



ORIENT

Photo coupler

Product Data Sheet

Part Number: OR-T304X(L)/306X(L)/308X(L)

Customer: _____

Date: _____

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1. Features

- (1) High isolation voltage between input and output (Viso:5000 V rms)
- (2) 4pin zero-cross optoisolators triac driver output
- (3) High repetitive peak off-state voltage V_{DRM} :
T304X: Min. 400V;T306X: Min. 600V;T308X: Min. 800V
- (4) High critical rate of rise of off-state voltage(dV/dt : MIN. 1000V / μs)
- (5) Dual-in-line package;Wide lead spacing package; Surface mounting package.
- (6) Operating temperature -40 °C to +110 °C
- (7) Safety approval

UL approved (No.E323844)

VDE approved(No.40029733)

CQC approved (No.CQC09001029446)

- (8) In compliance with RoHS, REACH standards
- (9) MSL Class I

2. Description

The OR-T304X(L)/306X(L)/308X(L) series of devices each consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon zero voltage crossing photo triac.They are designed for use with a discrete power triac in the interface of logic systems , such as solid-state relays, industrial controls, motors, solenoids and consumer appliances.

3. Application Range

- (1)AC Motor Drives
- (2)AC Motor Starters
- (3)Static power switch
- (4)Lighting Controls
- (5)Solenoid/Valve Controls
- (6)Solid State Relays
- (7)Temperature Controls

4. Absolute Maximum Ratings (Ta=25°C)

Parameter			Symbol	Rateing	Unit
Input	Forward Current		I _F	50	mA
	Junction Temperature		T _J	125	°C
	Reverse Voltage		V _R	6	V
	Power Dissipation		P	120	mW
Output	Off-State Output Terminal Voltage	T304X	V _{DRM}	400	V
		T306X		600	
		T308X		800	
	Peak Repetitive Surge Current (PW=1ms, 120 pps)		I _{TSM}	1	A
	On-State RMS Current		I _{T(RMS)}	100	mA
	Junction Temperature		T _J	125	°C
	Collector Power Dissipation		P _C	150	mW
	Total Power Dissipation			P _{tot}	250
*Insulation Voltage			V _{iso}	5000	V _{rms}
Working Temperature			T _{opr}	-40 ~ + 110	°C
Deposit Temperature			T _{stg}	-55 ~ + 125	
*2 Soldering Temperature			T _{sol}	260	

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2&3 are shorted together, and pins 4, 6 are shorted together.

* 2 For 10 second



5. Electrical Optical Characteristics at Ta=25°C

Parameter			Symbol	Min	Typ.	Max	Unit	Condition
Input	Forward Voltage		V_F	---	1.2	1.6	V	$I_F=20\text{mA}$
	Reverse Current		I_R	---	---	5	μA	$V_R=6\text{V}$
Output	1.Peak Blocking Current, Either Direction		I_{DRM}	---	---	500	nA	$V_{DRM} =$ Rated V_{DRM}
	Peak On-State Voltage, Either Direction		V_{TM}	---	---	3.0	V	$I_{TM}=100\text{mA}$ Peak
	2.Critical rate of Rise of Off-State Voltage		dv/dt	1000	---	---	V/ μs	$V_{in}=240\text{Vrms}$
Couple	3.Led Trigger Current,Current Required to Latch Output, Either Direction	T3040 T3060 T3080	I_{FT}	---	---	30	mA	Main Terminal Voltage = 3V
		T3041 T3061 T3081		---	---	15		
		T3042 T3062 T3082		---	---	10		
		T3043 T3063 T3083		---	---	5		
		T3044 T3064 T3084		---	---	3		
	Holding Current, Either Direction		I_H	---	400	---	μA	
ZERO CROSSING	Inhibit Voltage		V_{INH}	---	5	20	Volts	$I_F = \text{Rated } I_{FT}$, MT1-MT2 Voltage above which device will not trigger.
	Leakage in Inhibited State		$IDRM2$	---	---	500	μA	$I_F = \text{Rated } I_{FT}$, Rated V_{DRM} , Off State

*1. Test voltage must be applied within dv/dt rating.

*2. This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

*3. All devices are guaranteed to trigger at an I_F value less than or equal to $\max I_{FT}$. Therefore, recommended operating I_F lies between $\max I_{FT}$, 30 mA for OR-T3040, OR-T3060 and OR-T3080, 15 mA for OR-T3041, OR-T3061 and OR-T3081, 10 mA for OR-T3042, OR-T3062 and OR-T3082, 5 mA for OR-T3043, OR-T3063 and OR-T3083, 3 mA for OR-T3044, OR-T3064 and OR-T3084, and absolute $\max I_F$ (50mA).

6. Order Information

Part Number

OR-T304X(L)V-W-Y
or OR-T306X(L)V-W-Y
or OR-T308X(L)V-W-Y

Note

T304X(L)/T306X(L)/T308X(L) = Part number (X = 0, 1, 2, 3 or 4).

V = Lead form option (S, M or None).

W = Tape and reel option (TA, TA1 or none).

Y = 'V' code for VDE safety (This options is not necessary).

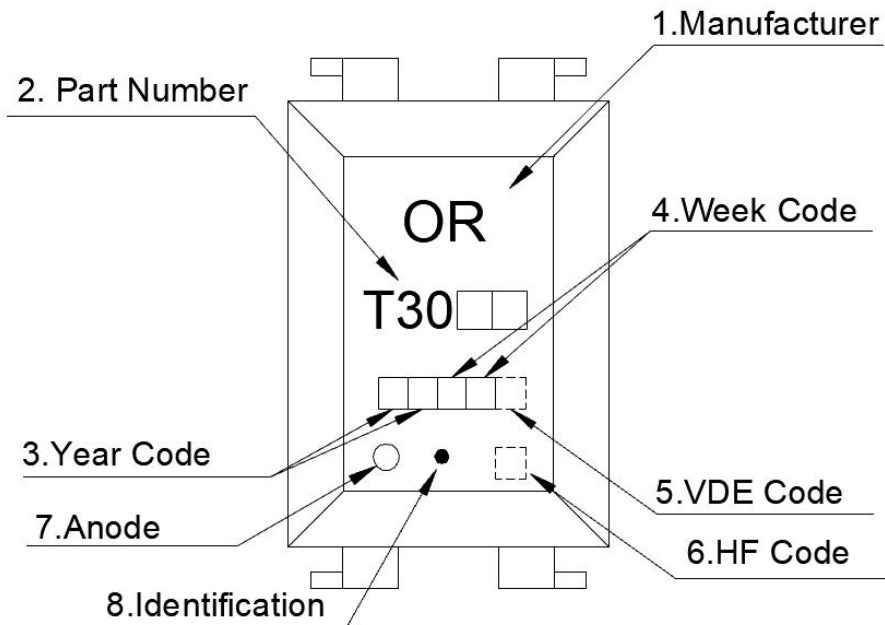
Z = 'G' code for halogen free (This options is not necessary).

* VDE Code can be selected.

* HF Code can be selected.

Option	Description	Packing quantity
None	Standard DIP-4	100 units per tube
M	Wide lead bend (0.4 inch spacing)	100 units per tube
S(TP)	Surface mount lead form (low profile) + TP tape & reel option	2000 units per reel
S(TP1)	Surface mount lead form (low profile) + TP1 tape & reel option	2000 units per reel

7. Naming Rule



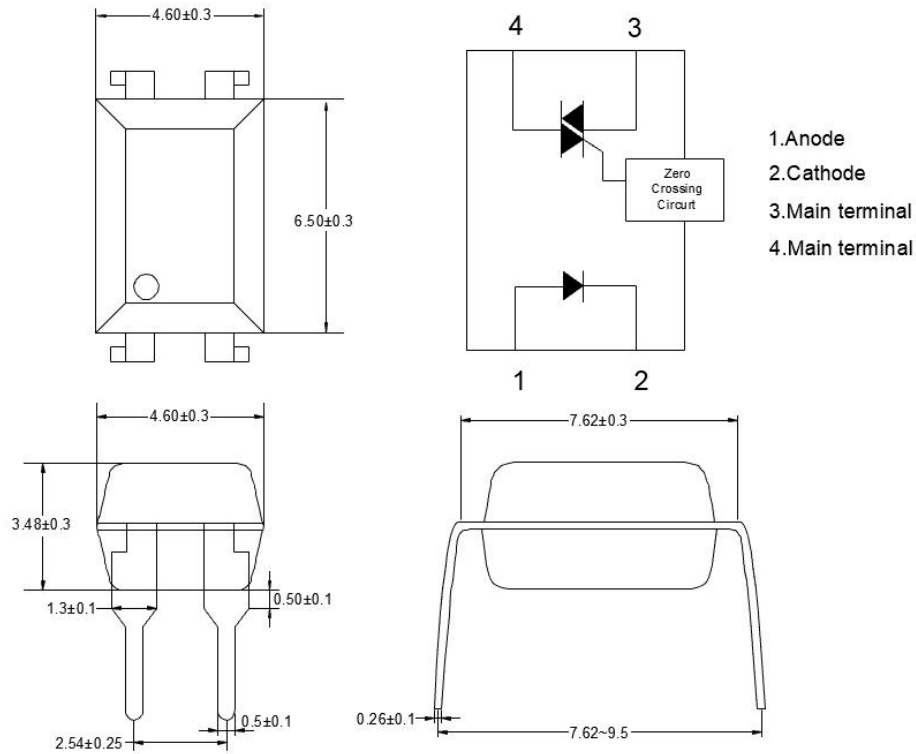
1. Manufacturer : ORIENT.
2. Part Number : T30□□.
3. Year Code □□ : '21' means '2021' and so on.
4. Week Code □□: 01 means the first week, 02 means the second week and so on.
5. VDE Code □□. (Optional)
6. HF Code □□. (Optional)
7. Anode.
8. Identification.

* VDE Code can be selected.

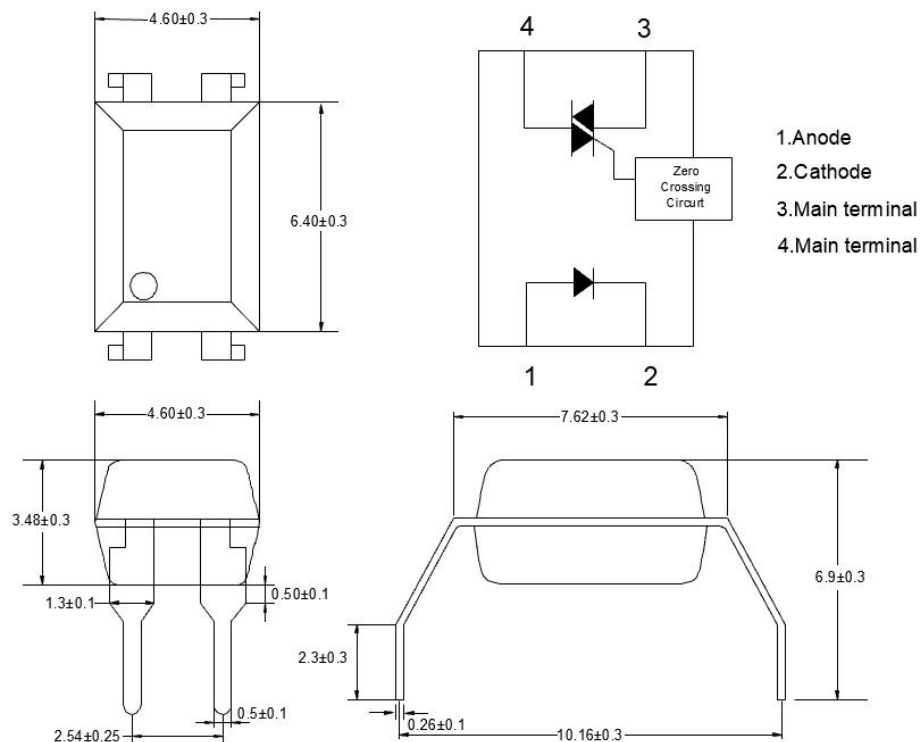
* HF Code can be selected.

8. Package Dimension

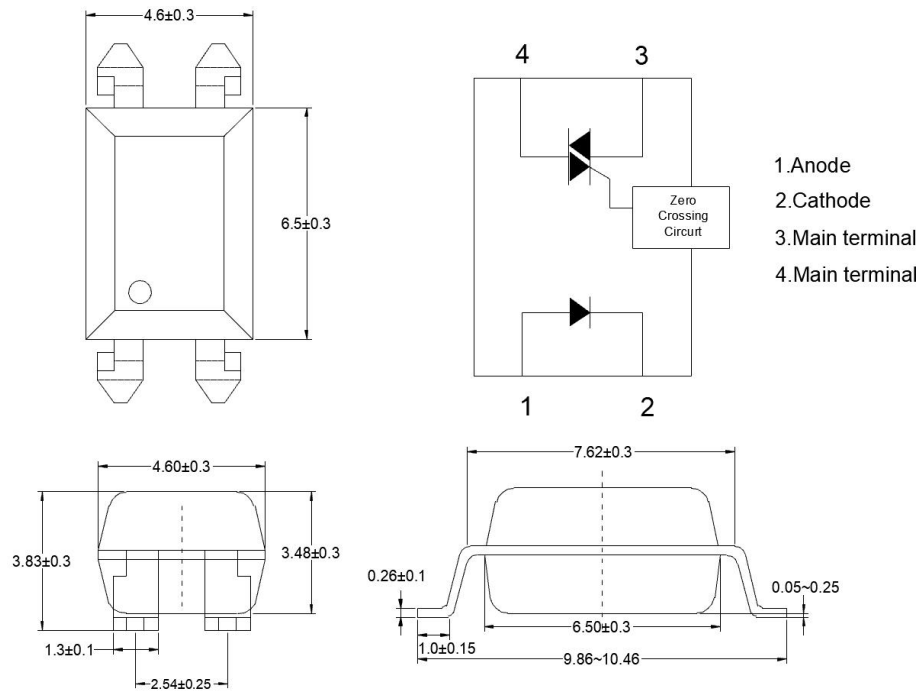
(1).T30XX



(2).T30XX M

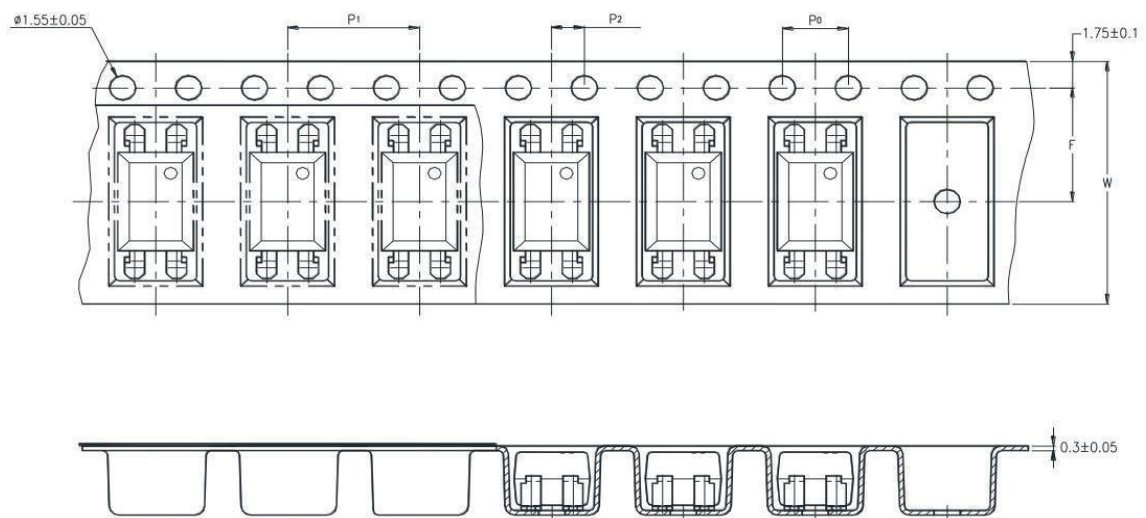


(3).T30XX S

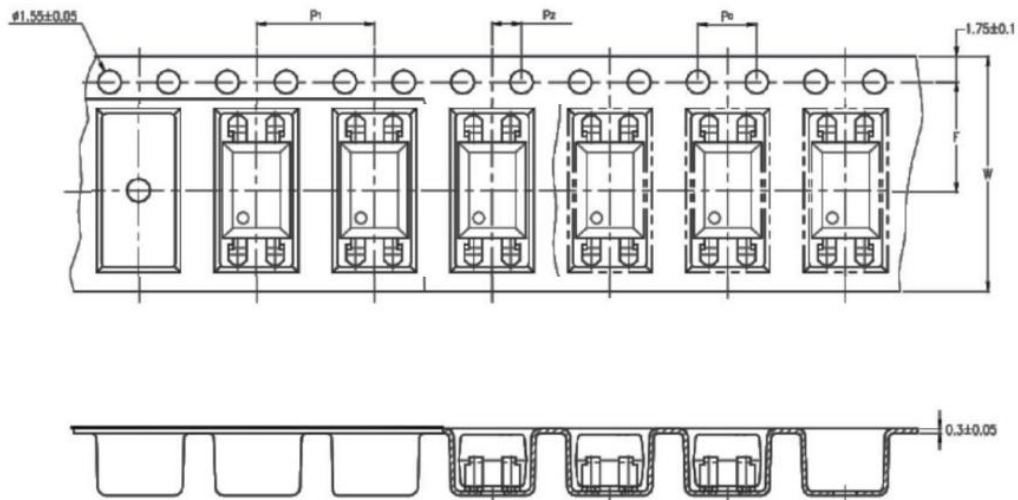


9. Taping Dimensions

(1)TP Type



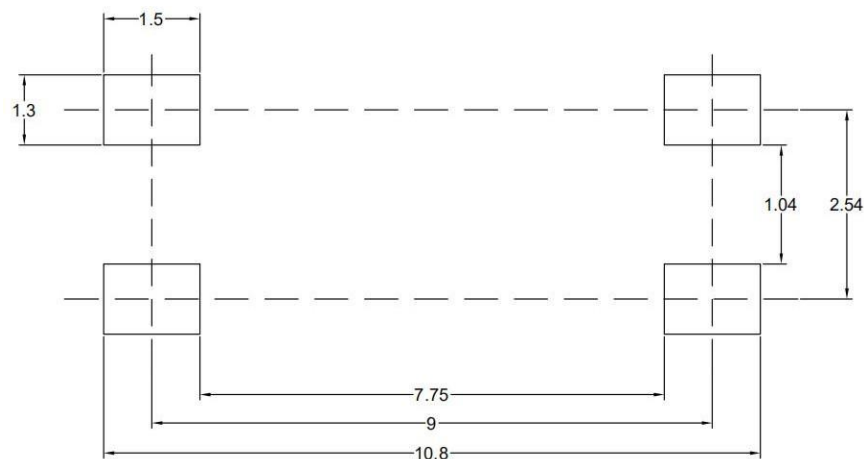
(2)TP1 Type



Description	Symbol	Dimension in mm (inch)
Tape wide	W	16 ± 0.3 (.63)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F	7.5 ± 0.1 (.295)
	P_2	2 ± 0.1 (.0079)
Distance of compartment to sprocket hole	P_1	8 ± 0.1 (.472)

Package Type	TP/TP1
Quantities(pcs)	2000

10. Recommended Foot Print Patterns (Mount Pad) (Unit: mm)



11. Package Dimension

(1) package dimension

DIP Type

Packing Information	
Packing type	Tube
Qty per Tube	100pcs
Small box (Inner) Dimension	525*128*60mm
Large box (Outer) Dimension	545*290*335mm
The Amount per Inner Box	5,000pcs
The Amount per Outer Box	50,000pcs

SOP Type

Packing Information	
Packing type	Reel type
Tape Width	16mm
Qty per Reel	2,000pcs
Small box (inner) Dimension	345*345*58.5mm
Large box (Outer) Dimension	620x360x360mm
Max qty per small box	4,000pcs
Max qty per large box	40,000pcs

(2)Packing Label Sample






Material Code : 120PCXXXXXX
P/N : OR-XXXXXX
Lot No. : XXXXXX-XXXX-TX-X
D/C : XXXX
Qty : XXXX PCS

内箱码

外箱码

“XXXXXXXXXXXXXXXX” (一体机序列码)
Made in China

Note:

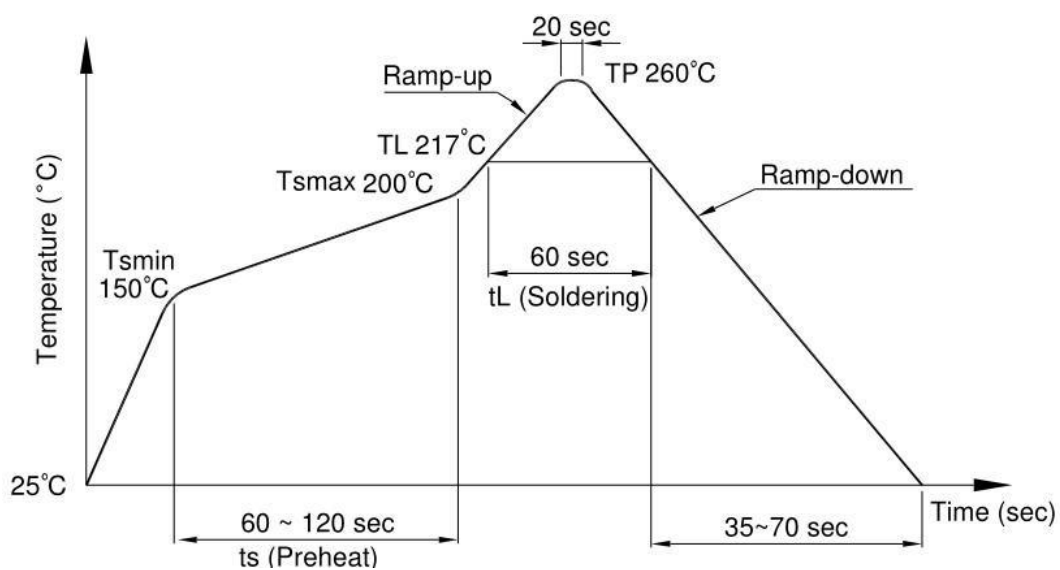
1. Material Code :Product ID.
2. P/N :Contents with "Order Information" in the specification.
3. Lot No. :Product data.
4. D/C :Product weeks.
5. Quantity :Packaging quantity.

12. Temperature Profile Of Soldering

(1).IR Reflow soldering (JEDEC-STD-020C compliant)

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

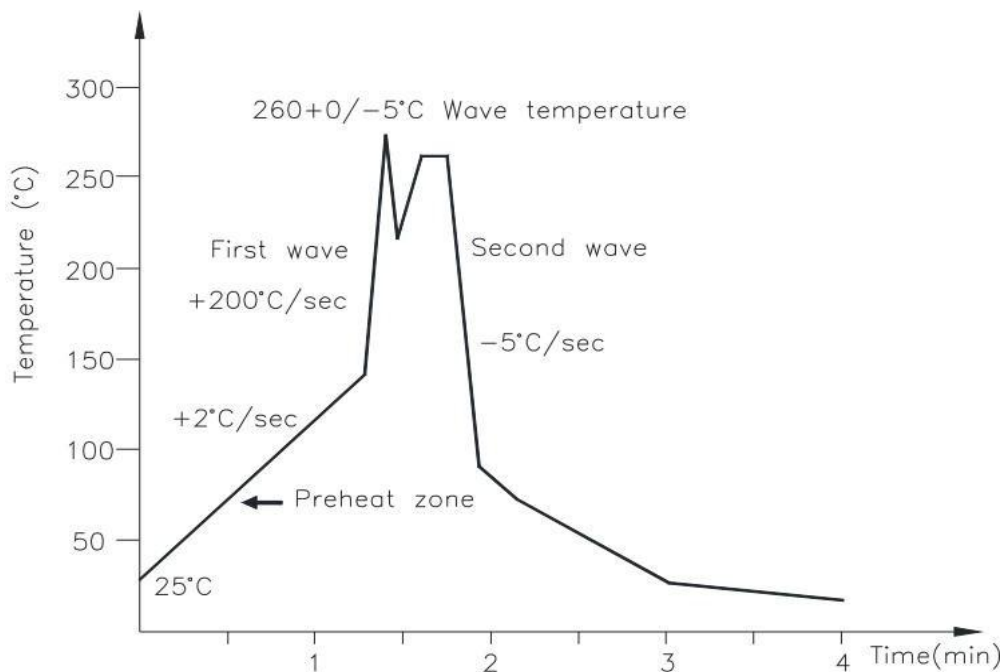
Profile item	Conditions
Preheat - Temperature Min (T Smin) - Temperature Max (T Smax) - Time (min to max) (ts)	150°C 200°C 90±30 sec
Soldering zone - Temperature (TL) - Time (t L)	217°C 60 sec
Peak Temperature	260°C
Peak Temperature time	20 sec
Ramp-up rate	3°C / sec max.
Ramp-down rate from peak temperature	3~6°C / sec
Reflow times	≤3



(3) .Wave soldering (JEDEC22A111 compliant)

One time soldering is recommended within the condition of temperature.

Temperature	260+0/-5°C
Time	10 sec
Preheat temperature	5 to 140°C
Preheat time	30 to 80 sec



(3).Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

Temperature	380+0/-5°C
Time	3 sec max

13. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Fig.1 Forward Current vs. Ambient Temperature

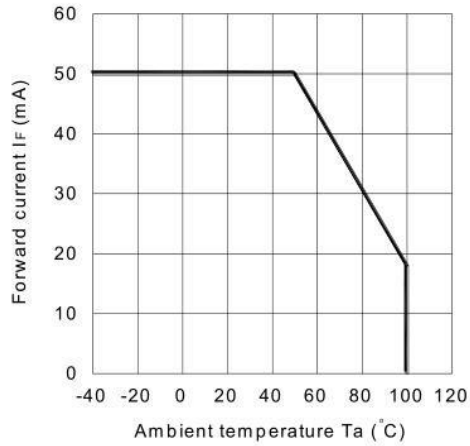


Fig.2 On-state Current vs. Ambient Temperature

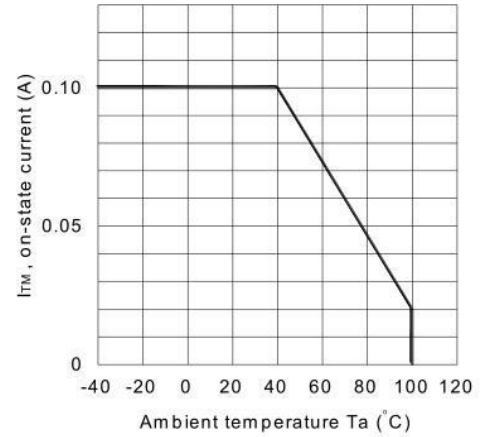


Fig.3 Minimum Trigger Current vs. Ambient Temperature

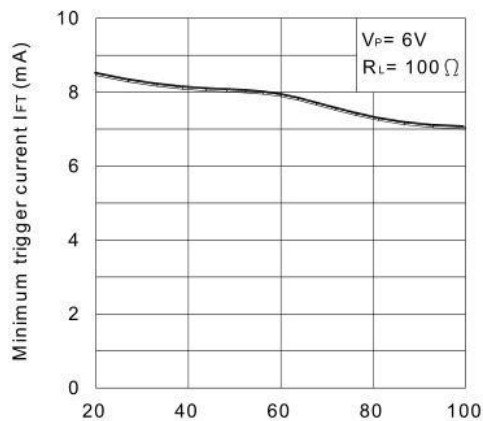


Fig.4 Forward Current vs. Forward Voltage

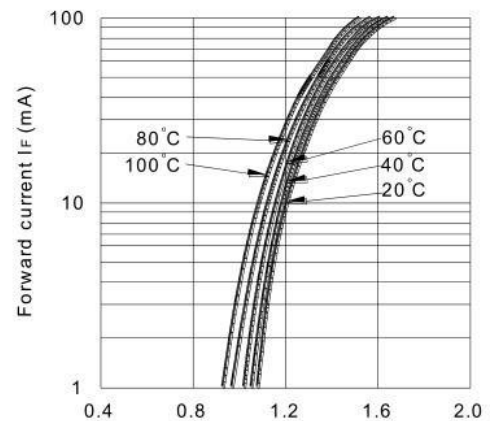


Fig.5 On-state Voltage vs. Ambient Temperature

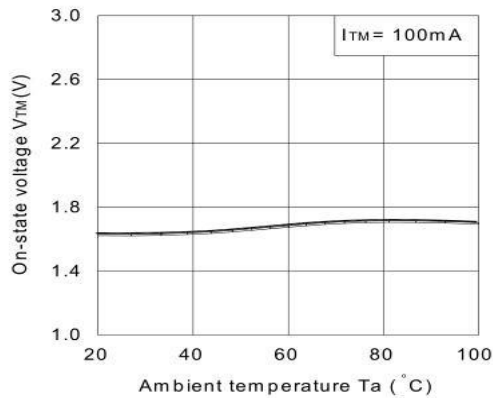


Fig.6 Holding Current vs. Ambient Temperature

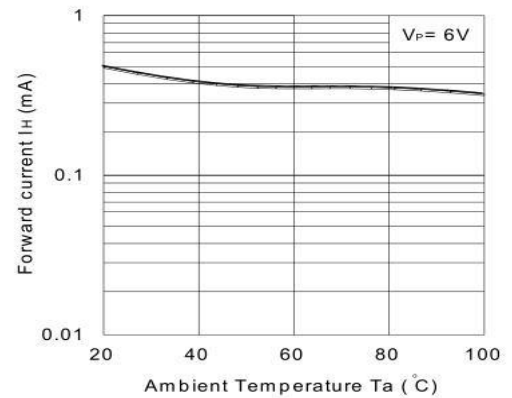


Fig.7 Repetitive Peak Off-state Current vs. Temperature

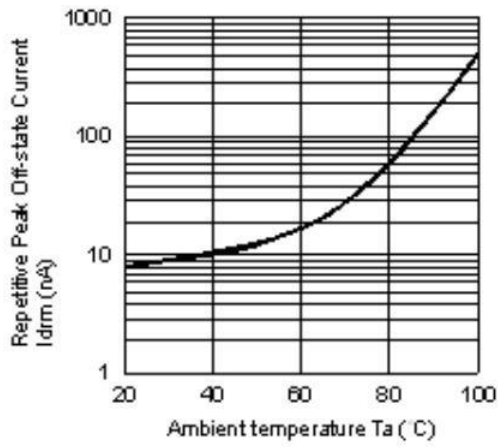
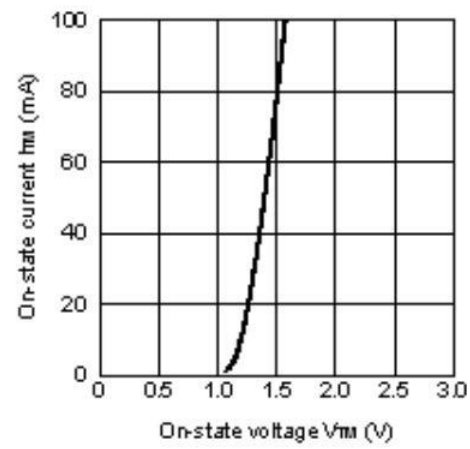


Fig.8 On-state Current vs. On-state Voltage



Basic Driver Circuit

