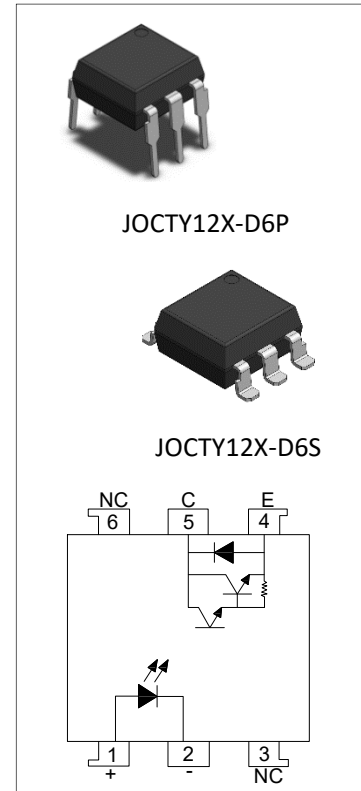


### DESCRIPTION:

The products are Darlington transistor opto-couplers in a plastic DIP6 package with different lead forming options. The device combines an AlGaAs infrared emitting diodes the emitter which is optically coupled to a silicon planar phototransistor detector. With the robust coplanar double mold structure, the device provides the most stable isolation feature. The products are widely used in switch mode power supplies, programmable controllers, household appliances and office equipment.

### MAIN FEATURES

- High isolation 5000 VRMS
- Operating temperature range -40°C to 110°C
- RoHS & REACH Compliance
- HBM: H3A; MM: M4; CDM: C3
- CQC approved
- VDE approved
- UL approved



### ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter		Symbol	Value	Unit
Input	Forward Current	$I_F$	50	mA
	Peak Forward Current	$I_{FP}$	1 <sup>①</sup>	A
	Reverse Voltage	$V_R$	6	V
	Power Dissipation	$P_D$	75	mW
Output	Collector-emitter Voltage	$V_{CEO}$	300	V
	Emitter-collector Voltage	$V_{ECO}$	0.3	V
	Collector Current	$I_C$	150	mA
	Power Dissipation	$P_C$	150	mW
Total Power Dissipation		$P_{tot}$	225	mW
Isolation Voltage		$V_{iso}$	5000 <sup>②</sup>	Vrms
Operating Temperature		$T_{opr}$	-40~+110	°C
Junction Temperature		$T_j$	125	°C

Storage Temperature	T <sub>stg</sub>	-55~+125	°C
Soldering Temperature	T <sub>sol</sub>	260	°C

**NOTE1:** 100μs pulse, 100Hz frequency

**NOTE2:** AC for 1minute, R.H.=40~60%

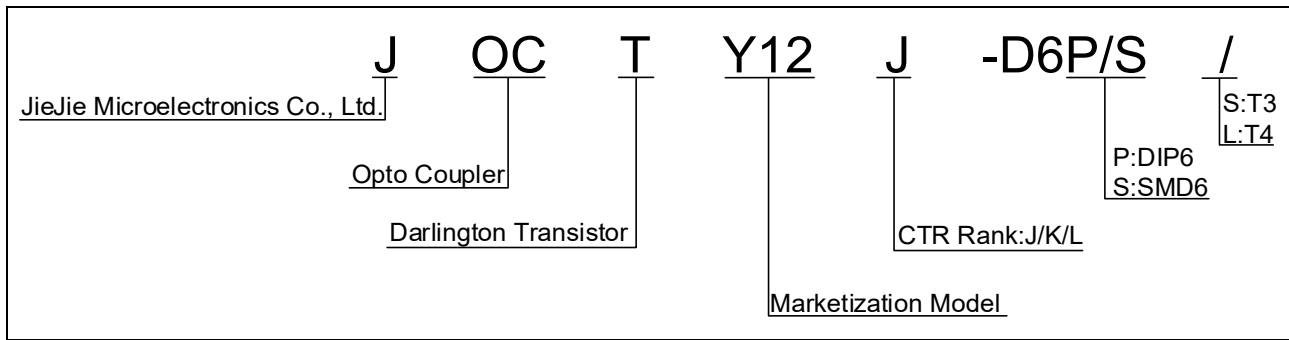
**ELECTRICAL CHARACTERISTICS** (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =10mA	-	1.2	1.5	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> =6V	-	-	1	μA
	Terminal Capacitance	C <sub>t</sub>	V=0, f=1MHz	-	10	-	pF
Output	Collector-Emitter dark current	I <sub>CEO</sub>	V <sub>CE</sub> =200V, I <sub>F</sub> =0	-	-	200	nA
	Collector-Emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> =0.1mA I <sub>F</sub> =0	300	-	-	V
	Emitter-Collector breakdown voltage	BV <sub>ECO</sub>	I <sub>E</sub> =0.1mA I <sub>F</sub> =0	0.3	-	-	V
Transfer Characteristics	Current transfer ratio	CTR <sup>①</sup>	I <sub>F</sub> =1mA V <sub>CE</sub> =2V	1000	-	7500	%
	Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> =1mA I <sub>C</sub> =10mA	-	-	1	V
	Isolation resistance	R <sub>io</sub>	DC500V 40~60%R.H.	10 <sup>12</sup>	-	-	Ω
	Floating Capacitance	C <sub>io</sub>	V=0, f=1MHz	-	0.8	-	pF
	Rise Time	t <sub>r</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =10mA R <sub>L</sub> =100Ω	-	40	-	μs
	Fall Time	t <sub>f</sub>		-	15	-	μs
	Response Time	t <sub>on</sub>		-	50	-	μs
t <sub>off</sub>		-		15	-	μs	

**NOTE1:** Rank Table of Current Transfer Ratio (Temperature=25°C)

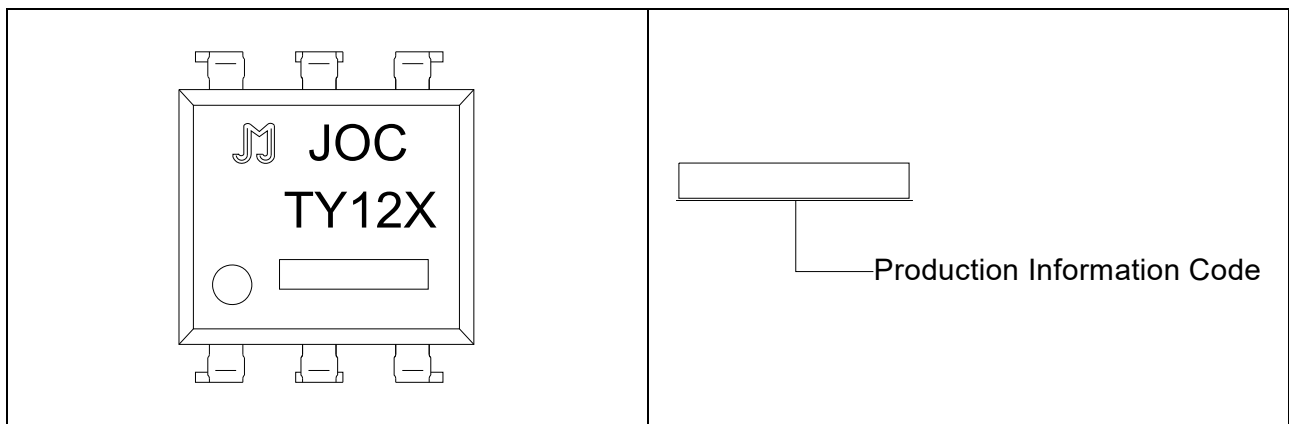
Grade Sign	Test Condition	Min. (%)	Max. (%)
J	I <sub>F</sub> =140μA, V <sub>CE</sub> =2V	-	40
	I <sub>F</sub> =300μA, V <sub>CE</sub> =2V	500	-
K	I <sub>F</sub> =1mA, V <sub>CE</sub> =2V	1000	7500
L	I <sub>F</sub> =1mA, V <sub>CE</sub> =1V	2000	7500

**ORDERING INFORMATION**



Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity –Outer box
DIP	60 Units/Tube	40 Tubes/Inner box	5 Inner box/Outer box =12k Units
SMD	1200 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box =12k Units

**MARKING**



Characteristics Curves

FIG.1: Max. Allowable LED Forward Current vs. Ambient Temperature

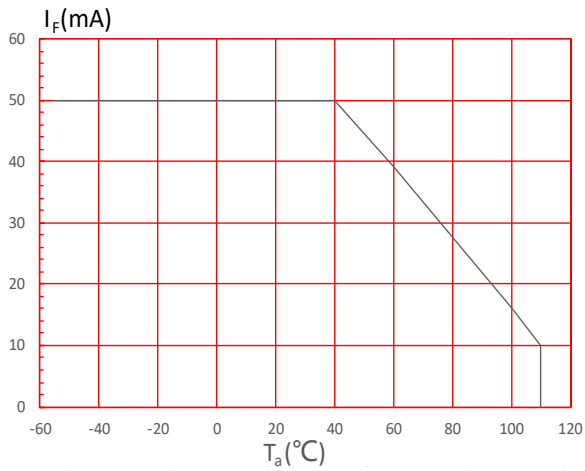


FIG.2: Collector Power Dissipation vs. Ambient Temperature

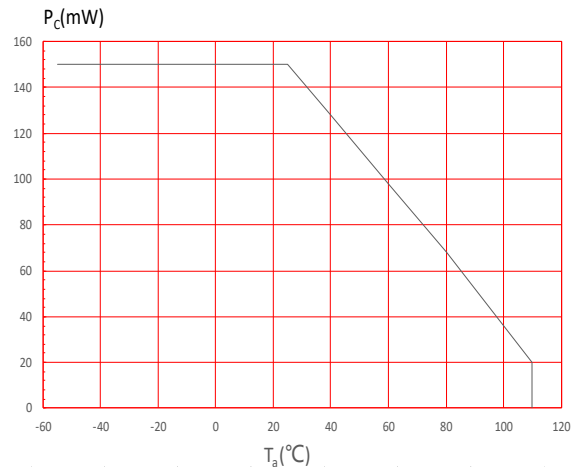


FIG.3: Forward Current vs. Forward Voltage

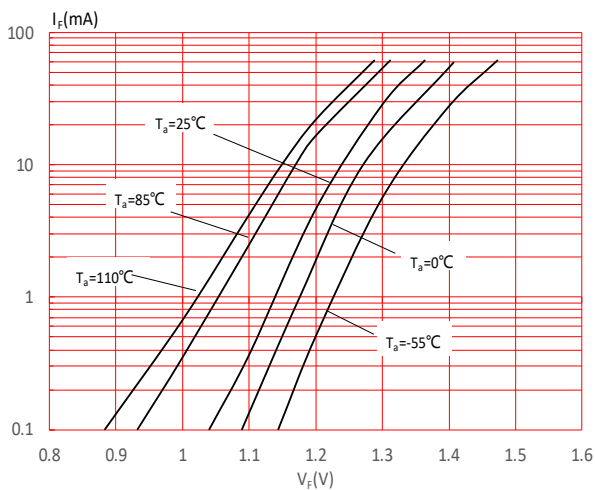
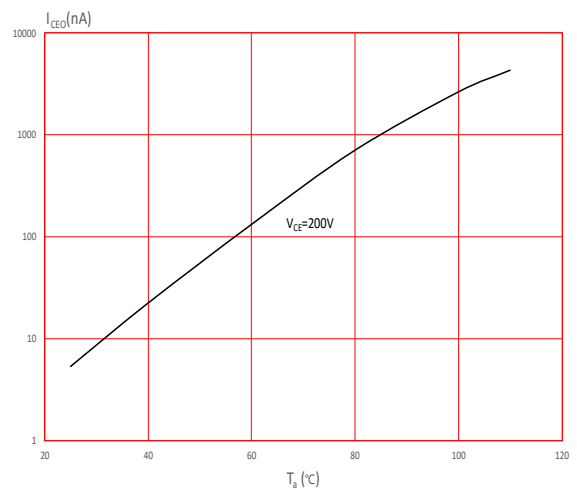


FIG.4: Collector Dark Current vs. Ambient Temperature



Test Circuits

FIG.5: Test Circuits of Propagation Delay Time

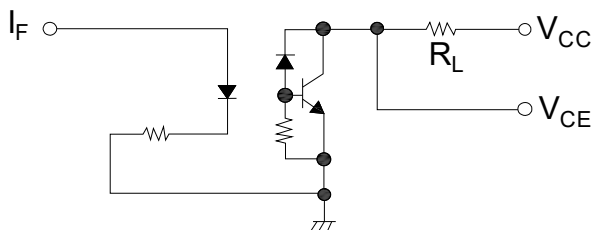
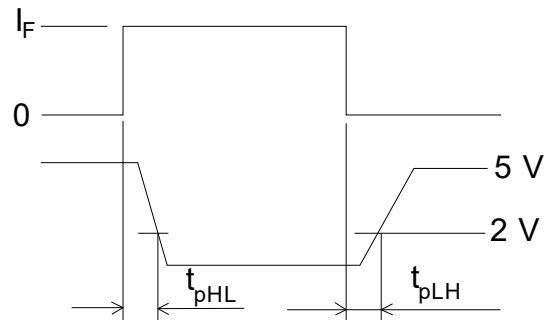
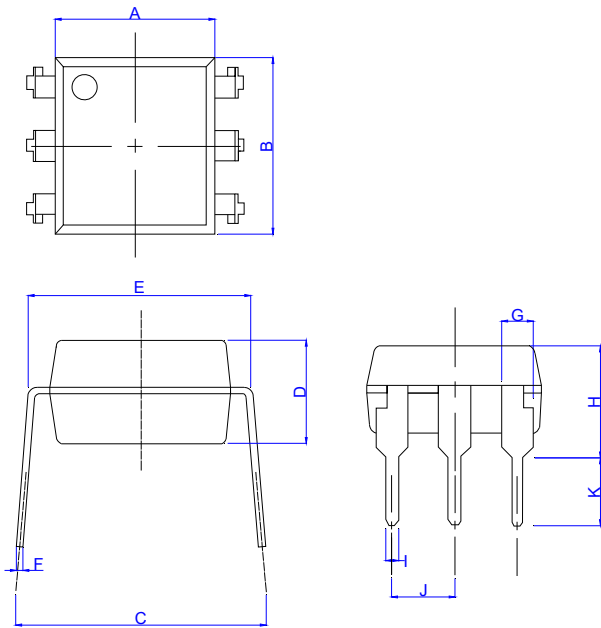


FIG.6: Curves of Propagation Delay Time



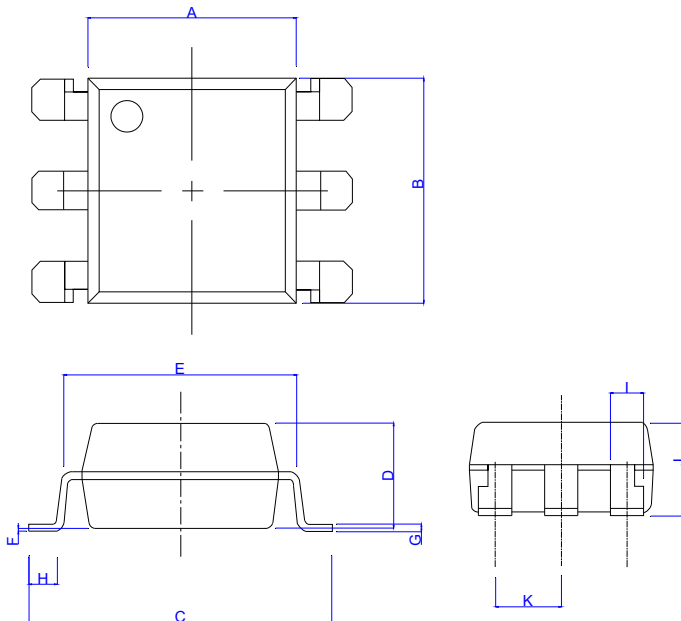
## Package Dimension (Unit: mm)

Standard DIP Type:



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.60	0.244		0.260
B	6.92		7.32	0.272		0.288
C	7.15		8.95	0.281		0.352
D	3.20		3.60	0.126		0.142
E	7.32		7.92	0.288		0.312
F	0.15		0.35	0.006		0.014
G	1.15		1.35	0.045		0.053
H	3.90		4.50	0.154		0.177
I	0.40		0.60	0.016		0.024
J	2.29		2.79	0.090		0.110
K	2.24		3.24	0.088		0.128

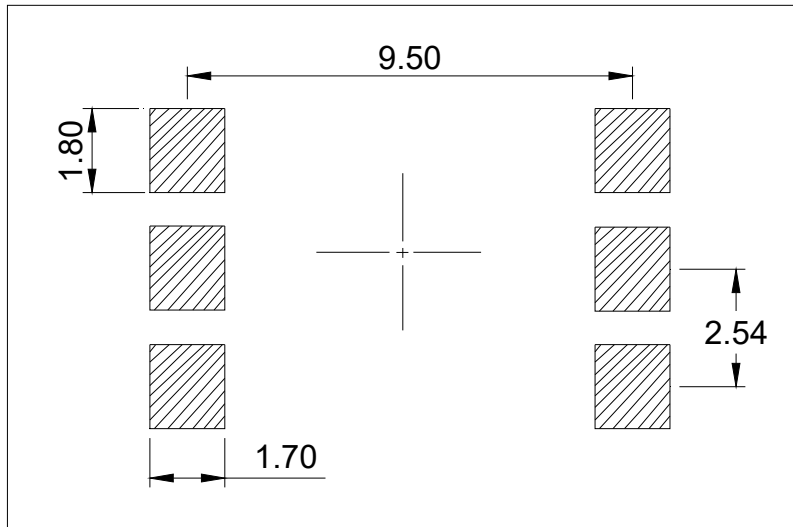
Option SMD Type:



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.60	0.244		0.260
B	6.92		7.32	0.272		0.288
C	9.50		10.50	0.375		0.413
D	3.20		3.60	0.126		0.142
E	7.32		7.92	0.288		0.312
F	0.05		0.35	0.002		0.014
G	0.16		0.36	0.006		0.014
H	0.60		1.40	0.024		0.055
I	0.90		1.50	0.035		0.059
J	3.30		3.90	0.130		0.154
K	2.29		2.79	0.090		0.110

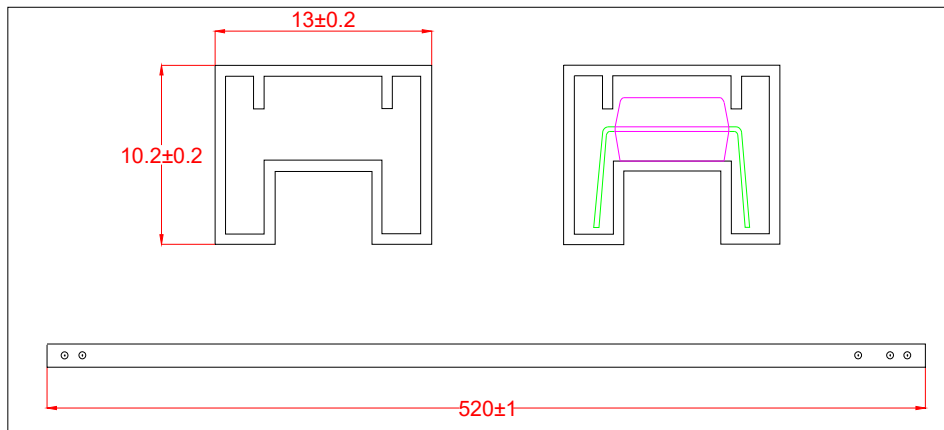
**RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)**

Option SMD



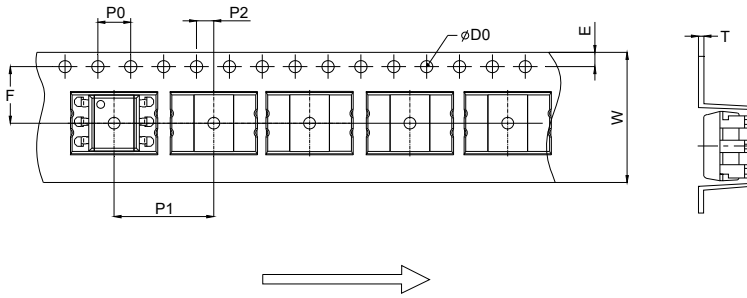
**TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

Standard DIP



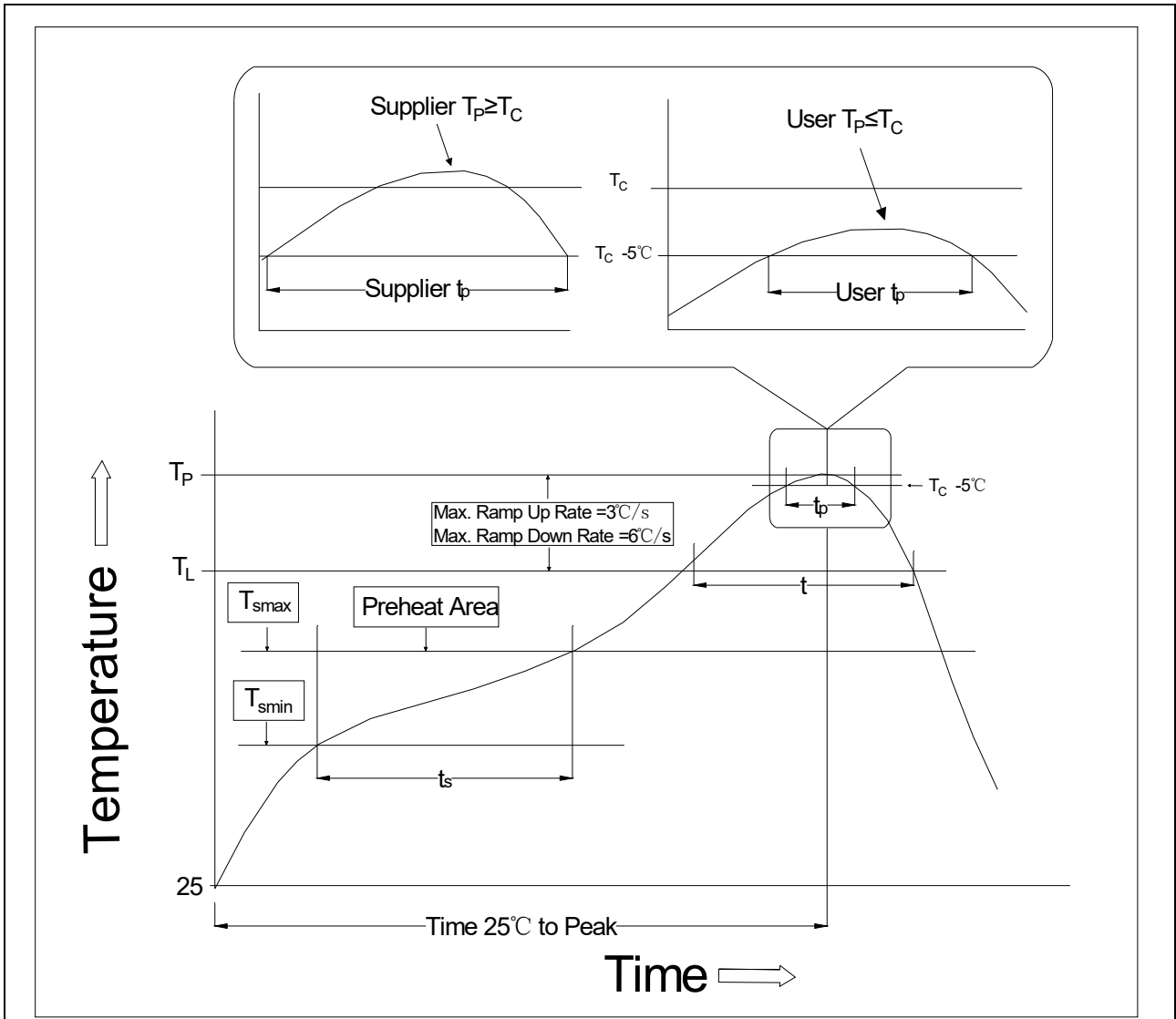
**CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

Option S/L



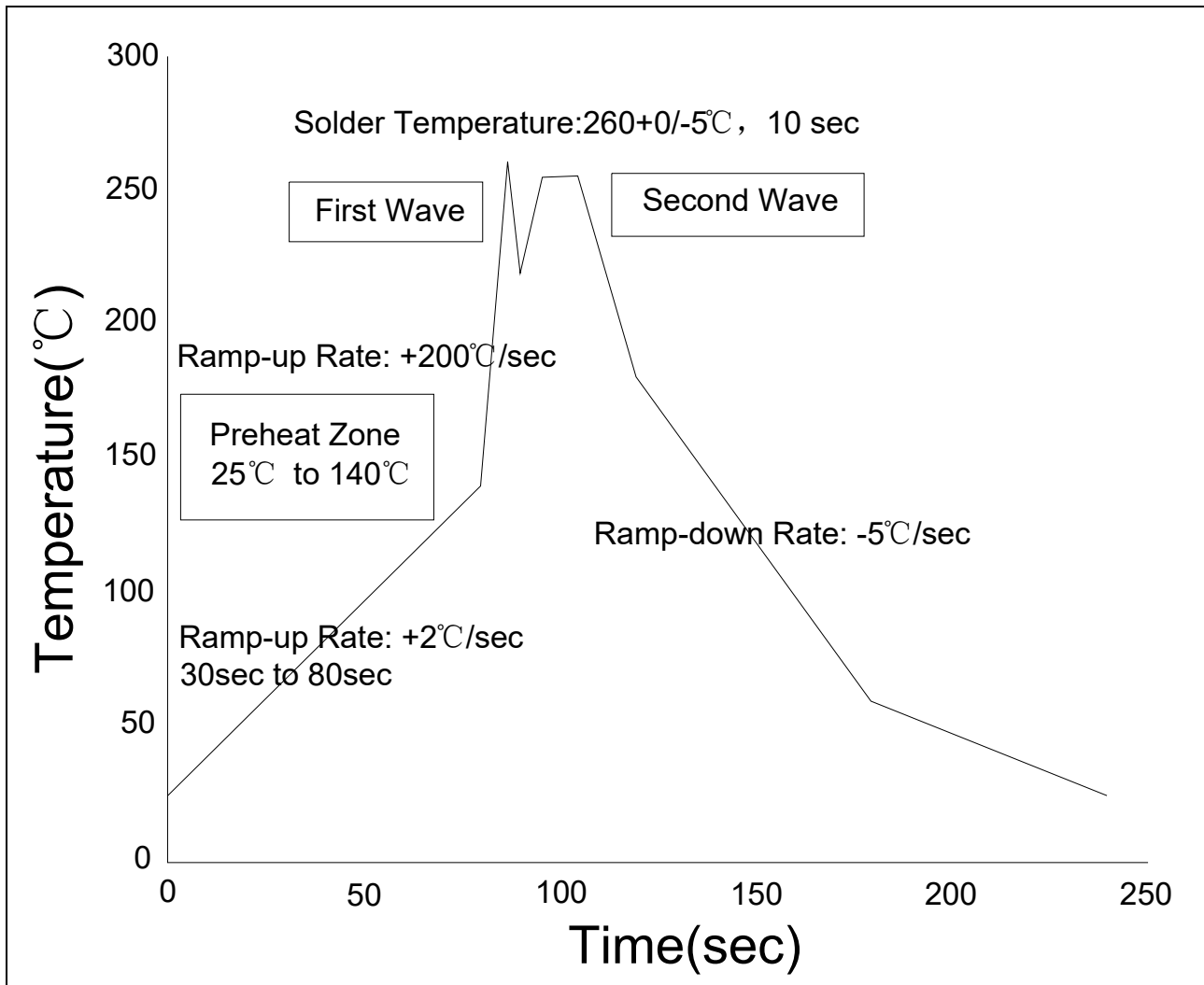
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60	0.059	0.063	
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.35	0.40	0.45	0.014	0.016	0.018
W	15.70	16.00	16.30	0.618	0.630	0.642

REFLOW INFORMATION



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T <sub>smin</sub> )	100°C	150°C
Temperature Max. (T <sub>smax</sub> )	150°C	200°C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60-120 seconds	60-120 seconds
Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )	3°C/second max.	3°C/second max.
Liquidus Temperature (T <sub>L</sub> )	183°C	217°C
Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C+0°C/-5°C	260°C+0°C/-5°C
Time (t <sub>P</sub> ) within 5°C of 260°C	10 seconds	10 seconds
Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )	3-6°C/second	3-6°C/second
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

**WAVE SOLDERING**



**HAND SOLDERING BY SOLDERING IRON**


Soldering Temperature	$360 \pm 5^{\circ}\text{C}$
Soldering Time	3s max.

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.
2. Avoid direct contact between the epoxy body and any tools or surfaces exceeding its maximum storage temperature.
3. Application of pressure on the epoxy body is prohibited at elevated temperatures. In specific scenarios, any applied force must not exceed 2.5N.
4. Ensure the component has cooled to ambient temperature before proceeding with any subsequent manufacturing steps.
5. The component has a shelf life of one year when stored under standard conditions.
6. Recommend storage Temp.: 0~40°C;  
Recommend storage humidity: <60%;  
MSL level: MSL 1

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