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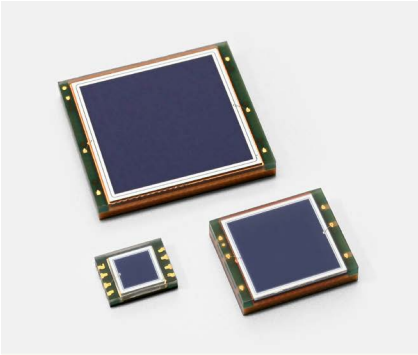
Si photodiodes

S16008 series



Si photodiodes for visible to near infrared region

The S16008 series is a surface mount type Si photodiode with high sensitivity in the visible to near infrared region. This provides higher sensitivity than the previous S2387 series.

Features

- **High sensitivity in visible to near infrared region**
- **Low dark current**
- **Superior linearity**
- **Compatible with lead-free solder reflow**

Applications

- **Analytical instruments**
- **Optical measurement equipment**
- **PCR testing equipment**

Structure / Absolute maximum ratings

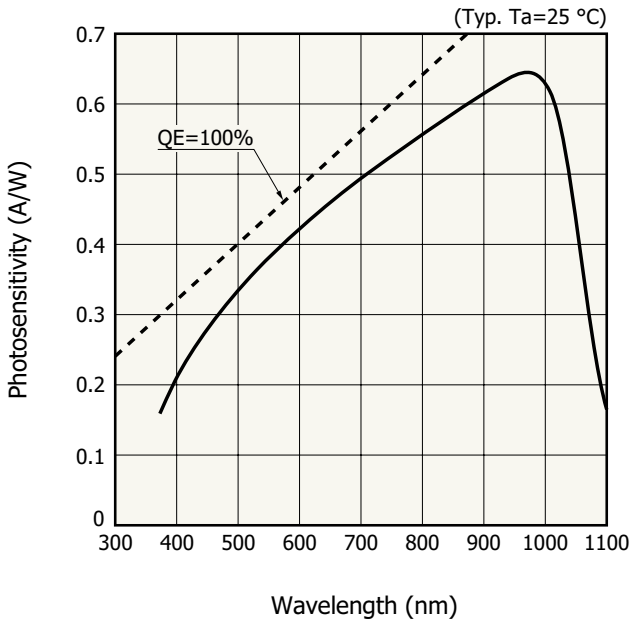
Type no.	Photosensitive area size (mm)	Package	Window material	Refractive index of window material	Absolute maximum ratings			
					Reverse voltage V_R (V)	Operating temperature Topr*1 (°C)	Storage temperature Tstg*1 (°C)	Soldering temperature (°C)
S16008-33	2.4 × 2.4	Glass epoxy	Silicone resin	1.54	30	-40 to +100	-40 to +100	260 (3 times)*2
S16008-66	5.8 × 5.8							
S16008-1010	10 × 10							

*1: No dew condensation.
When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
*2: See reflow soldering conditions (P.9).
S16008-33: JEDEC J-STD-020 MSL 2a, S16008-66: JEDEC J-STD-020 MSL 3, S16008-1010: JEDEC J-STD-020 MSL 4
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength λp (nm)	Photosensitivity S λ=λp (mA/W)	Dark current I_D V_R=10 mV		Temp. coefficient of I_D ΔT_{ID} (times/°C)	Rise time tr V_R=0 V R_L=1 kΩ 10 to 90% (μs)	Terminal capacitance Ct V_R=0 V f=1 MHz (nF)	Noise equivalent power NEP V_R=0 V λ=λp (W/Hz$^{1/2}$)	Shunt resistance Rsh V_R=10 mV	
				Typ. (pA)	Max. (pA)					Min. (GΩ)	Typ. (GΩ)
S16008-33	380 to 1100	960	640	0.01	5	1.12	1.5	0.7	9.0×10^{-16}	2	50
S16008-66				0.1	50		9	4	2.0×10^{-15}	0.2	10
S16008-1010				0.5	200		29	13	2.8×10^{-15}	0.05	5

Spectral response



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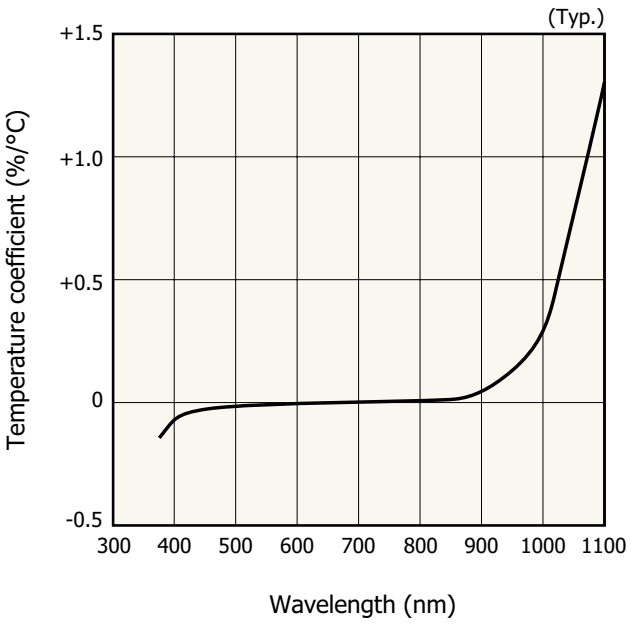
Photosensitivity temperature characteristics



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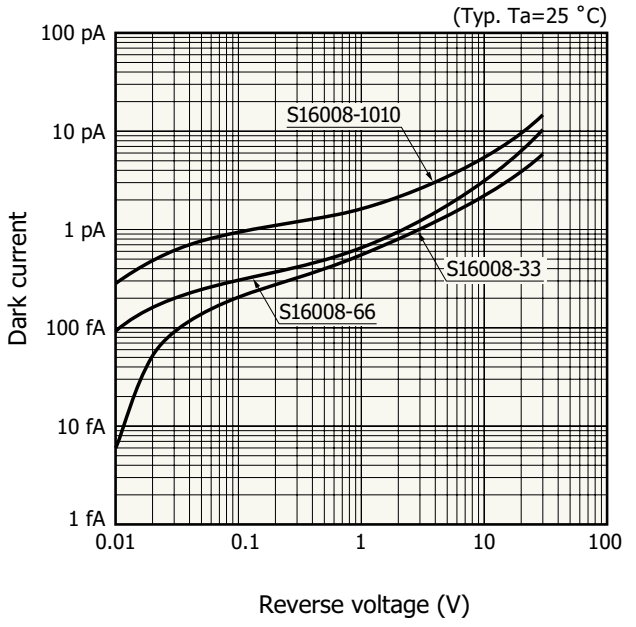
Dark current vs. reverse voltage



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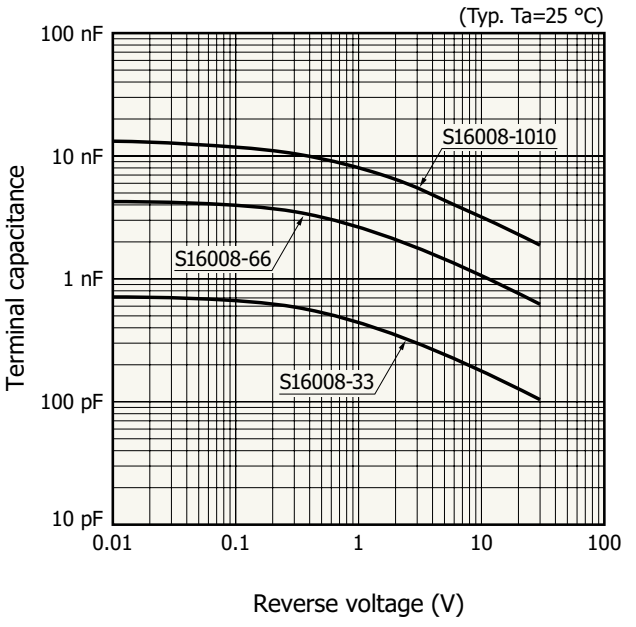
Terminal capacitance vs. reverse voltage



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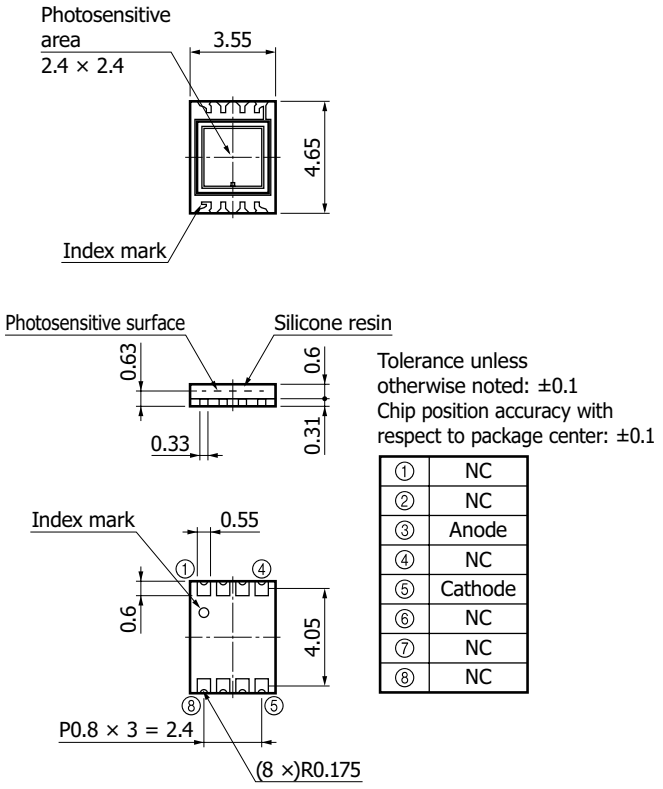
Dimensional outlines (unit: mm)

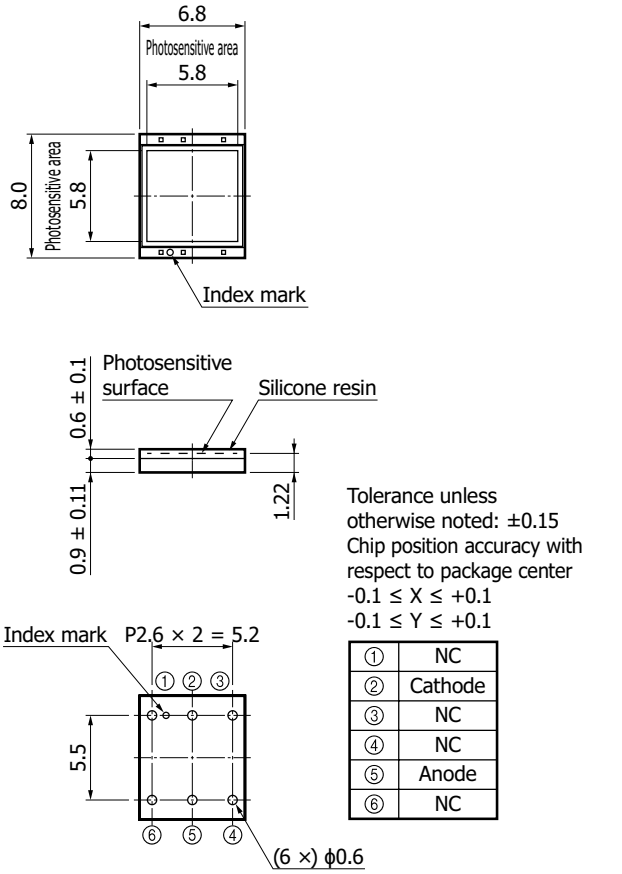
S16008-33



Tolerance unless otherwise noted: ±0.1
Chip position accuracy with respect to package center: ±0.1

①	NC
②	NC
③	Anode
④	NC
⑤	Cathode
⑥	NC
⑦	NC
⑧	NC

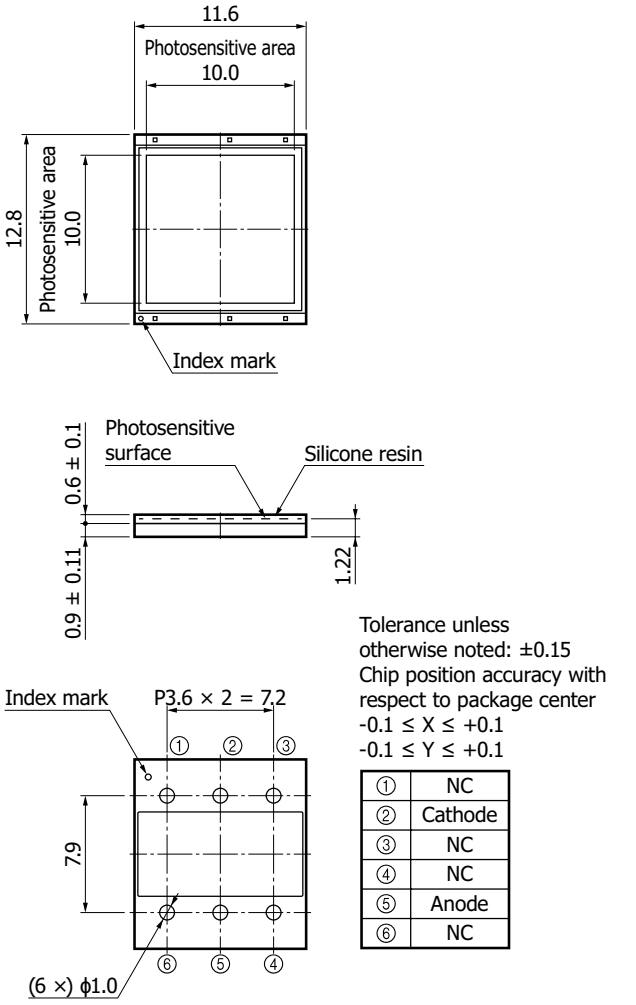
S16008-66



Tolerance unless otherwise noted: ±0.15
Chip position accuracy with respect to package center
-0.1 ≤ X ≤ +0.1
-0.1 ≤ Y ≤ +0.1

①	NC
②	Cathode
③	NC
④	NC
⑤	Anode
⑥	NC

S16008-1010



Tolerance unless otherwise noted: ±0.15
Chip position accuracy with respect to package center
-0.1 ≤ X ≤ +0.1
-0.1 ≤ Y ≤ +0.1

①	NC
②	Cathode
③	NC
④	NC
⑤	Anode
⑥	NC

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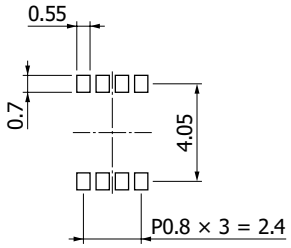
Recommended land patterns (unit: mm)

S16008-33



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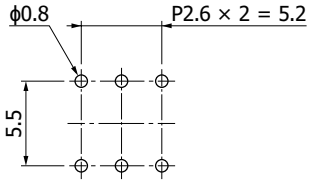
S16008-66



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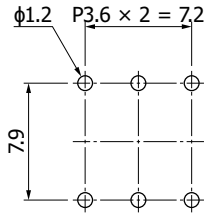
S16008-1010



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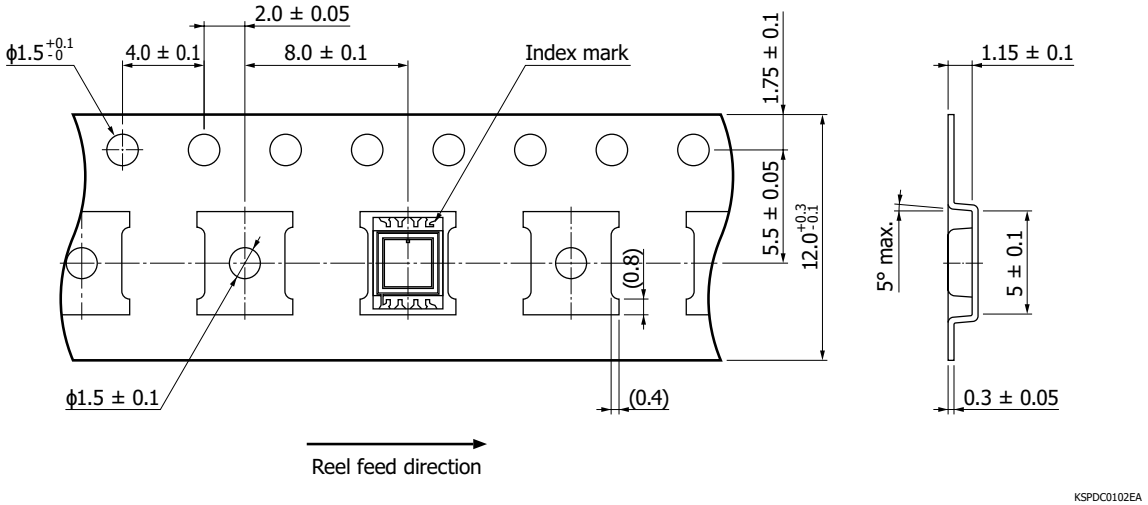
Standard packing specifications

S16008-33

■ Reel (conforms to JEITA ET-7200)

Outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
ϕ180 mm	ϕ60 mm	12 mm	PS	Conductive

■ Embossed tape (unit: mm, material: PS, conductive)



■ Packing quantity
1000 pcs/reel

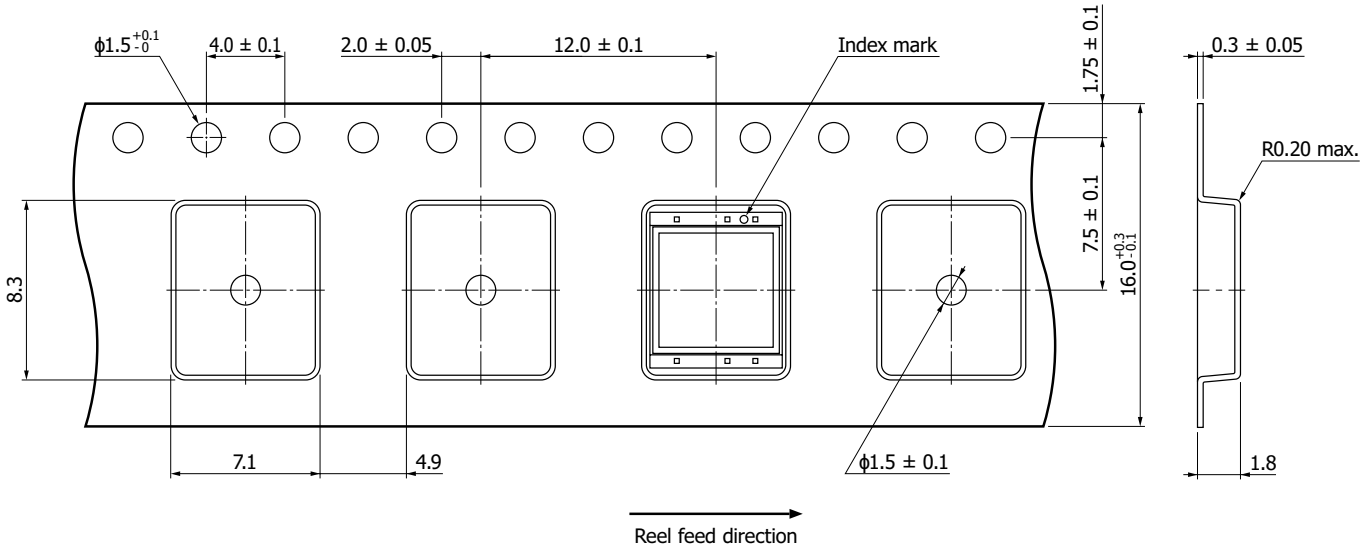
■ Packing state
Reel and desiccant in moisture-proof packaging (vacuum-sealed)

S16008-66

■ Reel (conforms to JEITA ET-7200)

Outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
ϕ330 mm	ϕ100 mm	16 mm	PS	Conductive

■ Embossed tape (unit: mm, material: PS, conductive)



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■ Packing quantity
100 pcs/reel

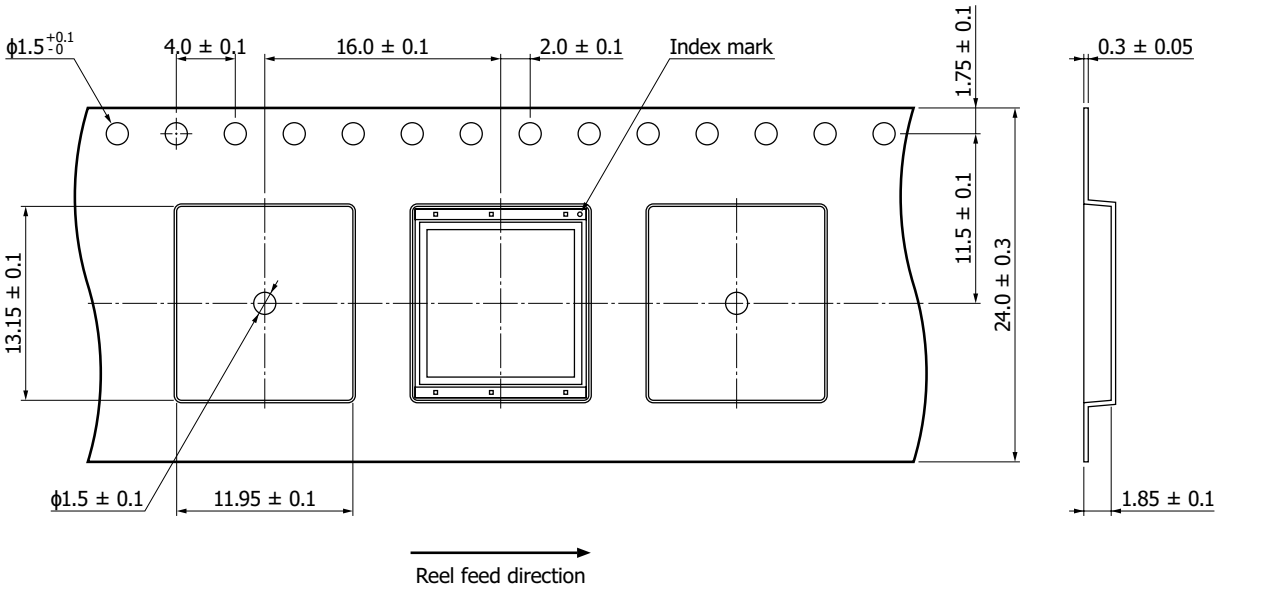
■ Packing state
Reel and desiccant in moisture-proof packaging (vacuum-sealed)

S16008-1010

■ Reel (conforms to JEITA ET-7200)

Outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
ϕ330 mm	ϕ100 mm	24 mm	PS	Conductive

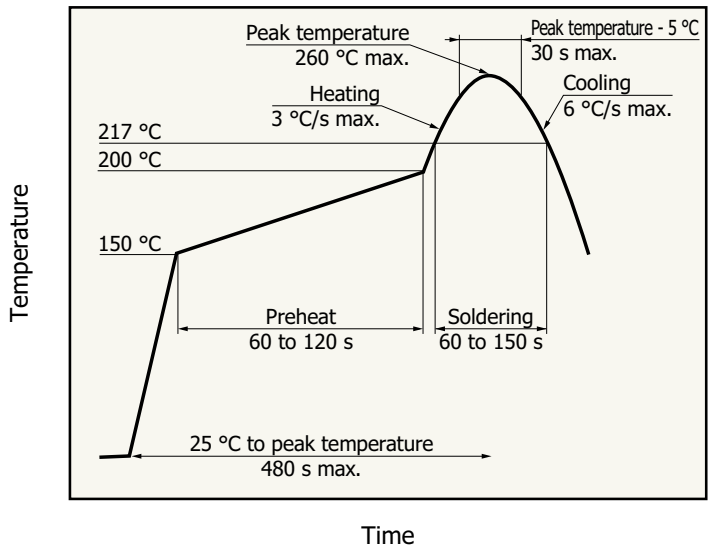
■ Embossed tape (unit: mm, material: PS, conductive)



■ Packing quantity
100 pcs/reel

■ Packing state
Reel and desiccant in moisture-proof packaging (vacuum-sealed)

Recommended reflow soldering conditions



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· After unpacking, store in an environment at a temperature of 30 °C or less and a humidity of 60% or less, and perform reflow soldering within the storage period shown in the table below.

Type no.	Storage period
S16008-33	4 weeks
S16008-66	168 hours
S16008-1010	72 hours

· The effect that the product receives during reflow soldering varies depending on the circuit board and the reflow oven that are used. When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Baking

If 12 months have passed in an unpacked state or the storage period in the table above has passed after opening, perform baking before reflow soldering to dehumidify. For the baking, refer to "Precautions / Surface mount type products" in the related information.

■ Recommended baking conditions

Temperature: 150 °C, 3 hours, up to twice

Note: When you set baking conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

· Disclaimer

· Precautions / Surface mount type products

■ Catalogs

· Technical note / Si photodiodes

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