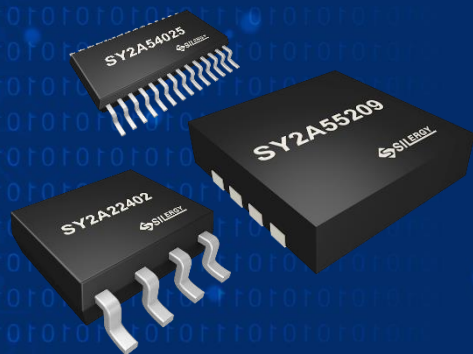


Automotive Solutions

**Q2 2025
AEC-Q100 QUALIFIED**



Typical Applications

Info/T-BOX/Gateway

- Backlight LED Driver
- Power Supply
- Audio Amplifier
- Battery Gauge
- Light Sensor
- CAN/SBC
- SerDes
- MOS

ABS/ESC/SDM/EPS

- Power Supply
- Motor Driver
- Half-bridge/Full-bridge Pre-driver
- MCU (ASIL-B/D)
- CAN
- MOS

BMS, TRACTION, OBC/DCDC

- SiC MOSFET
- Isolated Driver
- Battery Monitoring
- Isolated Power Supply
- Current Sense Amplifier
- MCU (ASIL-B/D)
- CAN

ADAS

- Power Supply
- High-side Driver
- Power Management IC
- CAN
- MOS
- SerDes

USB & Wireless Charging

- Power Supply
- ESD Protection
- Wireless Charging
- MCU
- MOS

Lighting

- Power Supply
- LED Driver
- MCU
- CAN
- ESD Protection

Body

- Power Supply
- Half-bridge/Full Bridge Driver
- Half-bridge/Full Bridge Pre-drive
- High-side and Low-side Driver
- Electronic Fuse
- MCU
- CAN

Sensor

- Temperature Sensor
- Optical Sensor

Automotive Qualified




Silergy and Its Supplier Quality System and Certificates

- ISO9001
- ISO14001
- ISO26262
- ISO27001
- ROHS/HF/REACH
- Responsible Business Alliance(RBA)
- IATF 16949 (suppliers)
- ISO17025(suppliers)
- ISO45001(suppliers)
- Sony Green Partner

Quality Control

- On-Site Foundry and Assembly Teams
- Daily Short-Term and Long- Term Reliability Monitoring
- Quarterly Supplier Quality Review
- Annual Supplier Audits



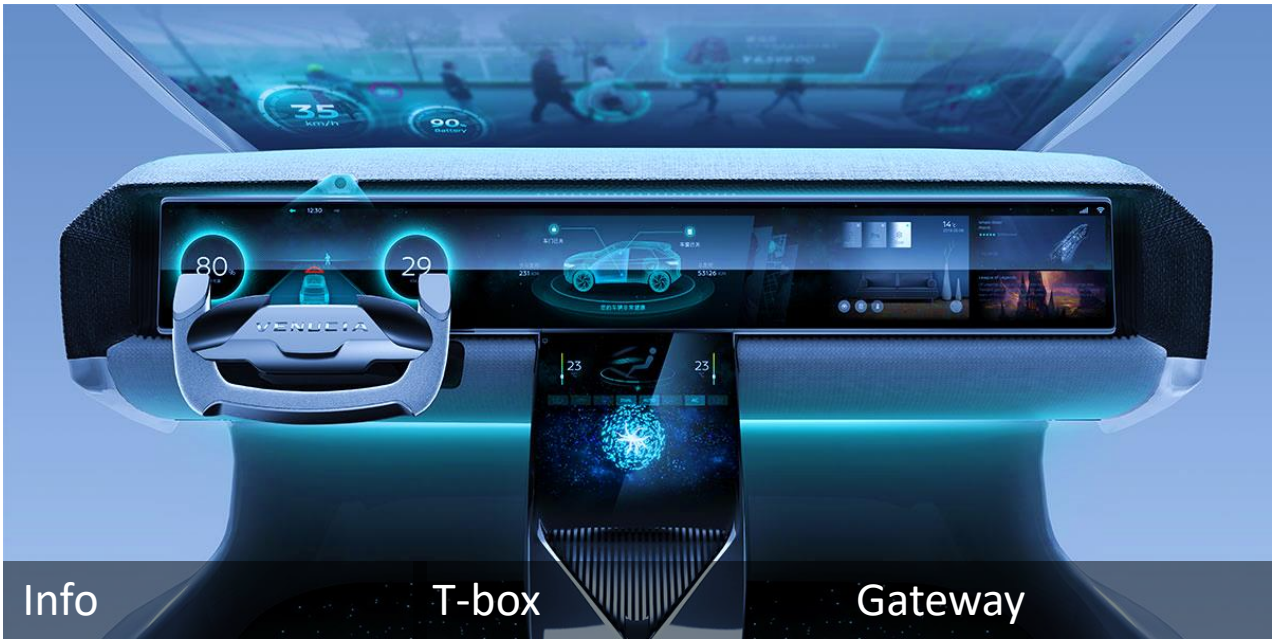
Category	P/N	Application	Feature	Package	Sampling
Buck	SY2A22402FCA/ SY2A22402BFCA	Info, T-Box, Gateway	Low I _Q , 40V, 0.6A Buck	SO8E	✓
Buck	SY2A22404FCA	Info, T-Box, Gateway	40V, 3.5A Buck	SO8E	✓
Buck	SA24404XNQ	IVI, T-Box, Gateway	36V, 4A Buck	QFN3.5x4-14	✓
 Buck	SA24406XNQ SA24406EXNQ	IVI, T-BOX, Gateway	36V, 6A Buck, PFM 36V, 6A Buck, FCCM	QFN3.5x4-14	✓
Buck	SA24493TLQ	IVI, T-BOX, Gateway	36V, 3A Buck	QFN2×2-12	✓
Buck	SY2A23001ADFD	Info, T-Box, Gateway	5.5V, 1A Buck, with Mode	DFN2x2-8	✓
Buck	SY2A23002ADFD	Info, T-Box, Gateway	5.5V, 2A Buck, with Mode	DFN2x2-8	✓
Buck	SA23002ATWD	Info, T-Box, Gateway	5.5V, 2A Buck, with Mode	DFN1.4x1.8-6	✓
Buck	SY2A23002BDFD	Info, T-Box, Gateway	5.5V, 2A Buck, with PG	DFN2x2-8	✓
Buck	SY2A23003ATWD	Info, T-Box, Gateway	5.5V, 3A Buck, with Mode	DFN1.4x1.8-6	✓
Buck	SA23003CTWD	Info, T-Box, Gateway	5.5V, 3A Buck, with PG	DFN1.4x1.8-6	✓
Buck	SA23004XHQ	Info, T-Box, ADAS	5.5V, 4A Buck, with PG, Mode, SS	QFN2×3-9	✓
Buck	SY2A23006XHQ	Info, T-Box, ADAS	5.5V, 6A Buck, with PG, Mode, SS	QFN2×3-9	✓
Buck	SY2A26066WYQ	Info, T-Box, Gateway	7V, 6A Buck	QFN2x3-14	✓
Buck	SY2A29103HSP	MDC/T-BOX	Vout0.7-5.3V, 36VIN Buck Controller	SSOP18E	✓
Buck-Boost	SY2A29311TVA	Info, T-Box, Gateway	36V, 7A Buck-Boost	QFN5x5-30	✓
Buck-Boost	SA22001QEQL	ADAS	60V, 4-Switch Buck-Boost Controller with ASIL-D	QFN5×5-32	✓
Boost	SY2A29117VPA	Info, T-Box, Gateway	16V, 15A Sync-Boost	QFN3x4-15	✓
Boost	SA22900QEQL	Audio Amplifier	50V, Dual-phase stackable Boost	QFN5×5-32	✓
LDO	SY2A27357AFCA	Info, T-Box, Body	36V, 0.3A LDO	SO8E	✓
LDO	SA21345CDFD	Info, T-Box, Body	36V, 300mA LDO	DFN2×2-8	✓
LDO	SY2A27357DAAA (Test at Room Temp)	Info, T-Box, Body	36V, 0.15A LDO	SOT23-5	✓
LDO	SY2A27357GFAA	Info, T-Box, Body	36V, 0.15A 5V LDO	SO8	✓
LDO	SA21345NFCPL	Info, T-Box, Body	36V, 0.15A, 5V Output LDO	SO8E	✓
LDO	SA21345QFCPL	Info, T-Box, Body	36V, 0.3A LDO	SO8E	✓
LDO	SY2A27352FCA	Info, T-Box, Body	36V, 0.3A LDO with Programmable Reset	SO8E	✓
LDO	SY2A27352IFCPL	Info, T-Box, Body	36V, 0.3A 3.3V LDO with Programmable Reset	SO8E	✓
LDO	SA21340PFCPL	Info, T-Box, Body	36V, 0.3A, 3.3V Output LDO with Programmable Reset	SO8E	✓
LDO	SY2A27317AUYS	Automotive BGA SSD	3.3V, 1350mA LDO	CSP2.4×2.4- 36	✓
 LDO	SA21309A00DAD	Info, T-Box, Camera	6V, 1A LDO, PG	DFN3×3-8	✓
High Side Switch	SA21803AHTPL	BCM, MDC, Power Distribution	48V, 50mΩ Smart High-Side Power Switch	TSOP14E	✓
High Side Switch	SA21803BHHTPL	BCM, MDC, Power Distribution	40V, 10mΩ Smart High-Side Power Switch	TSOP14E	✓
eFuse	SA21816CQSQ	Info, T-Box	2.7V-18V eFuse with True Reverse Blocking	QFN3x4-20	✓
 Power Switch	SA21904AQEQL	Driving Assistance System Power Distribution	High Voltage Hot swap and ORing	QFN5×5-32	✓
Multi-phase	SA58258QJQ	T-Box, ADAS	Dual-Rail N+M≤8 (M≤4) Controller with PMBus	QFN7×7-48	✓

Selection Guide

Category	P/N	Application	Feature	Package	Sampling
Battery	SY2A67932QIA	BUB in T-Box, eCall	LDO + Linear Charger	QFN4x4 16	✓
Battery	SY2A67932BQIA	BUB in T-Box, eCall	LDO + Linear Charger	QFN4x4 16	✓
USB Charger	SY2A67933QCA	QC3.0 USB Charger	QC3.0, DCP, 18W	QFN4x4 24	✓
PMIC	SY2A21731 Series	Camera Modules	16V Camera PMIC	QFN3x3-16	✓
Gas Gauge	SY2A55209DAA	BUB in T-Box, eCall	25V, 12bit Gas Gauge	DFN3x3-8	✓
Current Sense	SY2A55104AHT/ SY2A55105AHA	WPC,OBC,DCDC, EV/HEV	26V, Bidirectional Current-sense Amplifier	SOT363	✓
NEW Current Sense	SA59131HMP/ SA59131FAP	OBC,DCDC, BMS, Motor Control	4V to 80V Bidirectional Current-Sense Amplifier with PWM Rejection	TSSOP8/ SOP8	✓
ADC	SA59400FBP	BMS, Automotive Sensor	Bidirectional 12bit ADC with Temperature Sensor	MSOP10	✓
ADC	SA59401FBP	BMS, Automotive Sensor	Bidirectional 16bit ADC with Temperature Sensor	MSOP10	✓
ADC	SA89851HLP	BMS	12bit, 8 channel ADC, power down function	TSSOP30	✓
ADC	SA89853HUP	BMS	12bit, 16 channel ADC, power down function	TSSOP38	✓
LED Driver	SY2A39719HFA	Lighting	3Ch*150mA Linear Driver	TSSOP16E	✓
NEW LED Driver	SA33761HHP	Lighting	4 switcher buck-boost controller; high frequency; V _{IN} range from 4.5-55, V _{LED} range from 3-55	TSSOP24E	✓
Boost/Flyback	SY2A29705FAP	OBC, DCDC, Traction	11V 1A Boost/Flyback Controller	SO8	✓
Boost/Flyback	SY2A29302FAP	Lidar,OBC,Traction,BMS	36V Boost/Flyback Controller	SO8	✓
Boost/Flyback	SY2A29303HOP	Lidar,OBC,Traction,BMS	36V Boost/Flyback Controller	SSOP14E	✓
Motor Driver	SY2A58119VAA	HVAC, Mirror, BCM	6x Half-bridge	QFN5x5-24	✓
Motor Driver	SY2A58118HHP	HVAC, Mirror, BCM	8x Half-bridge	TSSOP24E	✓
Motor Driver	SY2A58152VAQ	HVAC, Mirror, BCM	12x Half-bridge	QFN5x5-24	✓
Motor Driver	SY2A58215FFP	Door handle, Door lock, BCM	40V 15A H-bridge	SOP16	✓
Gate Driver	SY2A58638DAD	WPC, ESP, ABS, BCM	High-side and Low-Side Driver	DFN3x3-8	✓
Gate Driver	SA52631FAP	WPC, ESP, ABS, BCM	High-side and Low-Side Driver	SOP8	✓
ISO DCDC	SY2A58720AAT	Isolated interface power supply, BMS	Single 3.3V or 5V Supply	SOT23-5	✓
Audio	SY2A54024HDA	T-Box, Info	High CMRR, Line receiver	TSSOP14	✓
Audio	SY2A54025HGA	T-Box, Info	10W Class-D AMP	TSSOP28E	✓
Audio	SY2A54035HFA	T-Box, Info	8W Class-D AMP	TSSOP16E	✓
Audio	SY2A54055HFA	T-Box, Info	22W Class-D AMP	TSSOP16E	✓
Audio	SY2A54508HFP	T-Box, Info	8W Class-D Audio Power Amplifier, Load dump	TSSOP16E	✓
Audio	SY2A54522HFP	T-Box, Info	22W Class-D Audio Power Amplifier, Load dump	TSSOP16E	✓
Audio	SY2A54560HNP	Car Audios, Home Audios	Mono Audio Digital to Analog Converter	TSSOP24	✓
Audio	SA55621QCQ	Telematics Control Unit, Head Unit	Low Power Audio Codec	QFN4×4-24	✓
Reference	SY2A81868AOT	BMS,OBC,EV/HEV	5V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868BAOT	BMS,OBC,EV/HEV	4.096V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868CAOT	BMS,OBC,EV/HEV	3.3V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868DAOT	BMS,OBC,EV/HEV	2.5V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868EAOT	BMS,OBC,EV/HEV	2.048V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868FAOT	BMS,OBC,EV/HEV	3.0V Shunt Voltage Reference	SOT-23	✓
Reference	SY2A81868FAOT	BMS,OBC,EV/HEV	3.0V Shunt Voltage Reference	SOT-23	✓

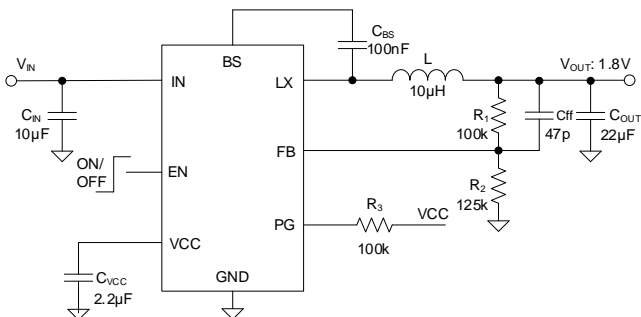
Selection Guide

Category	P/N	Application	Feature	Package	Sampling
ESD	SY2A206207AMA	ESD Protection	ESD for LIN	SOD323	√
ESD	SAT03N24AOT	ESD Protection	ESD for CAN	SOT-23	√
ESD	SAT21S05DWD	ESD Protection	Ultra-Low Capacitance TVS Protection	DFN1.0×0.6-2	√
Light Sensor	SA88010RS22-J00	Wiper	Light Sensor-IR	2.0x1.5x0.6	√
Light Sensor	SA88011AS22-J00	Body, Cluster, Info	Light Sensor	2.0x1.5x0.6	√
Light Sensor	SA88137AS22-J00	HUD, CID, CMS	Auto-grade Light Sensor	SMD2020-6	√
BMS AFE	SY2A61227GGF	BMS, EV/HEV	Stackable 18S Monitor and Passive Cell Balancer with Daisy Chain	TQFP10x10-64E	√
BMS Bridge	SA63000/AHFP	BMS, EV/HEV	SPI Interface: 2MHz-6MHz	TSSOP16E	√
MCU	SA32B12QEQ SA32B12AQEQ SA32B12GFF	Roof, Door, Seatbelt, Airbag, Smart Cockpit, HVAC, T-BOX, Shifter, BCM, EPB, Lighting	1xM4F, 120MHz, Flash 128KB, 2xCAN	QFN5x5-32 /LQFP7x7-48	√
MCU	SA32B14GFF SA32B14GDF		1xM4F, 120MHz, Flash 256KB, 3xCAN	LQFP7x7-48 /LQFP10x10-64	√
MCU	SA32B16GFF SA32B16GDF SA32B16GEF		1xM4F, 120MHz, Flash 512KB, 3xCAN	LQFP7x7-48/ LQFP10x10-64 /LQFP14x14-100	√



SY2A22402/SY2A22402B

Low Quiescent Current, 0.6A, 40V Input
Synchronous Step-Down Regulator



Features

- Input Voltage Range: 4.25V to 40V
- Output Current Capability: 0.6A
- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 225mΩ/150mΩ
- Low Quiescent Current:
 - SY2A22402: 5µA
 - SY2A22402B: 1.8µA
- Switching Frequency:
 - SY2A22402 : 500kHz
 - SY2A22402B: 2.1MHz
- Internal Soft-start Limits the Inrush Current
- Short Circuit Protection
- Thermal Shutdown and Auto Recovery
- Power Good Indicator
- Compact Package: SO8E
- Automotive AEC- Q100 Grade 1 Certified

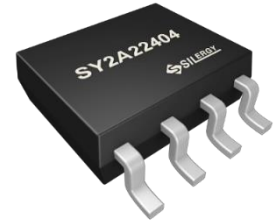
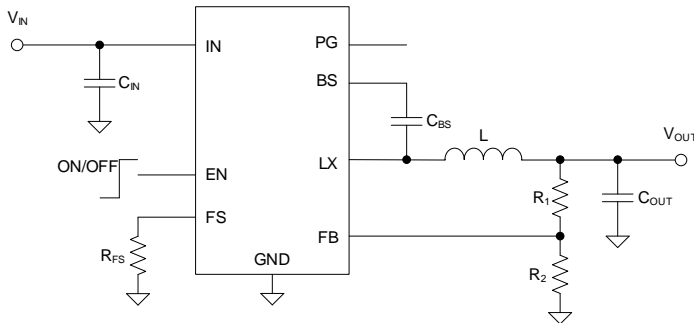
Applications

- Info, T-box, Gateway, EPS, ETC

Buck Regulators

SY2A22404

4.2V-40V Input , 3.5A High Efficiency Fast Response
Synchronous Step Down Regulator



Features

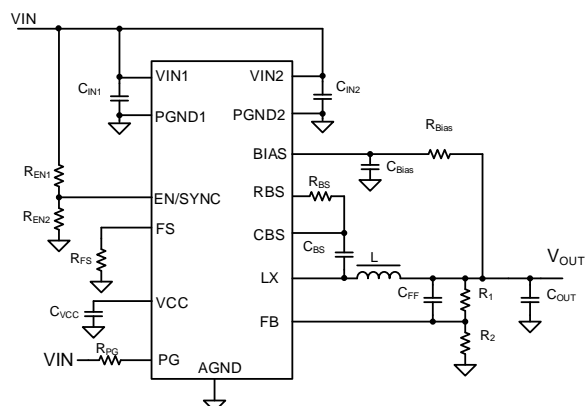
- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 115/80mΩ
- 4.2-40V Input Voltage Range
- Internal Compensation
- Internal 1ms Soft-start Limits the Inrush Current
- Adjustable Switching Frequency Range: 300kHz to 2.2MHz
- 3.5A Output Current Capability
- $\pm 2\%$ 0.6V Reference Over $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Cycle-by-cycle Peak Current Limitation
- Short Circuit Protection
- Thermal Shutdown and Auto Recovery
- RoHS Compliant and Halogen Free
- Compact Package: SO8E
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Info, T-box, Gateway, EPS, ETC
- OBC, DCDC, ABS, ESC
- Cluster
- Lighting

[Back](#)

36V Input, 4A Synchronous Step Down Regulator



Features

- 4V to 36V Input Voltage Range
- 4A Output Current Capability
- Low RDS(ON) for Internal Switches: 41mΩ Top, 21mΩ Bottom
- Typical 30μA Quiescent Current and 1μA Shutdown Current.
- 300kHz to 2.2MHz Switching Frequency
- Synchronization to External Clock
- Spread Spectrum Function
- Hiccup Mode Output Short-Circuit Protection
- EN On/Off Control with Accurate Threshold
- Cycle-by-Cycle Peak Current Limit
- Power Good Indicator
- 1V \pm 1% Reference Voltage Over -40°C to 150°C Temperature Range
- QFN3.5×4-14 Package
- Automotive AEC- Q100 Grade 1 Certified

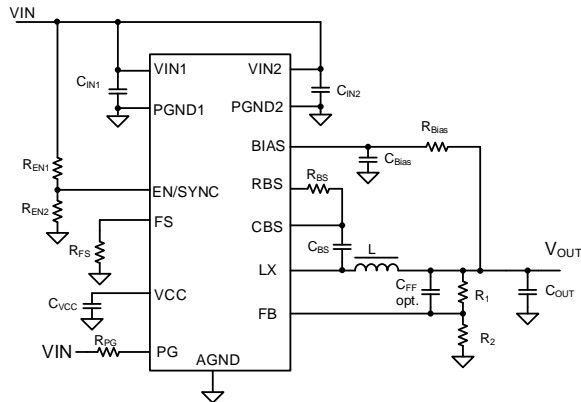
Applications

- IVI
- T-BOX
- Gateway

Buck Regulators

SA24406/SA24406E

36V Input, 6A Synchronous Step Down Regulator



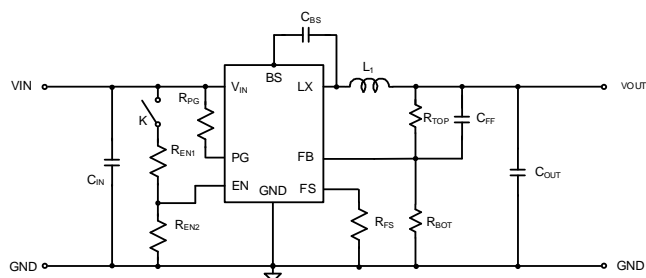
Features

- 4V to 36V Input Voltage Range
- 6A Output Current Capability
- Low $R_{DS(ON)}$ for Internal MOSFETs: 41mΩ Top, 21mΩ Bottom
- 30μA Quiescent Current (SA24406 Typical)
- 1μA Shutdown Current (Typical)
- 300kHz to 2.2MHz Switching Frequency
- Synchronization to External Clock
- Spread Spectrum Function
- Hiccup Mode Output Short-Circuit Protection
- EN On/Off Control with Accurate Threshold
- Cycle-by-Cycle Peak Current Limit
- Power Good Indicator
- Operating Mode at Light Load
 - SA24406: PFM
 - SA24406E: FCCM
- 1V $\pm 1\%$ Reference Voltage Over -40°C to 150°C Temperature Range
- Package: QFN3.5×4-14 with Wettable Flanks
- Automotive AEC- Q100 Grade 1 Certified

Applications

- IVI
- T-BOX
- Gateway

36V Input, 3A Synchronous Step Down Regulator



Features

- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 130mΩ/75mΩ
- Input Voltage Range: 4.5V-36V
- Low quiescent current: $I_Q = 18\mu A$ (Typ.)
- Internal Compensation
- Internal 1ms Soft-start Limits the Inrush Current
- Adjustable Switching Frequency Range: 300kHz to 2.2MHz
- Output Current Capability: 3A
- $\pm 1\%$ 0.6V Reference Over $-40^\circ C \sim 125^\circ C$
- Cycle-by-cycle Peak Current Limit
- Short-Circuit Protection
- Spread Spectrum Function
- Thermal Shutdown and Auto Recovery
- RoHS Compliant and Halogen Free
- Compact Package: QFN2×2-12
- Automotive AEC- Q100 Grade 1 Qualified

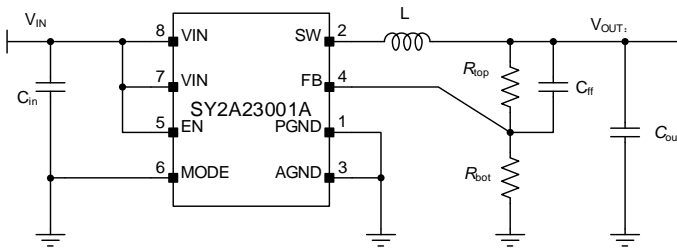
Applications

- IVI
- T-BOX
- Gateway

Buck Regulators

SY2A23001A

2.8V-5.5V Input, 1A Single Synchronous Buck Converter



Features

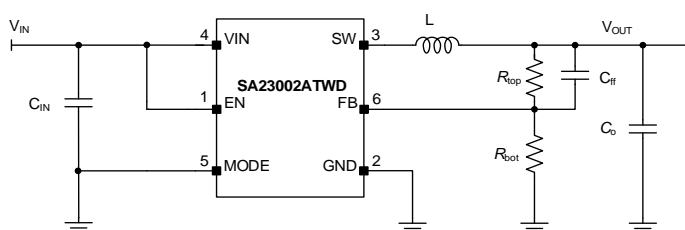
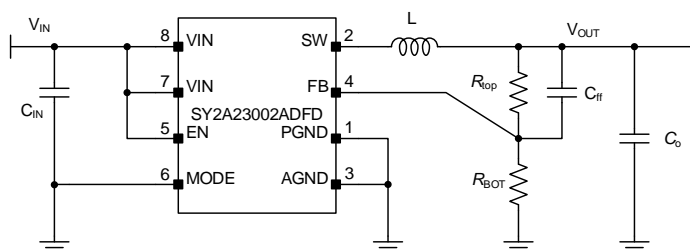
- 2.8V to 5.5V Input Voltage Range
- Up to 1A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency Minimizes Required External Components
- Selectable PWM and PFM Operating Modes
- 100% Duty-Cycle Capable
- Cycle-by-Cycle Current-Limit Protection
- Hiccup-Mode Short-Circuit Protection
- Thermal Shutdown
- Package: DFN2 \times 2-8
- Automotive AEC- Q100 Grade 1 certified

Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

Buck Regulators

2.8V-5.5V Input, 2A Single Synchronous Buck Converter

SY2A23002ADFD
SA23002ATWD

Features

- 2.8V to 5.5V Input Voltage Range
- Up to 2A Output Current
- Reference Accuracy of External Adjustable Voltage
 - SY2A23002ADFD: $\pm 1.5\%$
 - SA23002ATWD: $\pm 1.2\%$
- Typical $1\mu\text{A}$ Shutdown Current
- Fixed 2.35MHz Switching Frequency
- PWM and PFM Operating Selectable
- 100% Duty Cycle Capability
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection (SCP)
- Thermal Shutdown
- Package:
 - SY2A23002ADFD: DFN2 \times 2-8
 - SA23002ATWD: DFN1.4 \times 1.8-6
- Automotive AEC- Q100 Grade 1 Certified

Applications

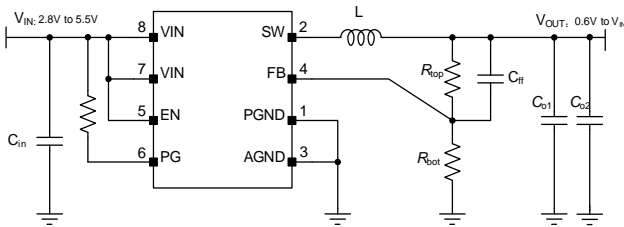
- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

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Buck Regulators

SY2A23002B

2.8V-5.5V Input, 2A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- Up to 2A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency
- 100% Duty-Cycle Capable
- PFM Mode for High Efficiency at Light Load
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection
- Power Good Indicator
- Thermal Shutdown
- Compact DFN2 \times 2-8 Package
- AEC-Q100 Qualified for Automotive Applications

Applications

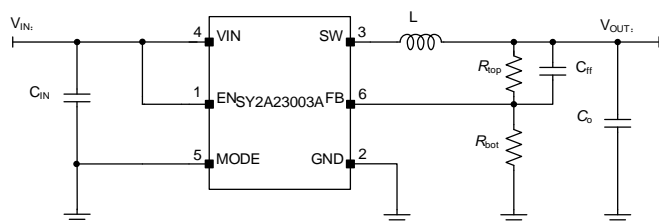
- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

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Buck Regulators

SY2A23003A

2.8V-5.5V Input, 3A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- Up to 3A Output Current
- External Adjustable Voltage with $\pm 1\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency Minimizes Required External Components
- Fixed Frequency PWM and PFM Operating Modes
- 100% Duty-Cycle Capable
- Cycle-by-Cycle Current-Limit Protection
- Hiccup-Mode Short-Circuit Protection
- Thermal Shutdown
- Package: DFN1.4 \times 1.8-6
- Automotive AEC-Q100 Grade 1 Certified

Applications

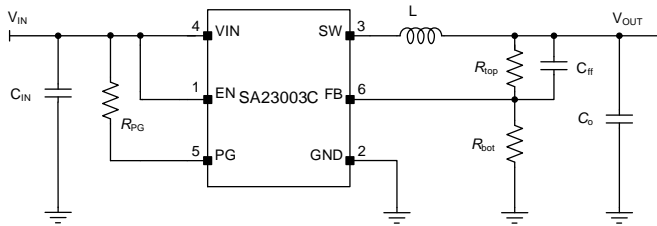
- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

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Buck Regulators

SA23003C

2.8V-5.5V Input, 3A Single Synchronous Buck Converter



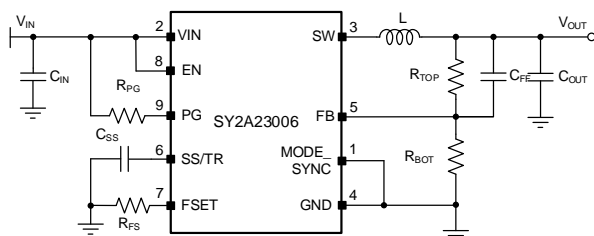
Features

- 2.8V to 5.5V Input Voltage Range
- Up to 3A Output Current
- External Adjustable Voltage with $\pm 1.5\%$ Reference Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Fixed 2.35MHz Switching Frequency
- Fixed Frequency PWM Operation Modes
- 100% Duty-Cycle Capable
- Cycle-by-Cycle Current-Limit Protection
- Hiccup-Mode Short-Circuit Protection
- Thermal Shutdown
- Package: DFN1.4 \times 1.8-6
- Automotive AEC-Q100 Grade 1 Certified

Applications

- Info, T-box
- Automotive Display
- ADAS

2.8V-5.5V Input, 6A Single Synchronous Buck Converter



Features

- 2.8V to 5.5V Input Voltage Range
- Up to 6A Output Current
- External Adjustable Output Voltage with $\pm 1.2\%$ Reference Voltage Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- Adjustable Switching Frequency of 1.8MHz to 3MHz
- PWM or PFM Operation Selectable in Light Load
- Adjustable Soft-Start Time
- 100% Duty-Cycle for Lowest Dropout
- Optional Frequency Jittering Function
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection
- Power Good Indicator
- Thermal Shutdown
- Compact QFN2mm \times 3mm-9 Package
- Automotive AEC-Q100 Grade 1 Certified

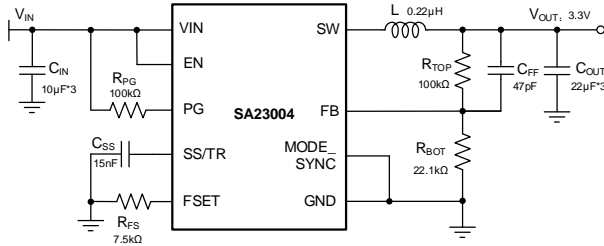
Applications

- Info, T-box
- Automotive Display
- ADAS

Buck Regulators

SA23004

2.8V-5.5V Input, 4A Single Synchronous Buck Converter



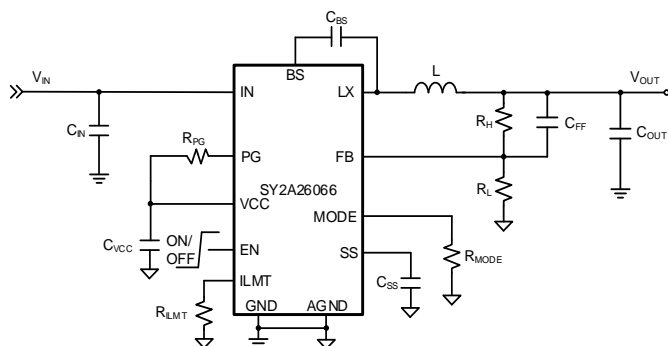
Features

- 2.8V to 5.5V Input Voltage Range
- Up to 4A Output Current
- External Adjustable Output Voltage with $\pm 1.2\%$ Reference Voltage Accuracy
- $1\mu\text{A}$ Shutdown Current (Typical)
- $36\mu\text{A}$ Quiescent Current (Typical)
- Adjustable Switching Frequency of 1.8MHz to 3MHz
- PWM or PFM Operation Selectable in Light Load
- Adjustable Soft-Start Time
- 100% Duty-Cycle for Lowest Dropout
- Optional Frequency Spread Spectrum
- Cycle-by-Cycle Current Limit Protection
- Hiccup Mode Short-Circuit Protection
- Power Good Indicator
- Thermal Shutdown
- Compact QFN2 \times 3-9 Package
- Automotive AEC-Q100 Grade 1 Certified

Applications

- Info, T-box
- Automotive Display
- ADAS

7V Input 6A Synchronous Step-Down Regulator



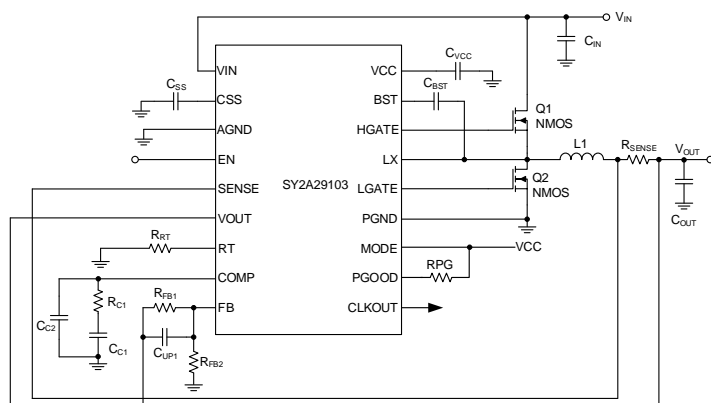
Features

- 3V to 7V Input Voltage Range
- Up to 6A Output Current
- $\pm 1\%$ Reference Voltage over -40°C to $+125^{\circ}\text{C}$ Junction Temperature Range
- Internal $22.1\text{m}\Omega$ Power Switch and $8.1\text{m}\Omega$ Synchronous Rectifier
- Instant-PWM™ Provides Fast Transient Response
- 660kHz, 1100kHz, and 2200 kHz Operating Frequency
- Selectable PFM/FCCM Operation
- Programmable Valley Current Limit
- Cycle-by-Cycle Valley and Peak Current Limit (OCP) and Reverse Current Limit if FCCM is Selected
- Output Overvoltage (OVP), Output Undervoltage (UVP), Overtemperature (OTP)
- Hiccup Mode after 32 Consecutive Cycles of Valley Current-Limit Protection
- Pre-Biased Startup
- Power-Good Indicator
- Compact Package: QFN2x3-14
- Automotive AEC-Q100 Grade 1 Certified

Applications

- Info, T-box, Gateway, Cluster
- Automotive Display
- ADAS

36V Synchronous Buck Controller



Features

- AEC-Q100-Grade 1 -40°C~125°C
- Wide Input Voltage Ranges from 4.0 V to 36V
- Start-up Input Voltage: 4.5V
- Output Voltage Range from 0.7V to 5.3V
- Fold Back Reference Voltage: 640mV \pm 1%
- Adjustable Switching Frequency: 250kHz to 1MHz
- Spread Frequency Function
- Adjustable Soft-start Time
- Pre-bias Start-up
- Output Voltage Abnormal Detection, Shows on PGOOD Pin, UVD/OVD
- Cycle by Cycle Current Limit Protection
- Thermal Shut down When $T_j > 160^\circ\text{C}$
- Reliable Protection: SOP/UVD/OVD/OVP/OTP
- Package: SSOP18E

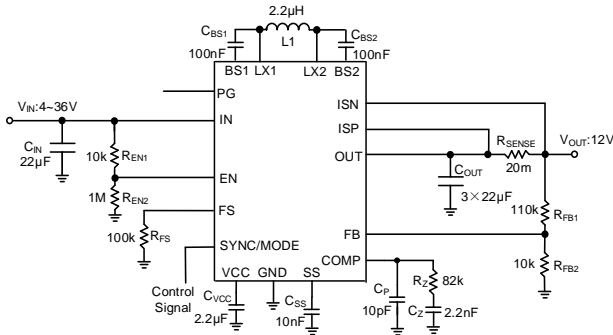
Applications

- DC/DC Converter
- Power Module
- Automotive Power Supply Unit
- Power Source for Control Units Including EV
- Inverter and Charge Controller



SY2A29311

High Efficiency, 4V-36V Input Single Inductor Synchronous Step Up/Down Regulator



Features

- 4V to 36V Input Voltage Range
- 3V to 20V Output Voltage Range
- Low $R_{DS(ON)}$ for Internal Switches: 35mΩ
- External Soft-start Limits the Inrush Current
- 1µA shutdown current
- 7A Internal Switch Peak Current Capability
- Programmable Frequency 200kHz~600kHz
- 1.0V±2% Reference over -40°C to 125°C
- Light Load Operating Mode Selection: PSM or FCCM
- Power Good Indicator
- Hic-cup Mode for Output Short-circuit Protection
- Output Over Current Protection
- Thermal Shutdown with Auto Recovery
- Compact Package: QFN5×5-30
- Automotive AEC- Q100 Grade 1 Qualified

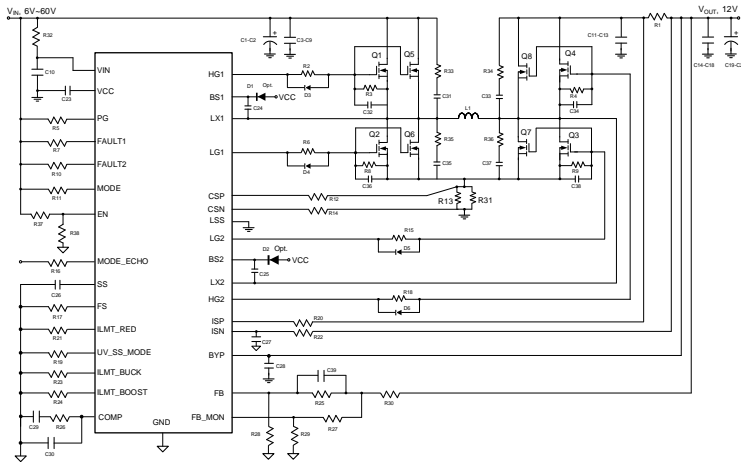
Applications

- Info, T-Box, Gateway
- ADAS
- Smart Cockpit

Buck-Boost Controller

SA22001

60V Synchronous Four-Switch Buck-Boost Controller

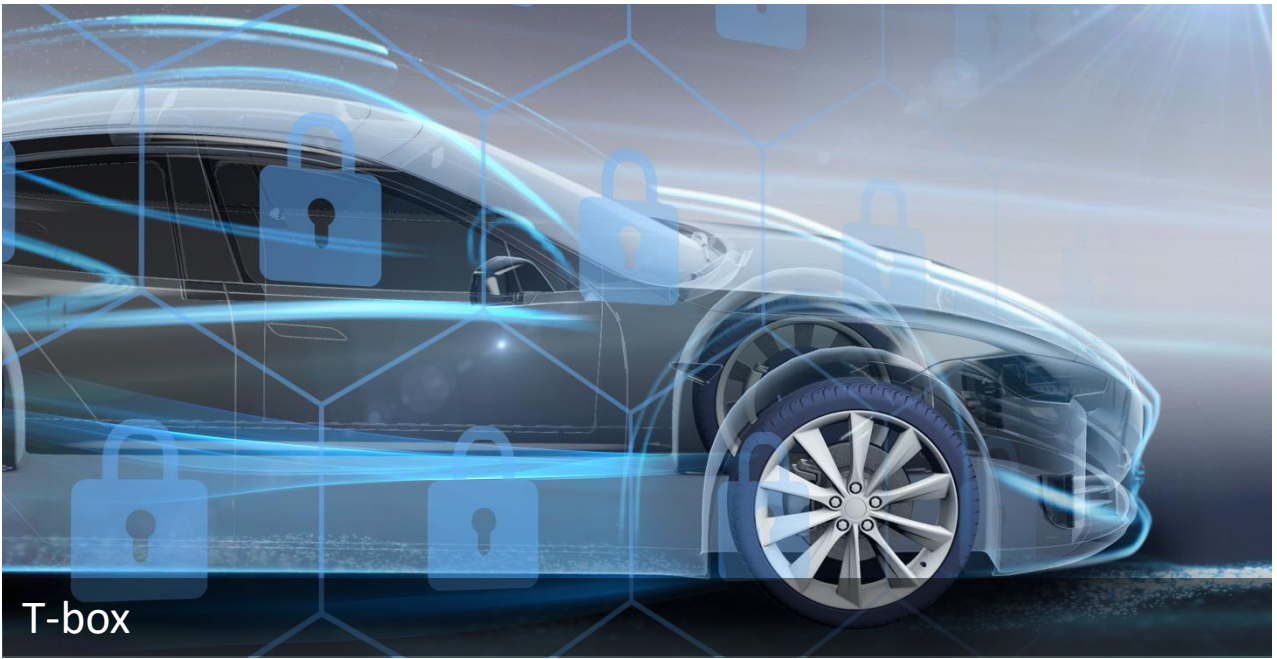


Features

- Four-Switch Single Inductor Architecture
- 6V to 60V Input Voltage Range
- 4.5V to 28V Output Voltage Range
- Peak Drive Current > 3A
- $0.8V \pm 1.5\%$ Reference Voltage over the $-40^{\circ}C$ to $125^{\circ}C$ Temperature Range
- Adjustable Switching Frequency from 150kHz to 400kHz
- Adjustable Soft-Start Time
- PWM or PFM Operation Selectable in Light Load
- Smooth Pre-Biased Startup
- Spread-Spectrum Function
- Power Good Indicator
- Fault Indicator
- CBC Current Limit Protection
- Output Voltage Undervoltage, Overvoltage, and Overcurrent Protection
- Thermal Shutdown
- Package: QFN5×5-32 with Wettable Flanks
- Automotive AEC-Q100 Grade 1 Certified
- Automotive ISO 26262 ASIL-D Certified

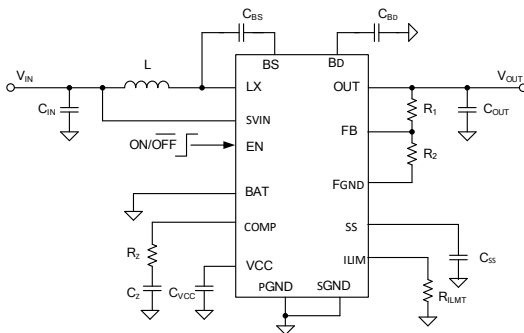
Applications

- ADAS



High Efficiency, 15A Synchronous Boost Regulator

SY2A29117



Features

- Wide Input Range:
 - 2.7V to 16V Start-up Voltage
 - 1.2V to 16V Operation Voltage
- 400kHz Pseudo-constant Frequency
- True Shutdown Function
- Low RDS(ON) Internal Switch
 - Main FET: 10mΩ
 - Rectifier FET: 20mΩ
 - Disconnect FET: 30 mΩ
- External Loop Compensation
- Programmable Peak Current Limit Threshold
- Battery Voltage Monitoring
- Programmable Soft-Start Limits the Inrush Current
- Input Voltage UVLO
- Over Temperature Protection
- Output Over Voltage Protection
- RoHS Compliant and Halogen Free
- Compact Package: QFN3×4-15
- Automotive AEC- Q100 Grade 1 Certified

Applications

- Backup Battery
- Info, T-box, Gateway

[Back](#)

Boost Regulators

SA22900

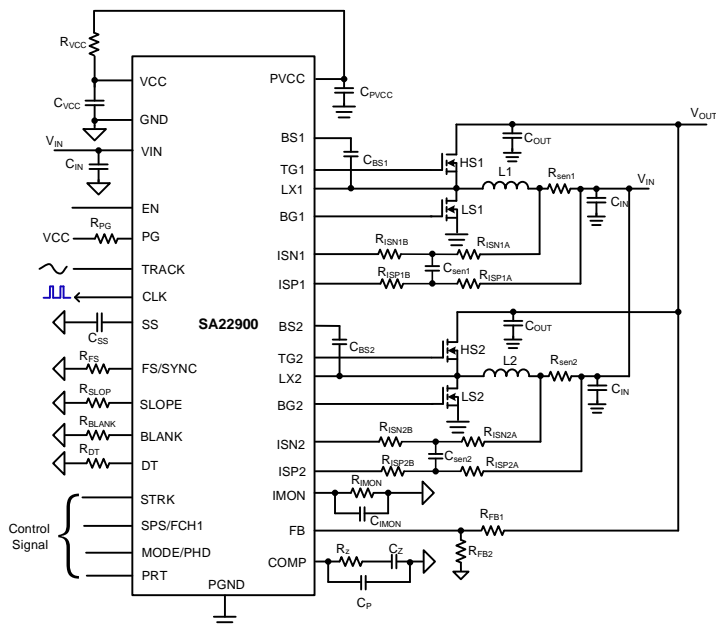
50V, Dual-Phase Stackable Synchronous Boost Controller

Features

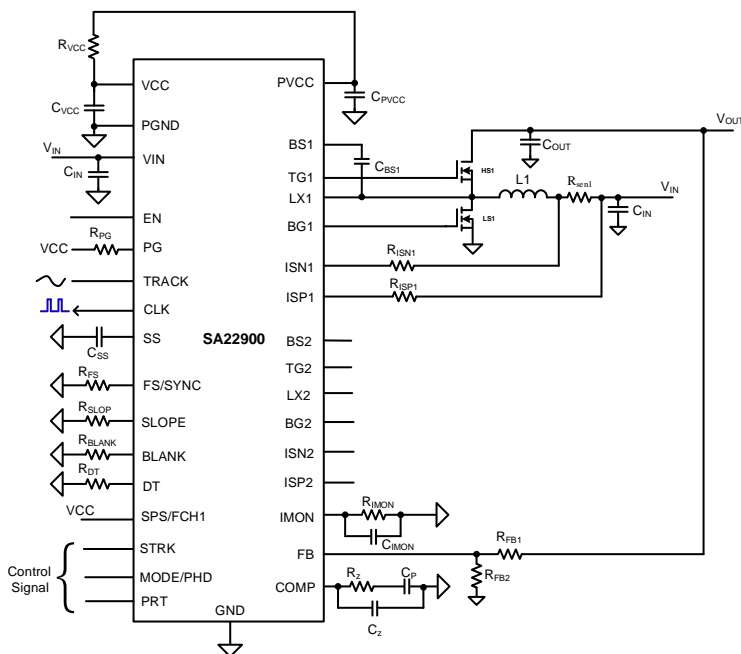
- Wide Input/output Voltage Range: 5V to 50V
- $1.6V \pm 1\%$ Reference Voltage over $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Selectable 1-, 2-, or 4 (Two Devices Paralleled)
- Interleaved Phase Operation
- Supports Spread Spectrum Function
- Power Good Indicator
- Supports External Synchronization
- Supports Tracking Function
- Integrated N-channel MOSFET Drivers: 5V 2A Sourcing/3A Sinking
- Programmable Frequency Per Phase: 50kHz to 1.1MHz
- Programmable Dead Time and Minimum Duty Cycle
- Light Load Operating Mode Selection: PFM or FCCM
- Selectable Phase Drop and Phase Add Function
- Fully Protected for Over Voltage, Over Current and Over-Temperature
- Selectable Hiccup or Latch-off Fault Response
- RoHS Compliant and Halogen Free
- Compact Package QFN5 \times 5-32
- Automotive AEC- Q100 Grade 1 Qualified

Applications

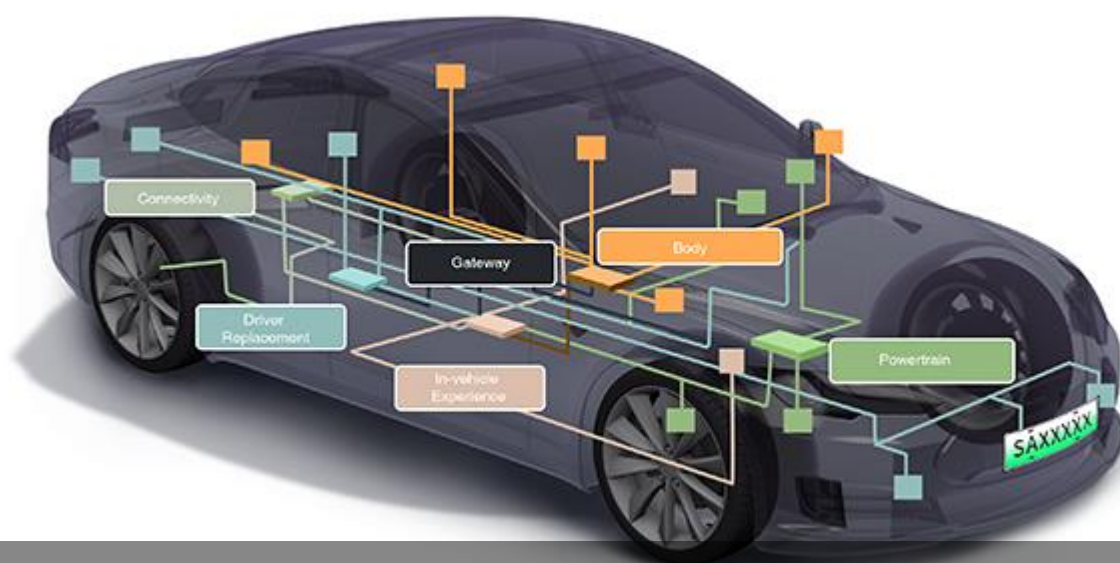
- Automotive Power Systems
- Audio Amplifiers
- Automotive Boost Applications
- Industrial and Telecommunication Power Supplies



Typical Application Circuit for Dual-phase Operation



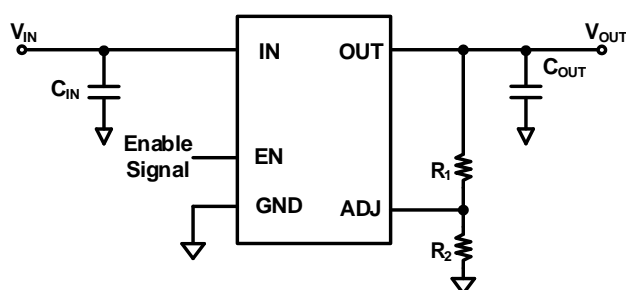
Typical Application Circuit for Single-phase Operation



Body

SY2A27357A

36V, 300mA LDO Regulator



Features

- Wide Input Voltage Range: 4V to 36V
- Low Dropout Voltage (300mV @ 300mA)
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- 300mA Maximum Load Current
- Enable Control Input
- Over Current Protection
- Thermal Shutdown
- Compact SO8E Package
- Automotive AEC- Q100 Grade 1 Certified

Applications

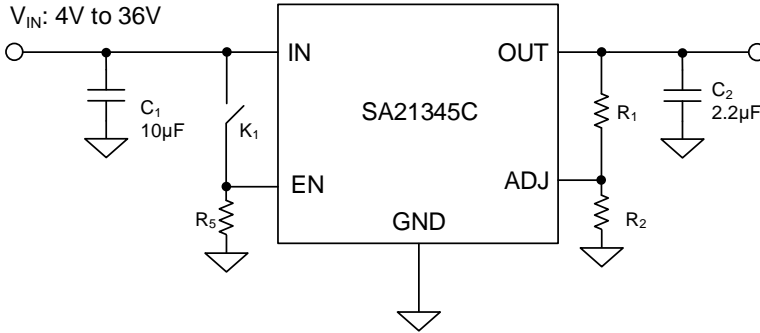
- Info, T-box, Gateway
- Body
- ADAS
- Lidar

[Back](#)

LDO

SA21345C

36V, 300mA LDO Regulator



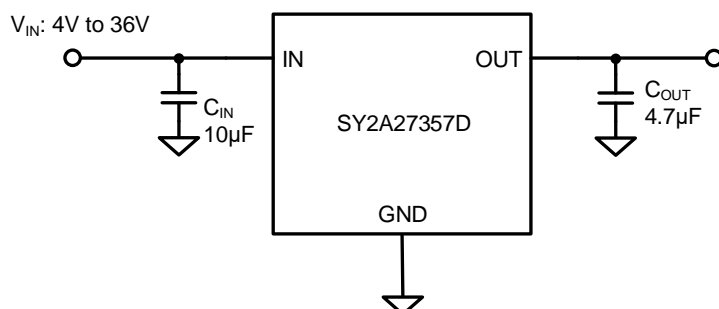
Features

- Wide Input Voltage Range: 4V to 36V
- 300mA Maximum Load Current
- Low Dropout Voltage of (300mV @ 300mA)
- Low Quiescent Current (10µA typ.)
- Low Shutdown Current (6µA max.)
- Stability with Tantalum or Ceramic capacitors
- Excellent Load and Line Regulation
- Enable Control Input
- Over Current Protection
- Thermal Shutdown
- Packages: DFN2×2-8
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Automotive Application
- Battery-Powered Equipment
- Gateway Application
- Remote Keyless Entry Systems
- SMPS Post-regulator/ DC-DC Modules

36V 150mA LDO Regulator

SY2A27357D**(Test at Room Temperature)**

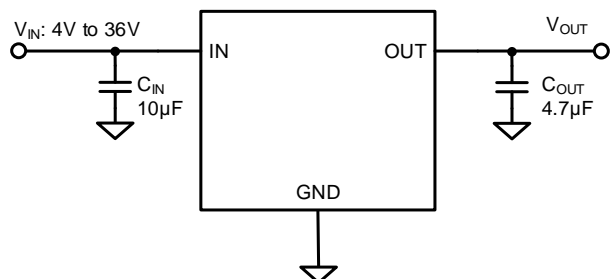
Features

- Wide Input Voltage Range: 4V to 36V
- 150mA Maximum Load Current
- Low Dropout Voltage (150mV @ 150mA)
- Ultra-low Quiescent Current (15 µA typ.)
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- Over Current Protection
- Thermal Shutdown
- Compact Package :SOT23-5
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Note Book
- Cell Phone
- Automotive LED Lighting ECU
- Automotive Body Modules

150mA LDO Regulator

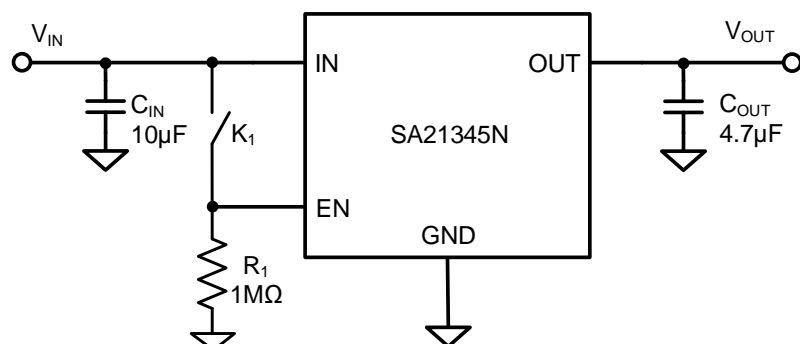


Features

- Wide Input Voltage Range: 4V to 36V
- Low Dropout Voltage (150mV @ 150mA)
- Ultra-low Quiescent Current
- Fixed 5V Output Voltage
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load And Line Regulation
- 150mA Maximum Load Current for SO8
- Over Current Protection
- Thermal Shutdown Protection
- Compact SO8 Package
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Certified

Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

SA21345N**150mA LDO Regulator****Features**

- Wide Input Voltage Range: 4V to 36V
- Fixed 5V Output Voltage
- Output Voltage Accuracy: 2%
- Low Dropout Voltage of (150mV@150mA)
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- 150mA Maximum Load Current for SO8E
- Enable Control Input
- Over Current Limit Protection
- Thermal Shutdown Protection
- Compact Package: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC-Q100 Grade 1 Qualified

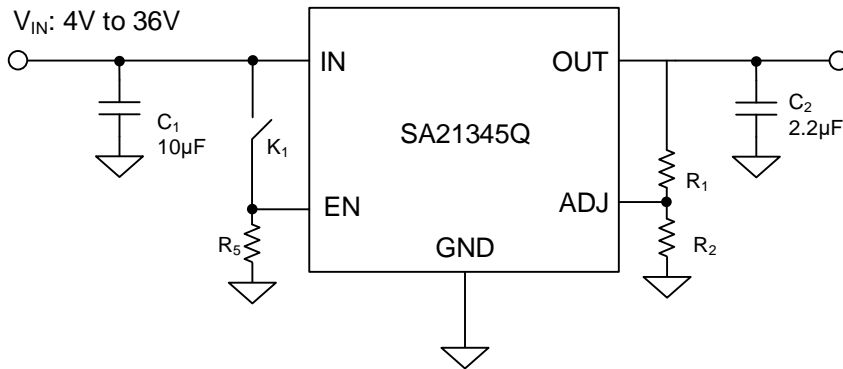
Applications

- Info, T-box, Gateway
- Automotive LED Lighting ECU
- Automotive Body Modules

LDO

SA21345Q

36V Input, 300mA LDO



Features

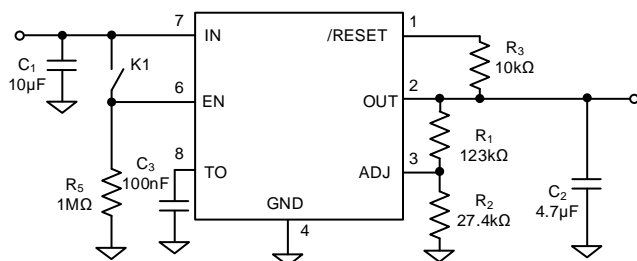
- Wide Input Voltage Range: 4V to 36V
- Low Dropout Voltage (300mV @ 300mA)
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitor
- Excellent Load and Line Regulation
- 300mA Maximum Load Current
- Enable Control Input
- Over Current Protection
- Thermal Shutdown
- Compact Package: SO8E
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Automotive Application
- Battery-Powered Equipment
- Gateway Application
- Remote Keyless Entry Systems
- SMPS Post-regulator/ DC-DC Modules



300mA, 36V Fast-Response LDO Regulator



Features

- High-current Capability: 300mA Over Full Temperature Range
- Low-dropout Voltage of 300mV at Full Load 300mA.
- Adjustable Output Voltage
- Low Ground Current
- Over Current Limit Protection
- Output Short Circuit Protection(Hiccup Mode)
- Over Temperature Protection.
- Reset Output with Programmable Timeout Period
- Packages: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Certified

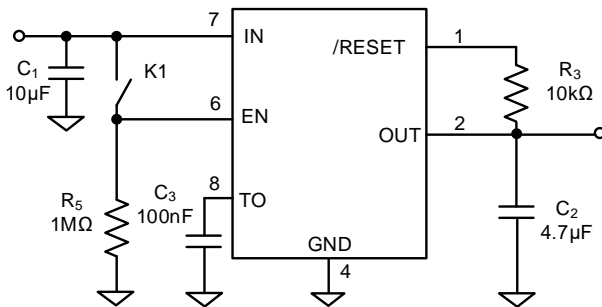
Applications

- Info, T-box, Gateway
- Body
- ADAS
- Lidar

LDO

SY2A27352I

36V 300mA LDO with Programmable Reset

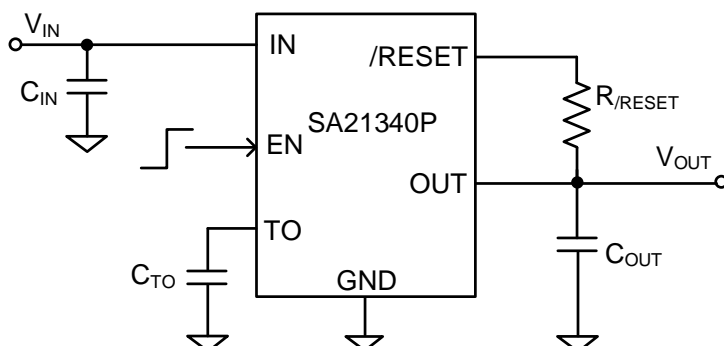


Features

- High-current Capability: 300mA Over Full Temperature Range
- Low-dropout Voltage of 300mV at Full Load 300mA
- Fixed 3.3V Output Voltage
- Low Ground Current
- Over Current Limit Protection
- Output Short Circuit Protection (Hiccup Mode)
- Over Temperature Protection
- Reset Output with Programmable Timeout Period
- Packages: SO8E
- RoHS Compliant and Halogen Free
- Automotive AEC- Q100 Grade 1 Certified

Applications

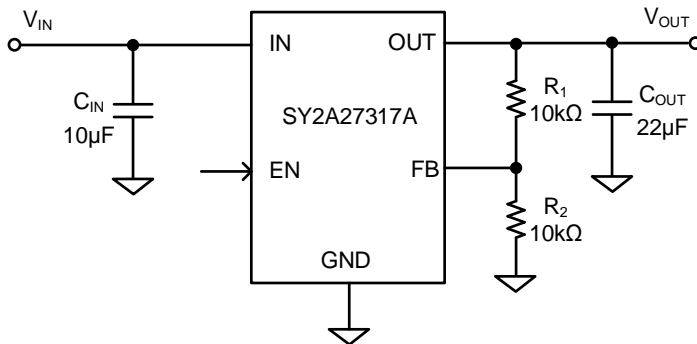
- Info, T-box, Gateway
- Body
- ADAS
- Lidar

SA21340P**36V 300mA LDO with Programmable Reset****Features**

- Wide Input Range: 4V to 36V
- Fixed 3.3V Output Voltage
- Output Voltage Accuracy: 2%
- Low Drop-out Voltage of 300mV at Full Load 300mA
- 300mA Maximum Load Current
- Ultra-low Quiescent Current
- Extremely Low Shutdown Current
- Stability with Tantalum or Ceramic Capacitors
- Excellent Load and Line Regulation
- Enable Control Input
- Over Current Limit Protection
- Output Short Circuit Protection (Hiccup Mode)
- Over Temperature Protection
- Thermal Shutdown
- RoHS Compliant and Halogen Free
- Package: SO8E
- Automotive AEC- Q100 Grade 1 Qualified

Applications

- Industrial/Automotive Application
- Portable/Battery-Powered Equipment
- Gateway Application
- Remote Keyless Entry Systems
- Cellular Handsets
- SMPS Post-regulator/ DC-DC Modules
- Medical Imaging

LDO**SY2A27317A****1350mA Low Dropout Regulator****Features**

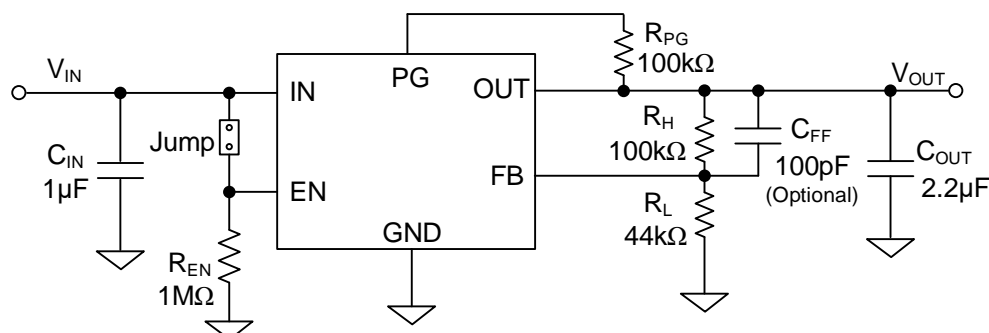
- Input Voltage Range: 1.65V to 3.3V
- Output Current up to 1350mA
- PSRR at 1kHz : 55dB(Typ)
- Adjustable Output FB Voltage Accuracy : $\pm 1\%$ @ $T_A = 25^\circ\text{C}$
- Drop Out Voltage : Max=0.4V
- Packages CSP 2.4mm \times 2.4mm -36
- RoHS Compliant and Halogen Free
- AEC Q100 Grade 2
- -40°C to $+105^\circ\text{C}$ Ambient Temperature Range

Applications

- Automotive BGA SSD

Low I_Q , Low Dropout, Automotive 1A LDO

SA21309A00DAD



Features

- Input Voltage Range: 1.5V to 6V
- Adjustable Output Voltage : 0.55V to 5.5V
- Low Dropout Voltage: 240mV(Typ.) at 1A(3.3V VOUT)
- Power Supply Rejection Ratio (PSRR): 55dB@1kHz
- Output Accuracy:
 - $\pm 0.85\%$ at 25°C
 - $\pm 1\%$ from -40°C to 125°C
- Stable with a Minimum of 2.2μF or Larger Ceramic Output Capacitor
- Low Current Consumption: Typical 25μA Quiescent and 0.1μA at Shutdown
- Over Current Limit and Short Circuit Protection
- Over Temperature Protection with Auto Recovery
- Moisture Sensitivity Level (MSL): 1
- Compact DFN3×3-8 Package
- Automotive AEC-Q100 Grade 1 Qualified

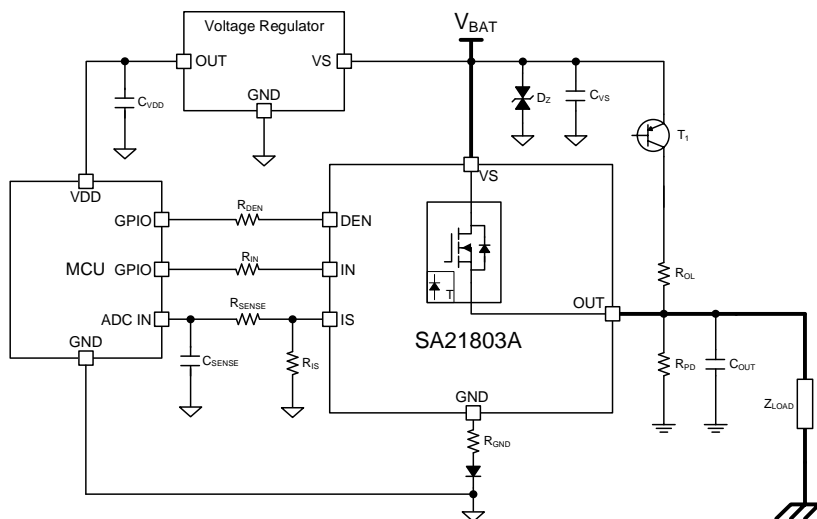
Applications

- Infotainment Power Supplies
- Automotive Cluster Displays
- Cameras
- Telematics Control Units
- General Purpose Automotive



48V, 50mΩ Single Channel, Smart High-Side Power Switch

SA21803A



Features

- AEC-Q100/ Q104 Qualified for Automotive Applications
- One Channel Device
- Very Low Shutdown Current
- 3.3V and 5V Compatible Logic Inputs
- Logic Ground Independent from Load Ground
- Very Low Power DMOS Leakage Current in OFF State
- Diagnostic Functions
 - Proportional Load Current Sense
 - Open Load in OFF State
 - Short Circuit to Battery and Ground
 - Over Temperature
 - Stable Diagnostic Signal During Short Circuit
 - Enhanced k_{ILIS} Dependency with Temperature and Load Current
- Protection Functions
 - Stable Behavior during Under Voltage
 - Reverse Polarity Protection with External Components
 - Secure Load Turn-off during Logic Ground Disconnect with External Components
 - Over Temperature Protection with Latch
 - Overvoltage Protection with External Components
 - Voltage Dependent Current Limitation
 - Enhanced Short Circuit Operation

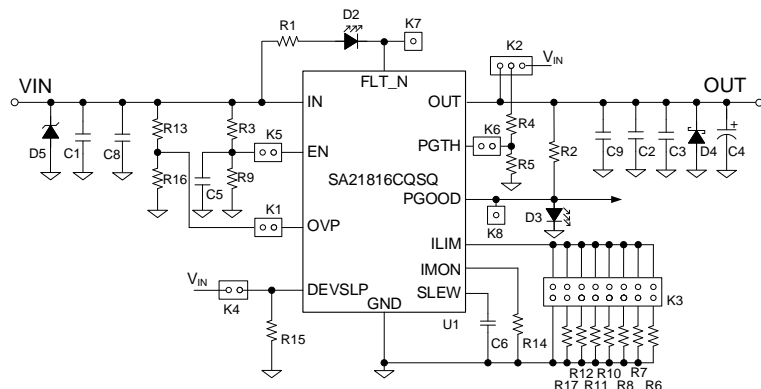
Applications

- Suitable for Resistive, Inductive and Capacitive Loads
- Replaces Electromechanical Relays, Fuses and Discrete Circuits
- Most Suitable for Loads with High Inrush Current, Such as Lamps
- Suitable for 12V and 24V Truck and Transportation System

[Back](#)

SA21816C

2.7V-18V eFuse with True Reverse Blocking



Features

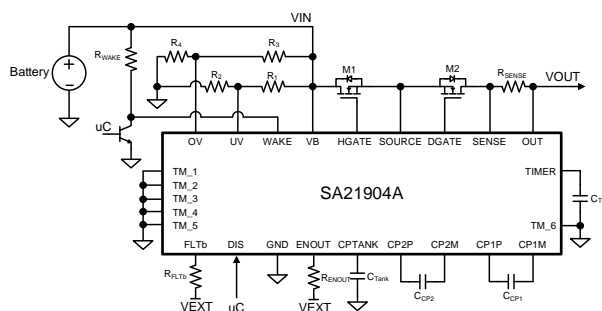
- AEC-Q100 Grade 1 Qualified
- Ultra Low RDS(ON): 46mΩ RON (Typical)
- Adjustable Current Limit: 0.6A to 5.3A
- IMON Current Indicator Output
- Operating IQ: 130μA (VIN = 12V, Typical)
- Reverse Current Blocking
- Programmable Output Slew Rate Control
- Power Good and Fault Outputs
- -40°C to 125°C Junction Temperature Range
- 2.7V - 18V Operating Voltage, 21V Max
- RoHS Compliant and Halogen Free
- Compact Package: QFN 3×4-20

Applications

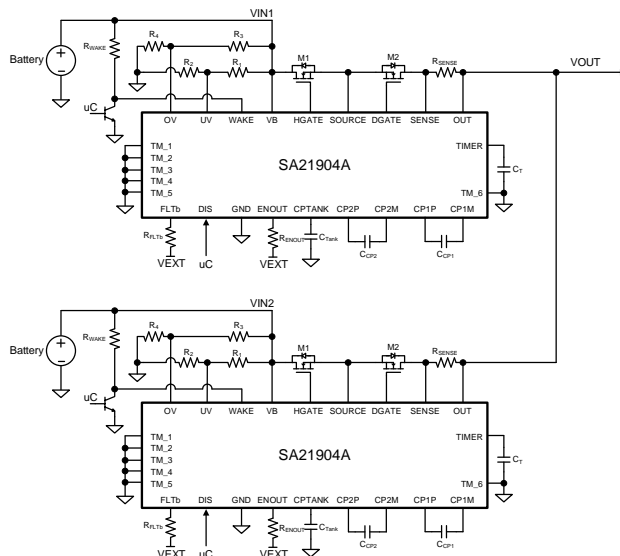
- Automotive Applications
- ADAS (Advanced Driver Assistance Systems)
Cameras and Radar Sensors
- USB Hubs
- Power MUX
- Power Management Backup

65V Hot swap and ORing Controller with ASIL D

SA21904A



Single Channel Typical Application



Features

- AEC-Q100 Grade 1 Qualified for Automotive Applications
- Wide Input Voltage Range: 4V to 65V
- Reverse Input Protection: -65V
- 2 External N-Channel MOSFET Predrivers
 - One Hot Swap Feature
 - One ORing Feature
- Very Low Supply Current: 2.2mA@Operation, 50μA@WAKE Low
- Current Limiting for Startup
- Programmable Current Limit Fault Timer
- Integrated Charge Pump
- Input Overvoltage Protection
- Input Undervoltage Protection
- Output Overcurrent Protection
- Complies with the 16750 AC Ripple Test Requirements (50Hz-25kHz)
- Developed According to ISO26262 to Be Used in ASIL D Application
- Package: QFN5×5-32

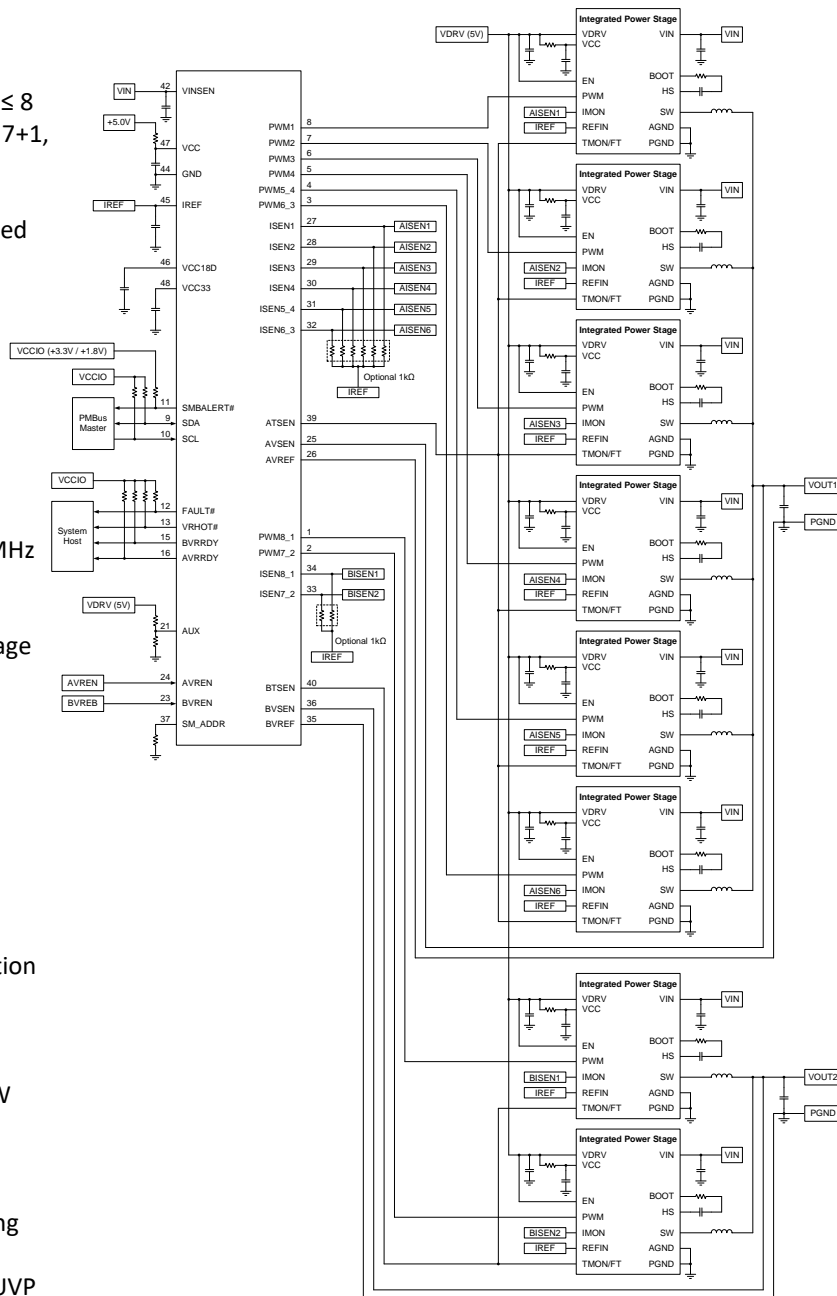
Applications

- Advanced Driving Assistance System
- Automotive Power Distribution Applications

Dual-Rail N+M≤8 (M≤4) Controller with PMBus

Features

- Supports up to 8 phase
- Programmable phase assignment between two loops; Support $N + M \leq 8$ ($M \leq 4$), with configurations of 8+0, 7+1, 6+2, 5+3, up to 4+4
- Internal NVM to store custom configurations, which can be modified using PMBus
- Configurable autonomous phase add/drop
- Output voltage regulation range: 0.5V to 2.0V (50mV/step)
- PMBus Rev 1.3 compliant serial interface
- Querier for voltage, current, and temperature faults
- Maximum supported bus speed: 1MHz
- Compliant with 1.8V and 3.3V logic levels
- Supports start-up into pre-bias voltage
- Differential output voltage sensing
- DrMOS current sensing
- Adjustable current balancing with programmable offsets for thermal balancing
- Programmable loop compensation
- Programmable DC load-line slope (droop) and offset
- Input voltage (+12V) sensing
- External fault detection and protection capability
- IUVLO, IOVP, OUV, OOV
- OOC (Total Current)
- Int. OTP/OTW and DrMOS OTP/OTW
- Open/short voltage sense line detection
- Valley phase current pulse limiting
- Negative phase current pulse limiting
- Phase configuration fault detection
- AUX voltage OVP and AUX voltage UVP
- Under inductor current warning
- AEC-Q100 qualified
- ASIL-D system ready
- Temperature grade 1: -40°C to 125°C
- RoHS compliant and halogen free 48-lead 7mm x 7mm QFN (0.5mm Pin Pitch) package

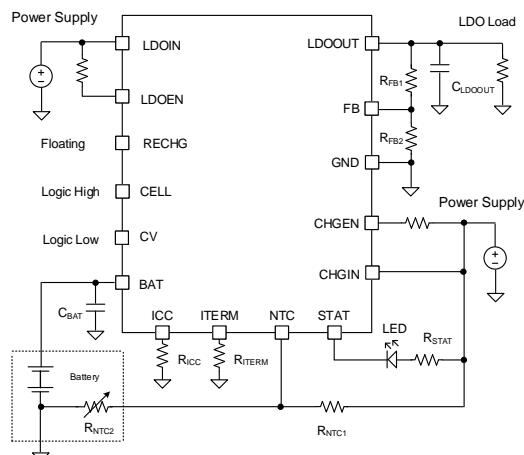


Applications

- Data Center Network Switches
- High Performance xPU/ASIC/FPGA Power



500mA Linear Regulator and 400mA Linear Charger



Features

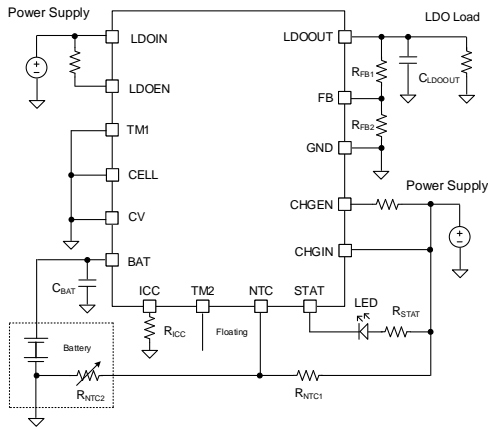
- 4.5V~36V Wide Input Operation Voltage Range
- Integrated a 500mA Linear Regulator with Over Load and Short Circuit Protection
- Integrated a 400mA Linear Charger
- Support 1-cell or 2-cell Li-ion and Li-polymer Batteries
- Support 4.05V, 4.1V and 4.2V Cell Voltage Battery
- $\pm 0.5\%$ Battery Charge Voltage Accuracy
- Programmable Constant Charge Current and Termination Current
- 100mA~400mA Constant Charge Current with $\pm 10\%$ Accuracy
- 20mA~100mA Termination Current with $\pm 20\%$ Accuracy
- Thermal Regulation and Thermal Shutdown
- Compact Package: QFN4 \times 4-16
- AEC-Q100 Grade1 Qualified

Applications

- T-box
- Portable Battery-powered Equipment

SY2A67932B

500mA Linear Regulator and 100mA Linear Charger for Automotive Battery Backup System



Features

- 4.5V-36V Wide Input Operation Voltage Range
- Integrated a 500mA Linear Regulator with Over Load and Short Circuit Protection
- Integrated a 100mA Linear Charger
- Support up to 2-cell Ni-MH Batteries by Linear Charging
- $\pm 0.5\%$ Battery Charge Voltage Accuracy
- Programmable Constant Charge Current
- 20mA~100mA Constant Charge Current with $\pm 20\%$ Accuracy
- Thermal Regulation and Thermal Shutdown
- Compact Package: QFN4 \times 4-16
- AEC-Q100 Grade1 Qualified

Applications

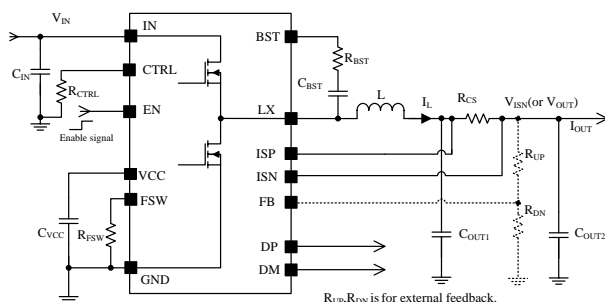
- T-box
- Portable Battery-Powered Equipment



BUB in T-box

4.5- 40V Wide Input, 3A High Efficiency CV/CC Step-Down Regulator with USB and QC3.0 Handshaking

SY2A67933



Features

- 4.5-40V Wide Input Voltage Range
- Build in Low $R_{DS(ON)}$ Power Switches
- 60-400kHz Programmable Switching Frequency
- Cable Voltage Drop Compensation
- Output Constant Current Limit
- Maximum 5V/3A Output Power
- Maximum 9V/2A Output Power
- Maximum 12V/1.5A Output Power
- Integrated Soft-start and Compensation
- Hiccup Mode During Output Short
- Input Voltage UVLO and OVP
- Output Over Voltage Protection
- Thermal Shutdown Protection
- Output Apple-divide Mode, DCP and QC3.0 Handshaking
- QC 3.0 Certificate
- 8kV ESD HBM Protection on DP and DM
- AEC-Q100 Grade1 Automotive Qualified
- Compact Package: QFN4x4-24

Applications

- Car Charger
- Cigarette Lighter Adapter
- Other CV/CC Applications

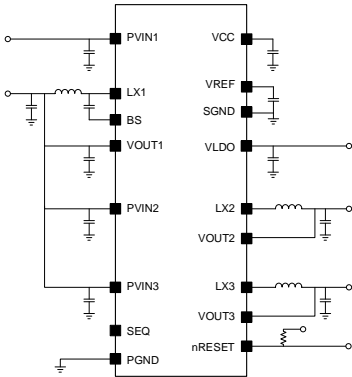
[Back](#)



SY2A21731 Series

Automotive Camera PMIC

Part Number	Buck 1	Buck 2	Buck 3	LDO	nRESET Delay Time
SY2A21731QDQ	3.8V	1.1V	1.8V	3.3V	2ms
SY2A21731BQDQ	3.3V	1.2V	1.8V	2.8V	2ms
SY2A21731CQDQ	3.8V	1.2V	1.8V	3.3V	2ms

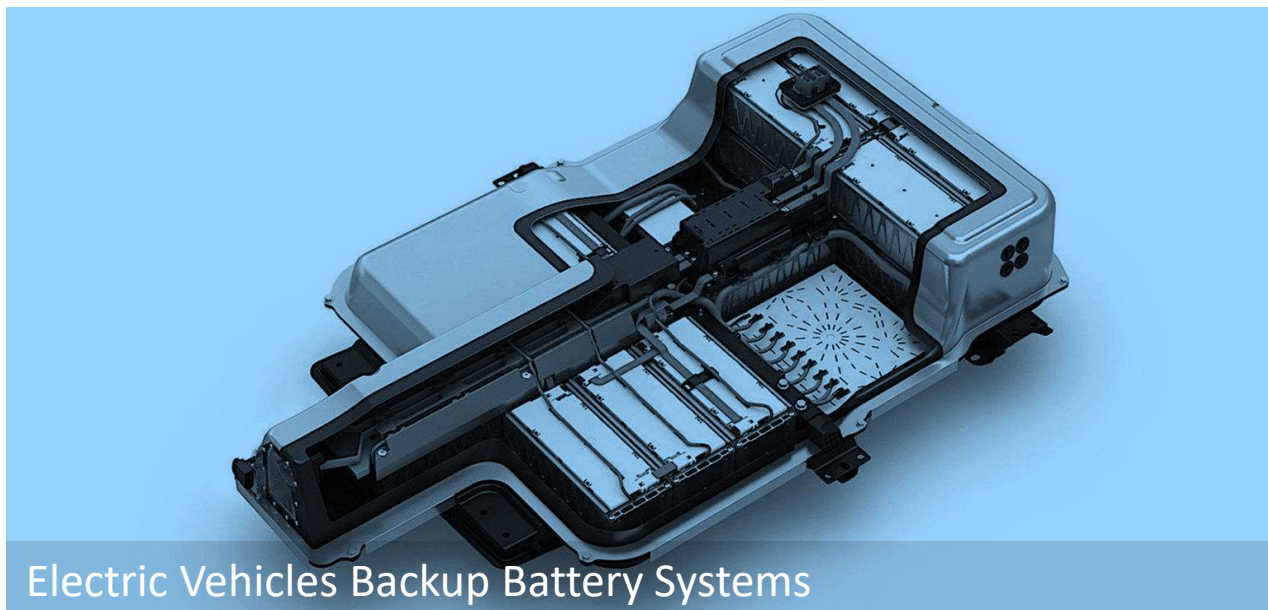


Features

- 4V to 16V Input Voltage Range
- 2.2MHz Fixed Switching Frequency
- Primary Synchronous Buck Converter (Buck 1)
 - Fixed Output Voltage: 3.3V/3.8V (optional)
 - Maximum Continuous Output Current: 1.5A
 - Low $R_{DS(ON)}$ Switches: 220mΩ High Side/120mΩ Low Side
- Secondary Synchronous Buck Converter (Buck 2)
 - Fixed Output Voltage: 1.1V/1.2V (optional)
 - Maximum Continuous Output Current: 1.5A
 - Low $R_{DS(ON)}$ Switches: 220mΩ High Side/180mΩ Low Side
- Secondary Synchronous Buck Converter (Buck 3)
 - Fixed Output Voltage: 1.8V
 - Maximum Continuous Output Current: 1A
 - Low $R_{DS(ON)}$ Switches: 320mΩ High Side/220mΩ Low Side
- Secondary LDO
 - Output Voltage: 2.8V/2.9V/3.3V (optional)
 - Maximum Output Current: 300mA
- Spread Spectrum Frequency Modulation
- AEC-Q100 Grade 1 Qualified
- Compact Package: QFN3×3-16

Applications

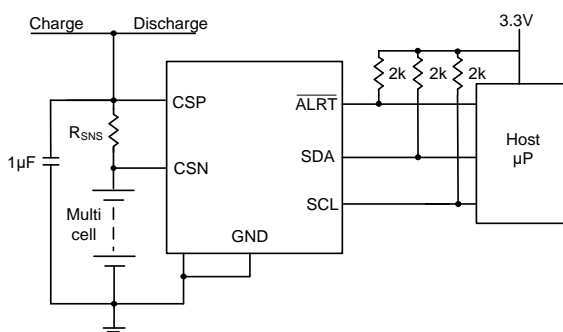
- Automotive Camera Modules



Electric Vehicles Backup Battery Systems

Multi Cell Battery Gas Gauge

SY2A55209



Features

- High Accuracy Coulomb Counter Measures Accumulated Battery Charge and Discharge
- Operation Voltage Range: 3.6V to 25V
- 12-bit ADC Measures Voltage and Current
- 1% Voltage, Current and Charge Accuracy
 - $\pm 64\text{mV}$ Sense Voltage Range for Current ADC
 - High Side Sense for Current ADC
 - Low Value External Current Sense Resistor
- Low Quiescent Current
- Configurable Alert Output/Charge Complete Input
- I2C Interface
- Compact DFN3 \times 3-8 Package
- AEC-Q100 Qualified for Automotive Applications
 - Temperature Grade 2: -40°C to $+105^{\circ}\text{C}$

Applications

- Power Tools
- Portable Equipment
- Electric and Hybrid Electric Vehicles
- Backup Battery Systems

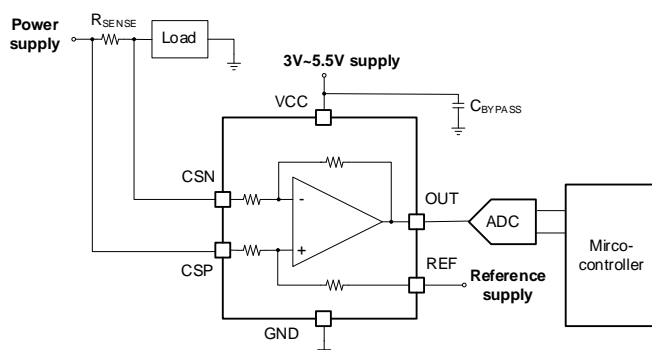
[Back](#)

Current Sense



SY2A55104/SY2A55105

High- or Low-Side, Bidirectional,
High Accuracy Current-sense Amplifier



Features

- Voltage-output, Current-sense Amplifier
- Wide Common Mode Operation Range: $-0.3V \sim 26V$
- Gain=50V/V(SY2A55104), Gain=100V/V(SY2A55105)
- Amplifier's Output Referenced to VREF input
- Shunt Input Voltage Range :
 - SY2A55104: $-40mV$ to $40mV$ ($VCC=5V$, $VREF=2.5V$)
 - SY2A55105: $-20mV$ to $20mV$ ($VCC=5V$, $VREF=2.5V$)
- Low Offset Voltage:
 - SY2A55104: $\pm 100\mu V$ (Maximum)
 - SY2A55105: $\pm 50\mu V$ (Maximum)
- $0.5\mu V/^{\circ}C$ Offset Drift (Maximum)
- $\pm 0.5\%$ Gain Error (Maximum)
- $10ppm/^{\circ}C$ Gain Drift (Maximum)
- Quiescent Current: $100\mu A$ (Maximum)
- Packages: SOT363

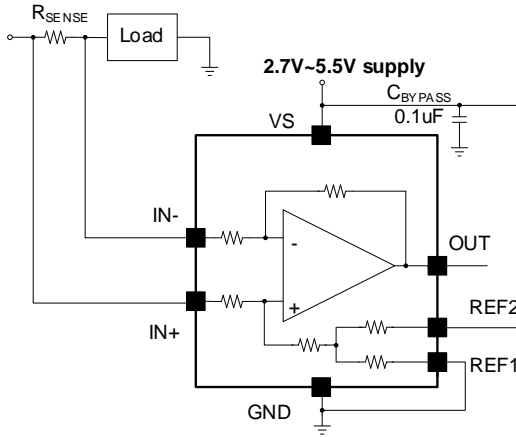
Applications

- Body Control Module
- OBC
- DCDC
- Motor Control

[Back](#)

-4V to 80V, High- and Low-Side, Bidirectional, Zero-Drift, Current-Sense Amplifier with Enhanced PWM Rejection

SA59131



Features

- -4V to 80V Wide Common-Mode Operate Range
- Voltage-output, Current-sense Amplifier
- Enhanced PWM Rejection
- Excellent CMRR:
 - 132dB DC CMRR
 - 93dB AC CMRR at 50 kHz
- High Accuracy:
 - Gain Error: 0.15% (Max)
 - Gain Drift: 2.5ppm/°C (Max)
- Low Offset Voltage:
 - Offset Voltage: $\pm 25\mu\text{V}$ (Max)
 - Offset Drift: 250nV/°C (Max)
- High Bandwidth: 500kHz
- Fixed Gain: 50V/V
- Quiescent Current: 2.4mA (Max)
- AEC-Q100 Grade 1 Qualified
- Package: TSSOP8/ SOP8
- MSL Rating: MSL1(TSSOP8)/ MSL3 (SOP8)

Applications

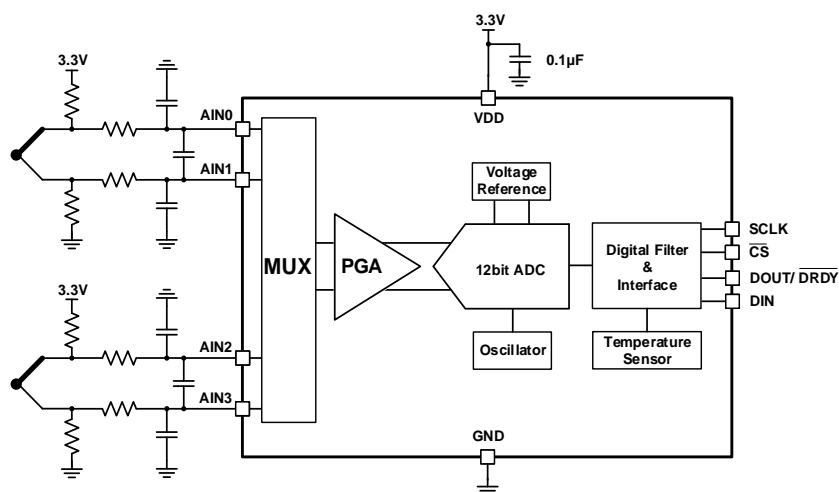
- Motor Controls
- Actuator Controls
- DC/DC Converters
- Battery Management Systems (BMS)
- eTurbo/ Charger

[Back](#)



Bidirectional, Zero-Drift, High-accuracy 12bit ADC with Internal Reference and Temperature Sensor

SA59400



Features

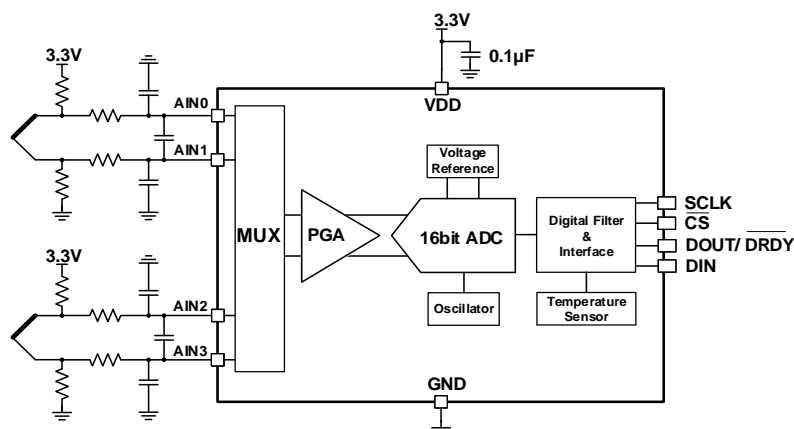
- Wide Supply Range: 2.7V to 5.5V
- Low Current Consumption:
 - Continuous Mode: 350µA
 - Single-Shot Mode: Automatic Power Down
- Programmable Data Rate: 120 SPS to 4630 SPS
- Single-Cycle Settling
- Internal Low-Drift Voltage Reference
- Internal Temperature Sensor:
 - 3°C (Maximum) Error: -40°C to 125°C
- Internal Oscillator
- Internal PGA
- Four Single-Ended or Two Differential Inputs
- MSOP10 Package

Applications

- BMS
- Automotive Sensor

[Back](#)

Bidirectional, Zero-Drift, High-accuracy 16bit ADC with Internal Reference and Temperature Sensor



Features

- Wide Supply Range: 2.7V to 5.5V
- Low Current Consumption:
 - Continuous Mode: 350µA
 - Single-Shot Mode: Automatic Power Down
- Programmable Data Rate: 8 SPS to 890 SPS
- Single-Cycle Settling
- Internal Low-Drift Voltage Reference
- Internal Temperature Sensor:
 - 3°C (Maximum) Error: -40°C to 125°C
- Internal Oscillator
- Internal PGA
- Two Differential Inputs
- MSOP10 Package

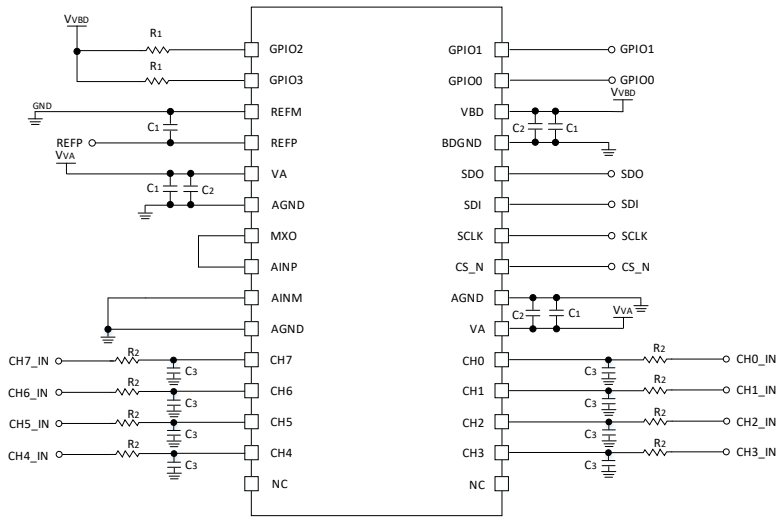
Applications

- BMS
- Automotive Sensor

ADC

SA89851/SA89853

8- and 16-Channel 12-Bit, 1MSPS, Single-Ended Automotive Analog-to-Digital Converter



Features

- 8- and 16-Channel, 12-Bit ADC
- Analog Supply Range: 2.7V to 5.25V
- I/O Supply Range: 1.7V to 5.25V
- 1MHz Sample-Rate Device
- Qualified for Automotive Applications
- Two Software or Hardware Selectable Unipolar Input Ranges: 0V to 2.5V or 0V to 5V
- Auto and Manual Channel Selection Modes
- Two Programmable Alarm Levels per Channel
- Individually Configurable GPIOs
- Low Power Dissipation
- Power-Down Feature
- 20MHz SPI-Compatible Serial Interface
- SA89851:TSSOP30
- SA89853:TSSOP38
- AEC-Q100 Qualified Grade 1: -40°C to 125°C Ambient Operating Temperature Range

Applications

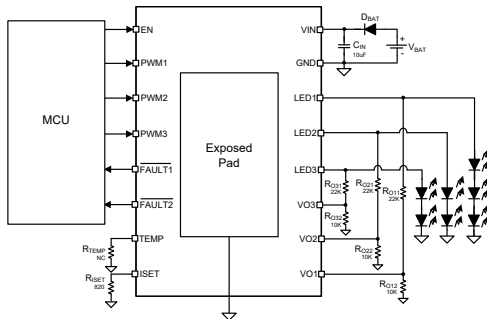
- Battery-Powered Systems
- Power Supply Monitoring
- Driver Assistance Applications
- HV Traction Inverter Voltage/Temp Monitoring

[Back](#)



Lighting

SY2A39719 28V, 0.15A, 3-channel Linear LED Driver with ON OFF Dimming



Features

- Wide Input Voltage Range 5V to 28V
- Current Accuracy for Full Temperature Range:
 - ±2.5% per Device when $I_{OUTx} > 30mA$
 - ±1.5% per Channel when $I_{OUTx} > 30mA$
- Low Dropout Voltage:
 - Maximum Dropout Voltage: 400mV@60mA
 - Maximum Dropout Voltage: 900mV@150mA
- Thermal Foldback Function
- Parallel Outputs for Higher Current Using Multiple ICs or Multiple Channels of A Single IC
- Short LED Detection with Deglitch Timer
- Single LED Short Detection with Deglitch Timer
- Open LED Detection with Deglitch Timer
- Separate Single LED Short Fault Pin and Open/Short Led Fault pin
- Compact Package: TSSOP16E
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade1: -40°C to 125 °C
 - Device HBM ESD All pins ± 2000V
 - Device CDM ESD Other pins ± 500V
 - Corner pins (1, 8, 9, and 16) ± 750V

Applications

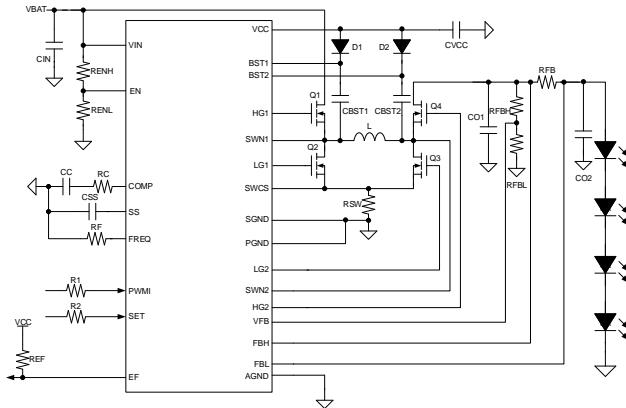
- DRL
- Position Light
- Fog Light
- Rear Light
- Turn Light
- Interior light
- OBC Indicator Light

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LED Driver

SA33761

55V Buck-Boost Controller for Automotive Front Lighting



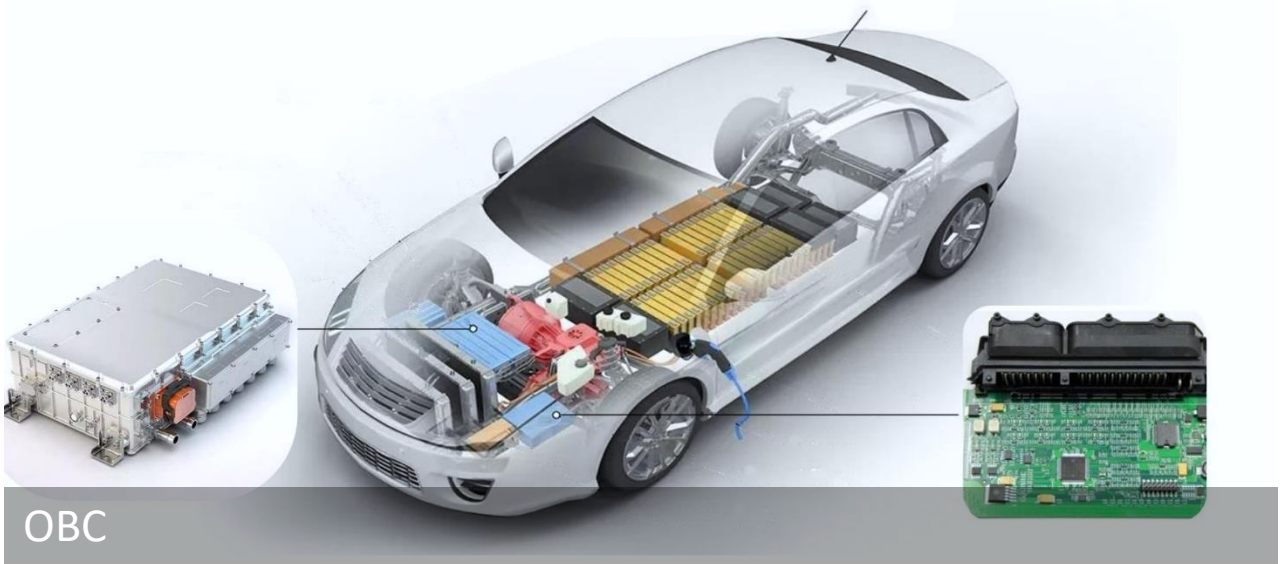
Features

- Wide Input Voltage Range from 4.5 V to 55V
- Wide Output Voltage Range from 2.5V to 55V
- Adaptive Switching between Pure Boost, Pure Buck, and Buck-Boost Modes
- Adjustable Switching Frequency 200kHz to 700kHz
- Spread Spectrum Operation
- Analog Dimming and Direct Dimming
- Adjustable Soft-Start Time
- Pre-Bias Startup
- Constant Frequency with Current Mode
- Overvoltage Protection, Open LED Protection, LED Short Protection, Over temperature Protection
- Package: TSSOP24E
- AEC- Q100 Grade 1 Certified

Applications

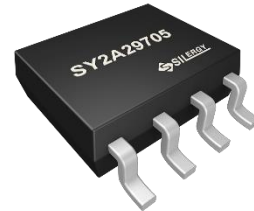
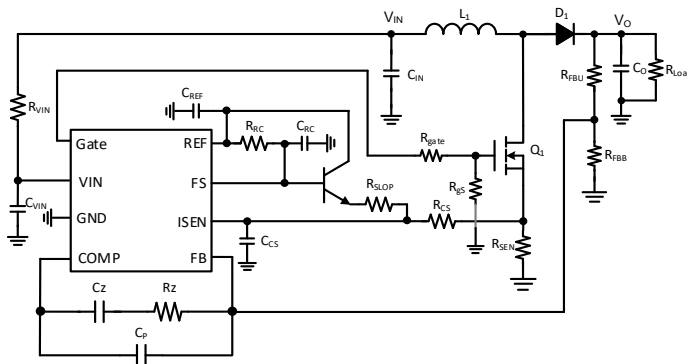
- Constant Current Buck-Boost for LED
- Constant Current Buck Controller for LED
- Constant Voltage Buck-Boost Controller

Boost/Flyback



Boost/Flyback Current Mode Controller

SY2A29705



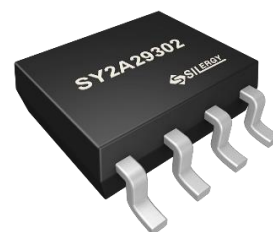
Features

- AEC-Q100-Grade 1 -40°C~125°C
- 5.0-11V Input Voltage Range
- $\pm 2\%$ Accuracy for REF and FB Reference
- Typical 150- μ A Starting Up Current and 800- μ A Operating Supply Current Exclude MOS Driving Current
- Flexible Frequency and Minimum off Time Set by FS Pin and up to 1 MHz Switching Frequency
- Cycle by Cycle Current Limit(1V) and over Current Limit (1.5V) for ISEN
- Typical 4ms Internal Soft Start and Fault (OCP、OTP、REF_UVLO、VIN_UVLO) Soft-start
- Package:SO8

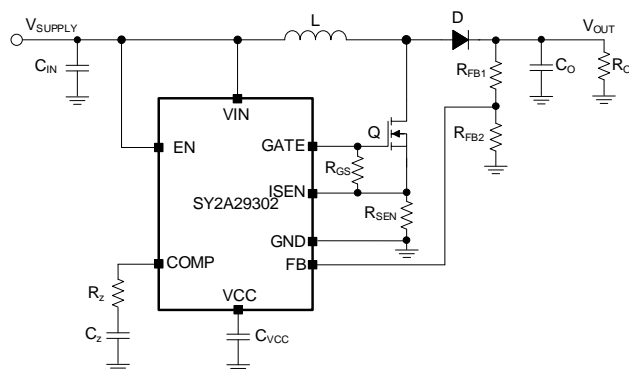
Applications

- OBC
- DC/DC
- Traction Inverter

[Back](#)



36V, Boost/Flyback/Sepic Controller



Features

- Wide Input Voltage Range: 3.45V to 36V
- 1.2V \pm 2% Reference Voltage
- Fixed Frequency Operation
- Internal Soft-Start
- Typical 1.6 μ A Shutdown Current
- Cycle-by-Cycle Current Limit Protection
- Hiccup-Mode Overcurrent Protection (OCP)
- Hiccup-Mode Short-Circuit Protection (SCP)
- 1.5A Peak Gate Source Current
- 1.5A Peak Gate Sink Current
- Thermal Shutdown
- Package: SOP8
- Automotive AEC- Q100 Grade 1 Certified

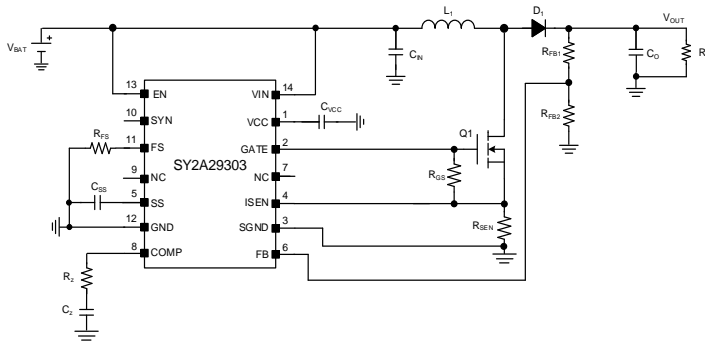
Applications

- OBC, DCDC, Traction, BMS
- Smart Cockpit
- LiDAR

Boost/Flyback

SY2A29303

36V, Boost/Flyback/Sepic Controller



Features

- Wide Input Voltage Range: 4.75V to 36V
- Flexible Switching Frequency Range From 100kHz to 1000kHz
- 2.5V \pm 2% Reference Voltage
- Typical 1.4 μ A Shutdown Current
- External Soft-Start Adjustable by Capacitor
- Cycle-by-Cycle Current Limit Protection
- Hiccup-Mode Overcurrent Protection
- 1A Peak Gate Source Current
- 1.3A Peak Gate Sink Current
- Thermal Shutdown
- Package: SSOP14E
- Automotive AEC- Q100 Grade 1 certified

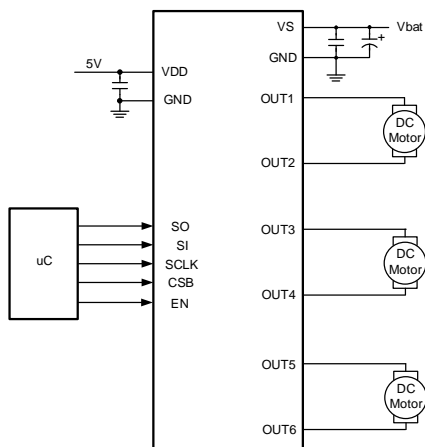
Applications

- OBC, DCDC, Traction, BMS
- Smart Cockpit
- LiDAR



SY2A58119

Hex Half-H-Bridge Driver with SPI Control



Features

- Six half-bridge drivers
- 0.55A output current per channel@13.5V
- Low power mode
- Compatible with 5V/3.3V system
- Serial data interface, up to 5MHz
- Fault reporting
- PWM capable outputs for frequency 80Hz, 100Hz and 200Hz with 8-bit duty cycle resolution
- Internal over current protection, short circuit protection, under load detection, under voltage lockout, over voltage lockout and thermal shutdown
- AEC-Q100 Qualified
- QFN5x5-24 package

Applications

- HVAC
- Mirror
- BDC, ZCU

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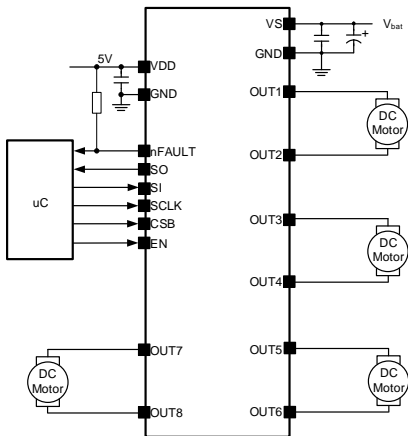
Motor Driver



Rear Mirror

Eight Half-H-Bridge Driver with SPI Control

SY2A58118



Features

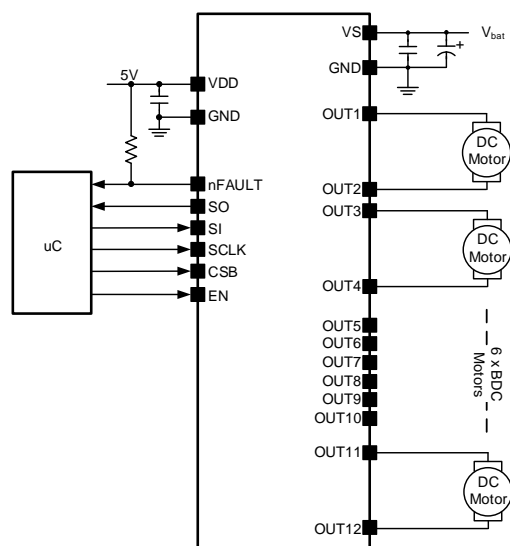
- 8 Half-bridge Outputs
- 4.5V to 32V Operating Voltage
- Up to 1A RMS Output Current for Each Output
- Low-power Sleep Mode
- Compatible with 5V/3.3V System
- Serial Peripheral Interface, up to 5MHz;
- Daisy Chain Functionality
- PWM Capable Output for Frequency 80Hz, 100Hz, 200Hz and 2kHz with 8-Bit Duty Cycle Resolution
- Integrated Protection: Overcurrent Protection, Short Circuit Protection, Open Load Detection, Under Voltage Lockout, Over Voltage Protection and Thermal Shutdown
- nFAULT Pin Output
- AEC-Q100 Qualified
- Compact Package: TSSOP24E

Applications

- HVAC
- Mirror
- BDC, ZCU

[Back](#)

Twelve Half-H-Bridge Driver with SPI Control



Features

- 12 Half-bridge Outputs
- 4.5V to 32V Operating Voltage
- Up to 1A RMS Output Current for Each Output
- Low-power Sleep Mode
- Compatible with 5V/3.3V System
- Serial Peripheral Interface, up to 5MHz;
- Daisy Chain Functionality
- PWM Capable Output for Frequency 80Hz, 100Hz, 200Hz and 2kHz with 8-bit Duty Cycle Resolution
- Integrated Protection: Overcurrent Protection, Short Circuit Protection, Open Load Detection, Under Voltage Lockout, Over Voltage Protection and Thermal Shutdown
- nFAULT Pin Output
- AEC-Q100 Qualified
- Compact Package: QFN5x5-24

Applications

- HVAC
- Mirror
- BDC, ZCU

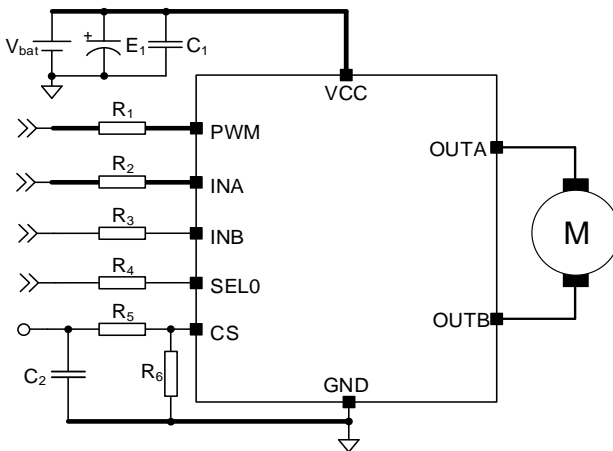
Motor Driver



Door Handle

15A H-bridge Motor Driver for Automotive Applications

SY2A58215



Features

- Output Current: 15 A
- Undervoltage Lockout
- Overvoltage Clamp
- Thermal Shutdown
- Cross-conduction Protection
- Current Limitation
- Protection against Loss of Ground and Loss of VCC
- Output Short Circuit Protections
- Low Power Standby Mode
- PWM Work Mode
- Current Sense Output
- Diagnostic Function
- AEC-Q100 Grade 1 Qualified
- Compact Package: SOP16

Applications

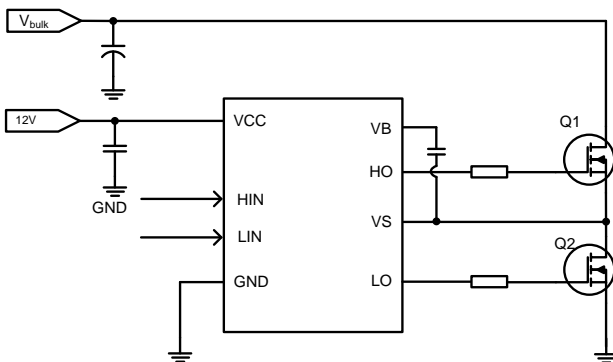
- Door Lock
- Door Handle
- OBC Lock
- BCM

[Back](#)



SY2A58638DAD/ SA52631FAP

40V High-side and Low-Side Gate Driver



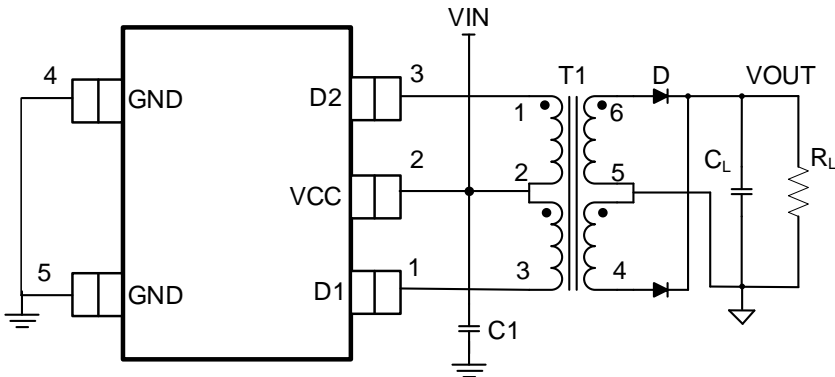
Features

- High Voltage Range up to 40 V
- 0.75A Source and 1.25A Sink Current
- VCC Operation Range from 4.4V to 14V
- CMOS/TTL Compatible
- Fast Propagation Delay Time
- Compact Package: DFN3x3-8/SOP8
- AEC-Q100 Qualified

Applications

- ABS
- ESC
- WPC
- Domain Controller
- Body

[Back](#)

SY2A58720**Transformer Driver for Isolated Power Supplies****Features**

- Single 3.3-V or 5-V Supply
- Push-Pull Driver for Small Transformers
- High Primary-side Current Drive: 500mA
- Spread Spectrum Clocking
- Thermal Shutdown
- Soft Start
- AEC-Q100 Grade1 Qualified
- Compact Package: SOT23-5

Applications

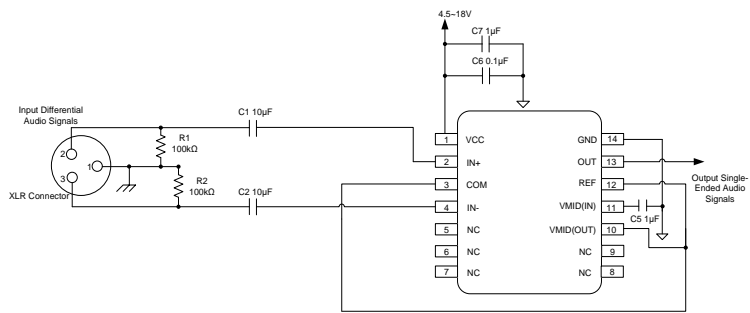
- BMS
- Isolated Interface Power Supply for CAN, RS-485, RS-422, RS-232, SPI, I2C, Low-Power LAN
- Industrial Equipment
- Medical Equipment

Audio



SY2A54024

High Common-Mode Rejection Line Receiver



Features

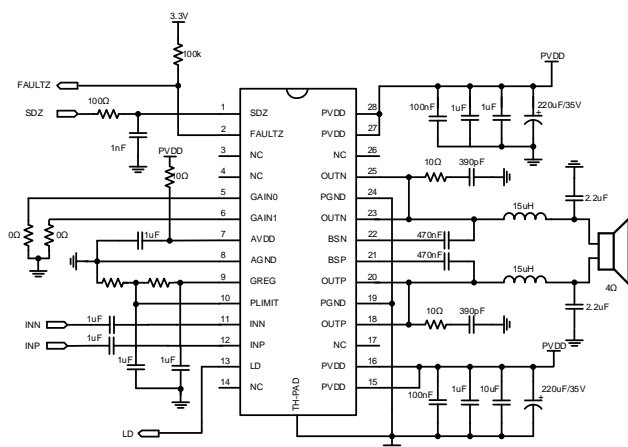
- High Common-mode Rejection: 106dB(Typical)
- High Input Impedance: 1MΩ Differential
- Ultra-low Total Harmonic Distortion + Noise: <0.001%
- Low Quiescent Current: 4.1mA (Typical)
- Short-circuit Protection
- Integrated EMI Filters
- Wide Supply Range: 4.5V to 18V
- Qualified According to AEC-Q100 Grade 1
- -40°C to 125°C Ambient Temperature Range
- Available in Small TSSOP-14 Package

Applications

- Differential Audio Interfaces
- Audio Input Circuitry
- Line Drivers
- Audio Power Amplifiers
- Audio Analyzers
- High-End Audio and Video (A/V) Receivers

Analog Class-D AUDIO IC For Automotive Application

SY2A54025



Features

- 10W into a 4Ω Load at <1% THD+N from a 12V Supply
- Qualified for Automotive Applications
- AEC-Q100 Qualified with the Following Results
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- High Efficient Class-D Operation Eliminating Need for Heat Sink
- Operates from 5.5V to 18V
- Adjustable Power Limit
- Four Selectable, Fixed-gain Settings
- Load Diagnostic Functions
 - Open and Shorted Output Load
 - Output-to-Ground and Output-to-PVDD Shorts
- Comprehensive Click and Pop Suppression
- Space-saving Surface Mount TSSOP28E Package

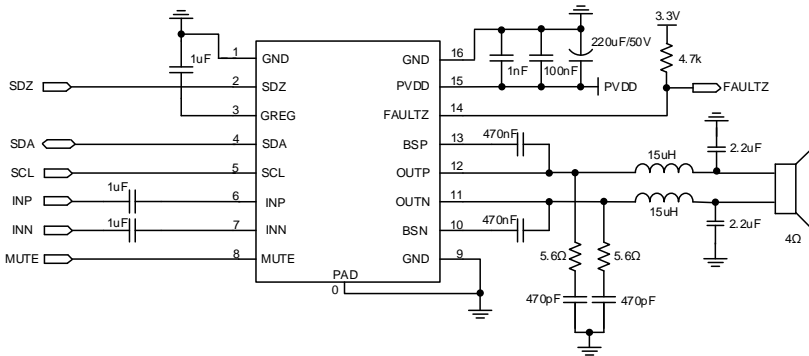
Applications

- Noise Generation for HEV/EV
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Linear Motor Driver

Audio

SY2A54035

Analog Class-D Audio IC For Automotive Application



Features

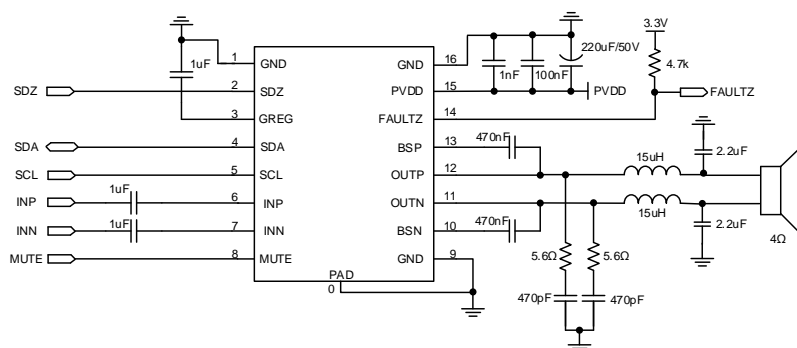
- 8W into a 4Ω Load at <10% THD+N from a 12V Supply
- Qualified for Automotive Applications
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- High Efficient Class-D Operation Eliminating Need for Heat Sink
- Operates from 4.5V to 18V
- Thermal and Over-Current Protection
- Load Diagnostic Functions:
 - Open and Shorted Output Load
 - Output-to-Ground and Output-to-PVDD Shorts
- Comprehensive Click and Pop Suppression
- Space-Saving Surface Mount TSSOP16E Package

Applications

- Noise Generation for HEV/EV
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Linear Motor Driver

Analog Class-D Audio IC For Automotive Application

SY2A54055



Features

- 22W into a 4Ω Load at <10% THD+N from a 14.4V Supply
- Qualified for Automotive Applications;
- AEC-Q100 Qualified with the Following Results:
Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
Device HBM ESD Classification Level H2
Device CDM ESD Classification Level C3
- 90% Efficient Class-D Operation Eliminating Need for Heat Sink
- Operates from 4.5V to 18V
- Thermal and Short-Circuit Protection with Auto Recovery
- Load Diagnostic Functions:
Open and Shorted Output Load
Output-to-Ground and Output-to-PVDD Shorts
- Comprehensive Click and Pop Suppression
- Space-Saving Surface Mount TSSOP16E Package

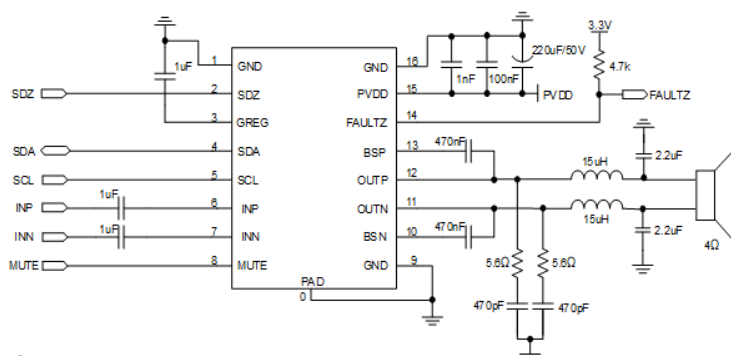
Applications

- Noise Generation for HEV/EV
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Linear Motor Driver

Audio

SY2A54508

Analog Class-D Audio IC For Automotive Application



Features

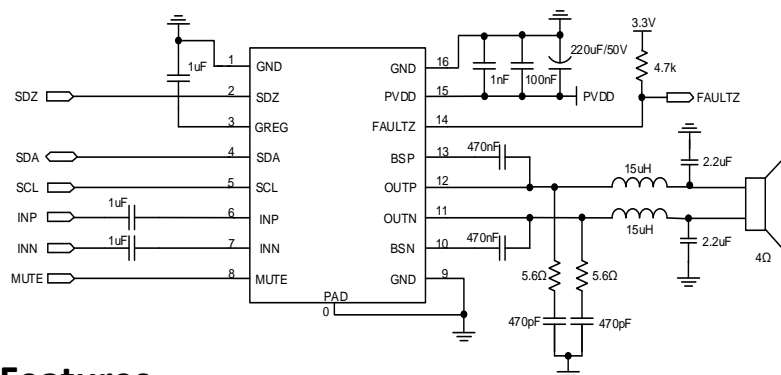
- Wide Voltage Range
 - 4.5V to 28V with Under and Over Voltage Protection
 - 40V Load-dump Protection per ISO-16750-2
- High Output Power Capability
 - 8W4 Ω , 0.1% THD+N at 14.4V
 - 12W4 Ω , 1% THD+N at 12V
- Excellent Audio performance
 - 0.03% THD+N at 1W4 Ω 12V
 - 102dB A-weighted SNR
- Comprehensive Protection
 - Under Voltage, Over Voltage, Over Temperature, Over Current, DC Detection Protection with Auto Recovery
 - Selectable Power Limit Function for Speaker Protection
- Load Diagnostic Functions
 - Open and Shorted Output Load
 - Output-to-ground and Output-to-PVDD Shorts and Shorted Output Indicator
- AEC-Q100 Qualified with the Following Results:
 - Device Temperature Grade 1: -40°C to 125°C Ambient Operating Temperature Range
 - Device HBM ESD Classification Level H2
 - Device CDM ESD Classification Level C3
- Differential Single-ended Input
- Spread Spectrum and Programmable Edge Rate to Optimize EMC Performance
- Space-Saving Surface Mount TSSOP16E Package

Applications

- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Automotive Telematics

Analog Class-D Audio IC For Automotive Application

SY2A54522



Features

- Wide Voltage Range
 - 4.5V to 28V with Under and Over Voltage Protection
 - 40V Load-dump Protection per ISO-16750-2
- High Output Power Capability
 - 22W4 Ω , 0.1% THD+N at 14.4V
 - 38W8 Ω , 1% THD+N at 28V
- Excellent Audio performance
 - 0.03% THD+N at 1W4 Ω 12V
 - 102dB A-weighted SNR
- Comprehensive Protection
 - Under Voltage, Over Voltage, Over Temperature, Over Current, DC Detection Protection with Auto Recovery
 - Selectable Power Limit Function for Speaker Protection
- Load Diagnostic Functions
 - Open and Shorted Output Load
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 - Device HBM ESD Classification Level H2
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- Differential Single-ended Input
- Spread Spectrum and Programmable Edge Rate to Optimize EMC Performance
- Space-Saving Surface Mount TSSOP16E Package

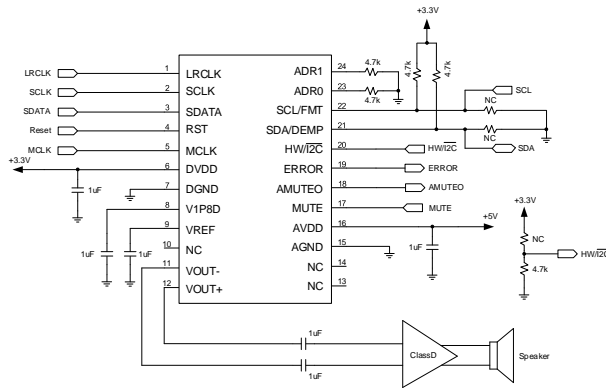
Applications

- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Automotive Telematics

Audio

SY2A54560

Mono Audio Digital to Analog Converter



Features

- Power supply
 - 5 V for Analog and 3.3 V for Digital
- Large Differential Voltage Output
 - 8.6 VPP at 0dBFS(default)
- Excellent Audio performance
 - -90dB THD+N at 0dBFS
 - 115 dB A-weighted SNR
 - 115 dB Dynamic Range SNR
- Low power consumption
 - Power-Save Mode: 6.5uA AVDD quiescent current
 - Play mode: 1.7mA AVDD quiescent current at fs=48kHz MCLK=512*fs
- Abundant Audio Interface
 - Input Sampling Rates: 8 kHz to 192 kHz
 - I/F Format: I2S, Left-/Right-Justified
 - Input Data Length: 16, 20, 24, 32 Bits
- Flexible Mode Control
 - I2C mode with 4 Slave address
 - Hardware Mode
- Hardware Mode Control
 - Audio I/F Format Select: I2S or Left-Justified
 - Digital De-Emphasis Filter Select: 44.1 kHz or disable
 - Sampling mode is Auto
- Digital Filter
 - Digital De-Emphasis Filter
 - Sharp roll off filter: Passband ripple: ± 0.0018 dB, stop band Attenuation: -75dB
 - Slow roll off filter: Passband ripple: ± 0.001 dB, stop band Attenuation: -112 dB
- Analog Filter
 - Analog Low-Pass Filter Included
- Comprehensive Error Detection and Protection
 - Zero Detection
 - Clock Error Detection
 - Supply Under Voltage Detection
 - Analog Mute by Detected Faults
 - Output Current Limit Protection
- AEC-Q100 Grade1 Qualified
- Compact Package: TSSOP24

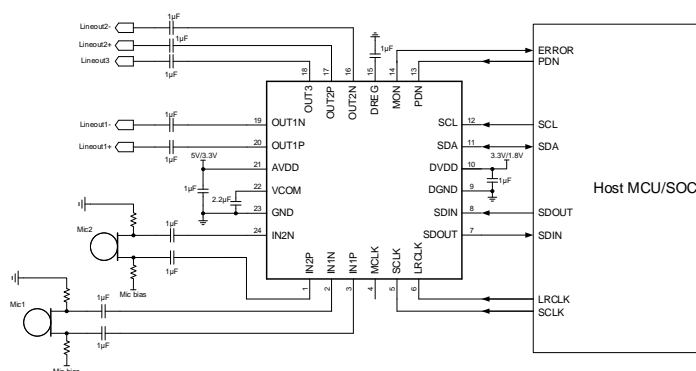
Applications

- Car Audios
- Home Audios

[Back](#)

Analog Class-D Audio IC For Automotive Application

SA55621



Features

- AEC-Q100 Qualified with Operating Temperature Grade 1
- Power Supplies:
 - 3.3V or 5V Analog Supply
 - 1.8V or 3.3V Digital IO Interface
- Audio DAC:
 - Digital Volume: +12 to -115dB, 0.5dB Per Step, Mute
 - Digital Filters: Sharp/Slow Roll-Off Filter
 - 2 Fully Differential Outputs and 1 Single-Ended Output
 - Differential Voltage Output: $5.8V_{pp}$ at 3.3V AVDD, $8.7V_{pp}$ at 5V AVDD
 - 107dB SNR, -83dB THD+N with Fully Differential Output
- Audio ADC:
 - 2 Fully Differential Inputs
 - Input PGA: -18 to +27dB, 3dB Per Step
 - Input Mixer
 - Digital Filters: Narrow Band Voice Filter, Wide Band Voice Filter, Full Band Voice Filter and 2 Optional Bi-Quad

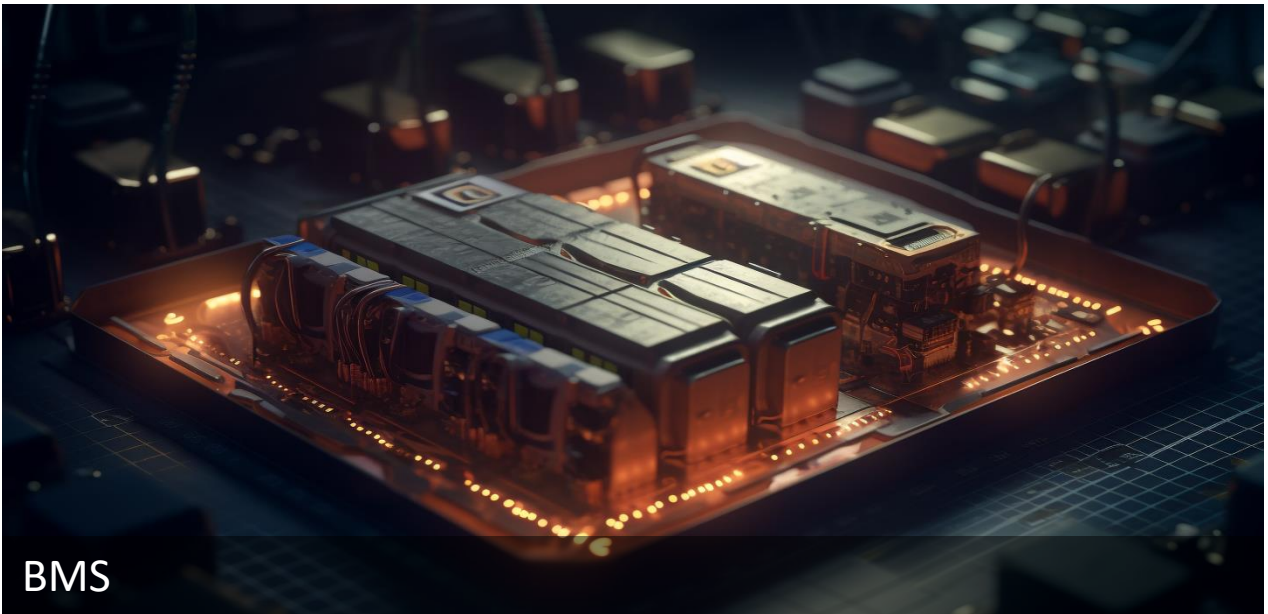
Filters

- Differential Voltage Input: $4.5V_{pp}$ at 3.3V AVDD, $6.8V_{pp}$ at 5V AVDD
- Digital Volume: +24 to -103dB, 0.5dB Per Step, Mute
- 99dB SNR, -91dB THD+N
- Mic Direct Path Line Driver:
 - Mic Direct Path Boost Gain: 0 to +9dB, 3dB Per Step
 - 2 Fully-Differential Outputs
 - Differential Voltage Output: $5.8V_{pp}$ at 3.3V AVDD, $8.7V_{pp}$ at 5V AVDD
 - 108dB SNR, -96dB THD+N with Fully-Differential Output
- Audio Interface:
 - Supports Controller and Target Mode
 - Format: I²S, Left-/Right-Justified, TDM with 4/8/16 Slots
 - Supports Sampling Rates from 8 kHz to 96 kHz
 - Input/output Data Length: 16-bit, 20-bit, 24-bit, 32-bit
 - Slot Width: 16-bit, 24-bit, 32-bit
- I2C Control
- Package Size: QFN4×4-24

Applications

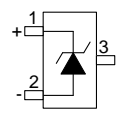
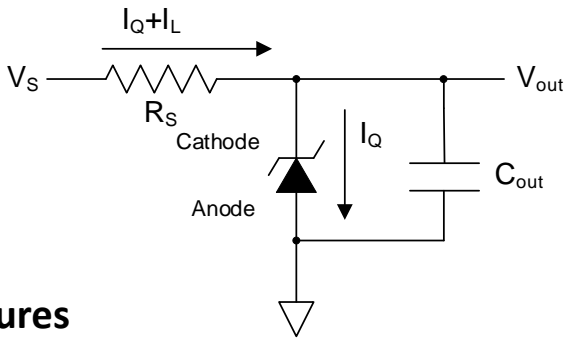
- Emergency Call Systems (e Call)
- Cluster
- AVAS
- Automotive Telematics

Voltage Reference



SY2A81868/SY2A81868B/ SY2A81868C/SY2A81868D/ SY2A81868E/SY2A81868F

Precision Micro-power Shunt Voltage Reference



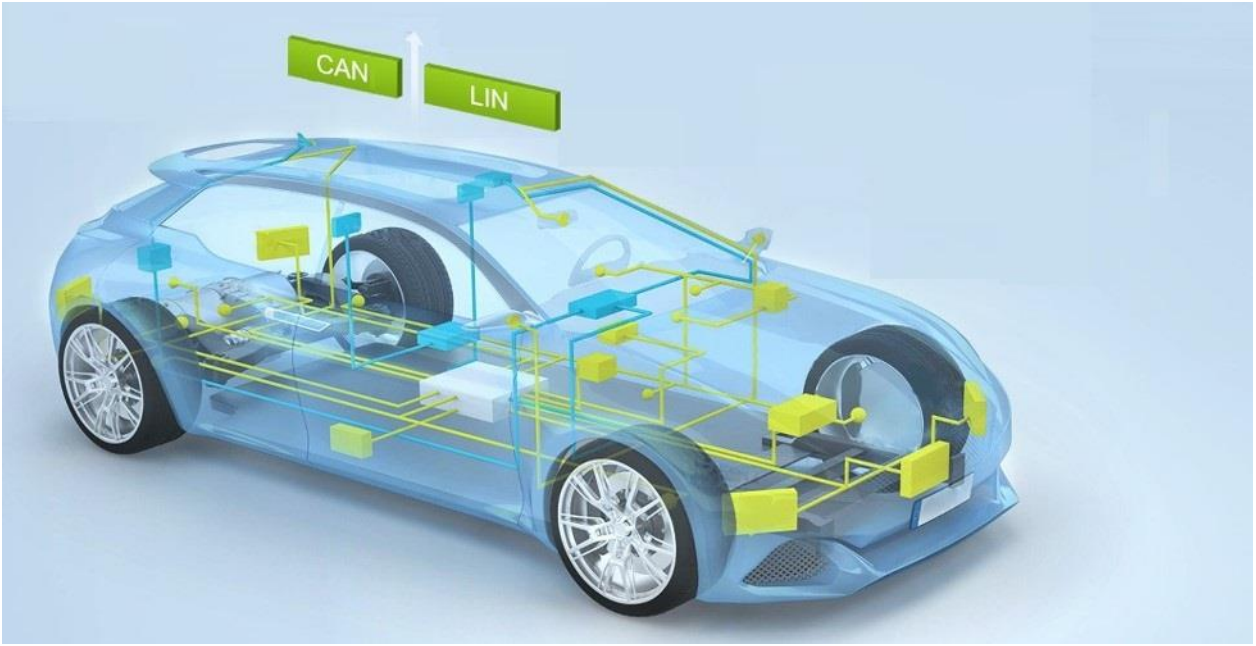
Features

- No output Capacitor Required
- Tolerates Capacitive Loads
- Fixed Reverse Breakdown Voltage:
 - SY2A81868: 5V
 - SY2A81868B: 4.096V
 - SY2A81868C: 3.3V
 - SY2A81868D: 2.5V
 - SY2A81868E: 2.048V
 - SY2A81868F: 3.0V
- Output Voltage Tolerance $\pm 0.1\%$ (Maximum)
- Low output noise (10Hz to 10kHz) 38 μ Vrms (Typical)
- Wide Operating Current Range I_{RMIN} to 15mA
- Industrial Temperature Range -40°C to 125°C
- Low Temperature Coefficient ± 43 ppm/ $^{\circ}\text{C}$ (max)
- Small Package: SOT-23
- AEC Q100 Grade 1 Qualified

Applications

- BMS
- OBC
- EV/HEV

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LIN Bus TVS Protection

SY2A206207AMA



Features

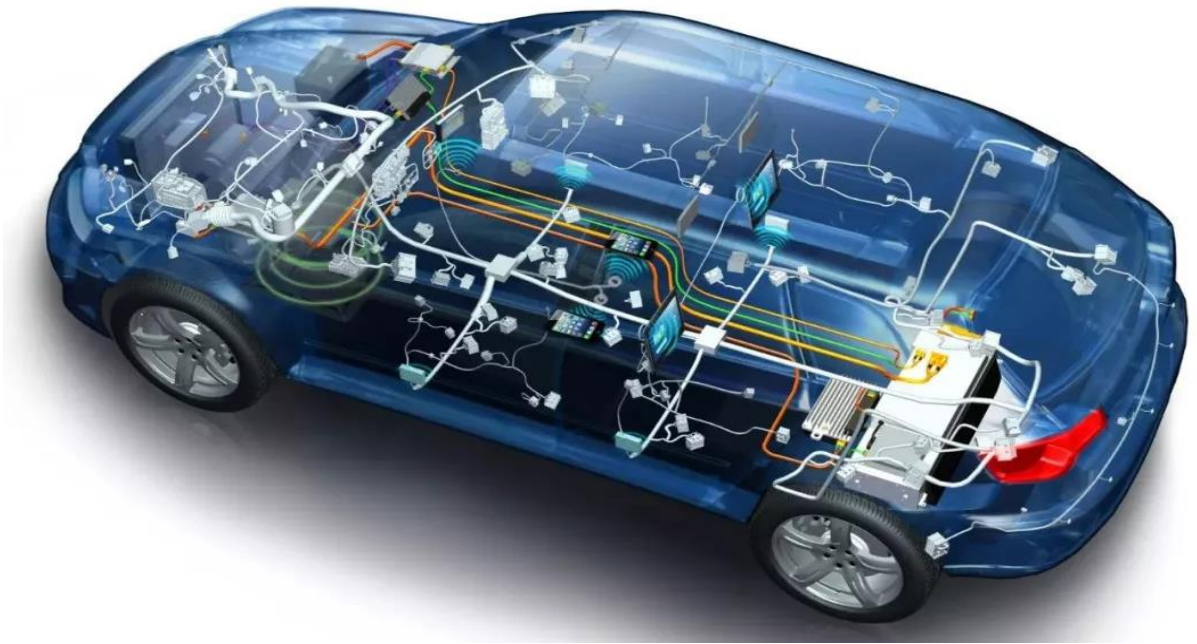
- Transient protection for high-speed data lines
- IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
- IEC 61000-4-5 (Surge) 4A (8/20 μs)
- Protects one automotive LIN-bus line
- Low capacitance: 12pF (Typical)
- Low leakage current: 0.01 μA @ VRWM (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge
- AEC-Q101 Qualified
- SOD-323 package

Applications

- LIN Bus Protection

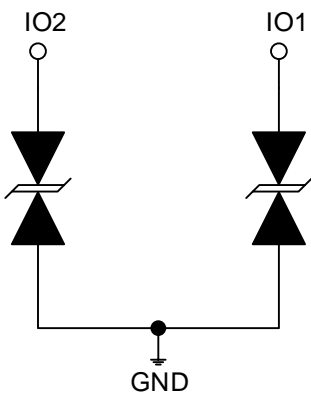
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ESD Protection



SAT03N24AOT

CAN Bus TVS Protection



Features

- Operating Voltage: 24V and Below
- Transient Protection for Data Lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
 - IEC 61000-4-5 (Surge) 4A (8/20 μs)
- Low Capacitance: 12pF (Typical)
- Low Leakage Current: 0.01 μA at VRWM (Typical)
- Can Be Used for Data, Control, or CAN Bus Lines Protection
- AEC-Q101 Qualified

Applications

- CAN/CAN-FD Bus Protection

[Back](#)

Ultra-Low Capacitance TVS Protection

SAT21S05DWD



Features

- Operating Voltage: 5V and Below
- Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
 - IEC 61000-4-5 (Surge) 4.5A (8/20 μs)
- Protects One Data, Control or Power Line
- Low Capacitance: 0.5pF (Typical)
- Low Leakage Current: 0.01 μA at VRWM (Typical)
- Low Clamping Voltage
- AEC-Q101 Qualified

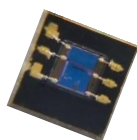
Applications

- Serial ATA
- PCI Express
- Desktops, Servers, and Notebooks
- MDDI Ports
- USB 2.0, 3.0 and 3.1
- Display Ports
- HDMI 1.3, 1.4, 2.0 and 2.1
- Digital Visual Interfaces (DVI)
- Automotive Applications

Sensor



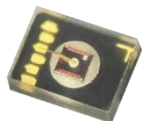
SA88010RS22-J00



Features

- Package type: Optical DFN
- Dimensions: 2.0mmx1.5mmx0.6mm
- Peak sensitivity occurs with 870nm wavelength
- Fast rising and falling speed
- AEC-Q102 Qualified

SA88011AS22-J00



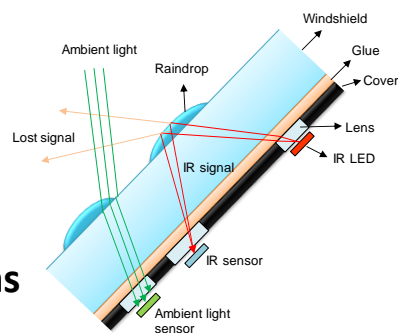
Features

- Package Type: Optical DFN
- Dimensions: 2.0mmx1.5mmx0.6mm
- High Sensitivity at Visible Range
- Spectral Response Close to Human Eyes Photopic Curve
- AEC-Q102 Qualified

Applications

- Body
- Cluster
- Info

Silicon PIN Infrared Photodiode



Applications

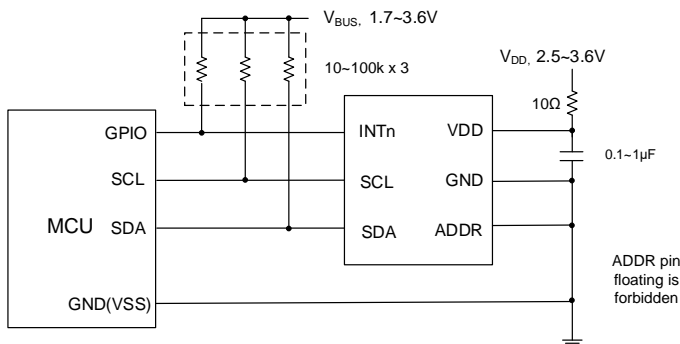
- Wiper

Ambient Light Sensor

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Ambient Light Sensor for Automotive Application

SA88137AS22-J00

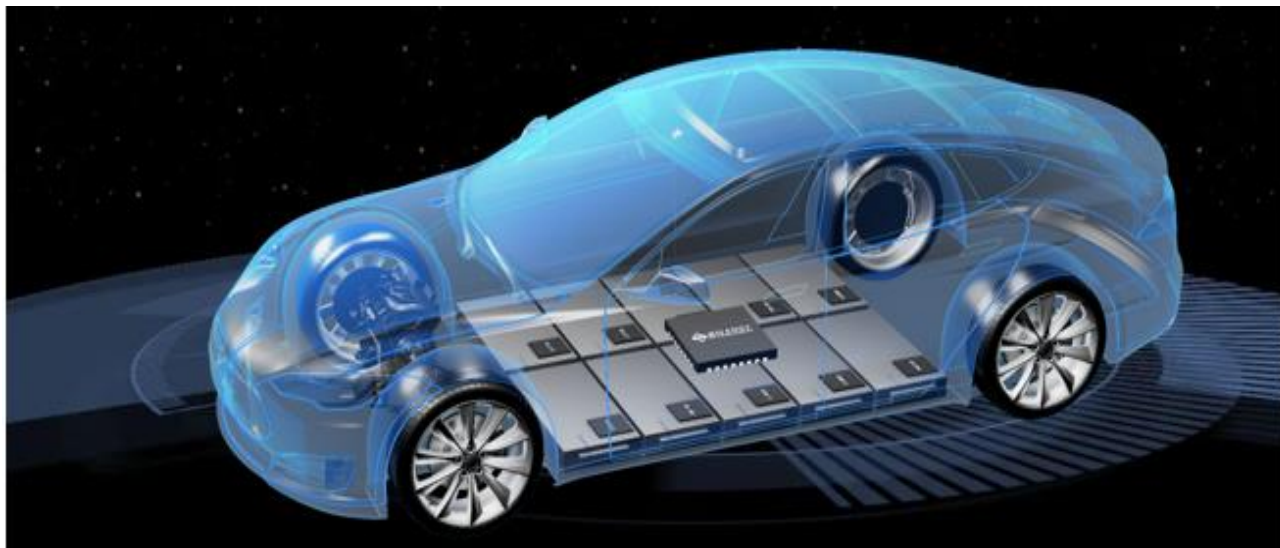


Features

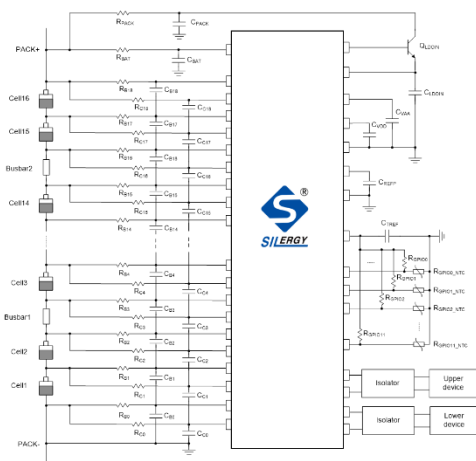
- AEC-Q100 Qualified (Grade 2)
- Electrical Operation Performance:
 - Power Supply Voltage: 2.5V~3.6V
 - Operating Current: 150μA
 - Shutdown Current: Less Than 10μA
 - Operation Temperature: -40°C to +105°C
- Ambient Light Sensing:
 - ALS Channel with Photopic Coating and CLEAR Channel Without Coating
 - Programmable Gain Settings from 256x to 1x
 - Programmable Integration Time Settings Ranging from 25ms to 800ms
- Programmable Sleep Time Between Two Sequential ADC Cycles for Power-Saving
- High Sensitivity 0.0002 Lux/Count at IT=800ms and Gain=256x
- Measurement Range: 0.0002~107k Lux for ALS Channel
- Hardware Interrupt Pin with Programmable Configuration
- BT Substrate with Transparent Molding Compound
- Package Size: 2.0×2.0×0.6mm³

Applications

- HUD
- CID
- CMS



SY2A61227



- High-Voltage Battery Stacks
- Electric Vehicles and Hybrid Electric Vehicles
- Backup Battery Systems

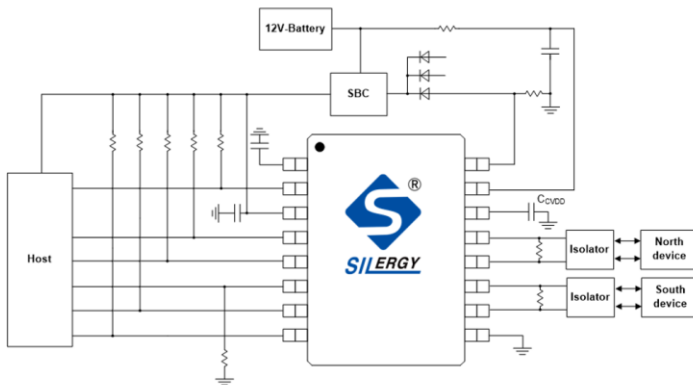


- Measure 6 to 18 cells with 16-bit ADC, up to 100V
- 18-channel battery cell or bus bar voltage measurement
 - $\pm 1\text{mV}$ accuracy (1.5V to 4.5V, 25°C)
 - $\pm 3\text{mV}$ accuracy (1.5V to 4.5V, -20°C to 65°C)
 - $\pm 5\text{mV}$ accuracy (-2V to 5V , -40°C to 125°C)
- 12 channels GPIO for battery pack temperature measurement
 - $\pm 0.12\% V_{\text{TREF}}$ accuracy ($10\% V_{\text{TREF}}$ to $90\% V_{\text{TREF}}$, -20°C to 65°C)
 - $\pm 0.24\% V_{\text{TREF}}$ accuracy (0 to $100\% V_{\text{TREF}}$, -40°C to 125°C)
- Integrated balance FETs, 300mA per channel
 - Smart thermal management (cell, PCB, die)
 - Auto-pause balance during ADC measurement
 - Online PWM adjustable balance current
 - Offline balance when host is sleep
- Reversely wake host up on OVUV/OTUT when host is sleep
 - Programmable de-bouncing counter
 - Two OTUT thresholds (cell, PCB) for each channel
- Robust daisy-chain communication
 - High speedreading 218cells within 4.8ms
 - One command smart addressing scheme
 - Optional ring architecture
- GPIOs supports I2C master
- AEC-Q100 grade1: -40°C to $+125^{\circ}\text{C}$
- ASIL-D Functional Safety-Compliant
- Package: TQFP 10×10 -64E



SA63000A

SPI Communication Transceiver for Automotive Battery Management System



Features

- 12V/5V Operation Voltage
- ASIL-D Functional Safety-Capable
- SPI Interface: 2MHz-6MHz
- 256-Byte TX FIFO and 32-Byte RX FIFO
- 2 Operating Modes
 - Sleep Mode: Support reversely wake-up host with 5uA quiescent current
 - Active Mode: Support ring architecture communication and asserting fault to inform host
- AEC-Q100 Grade1: -40°C To +125°C
- ASIL-D Functional Safety-Capable
- Package Info: TSSOP16E

Applications

- Battery Management Systems (BMS)
- Electric and Hybrid Vehicles (EV/HEV)

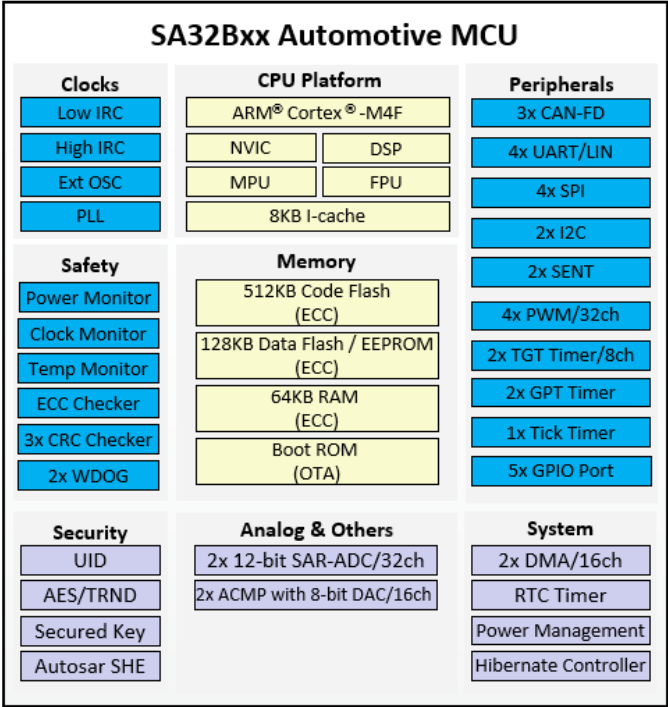
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MCU

The SA32 B-series of Arm® Cortex®-M4F based MCUs provides high-reliability solutions for automotive applications with rich peripherals and various package offerings. This series meets AEC-Q100 G1 standard and ISO26262 ASIL-B level function safety. With its performance, reliability and function safety design, this series is suited for automotive applications such as BCM, T-Box, OBC, Low-voltage BMS, HVAC, TMS, Cluster, Lighting, etc.

Part Number	CPU	Frequency (MHz)	C-Flash (KB)	D-Flash (KB)	SRAM (KB)	CAN-FD	UART/LIN	SPI		Package	Targeted Applications
SA32B12QEQ	M4F	120	128	128	64	1	2	1	SHE	QFN5x5-32	Roofs, Windows, Shifter, Seatbelt, Airbag, Parking Brake, Lighting, Wireless Charger, HVAC, TMS, T-BOX, OBC, LV BMS, BCM, Smart Cockpit, etc.
SA32B12AQEQ	M4F	120	128	128	64	1	2	2	SHE	QFN5x5-32	
SA32B12GFF	M4F	120	128	128	64	3	3	3	SHE	LQFP7x7-48	
SA32B14GFF	M4F	120	256	128	64	3	3	3	SHE	LQFP7x7-48	
SA32B14GDF	M4F	120	256	128	64	3	4	3	SHE	LQFP10x10-64	
SA32B16GFF	M4F	120	512	128	64	3	3	3	SHE	LQFP7x7-48	
SA32B16GDF	M4F	120	512	128	64	3	4	3	SHE	LQFP10x10-64	
SA32B16GEF	M4F	120	512	128	64	3	4	4	SHE	LQFP14x14-100	

➤ Block Diagram



Peripherals

3x CAN-FD

4x UART/LIN

4x SPI

2x I2C

2x SENT

4x PWM/32ch

2x TGT Timer/8ch

2x GPT Timer

1x Tick Timer

5x GPIO Port

System

2x DMA/16ch

RTC Timer

Power Management

Hibernate Controller

➤ Application



➤ SA32B Ecosystem



- Documents**
- Datasheet
 - Reference Manual
 - Errata
 - HW Design Guide
 - Application Notes



- Application**
- T-BOX
 - Rear Lighting
 - LV BMS
 - Auto AC Compressor
 - AVAS



- Evaluation Board**
- General EVB Suit
 - Rear Lighting EVB



- Software Develop Kit**
- Driver Interface Library
 - Demo Code
 - FreeRTOS



- MCAL**
- MCAL
 - MCAL Application Note
 - MCAL Configuration Service



- Debugger & Programmer**
- U-LINK
 - J-LINK
 - I-JET
 - ACROVIEW AP6000/8000
 - Maxwiz MAP500A
 - PEmicro



- IDE**
- KEIL
 - IAR
 - GHS
 - Vscodex+GCC



- Function Safety**
- Safety Manual
 - FMEDA
 - Assessment Report
 - Safety Package

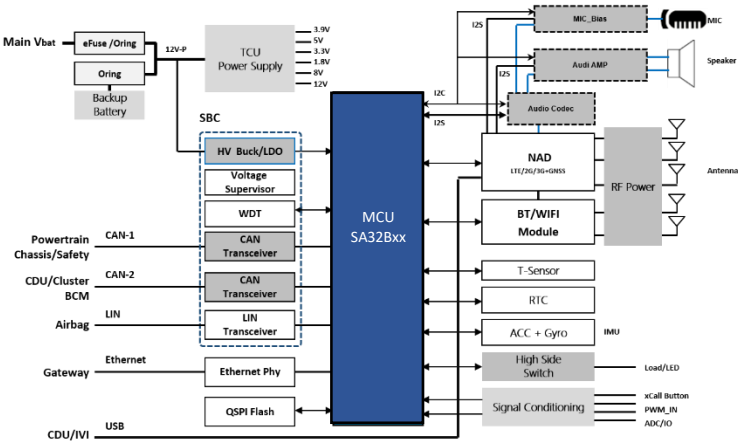


- Technical Support**
- Local FAE/AE

➤ SA32B Target Application: T-Box

Key Features

- Big capacity flash 512KB-2MB;
- Support several low-power modes, the smallest standby current of $\leq 50\mu A$
- Rich peripherals, including LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit/1Mbps SAR ADC (total 32/68 channels), 2x ACMP ;
- Support SHE/HSM, Secure Boot, AES/RSA, SM2/3/4, etc.;
- Multiple Packages, LQFP64/100/144



Silergy Solutions

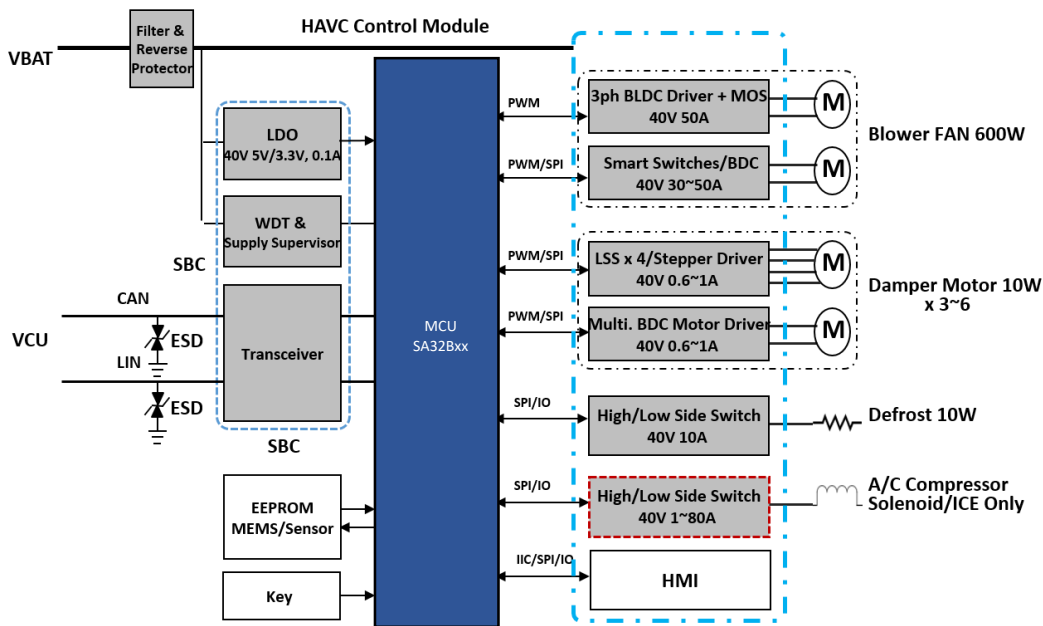
Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB Flash, SHE	LQFP64/100
SA51034	Audio Amp	8W mono Class-D, I ² C	TSSOP16E
SA51500 SA51510	Audio Amp	10W mono Class-D, I ² C, 40V Load Dump 22W mono Class-D, I ² C, 40V Load Dump	TSSOP16E

MCU

➤ SA32B Target Application: HVAC

Key Features

- Big capacity flash 512KB-2MB;
- Support several low-power modes, the smallest standby current of $\leq 50\mu\text{A}$;
- Rich peripherals, including LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit/1Mbps SAR ADC (total 32/68 channels), 2x ACMP ;
- Support SHE/HSM, Secure Boot, AES/RSA, SM2/3/4, etc.;
- Multiple Packages, LQFP64/100/144



Silergy Solutions

Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB Flash, SHE	LQFP48/64/100
SA52108	Motor Driver	8-half bridge driver	TSSOP24E
SA52112	Motor Driver	12-half bridge driver	QFN5x5-24
SA21345A	LDO	36V, 300mA LDO	SO8E

➤ SA32B Target Application: LV BMS

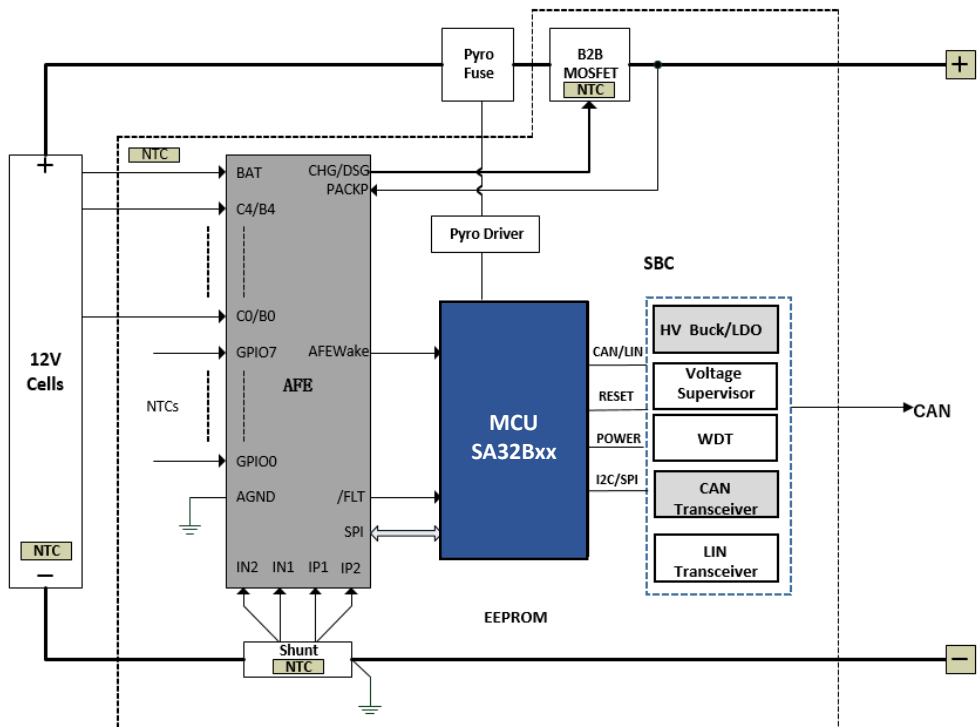
Key Features

SA32B Series

- Big capacity flash 512KB-2MB;
- Support several low-power modes, the smallest standby current of $\leq 50\mu\text{A}$;
- Rich peripherals, including LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals, 2x 12-bit/1Mbps SAR ADC (total 32/68 channels), 2x ACMP ;
- Support SHE/HSM, Secure Boot, AES/RSA, SM2/3/4, etc.;
- Multiple Packages, LQFP64/100/144

AFE and Bridge

- 4s AFE;
- ASIL-D Compatible in Active Mode



Silergy Solutions

Product	Function	Key Features	Package
SA32B16	MCU	M4F, 120MHz, 512KB Flash, SHE	LQFP48/64/100
SA63654	AFE	4S AFE, ASIL-D compatible	QFN40

MCU

➤ SA32B Target Application: Rear Lighting

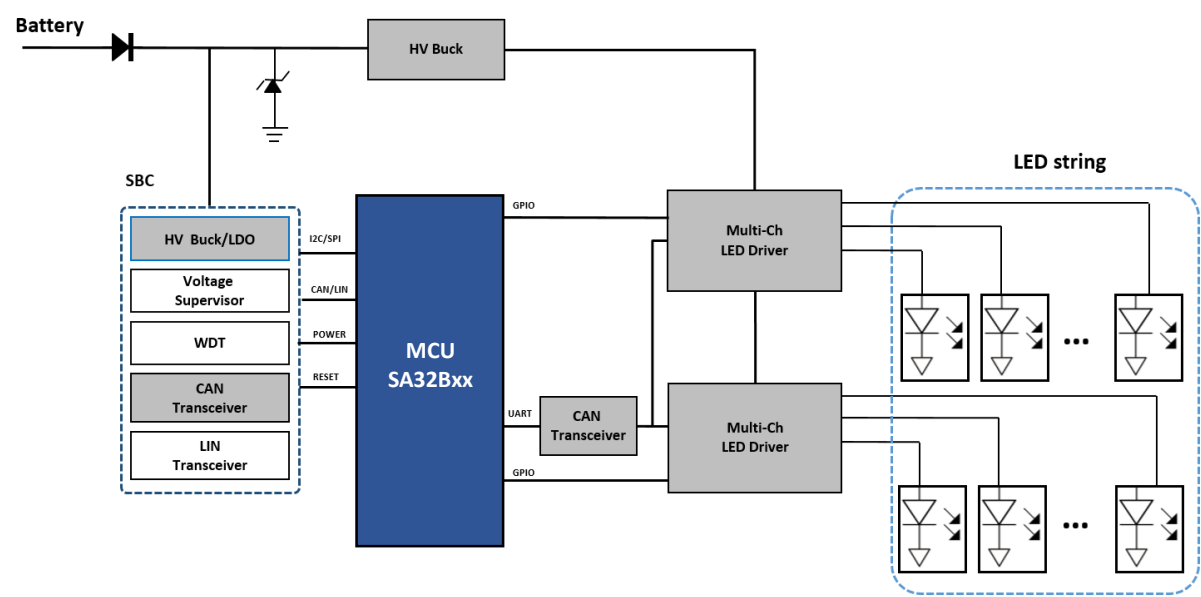
Key Features

SA32A/B Series

- Big capacity flash 64-256KB;
- Support several low-power modes, the smallest standby current of ≤6uA;
- Rich peripherals, including LIN/CAN/SPI/UART/PWM, etc.;
- Support high precision analog peripherals;
- Multiple Packages, QFN32, LQFP48/64;

24-Channel LED driver

- 24 Chn, each channel support up to 100mA current;
- Up to 2Mbps UART Over CAN to improve EMI
- Support Cascade connection by multiple chips.



Silergy Solutions

Product	Function	Key Features	Package
SA32A12/10	MCU	M0, 72/64MHz, 128/64KB Flash	LQFP64/48, QFN32
SA32B14/12	MCU	M4F, 120MHz, 256/128KB, Flash, SHE	LQFP64/48, QFN32
SA32774	LED Driver	24 CHN, Max current 100mA for each CHN	QFN48



Contact Us

Silergy Corp. was founded by a group of technology innovators and business leaders with an average 30 years' experience. We design innovative mixed-signal and analog ICs that utilize our industry-leading process technologies. Widely used in automotive, industrial, consumer, computing and communication devices, our products are designed to improve efficiency and to conserve or measure energy use.

Silergy Corp is a Cayman Island company with its operations headquarters in Hangzhou, China. The company stock is traded on Taiwan Stock Exchange (TWSE: 6415).

We are committed to providing industry-leading performance at an affordable solution cost.

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