SA88011AS22-J00

Ambient Light Sensor

General Description

SA88011AS22-J00 is a silicon NPN planar type photo transistor. It is packaged in clear, optical SMD2015 package with sensitive area of chip is 0.19mm^2.

Features

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

Applications

- Automotive Sensors
- Industrial Electronics

Absolute Maximum Ratings (T_A = +25°C)

Symbol	Parameter	Min	Max	Unit
T_{OP}	Operation Temperature	-40	100	°C
T_{stg}	Storage Temperature	-40	100	°C
V_R	Reverse Voltage	6		V
ESD	Human Body Model	±2000		V

NOTE: *All parameters having Min/Max specifications are guaranteed. Typical values are for information purposes only. Unless otherwise noted, all tests are at the specified temperature and are pulsed tests, therefore:* $T_J = T_C = T_A$

Electrical and Optical Characteristics

(T_A=+25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{(BR)CE}$	Collector Emitter Breakdown Voltage	I_{CE}=100uA, E_V=0 lux	6			V
I_D	Dark Current	V_{CE}=5V, E_V=0 lux		10	50	nA
I_{CE}	Photo Current	V_{CE}=5V, White LED, E_V=100 lux	9.4	14.0	18.6	μA
		V_{CE}=5V, Incandescent lamp E_V=100 lux		28.0		μA
TK_{IPCE}	Temperature Coefficient of I_P	V_{CE}=5V, White LED		1.29		%/K
φ	Angle of Half Sensitivity			±42		deg
λ_P	Wavelength of Peak Sensitivity			520		nm
$\lambda_{50\%}$	Spectral Range of Sensitivity		425		610	nm

Typical Curves

Relative Spectral Response

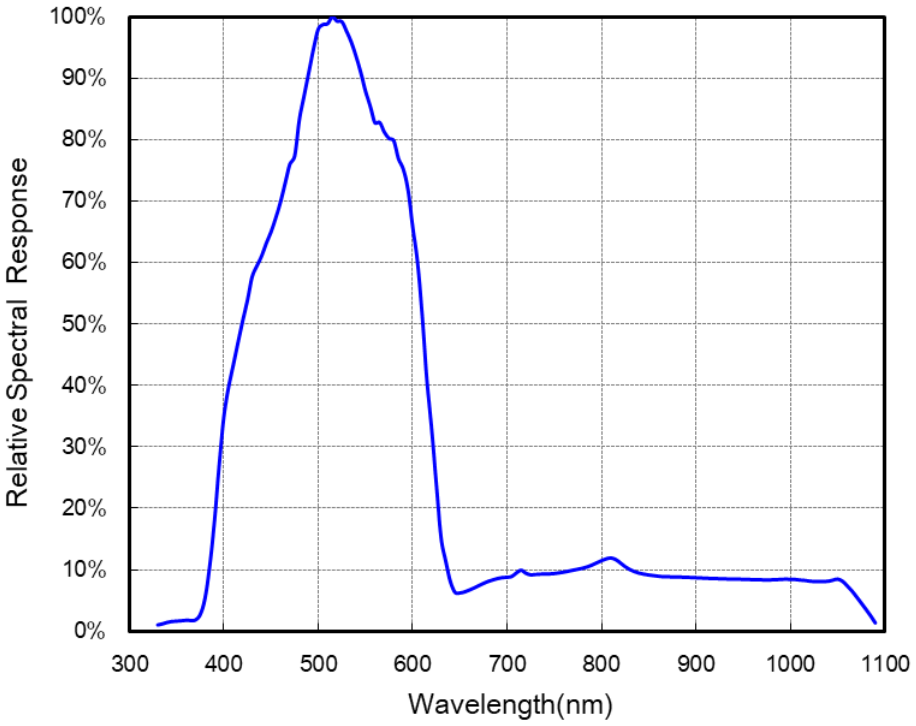
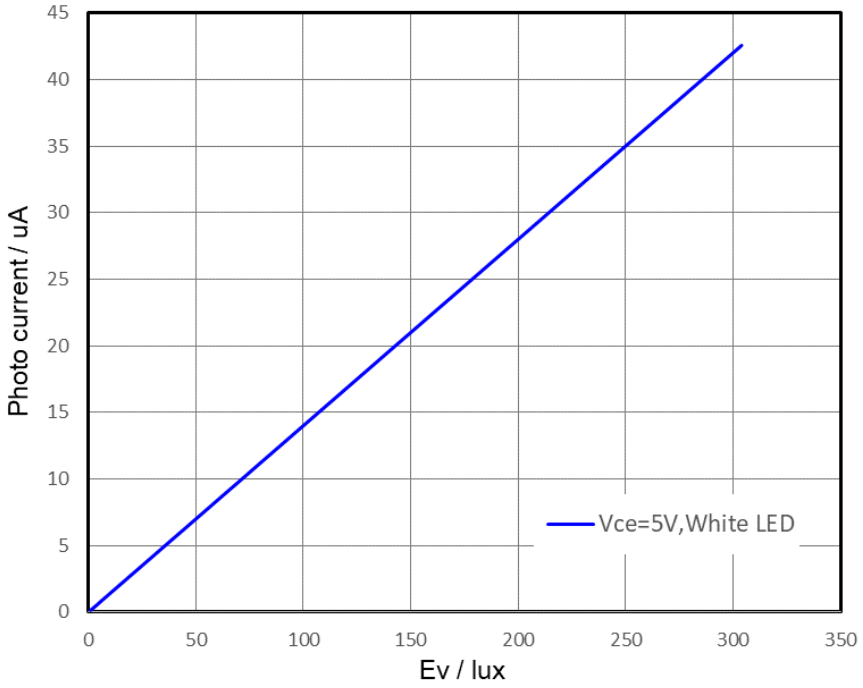
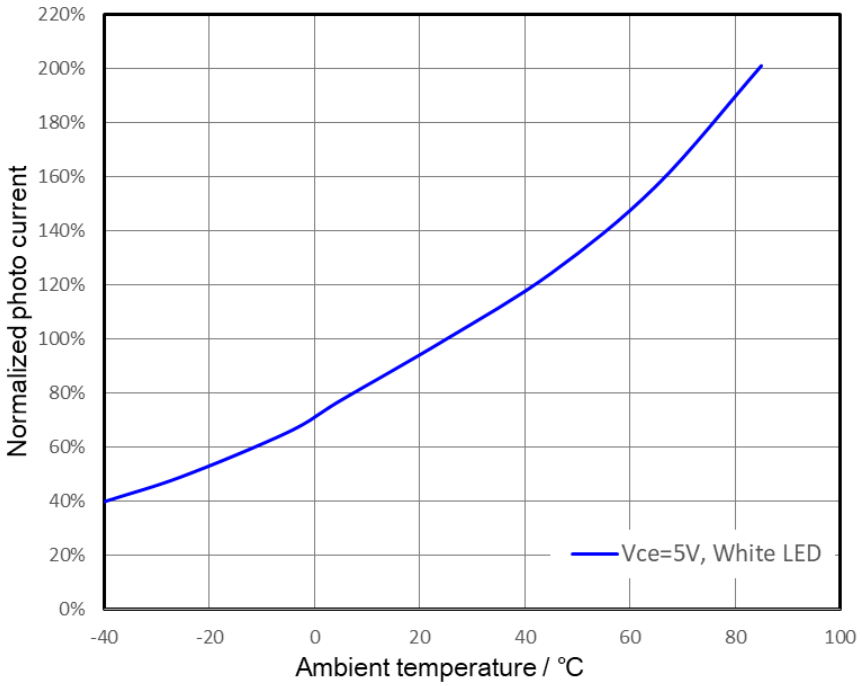


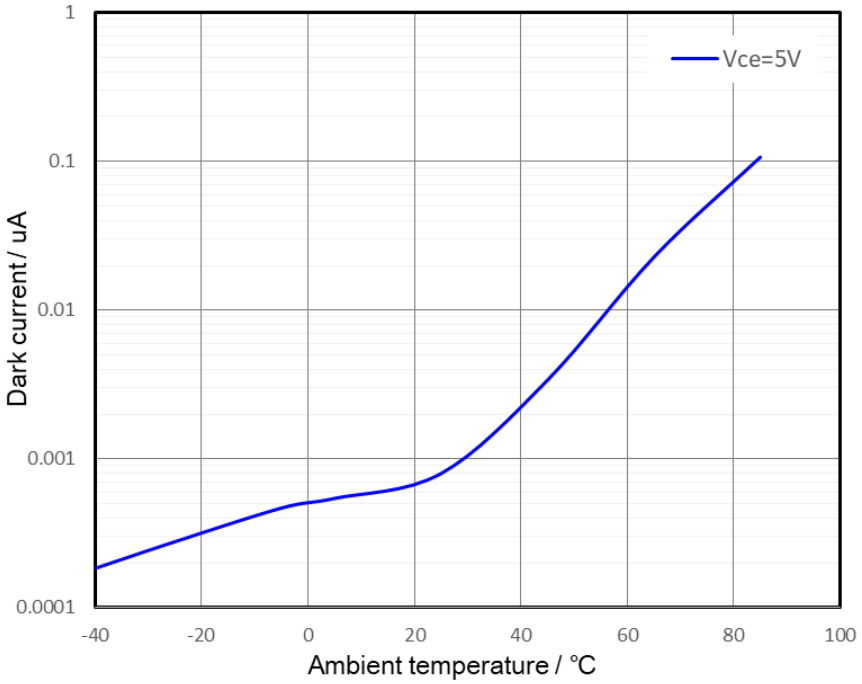
Photo Current / Illuminance



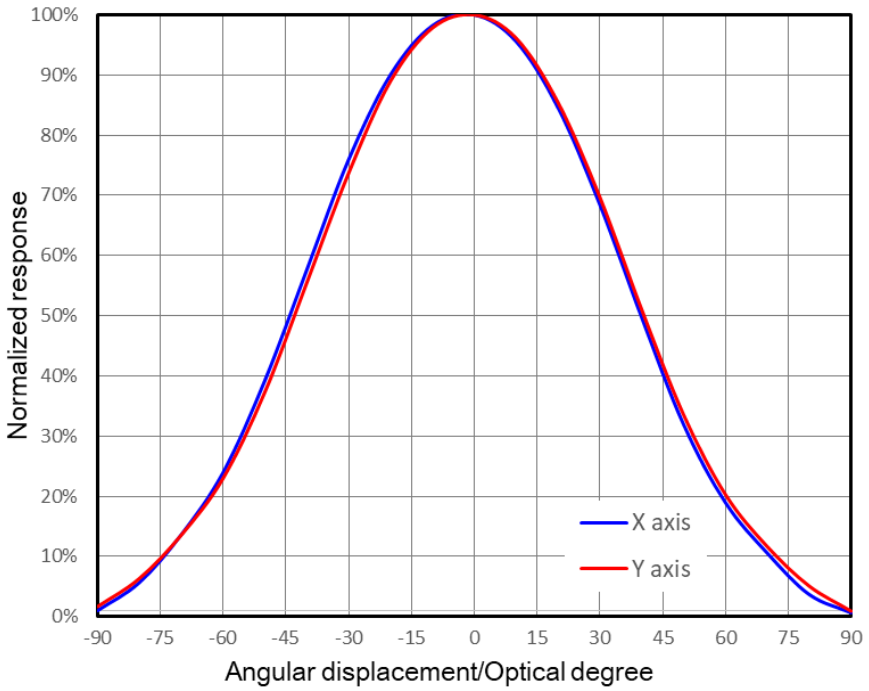
Normalized Photo Current / Ambient Temperature



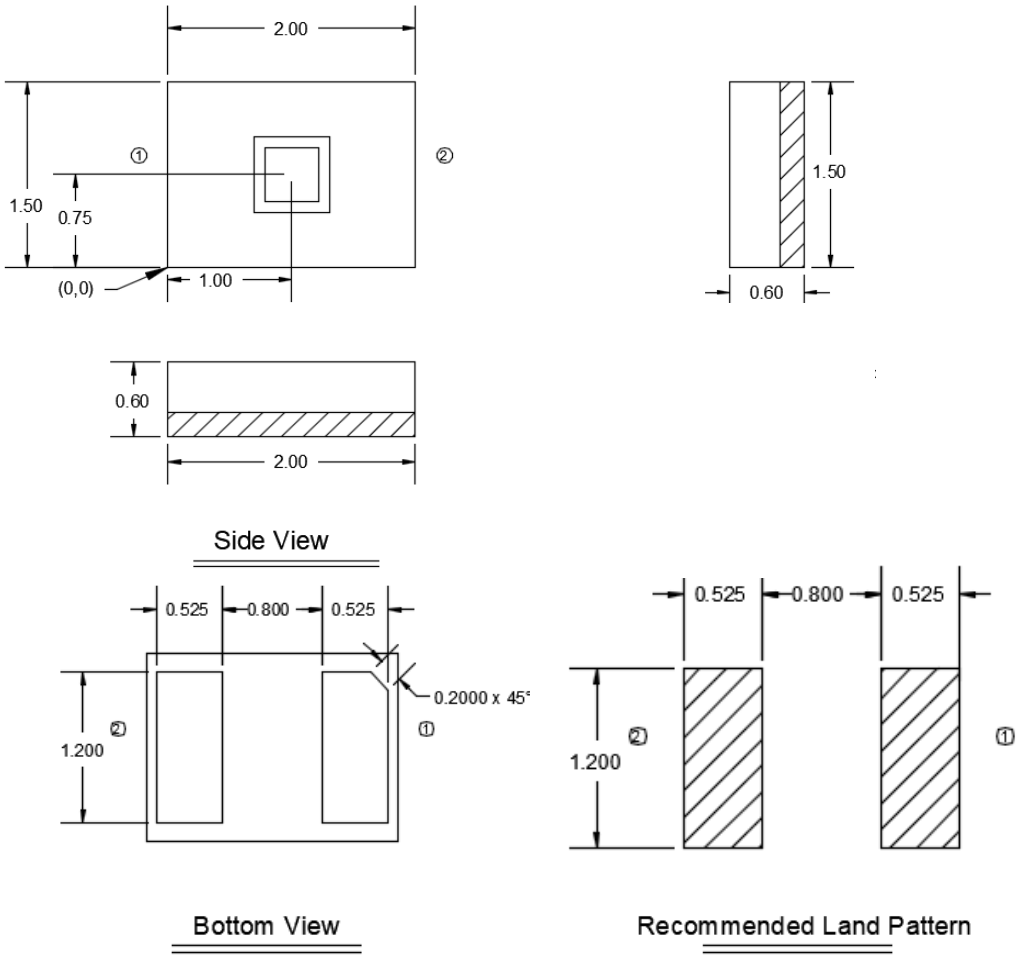
Dark Current vs. Ambient Temperature



Normalized Angular Response



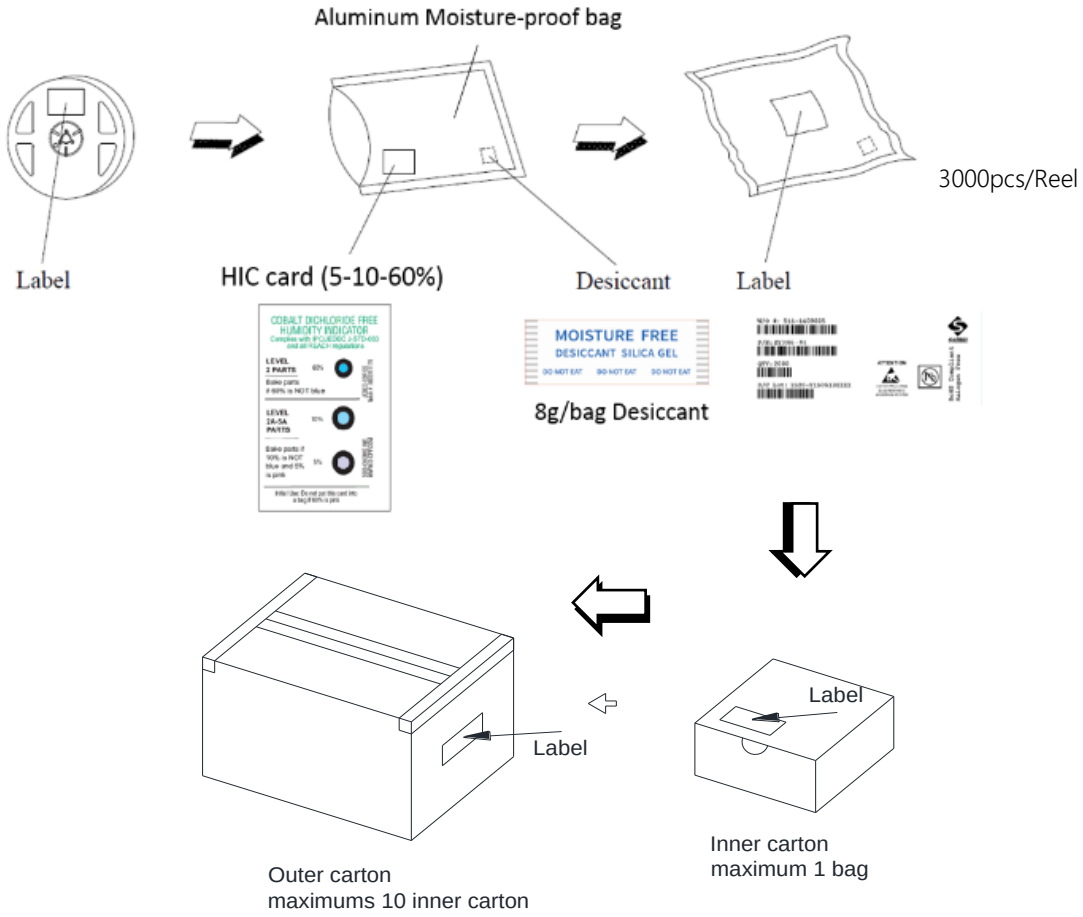
Package Outline Drawings



Pin name	Pin assignment
1	Emitter
2	Collector

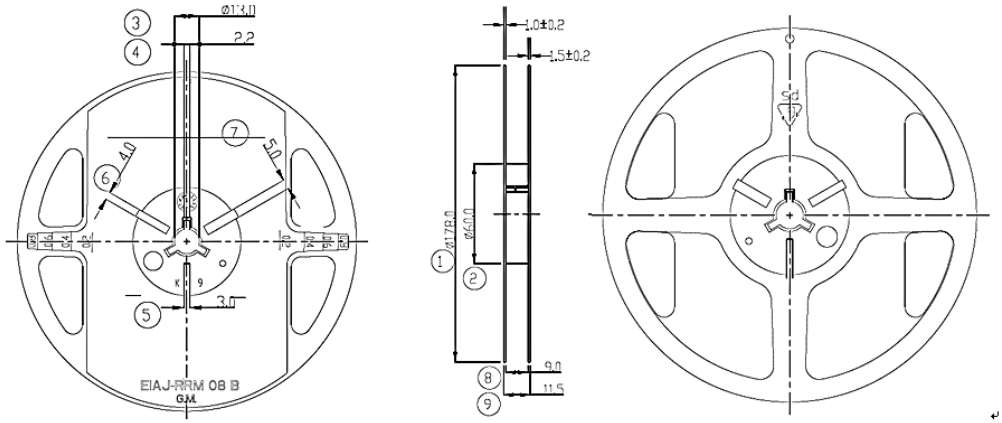
Note:
[1] All tolerances are +/-0.1mm, unless otherwise noted;
[2] ALS sensing center is at point A (x,y)=(1.0,0.75);
[3] Sensitive area: 0.432mm x 0.432mm;
[4] Unit is mm.

Packaging Quantity Specifications

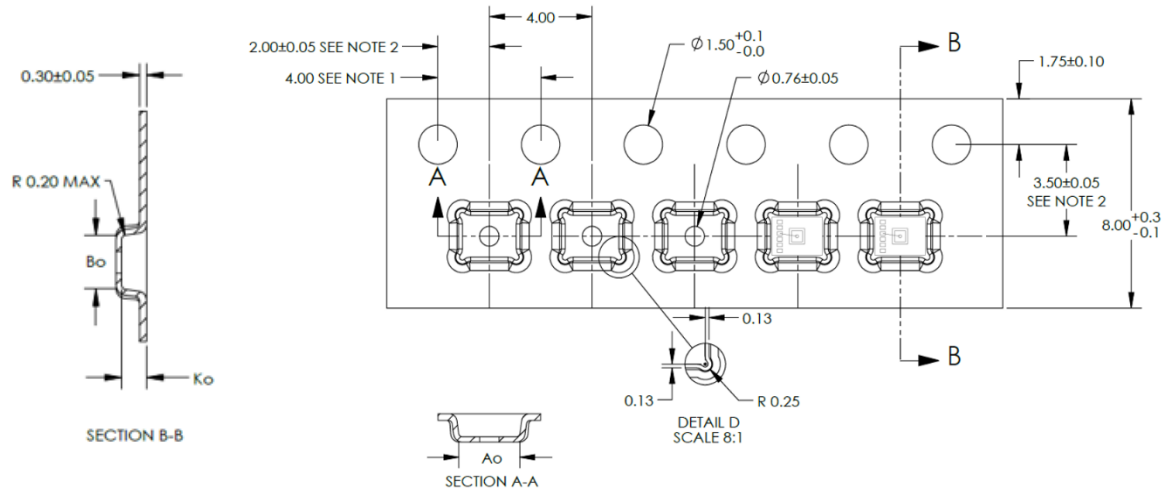


● Dimensions of Reel (Unit: mm)

Width	1	2	3	4	5	6	7	8	9
7"	178±1	60±0.5	13±0.5	2.2±0.5	$3^{+0.5}_{-0.5}$	$4^{+0.5}_{-0.5}$	$5.0^{+0.5}_{-0.5}$	9±0.5	11.5±0.5



● Dimensions of Tape (Unit: mm)



	DIM	±
Ao	2.35	0.05
Bo	1.85	0.05
Ko	0.88	+0.05/-0.10

Recommended Method of Storage

Storage is recommended as soon as the bag has been opened to prevent moisture absorption. The following conditions should be observed, if bags are not available:

- Storage temperature: 10°C to 30°C
- Storage humidity: ≦60%RH max.
- Storage Time: ≦168hr max.

Moisture-Proof Package

To avoid moisture absorption by the resin, the product should be stored under the following conditions:

- Temperature: 23 ± 5°C
- Relative humidity: 60% (max)
- Baking is required if the devices have been stored unopened for more than 24 months and the HIC card is not discolored

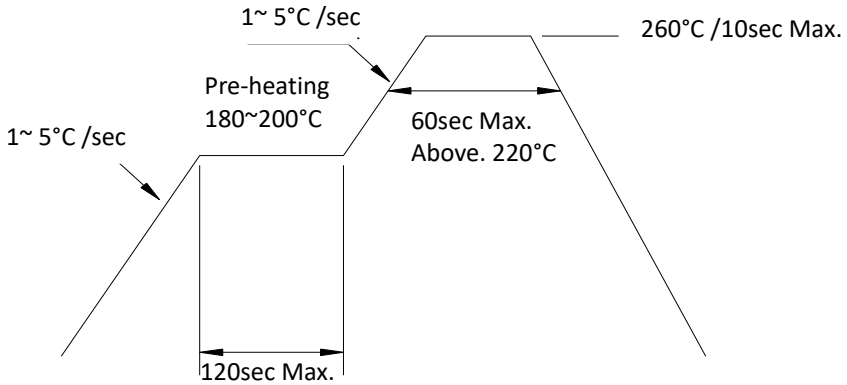
ESD Precaution

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the Anti-static bag. Electro-Static Sensitive Devices warning labels are on the packing.

Make any Necessary Soldering Correction Manually

Temperature shall be no more than 350°C (25W for soldering iron) within 3 seconds. Make sure do not do this more than one time for any given pin.

Recommended Solder Profile



Note:

[1]. Reflow soldering should not be done more than twice.

[2]. Do not put stress on the devices during heating stage while soldering.

[3]. Do not warp the circuit board after soldering.

Revision History

The revision history provided is for informational purpose only and is believed to be accurate, however, not warranted. Please make sure that you have the latest revision.

Revision Number	Revision Date	Description
1.0	Nov 17,2024	Production Release
0.9B	Nov 17,2023	Add “AEC-Q102 Qualified” in Features
0.9A	Jun 1,2023	“Baking is required if the devices have been store unopened for more than six months” changed into “Baking is required if the devices have been stored unopened for more than 24 months and the HIC card is not discolored”.
0.9	Jan 14,2022	Initial Release

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