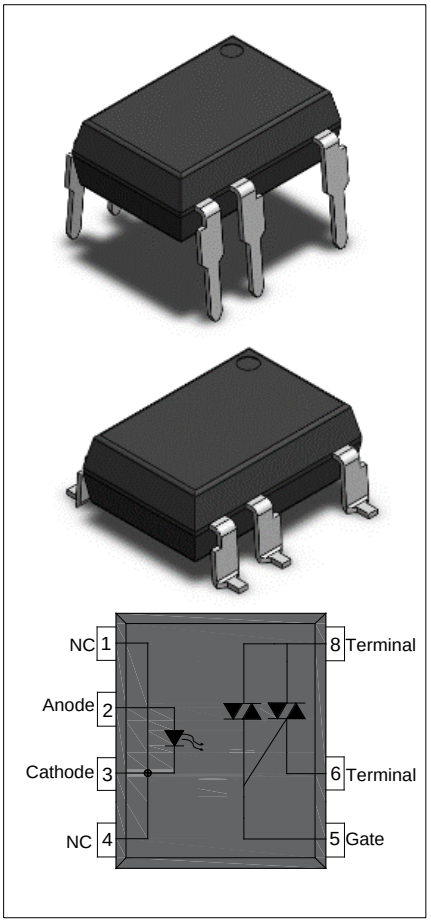
JORX223 Series

Rev.A.1.0

DESCRIPTION:

The JORX223 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon random-phase photo triac to drive a power triac in a plastic DIP7 package with different lead forming options. The products are widely used in solenoid/valve controls, lighting controls, motor controls, temperature controls, static AC power switches, solid state relays, interfacing microprocessors to 265 V_{AC} peripherals.



MAIN FEATURES:

High isolation 5000 Vrms
DC input with triac output
Operating temperature range - 40°C to 85 °C
REACH & RoHS compliance
MSL class 2
HBM: H3A; MM: M4
CQC approved
VDE approved
UL approved

ABSOLUTE MAXIMUM RATINGS (Temperature=25°C)

Parameter			Symbol	Value	Unit
Input	Forward Current		I_F	60	mA
	Peak Forward Current		I_{FP}	1①	A
	Reverse Voltage		V_R	6	V
Output	Repetitive peak off-state voltage		V_{DRM}	600	V
	Repetitive peak off-state voltage		V_{RRM}	600	V
	On-state RMS Current	JOR0223	$I_{T(RMS)}$	0.3	A
		JOR1223		0.6	
		JOR2223		0.9	
		JOR3223		1.2	
	Non repetitive surge peak on-state current	JOR0223	I_{TSM}	3	A
		JOR1223		6	

	(full cycle , t_p=20ms)	JOR2223		9	
		JOR3223		12	
Isolation Voltage			V_{iso}	5000②	Vrms
Operating Temperature			T_{opr}	-40~85	℃
Storage Temperature			T_{stg}	-40~125	℃
Soldering Temperature			T_{sol}	260③	℃

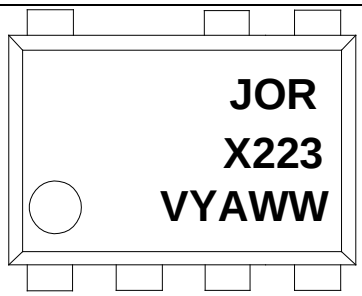
NOTE1: 100μs pulse, 100Hzfrequency
NOTE2: AC for 1minute, R.H.=40~60%
NOTE3: For 10 seconds

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F=20mA	-	1.25	1.4	V
	Reverse Current	I_R	V_R=6V	-	-	1	μA
Output	Peak Off-state Current, Either Direction	I_{DRM}	V_{DRM} / V_{RRM} =600V, I_F=0	-	-	10	μA
		I_{RRM}		-	-	10	
	Peak On-state Voltage, Either Direction	V_{TM}	I_{TM}= I_{TM} Rated	-	-	2	V
	Critical Rate of Rise of Off-state voltage	dV/dt	V_D=400V, Gate Open I_F=0, T_j=85℃	1000	-	-	V/μs
Transfer Characteristics	LED Trigger Current	I_{FT}	Terminal Voltage=6V R_L=100Ω	-	-	10	mA
	Holding Current	I_H	V_D=6V	-	-	25	mA
	Isolation Resistance	R_{ISO}	DC500V 40~60%R.H.	10^{12}	10^{14}	-	Ω
	Response Time	t_{on}	V_D=6V, R_L=100Ω, I_F=20mA	-	20	100	μs

ORDERING AND MARKING INFORMATION

MARKING INFORMATION



JOR : Company Abbr.
X223 : Part Number & Rank
V : VDE Option
Y : Fiscal Year
A : Manufacturing Code
WW : Work Week

ORDERING INFORMATION

JORX223(Y)(Z)-GV

JOR – Company Abbr.
X223 – Part Number & Rank (X=0/1/2/3)
Y – Lead Form Option (SL/None)
Z – Tape and Reel Option (T1/T2)
G – Green Option (G or None)
V – VDE Option (V or None)

Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity –Outer box
None	50 Units/Tube	27 Tubes/Inner box	12 Inner box/Outer box =16.2k Units
SL(T1)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box =15k Units
SL(T2)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box =15k Units

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

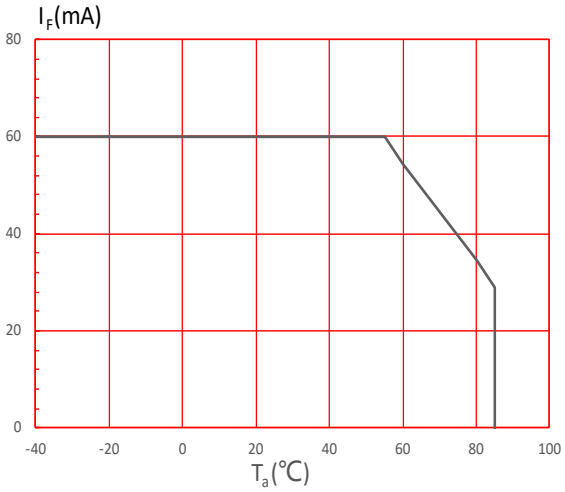


FIG.2: On-state Terminal Current vs. Ambient Temperature

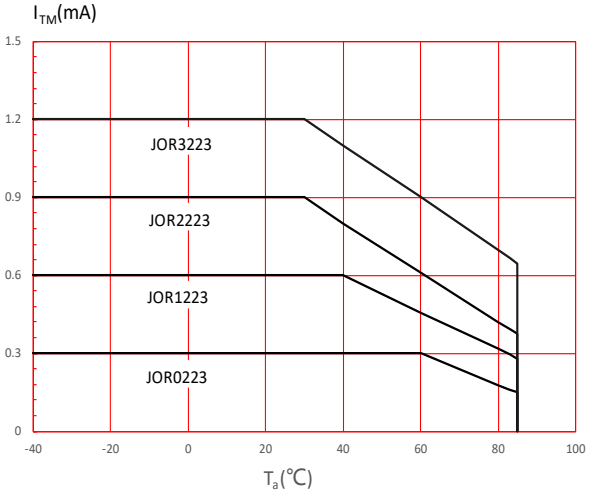


FIG.3: Forward Current vs. Forward Voltage

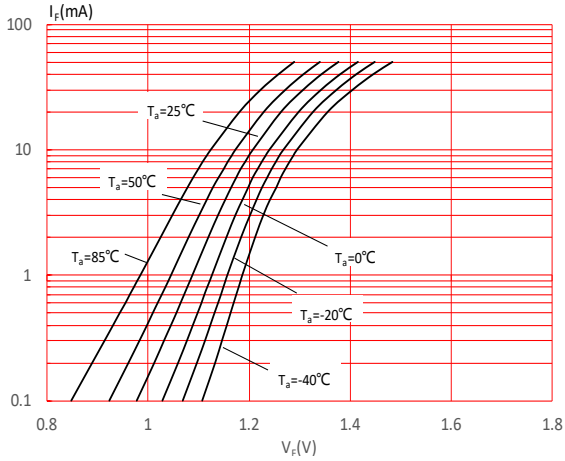


FIG.4: Forward Voltage vs. Ambient Temperature

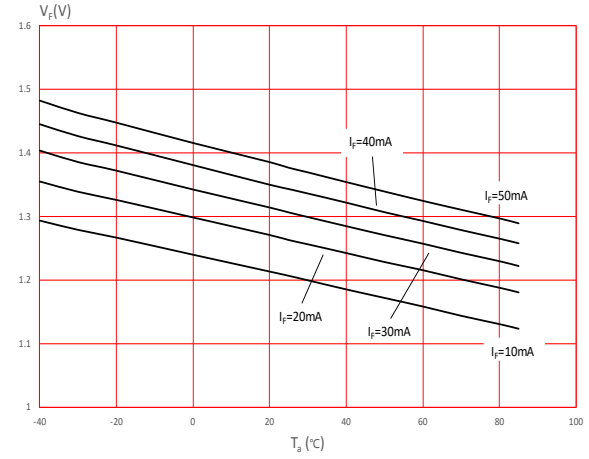


FIG.5: Off-state Terminal Current vs Off-state Terminal Voltage

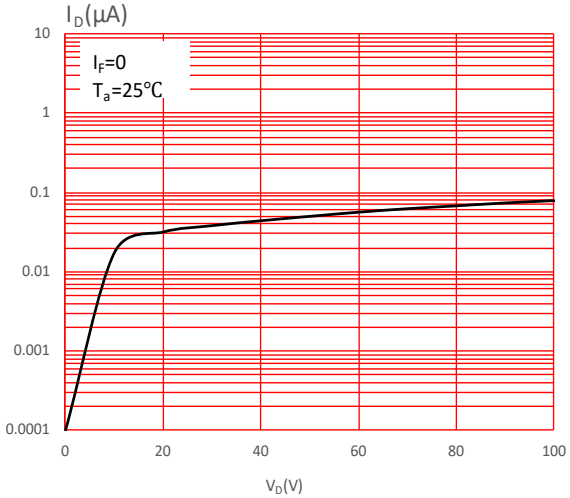


FIG.6: Normalized Trigger Current vs. Ambient Temperature

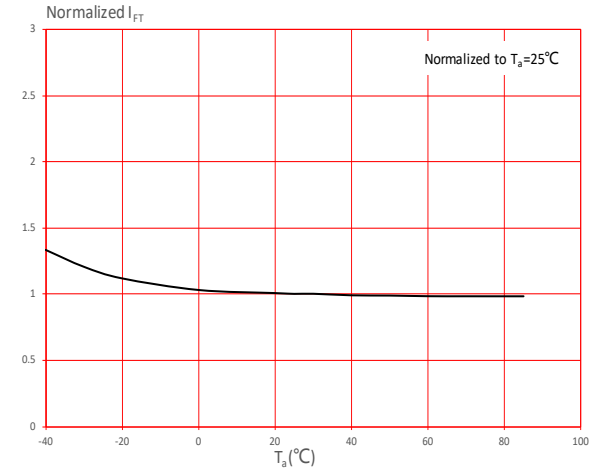


FIG.7: On-state Terminal Voltage vs. Ambient Temperature

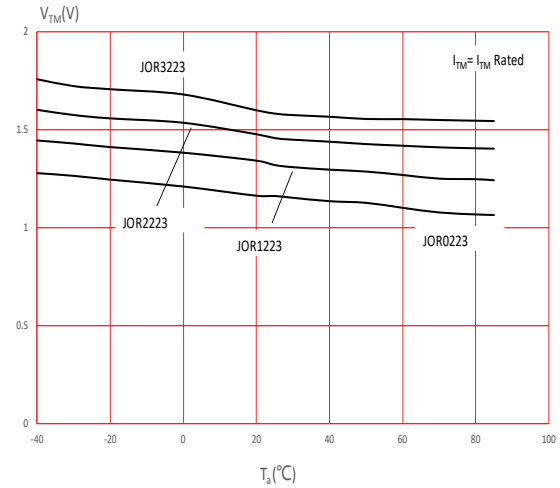


FIG.8: Normalized Holding Current vs. Ambient Temperature

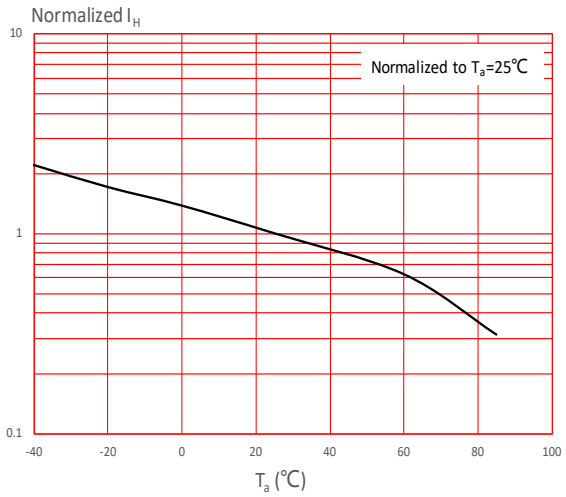
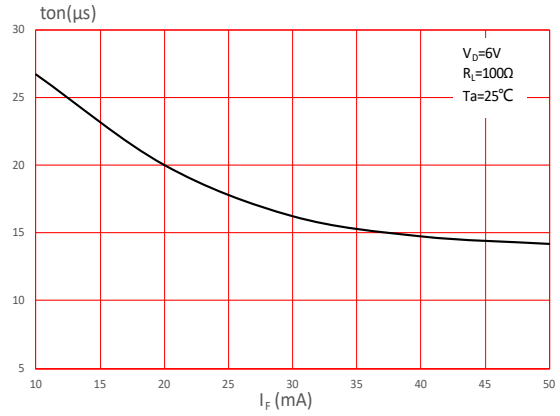


FIG.9: Turn On Time vs. Forward Current



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

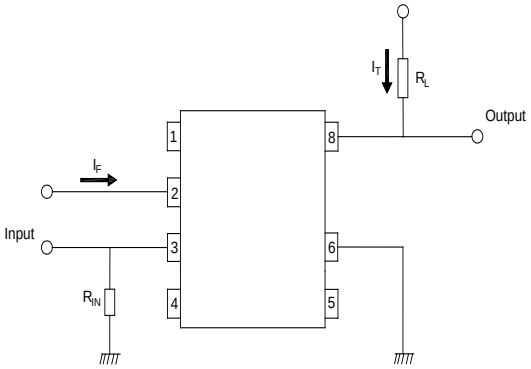
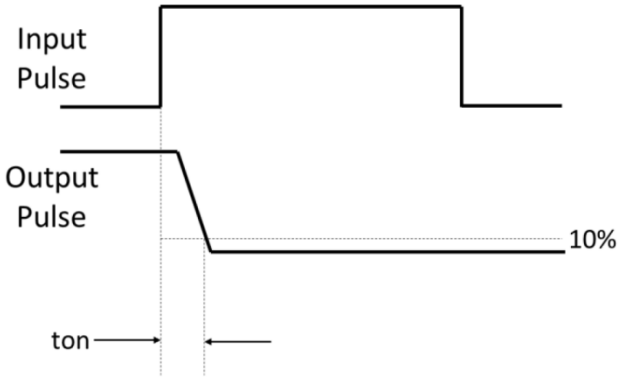
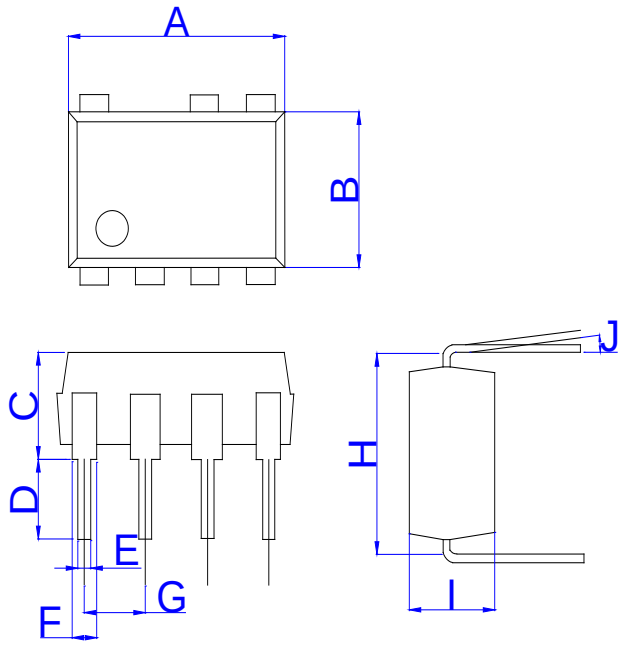


FIG.11: Waveforms of Turn On Time



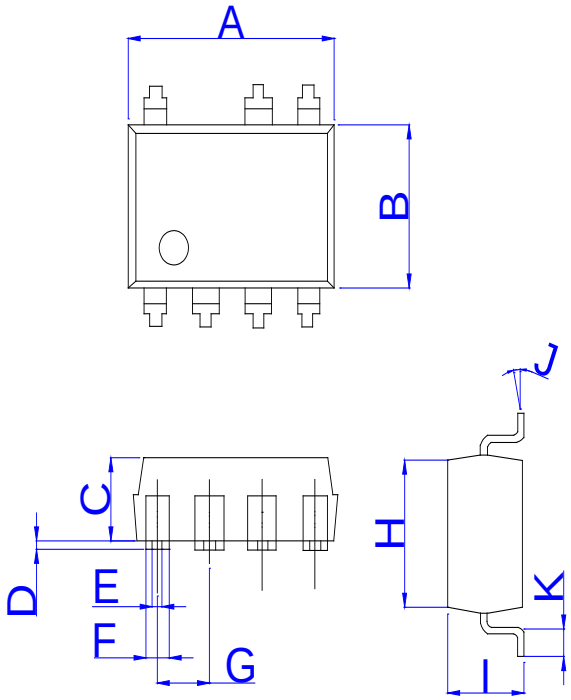
Package Dimension (Unit: mm）

Standard DIP Type:



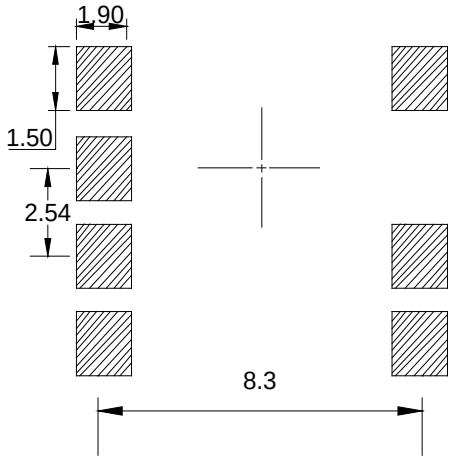
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.68	9.78	9.88	0.381	0.385	0.389
B	6.30	6.40	6.50	0.248	0.252	0.256
C	3.70	3.90	4.10	0.146	0.154	0.162
D	2.90	3.00	3.10	0.114	0.118	0.122
E	0.40	0.50	0.60	0.016	0.020	0.024
F	1.10	1.20	1.30	0.043	0.047	0.051
G	2.44	2.54	2.64	0.096	0.100	0.104
H	7.52	7.62	7.72	0.296	0.300	0.304
I	3.30	3.40	3.50	0.130	0.134	0.138
J			10°			

Option SL Type:



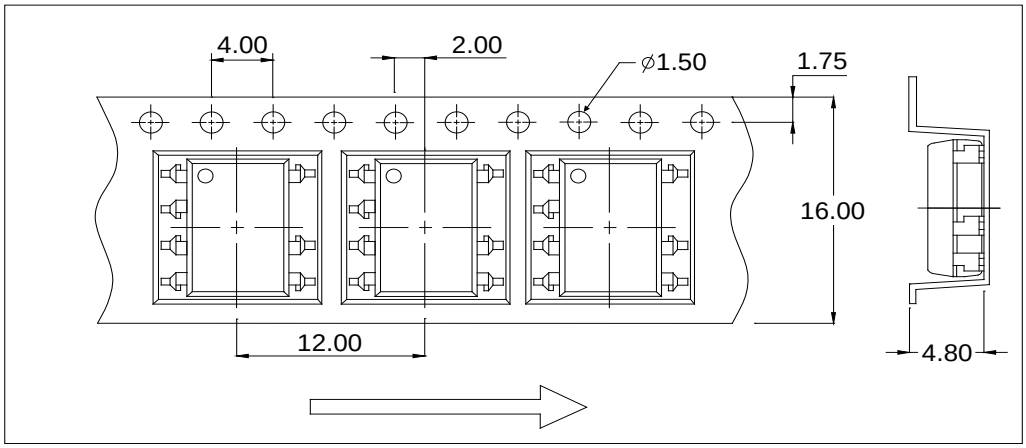
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.68	9.78	9.88		0.385	
B	6.30	6.40	6.50		0.252	
C	3.30	3.40	3.50		0.134	
D		0.20	0.40		0.008	0.016
E	0.40	0.50	0.60	0.156	0.020	0.024
F	1.10	1.20	1.30	0.043	0.047	0.051
G	2.44	2.54	2.64	0.096	0.100	0.104
H	7.52	7.62	7.72	0.296	0.300	0.304
I	3.30	3.40	3.50	0.130	0.134	0.138
J			10°			
K	0.9	1.00	1.10	0.035	0.039	0.043

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

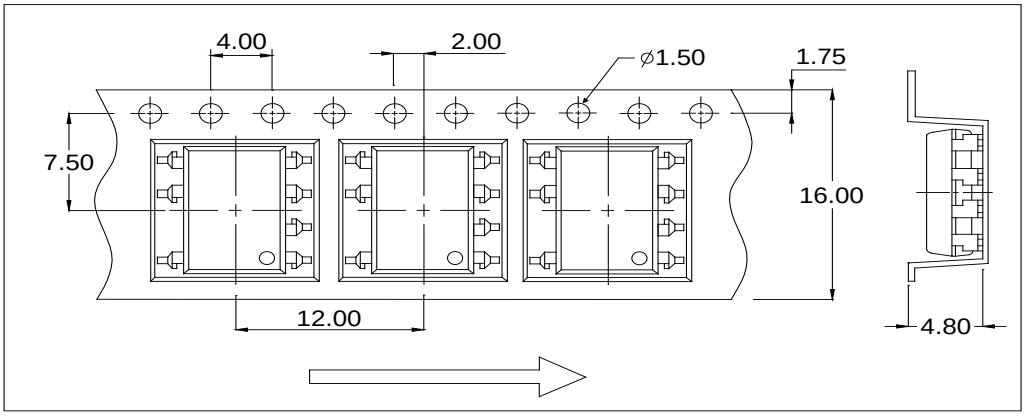


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

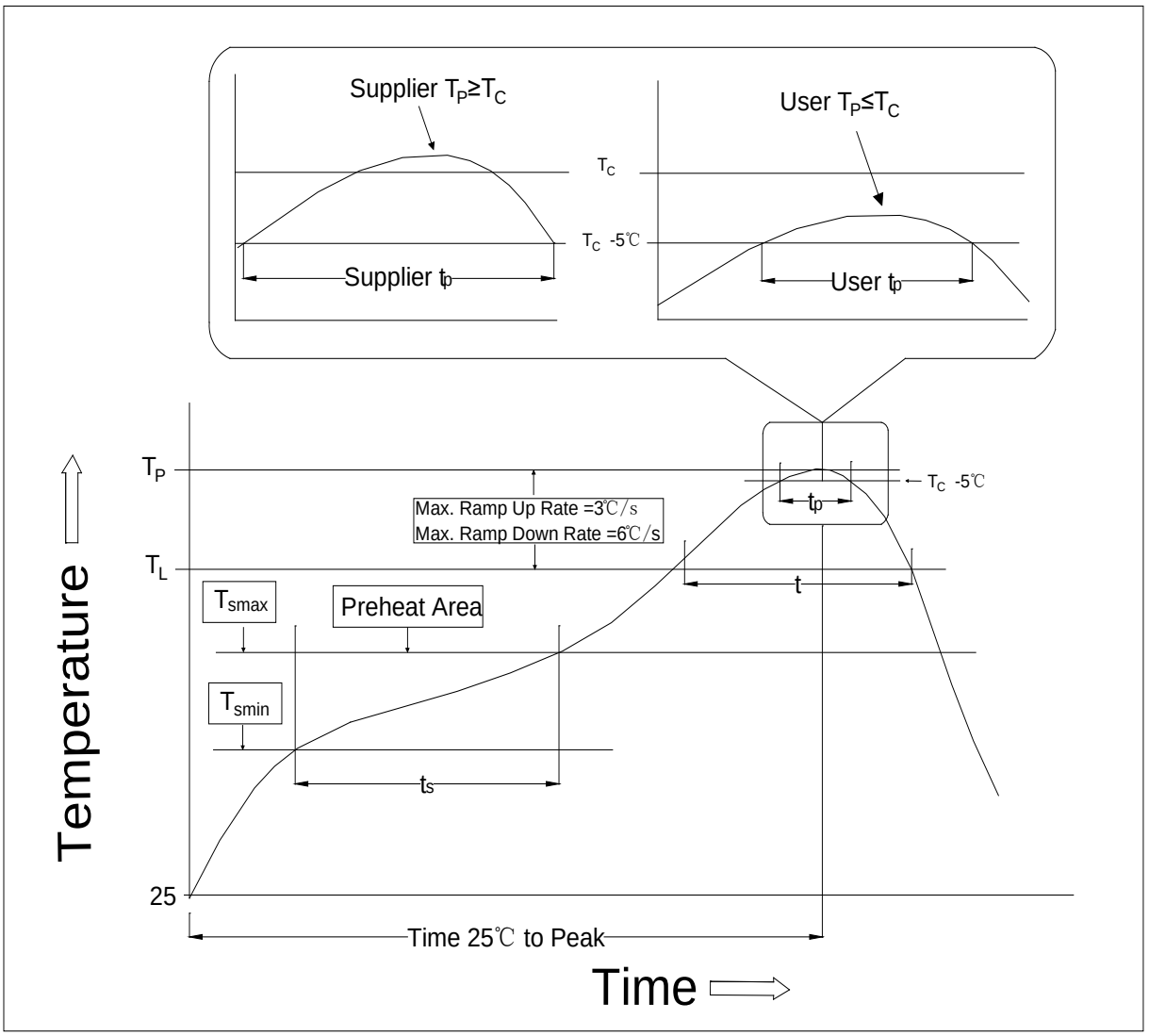
Option SL(T1)



Option SL(T2)



REFLOW INFORMATION



Temperature Min. (Tsmin)	150℃
Temperature Max. (Tsmax)	200℃
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Ramp-up Rate (tL to tP)	3℃/second max.
Liquidous Temperature (TL)	217℃
Time (tL) Maintained Above (TL)	60-120 seconds
Peak Body Package Temperature	260℃+0℃/-5℃
Time (tP) within 5℃ of 260℃	10 seconds
Ramp-down Rate (TP to TL)	6℃/second max.

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