

JOR21XD6 Series

Rev.A.1.0

DESCRIPTION:

The products are 6-pin optical relays. The device consists of an AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit in a plastic DIP6 package with different lead forming options. The detector consists of a high-speed photovoltaic diode array and driver circuitry. The products are widely used in measuring and testing equipment, security and disaster prevention market, industrial machinery and equipment.

MAIN FEATURES

High isolation 5000 Vrms

Wide variation of load voltage 60V to 600V

Operating temperature range -40°C to 110°C

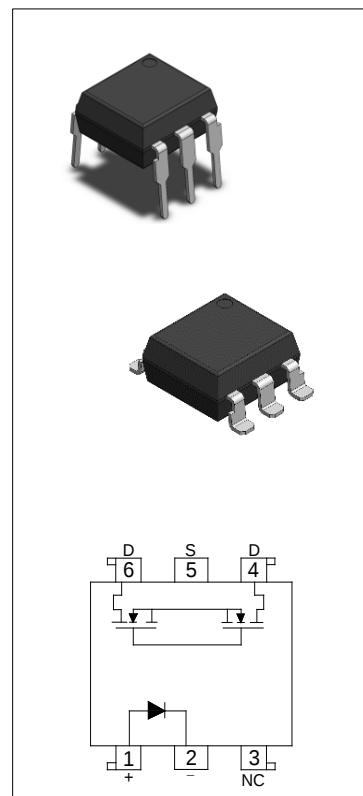
REACH & RoHS compliance

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 ^①	A
	Reverse Voltage		V _R	6	V
	Input Power Dissipation		P _D	75	mW
Output	Load Voltage	JOR212D6	V _O	60	V
		JOR213D6		100	
		JOR214D6		400	
		JOR216D6		600	
	Continuous load current	JOR212D6	I _O	2	A
		JOR213D6		1.25	
		JOR214D6		0.1	
		JOR216D6		0.05	
	Output Power Dissipation		P _O	300	mW
Total Power Dissipation			P _{tot}	375	mW

Isolation Voltage	V_{iso}	5000 ^②	Vrms
Operating Temperature	T_{opr}	-40~110	°C
Junction Temperature	T_j	125	°C
Storage Temperature	T_{stg}	-40~125	°C
Soldering Temperature	T_{sol}	260	°C

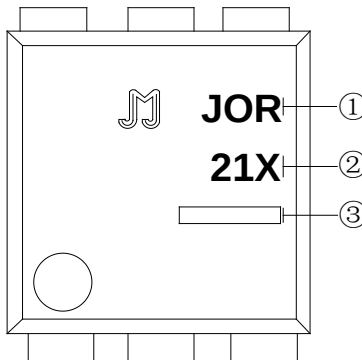
NOTE1 : 100μs pulse, 100Hz frequency

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

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter			Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage		V_F	$I_F=10mA$	-	1.3	1.5	V
	Reverse Current		I_R	$V_R=6V$	-	-	1	μA
	Action Current		$I_{F(ON)}$	$I_O=I_{O(MAX)}$	-	1.5	3	mA
	Reset Current		$I_{F(OFF)}$	$I_O=I_{O(MAX)}$	0.4	0.8	-	mA
Output	On Resistance	JOR212D6	R_{on}	$I_F=5mA$ $I_O=Max.$ Within 1s on time	-	0.05	0.1	Ω
		JOR213D6			-	0.15	0.4	
		JOR214D6			-	20	30	
		JOR216D6			-	30	40	
	Off State Leakage Current		I_{Leak}	$I_F=0mA$, $V_O=Max.$	-	-	1	μA
	Output Capacitance		C_{OFF}	$V_{OFF}=0V$, $f_0=1MHz$	10	-	1000	pF
Switching Characteristics	Isolation Resistance		R_{ISO}	DC500V 40~60%R.H.	10^{12}	-	-	Ω
	Floating Capacitance		C_{IO}	$V=0$, $f=1MHz$	-	0.8	-	pF
	Turn On Time	JOR212D6	t_{on}	$I_F=5mA$, $I_O=Max.$	-	1	2	ms
		JOR213D6			-	0.6	2	
		JOR214D6			-	0.21	0.5	
		JOR216D6			-	0.18	0.5	
	Turn Off Time	JOR212D6	t_{off}	$I_F=5mA$, $I_O=Max.$	-	0.2	1	ms
		JOR213D6			-	0.2	1	
		JOR214D6			-	0.2	1	
		JOR216D6			-	0.2	1	

ORDERING AND MARKING INFORMATION

MARKING INFORMATION			
		① : Company Abbr. ② : Part Number & Rank ③ : Production Information Code	
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

Characteristics Curves

FIG.1: LED Dropout Voltage vs. Ambient Temperature

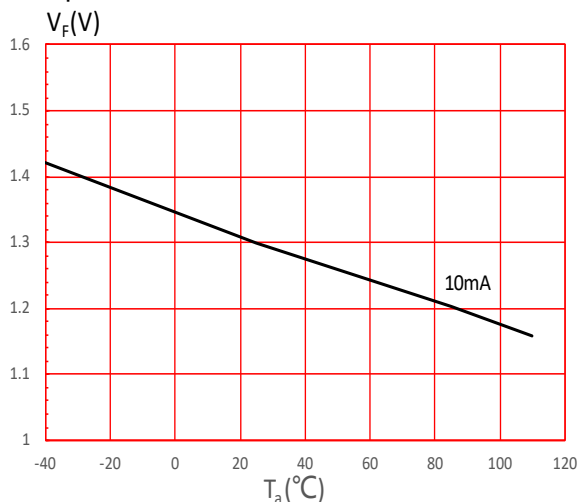


FIG.3: On Resistance vs. Ambient Temperature

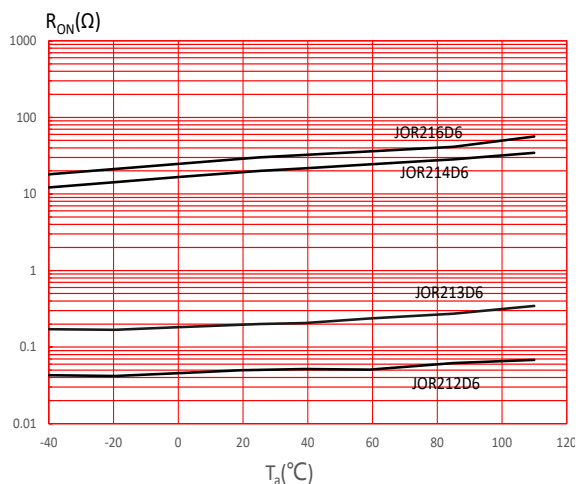


FIG.5: LED Operate Current vs. Ambient Temperature

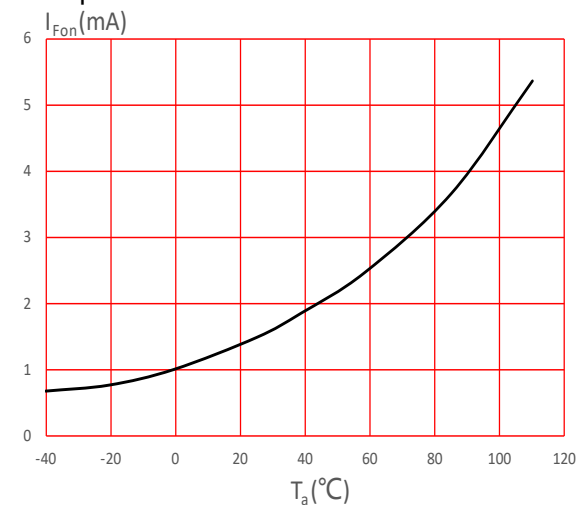


FIG.2: Output Current vs. Output Voltage

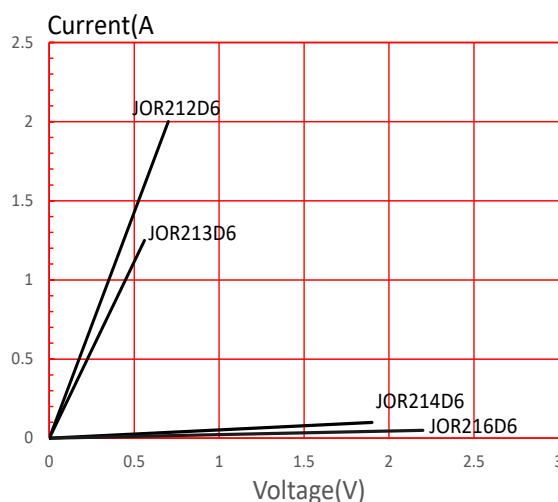


FIG.4: Load Current vs. Ambient Temperature

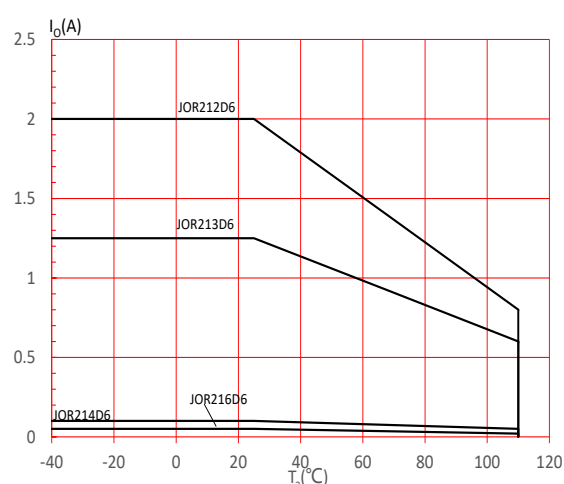


FIG.6: LED Turn Off Current vs. Ambient Temperature

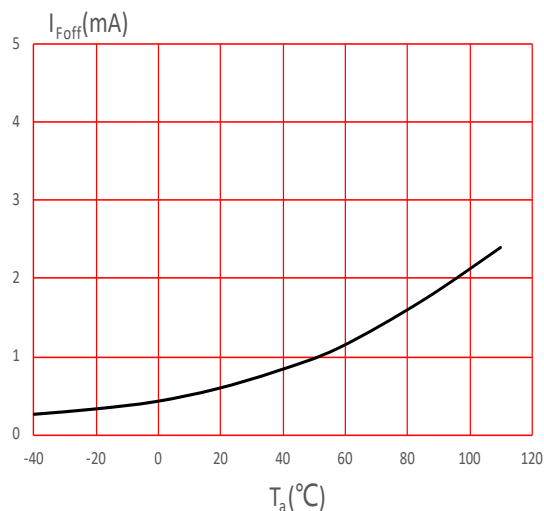


FIG.7: Turn On Time vs. Ambient Temperature

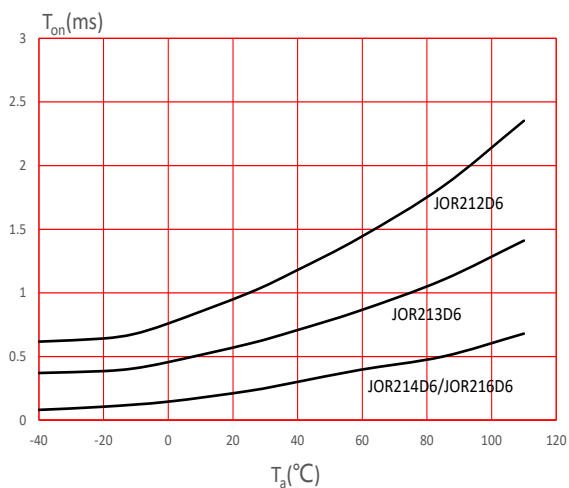


FIG.8: Turn Off Time vs. Ambient Temperature

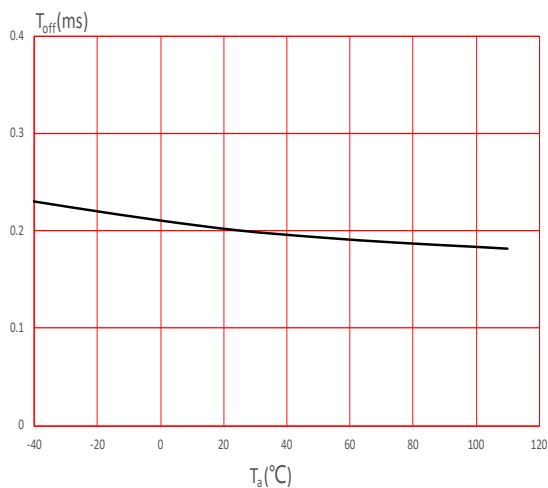


FIG.9: Turn On Time vs. LED Forward Current

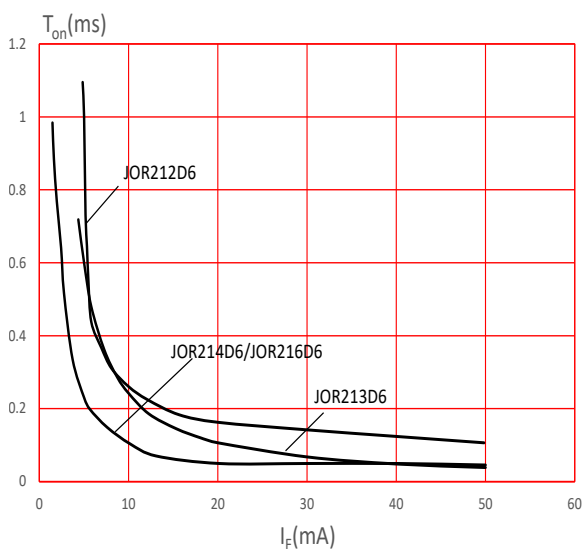


FIG.10: Turn Off Time vs. LED Forward Current

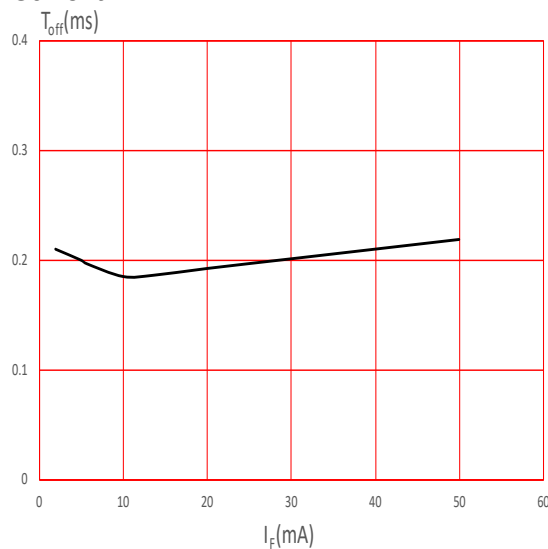


FIG.11: Off State Leakage Current vs. Load Voltage

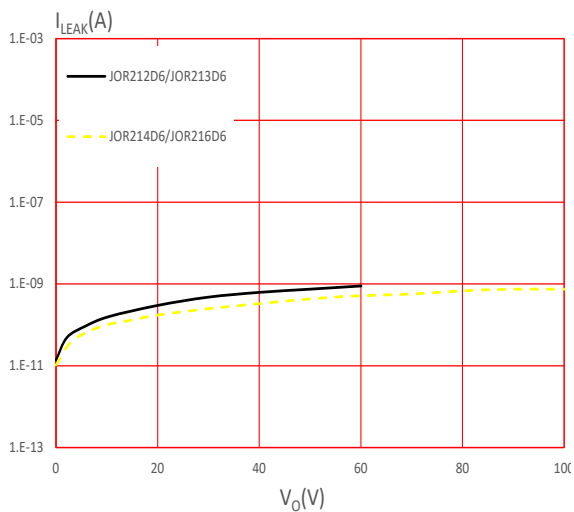
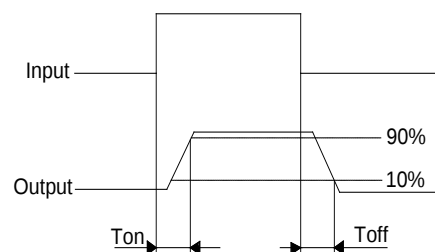
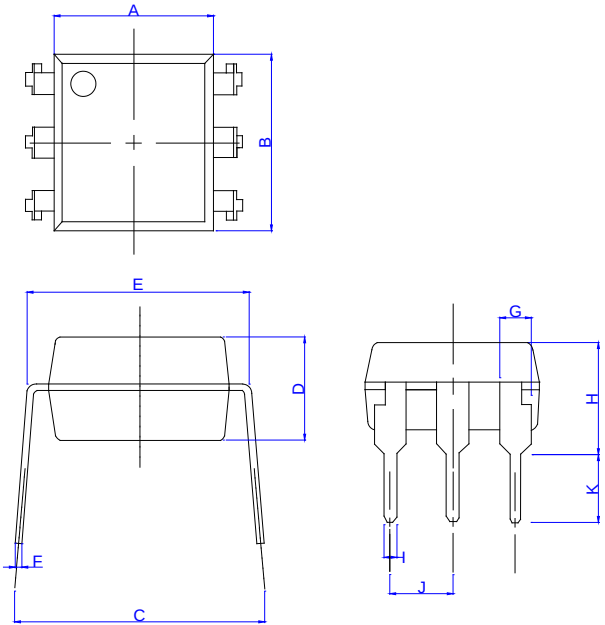


Fig.12: Turn on/Turn off time



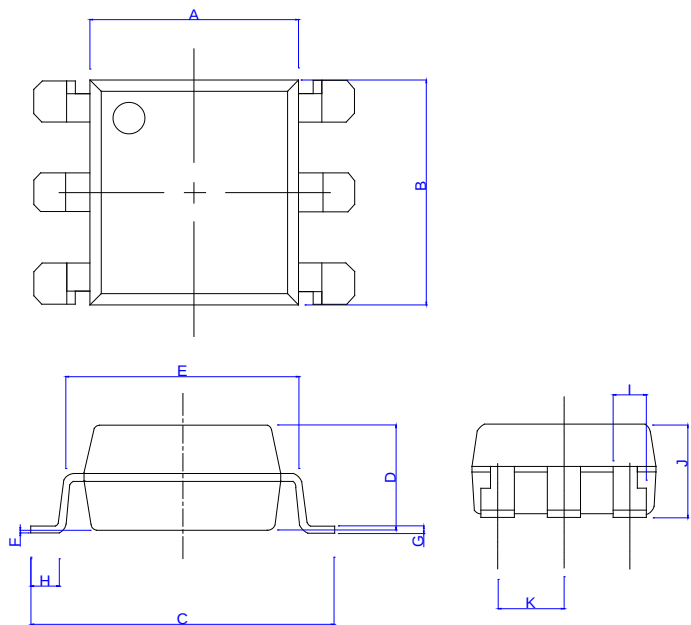
Package Dimension (Unit: mm)

Standard DIP Type:

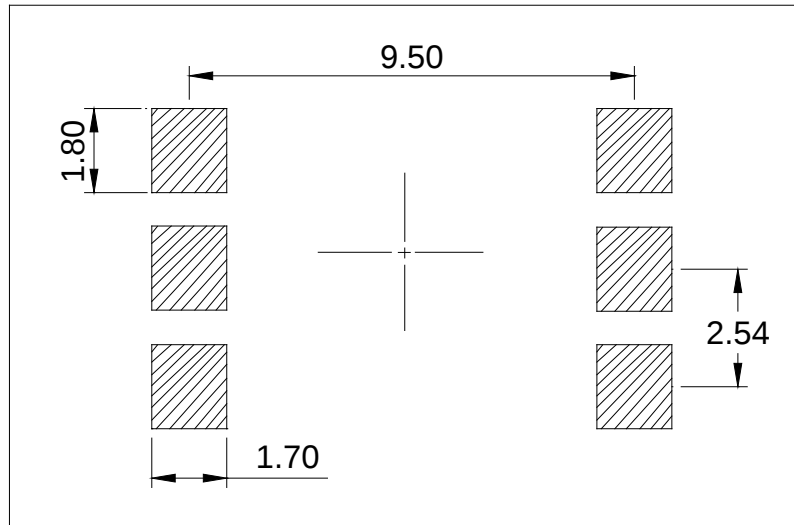
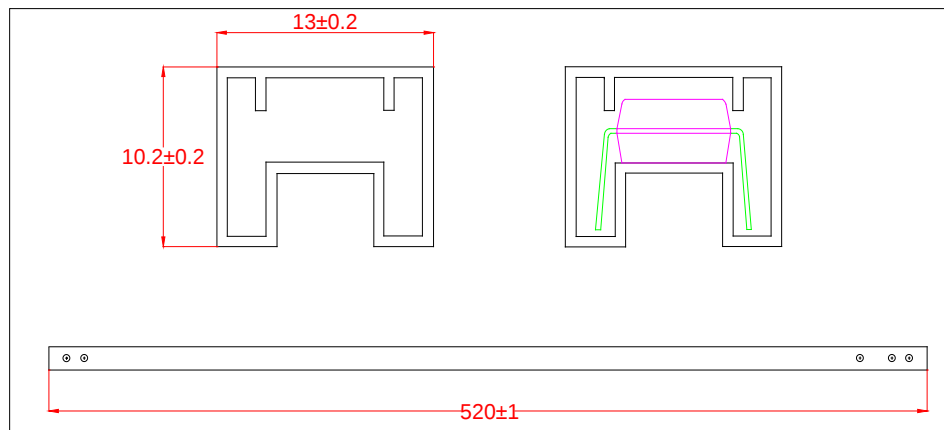


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.60	0.244		0.260
B	6.92		7.32	0.272		0.288
C	7.15		8.95	0.281		0.352
D	3.20		3.60	0.126		0.142
E	7.32		7.92	0.288		0.312
F	0.15		0.35	0.006		0.014
G	1.15		1.35	0.045		0.053
H	3.90		4.50	0.154		0.177
I	0.40		0.60	0.016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

Option SMD Type:

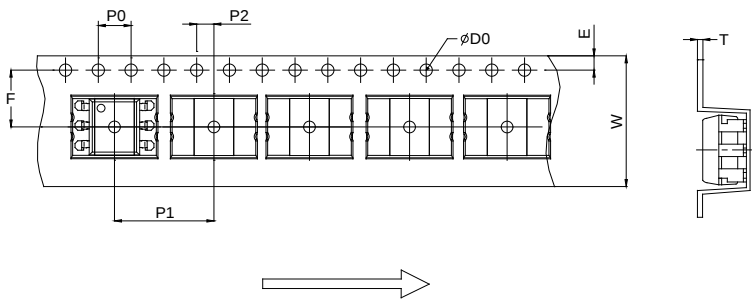


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.60	0.244		0.260
B	6.92		7.32	0.272		0.288
C	9.50		10.50	0.375		0.413
D	3.20		3.60	0.126		0.142
E	7.32		7.92	0.288		0.312
F	0.05		0.35	0.002		0.014
G	0.16		0.36	0.006		0.014
H	0.60		1.40	0.024		0.055
I	0.90		1.50	0.035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

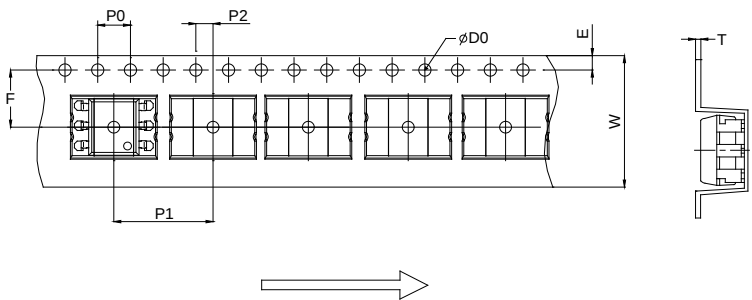
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S



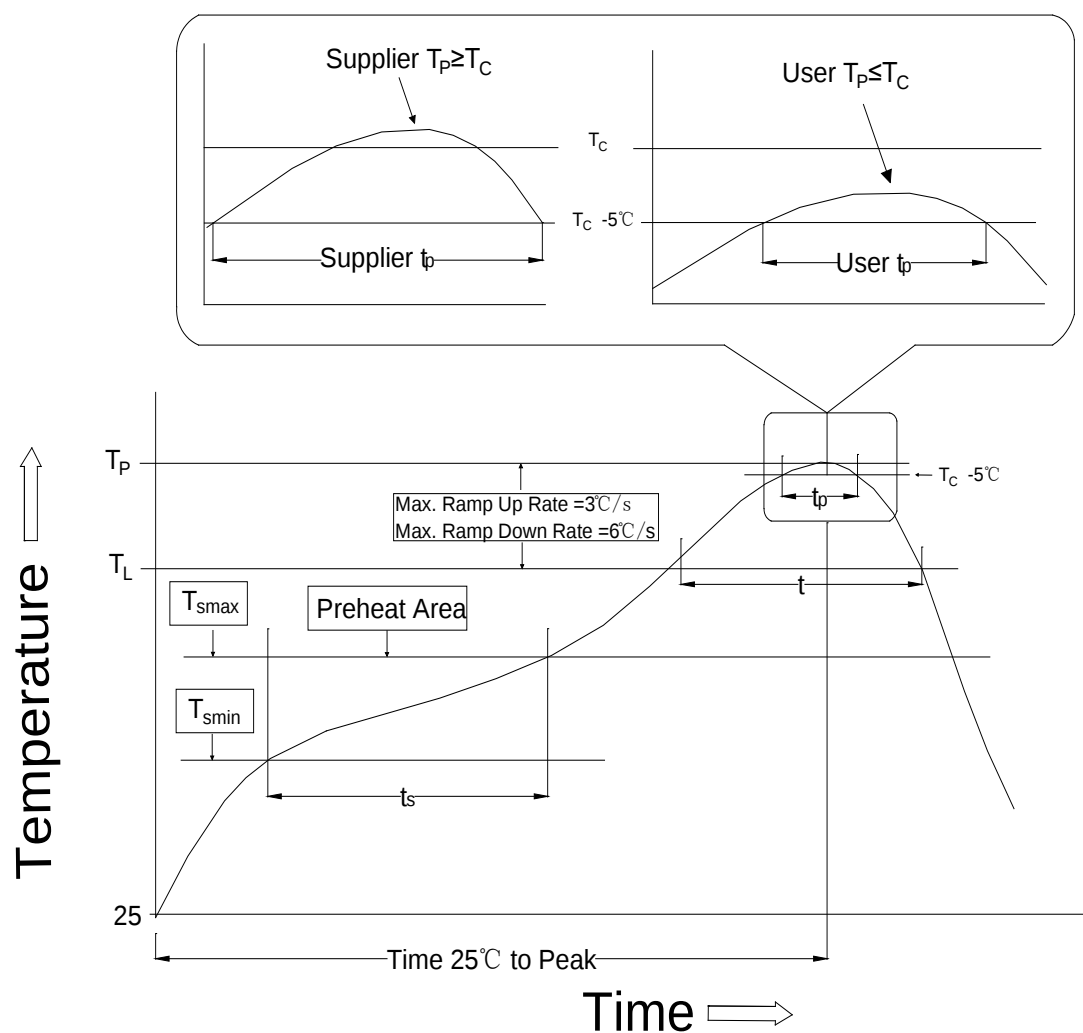
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.35	0.40	0.45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

Option L



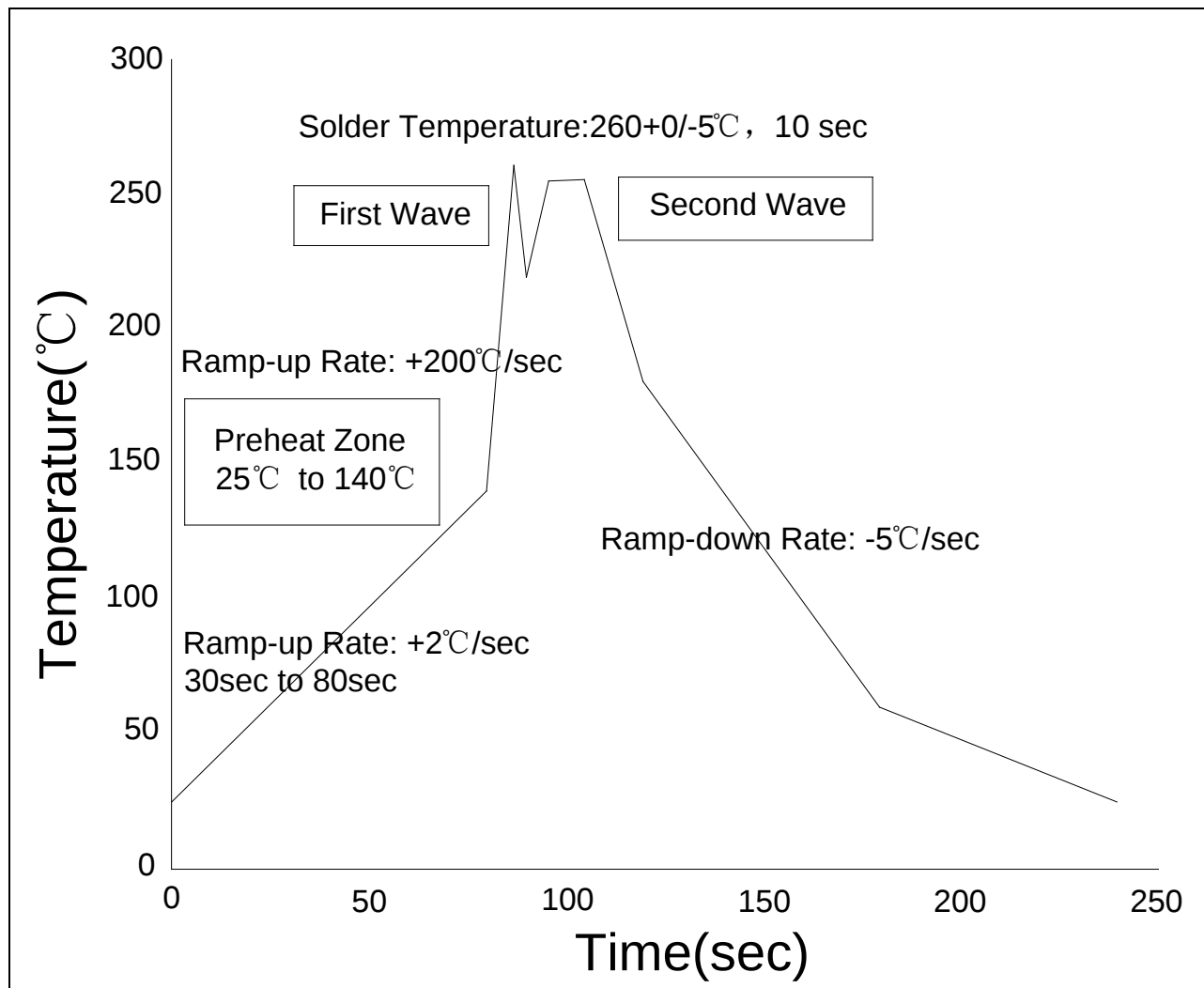
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.35	0.40	0.45	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_{smin})	100°C	150°C
Temperature Max. (T_{smax})	150°C	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidus Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60-150 seconds	60-150 seconds
Peak Body Package Temperature	235°C+0°C/-5°C	260°C+0°C/-5°C
Time (t_P) within 5°C of 260°C	10 seconds	10 seconds
Ramp-down Rate (T_P to T_L)	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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