

PHOTO TRIAC OUTPUT TYPE
5-PIN PHOTOCOUPLER**DESCRIPTION**

The PS3641, PS3642 and PS3641L, PS3642L are optically coupled isolators containing a GaAs light emitting diode and photo triac.

The PS3641, PS3642 are in a plastic DIP (Dual In-line Package) and the PS3641L, PS3642L are lead bending type (Gull-wing) for surface mounting.

FEATURES

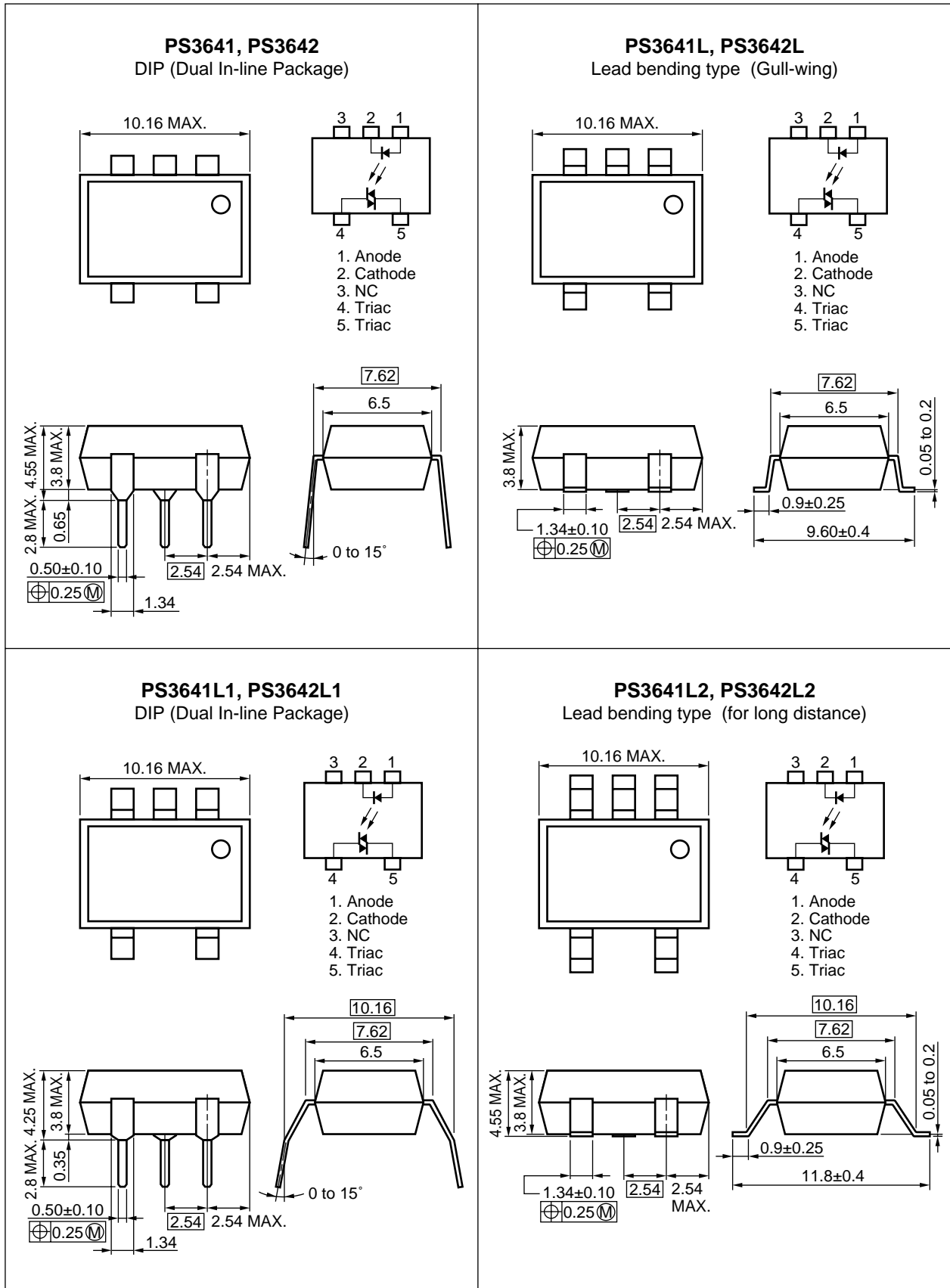
- High critical rate of rise of off-state voltage ($dV/dt = 500 \text{ V}/\mu\text{s}$ TYP.)
- High repetitive peak off-state voltage (PS3641, PS3641L: $V_{\text{DRM}} = 600 \text{ V MIN.}$)
(PS3642, PS3642L: $V_{\text{DRM}} = 400 \text{ V MIN.}$)
- High Isolation voltage ($BV = 5\,000 \text{ Vr.m.s. MIN.}$)
- ★ Taping product name (PS3641L-E3, E4, PS3642L-E3, E4)
- Clearance distance of pin to opposite type (PS3641L1, PS3641L2, PS3642L1, PS3642L2)

APPLICATIONS

- For triggering triac
- Controller for miniature motor

The information in this document is subject to change without notice.

PACKAGE DIMENSIONS (in millimeters)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise specified)

Parameter		Symbol	Ratings		Unit
			PS3641, PS3641L	PS3642, PS3642L	
Diode	Forward Current (DC)	I _F	80		mA
	Reverse Voltage	V _R	6.0		V
	Power Dissipation Derating	ΔP _D /°C	1.5		mW/°C
	Power Dissipation	P _D	150		mW
	Peak Forward Current ^{*1}	I _{FP}	1		A
Detector	Repetitive Peak Off-state Voltage	V _{DRM}	600	400	V
	RMS On-state Current ^{*2}	I _{T (RMS)}	100		mA
	Peak 1 Cycle Surge On Current ^{*3}	I _{TSM}	0.5		A
	Power Dissipation Derating	ΔP _C /°C	1.5		mW/°C
	Power Dissipation	P _C	150		mW
Isolation Voltage ^{*4}		BV	5 000		Vr.m.s.
Operating Ambient Temperature		T _A	-40 to +100		°C
Storage Temperature		T _{stg}	-55 to +125		°C

*1 PW = 100 μs, Duty Cycle = 1 %

★ *2 Current for operation of this device differs depending on conditions such as load, operating temperature, and supply voltage

*3 Sine Wave f = 50 Hz

*4 AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and output

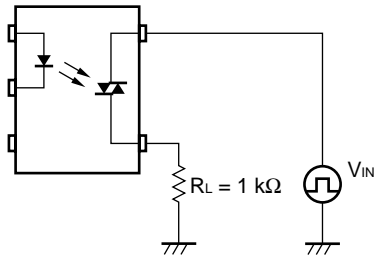
RECOMMENDED OPERATING CONDITIONS

Parameter		Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage	PS3641	V _{AC}			240	V _{AC}
	PS3642				120	
Forward Current		I _F	15	20	30	mA
Operating Ambient Temperature		T _A	-25		+85	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

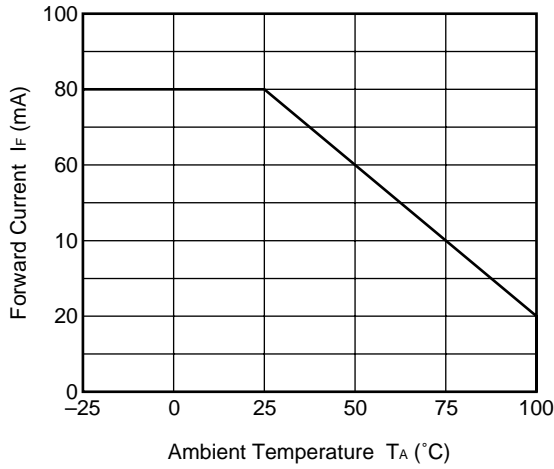
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V _F	I _F = 10 mA		1.1	1.4	V
	Reverse Current	I _R	V _R = 5 V			5	μA
	Terminal Capacitance	C _t	V = 0 V, f = 1 MHz		30		pF
Photo Triac	Peak Off-state Current	I _{DRM}	V _{DRM} = ±Rated			100	nA
	Peak On-state Voltage	V _{TM}	I _{TM} = ±Rated		2.5	3.0	V
	Holding Current	I _H			0.8		mA
	Critical Rate of Rise of Off-state Voltage ^{*1}	dV/dt	V _{IN} = ±1/√2 Rated	200	500		V/μs
Coupled	Trigger Input Current	I _{FT}	V _{TM} = ±6 V		6	10	mA
	Isolation Resistance	R _{I-O}	V _{I-O} = 1 kV _{DC}	10 ¹¹			Ω
	Isolation Capacitance	C _{I-O}	V = 0 V, f = 1 MHz		0.4		pF

*1 Test circuit for critical rate of rise of off-state voltage

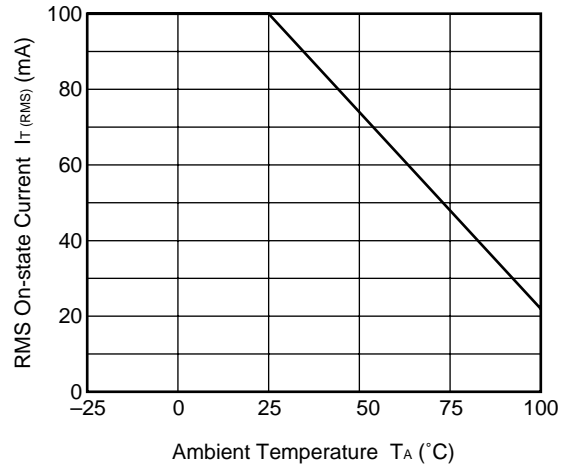


TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

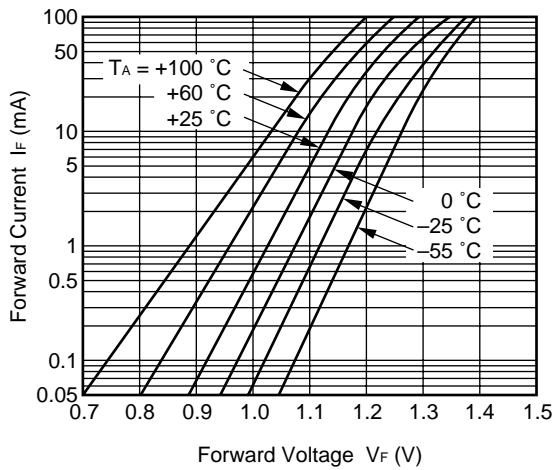
FORWARD CURRENT vs. AMBIENT TEMPERATURE



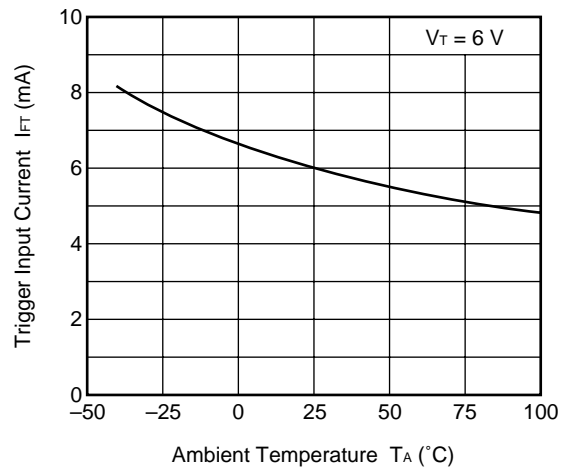
RMS ON-STATE CURRENT vs. AMBIENT TEMPERATURE



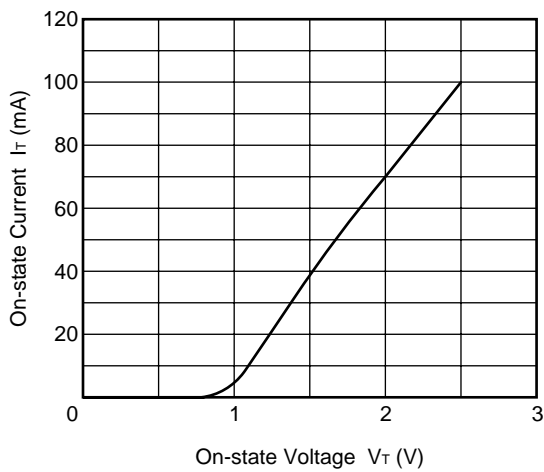
FORWARD CURRENT vs. FORWARD VOLTAGE



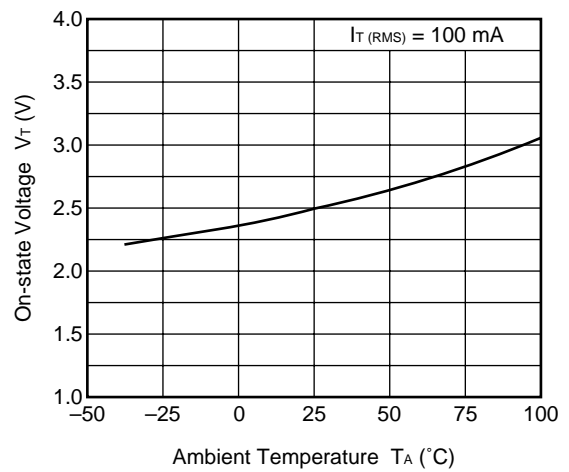
TRIGGER INPUT CURRENT vs. AMBIENT TEMPERATURE



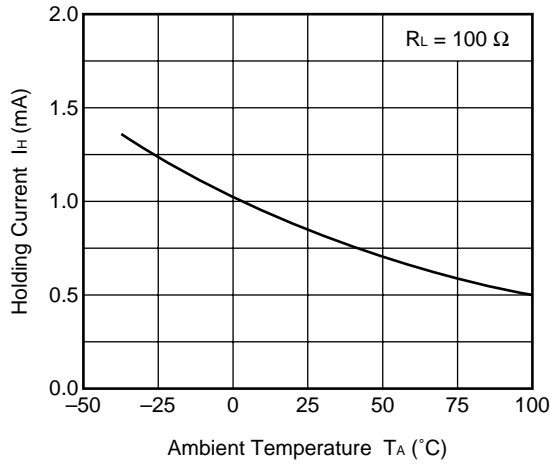
ON-STATE CURRENT vs. ON-STATE VOLTAGE



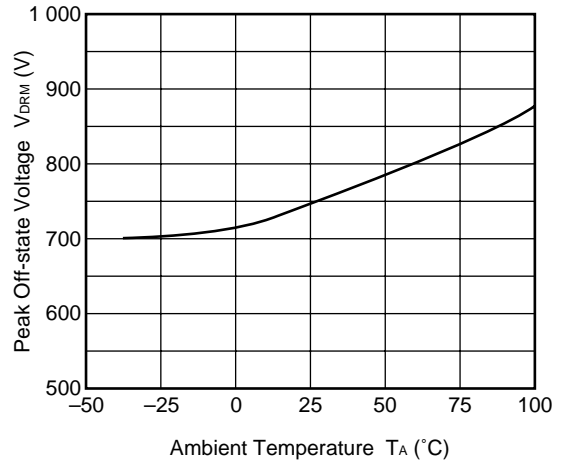
ON-STATE VOLTAGE vs. AMBIENT TEMPERATURE



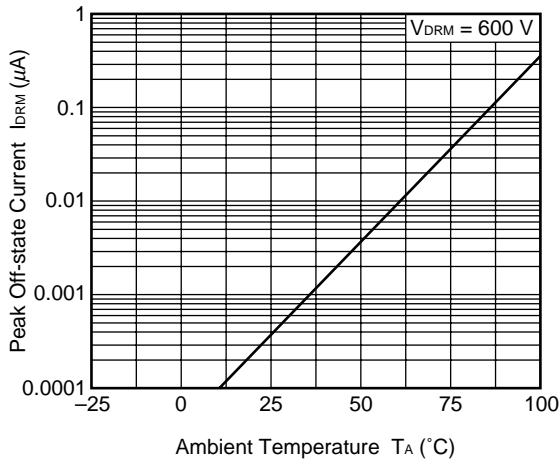
HOLDING CURRENT vs. AMBIENT TEMPERATURE



PEAK OFF-STATE VOLTAGE vs. AMBIENT TEMPERATURE



PEAK OFF-STATE CURRENT vs. AMBIENT TEMPERATURE



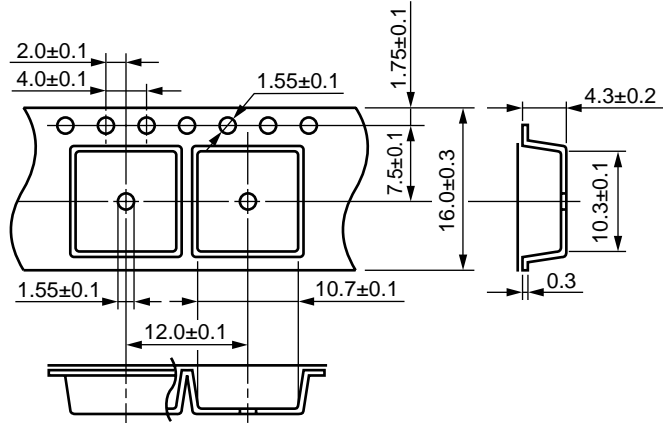
PRECAUTION FOR USER

1. Mount all pin for improvement heat sink.
2. Be sure to connect a circuit for surge absorbent.

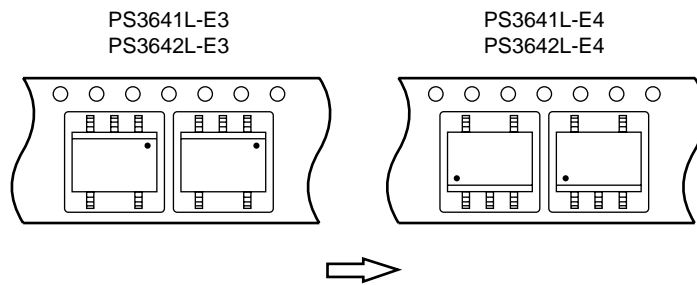
An appropriate circuit must be chosen according to the load (for CR, chose its constant). This must be carefully done especially for an inductive load.

★ TAPING SPECIFICATIONS (in millimeters)

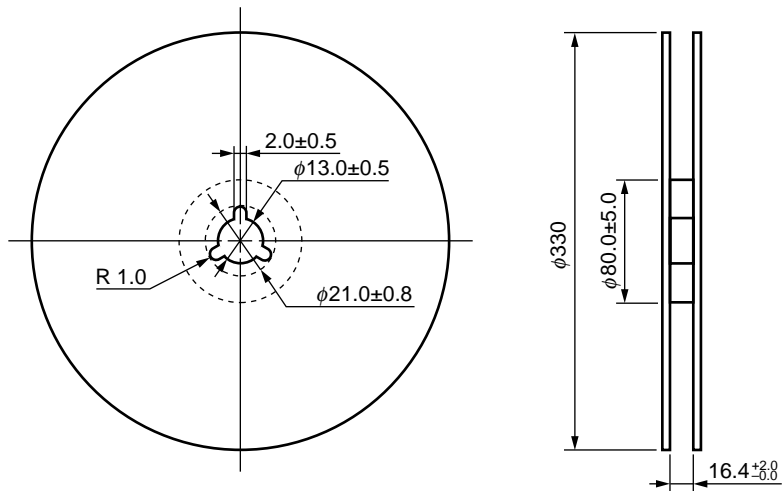
Outline and Dimensions (Tape)



Taping Direction



Outline and Dimensions (Reel)



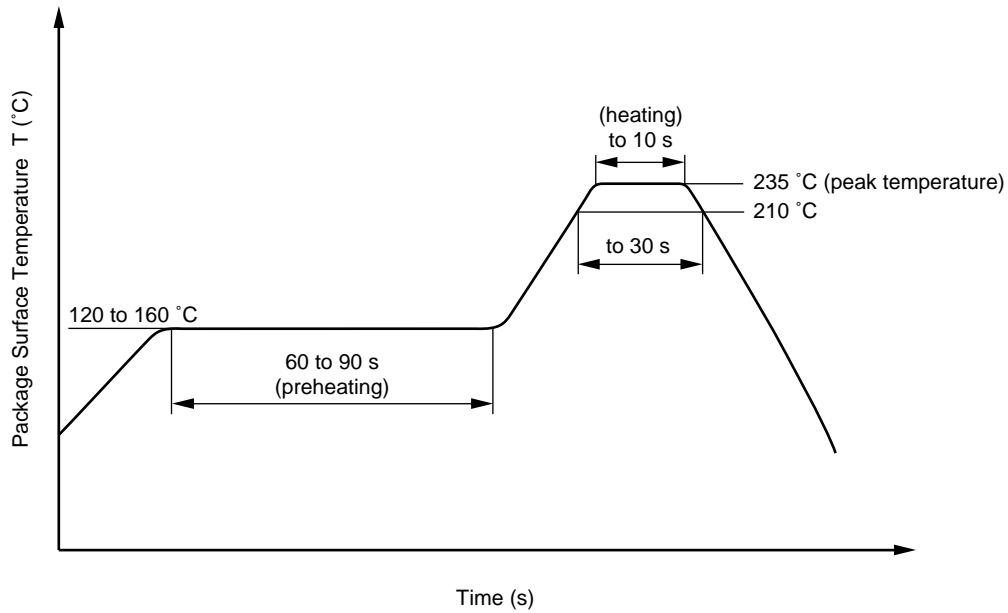
Packing: 1 000 pcs/reel

RECOMMENDED SOLDERING CONDITIONS

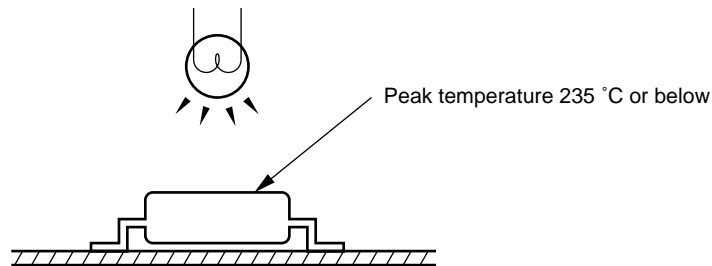
(1) Infrared reflow soldering

- Peak reflow temperature 235 °C (package surface temperature)
- Time of temperature higher than 210 °C 30 seconds or less
- ★ • Number of reflows Three
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

Recommended Temperature Profile of Infrared Reflow



Caution Please avoid to removed the residual flux by water after the first reflow processes.



(2) Dip soldering

- Temperature 260 °C or below (molten solder temperature)
- Time 10 seconds or less
- Number of times One
- Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

[MEMO]

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CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.

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Anti-radioactive design is not implemented in this product.