

JORX223 Series

Rev.A.1.1

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

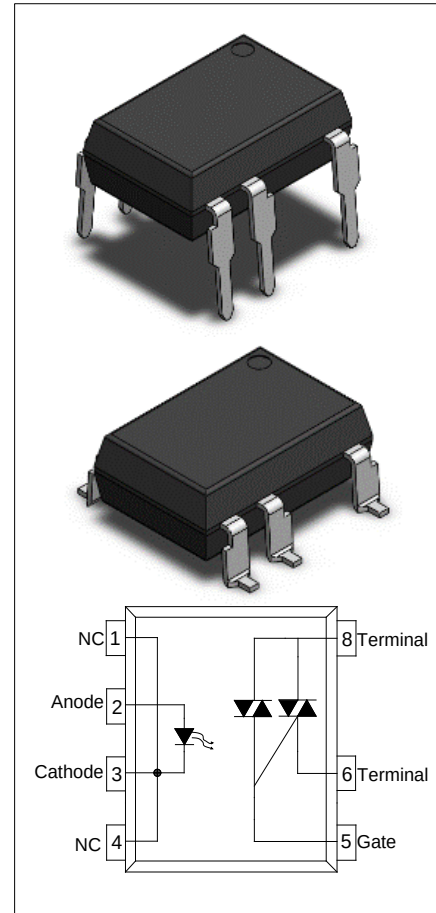
MSL class 2

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}	1 ^①	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
	Critical rate of rise of on-state current		di/dt	100	A/μs
	On-state RMS Current	JOR0223	I _{T(RMS)}	0.3	A
		JOR1223		0.6	
		JOR2223		0.9	
		JOR3223		1.2	
Non repetitive surge	JOR0223	I _{TSM}	3	A	

	peak on-state current (full cycle , t _p =20ms)	JOR1223		6	
		JOR2223		9	
		JOR3223		12	
Isolation Voltage			V _{iso}	5000 ^②	Vrms
Operating Temperature			T _{opr}	-40~85	℃
Storage Temperature			T _{stg}	-40~125	℃
Soldering Temperature			T _{sol}	260 ^③	℃

NOTE1 : 100 μs pulse, 100Hz frequency

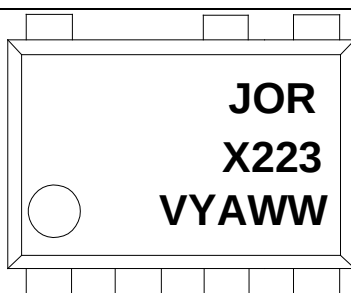
NOTE2 : AC for 1 minute, R.H.=40~60%

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 $I_F=0$, $T_J=85^\circ C$	1000	-	-	V/ μs
	Critical Rate of Rise of Commutating Voltage	$(dV/dt)_c$	$(dI/dt)_c$ =1.5A/ms, $T_J=85^\circ C$	10	-	-	V/ μs
Transfer Characteristics	LED Trigger Current	I_{FT}	Terminal Voltage=6V $R_L=100\Omega$	-	-	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}	$V_D=6V$, $R_L=100\Omega$, $I_F=20mA$	-	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

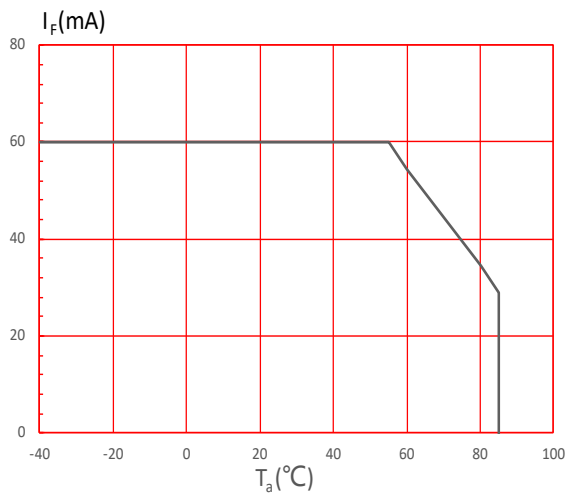


FIG.2: On-state Terminal Current vs. Ambient Temperature

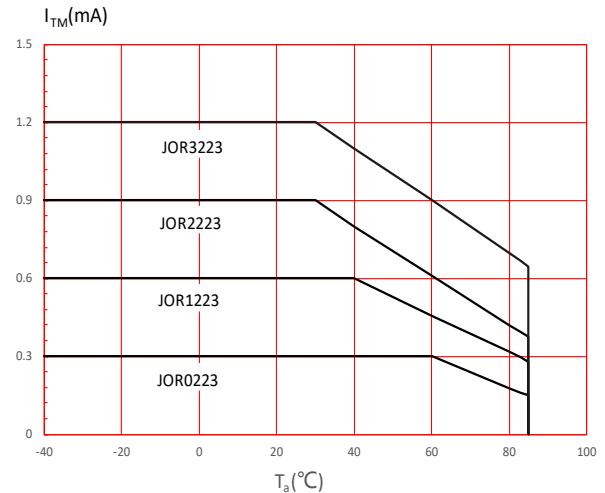


FIG.3: Forward Current vs. Forward Voltage

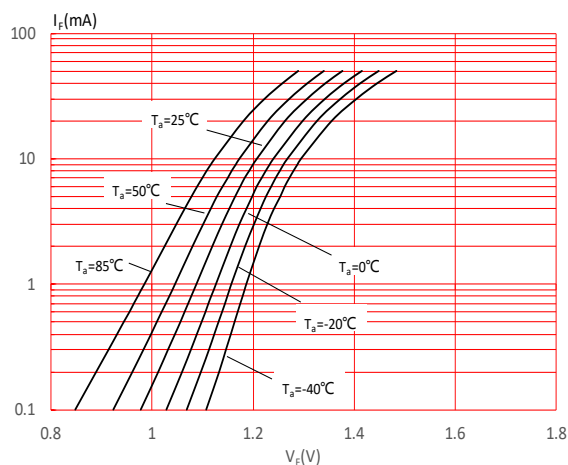


FIG.4: Forward Voltage vs. Ambient Temperature

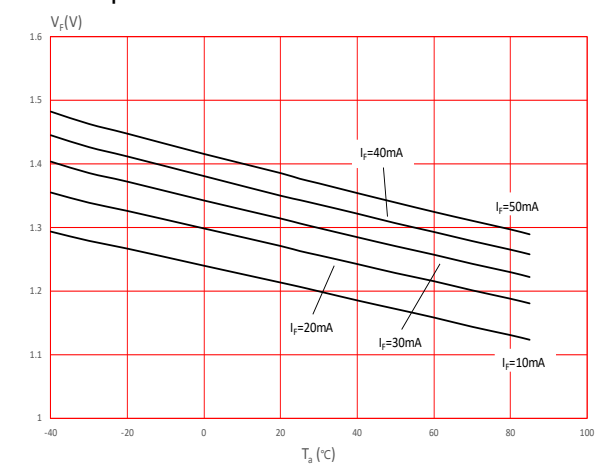


FIG.5: Off-state Terminal Current vs Off-state Terminal Voltage

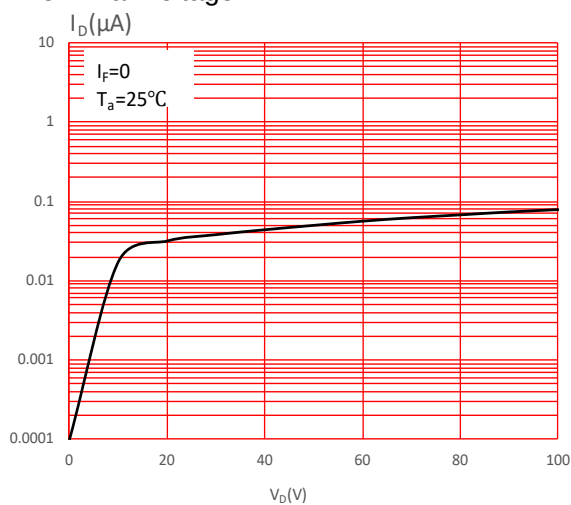


FIG.6: Normalized Trigger Current vs. Ambient Temperature

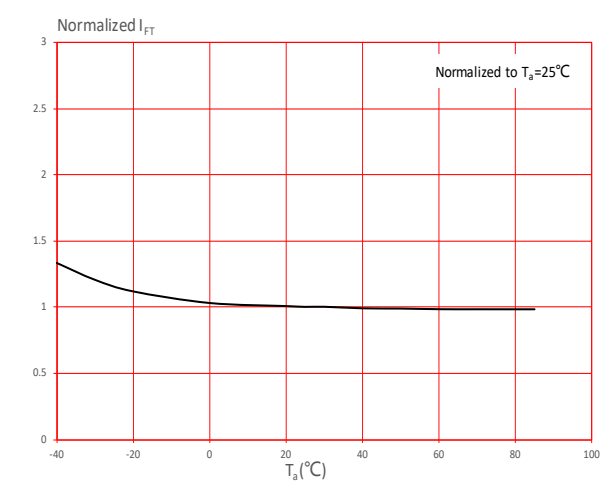


FIG.7: On-state Terminal Voltage vs. Ambient Temperature

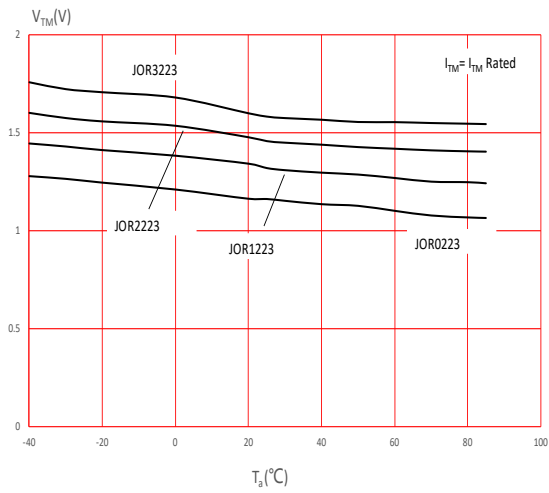


FIG.8: Normalized Holding Current vs. Ambient Temperature

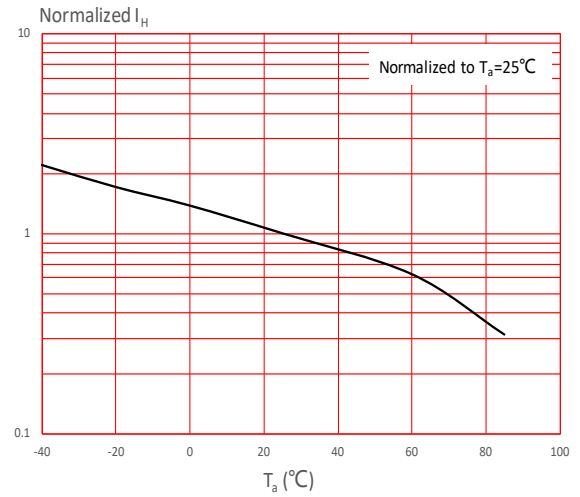
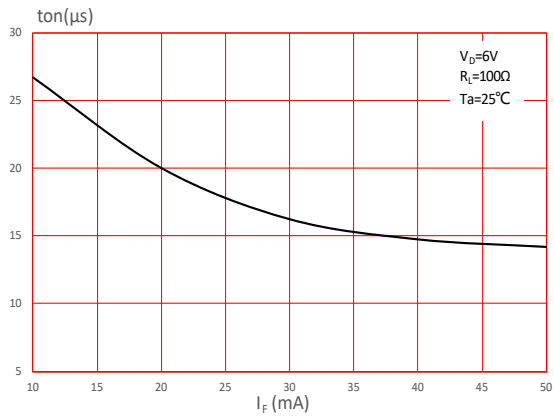


FIG.9: Turn On Time vs. Forward Current



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

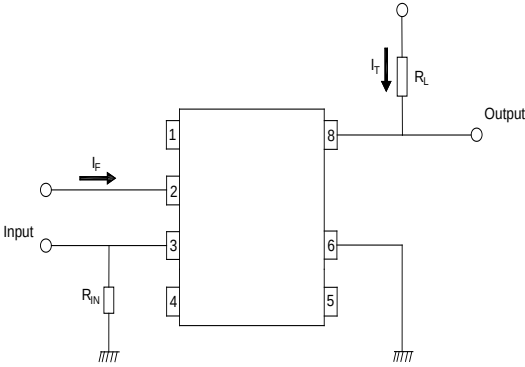
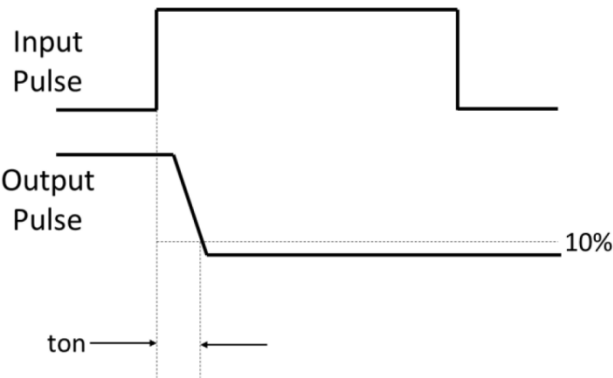
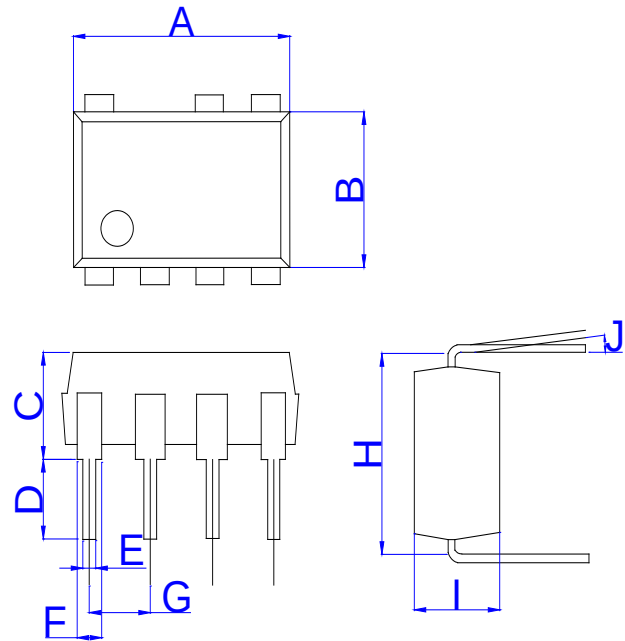


FIG.11: Waveforms of Turn On Time



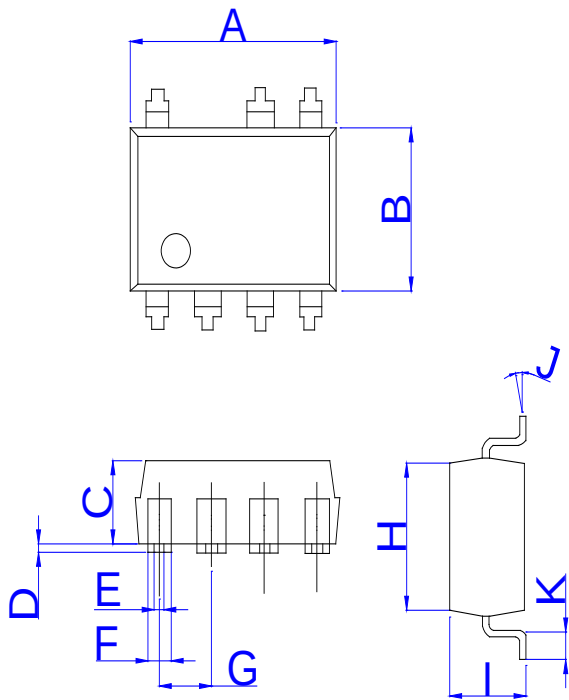
Package Dimension (Unit: mm)

Standard DIP Type:



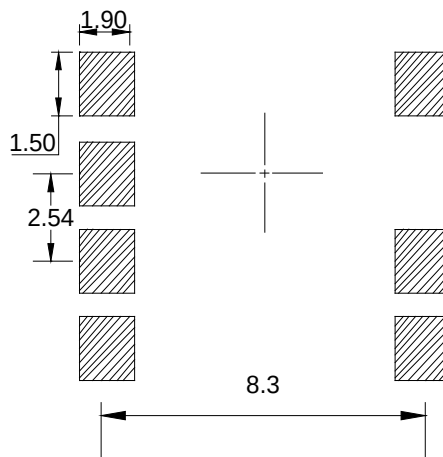
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.68	9.78	9.88	0.381	0.385	0.389
B	6.30	6.40	6.50	0.248	0.252	0.256
C	3.70	3.90	4.10	0.146	0.154	0.162
D	2.90	3.00	3.10	0.114	0.118	0.122
E	0.40	0.50	0.60	0.016	0.020	0.024
F	1.10	1.20	1.30	0.043	0.047	0.051
G	2.44	2.54	2.64	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:



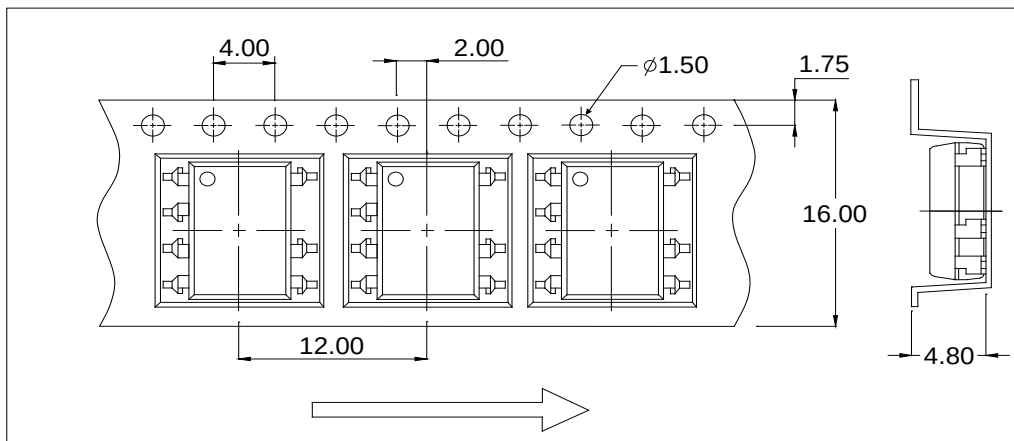
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.68	9.78	9.88		0.385	
B	6.30	6.40	6.50		0.252	
C	3.30	3.40	3.50		0.134	
D		0.20	0.40		0.008	0.016
E	0.40	0.50	0.60	0.156	0.020	0.024
F	1.10	1.20	1.30	0.043	0.047	0.051
G	2.44	2.54	2.64	0.096	0.100	0.104
H	7.52	7.62	7.72	0.296	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)

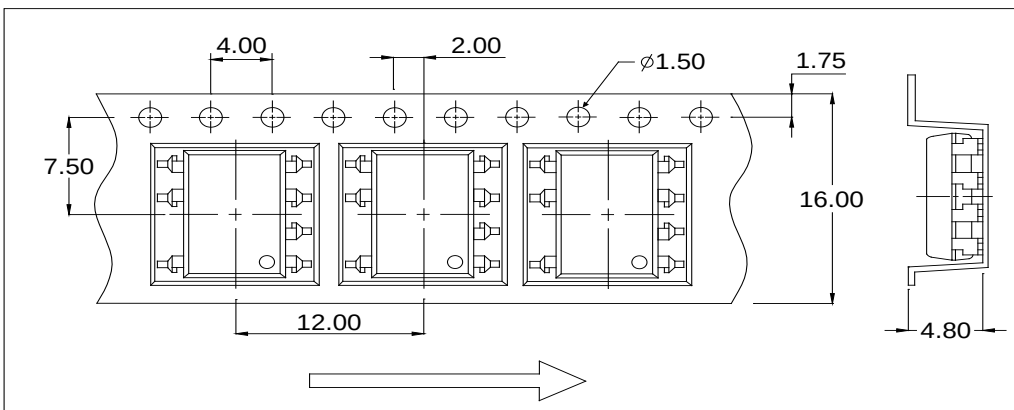


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

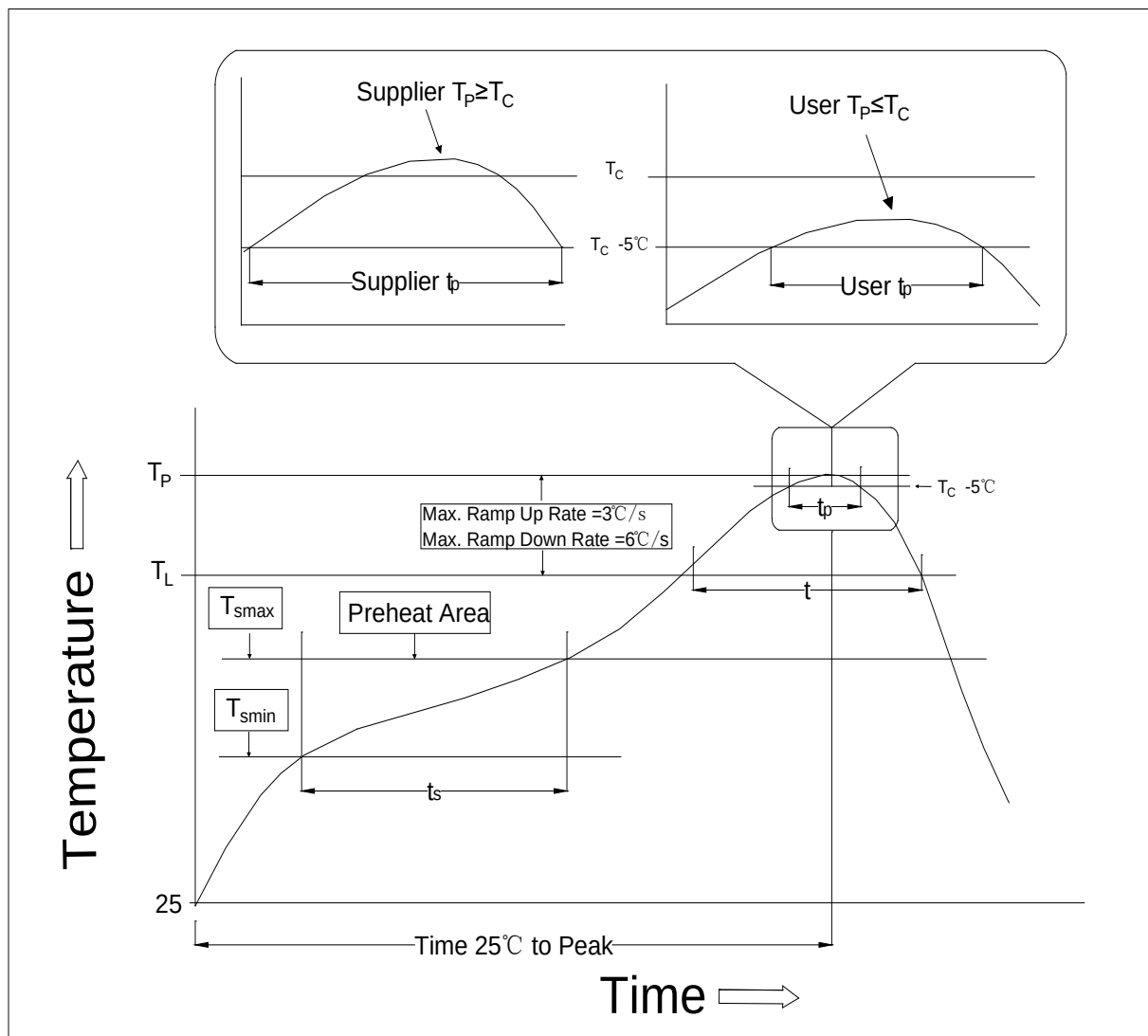
Option SL(T1)



Option SL(T2)

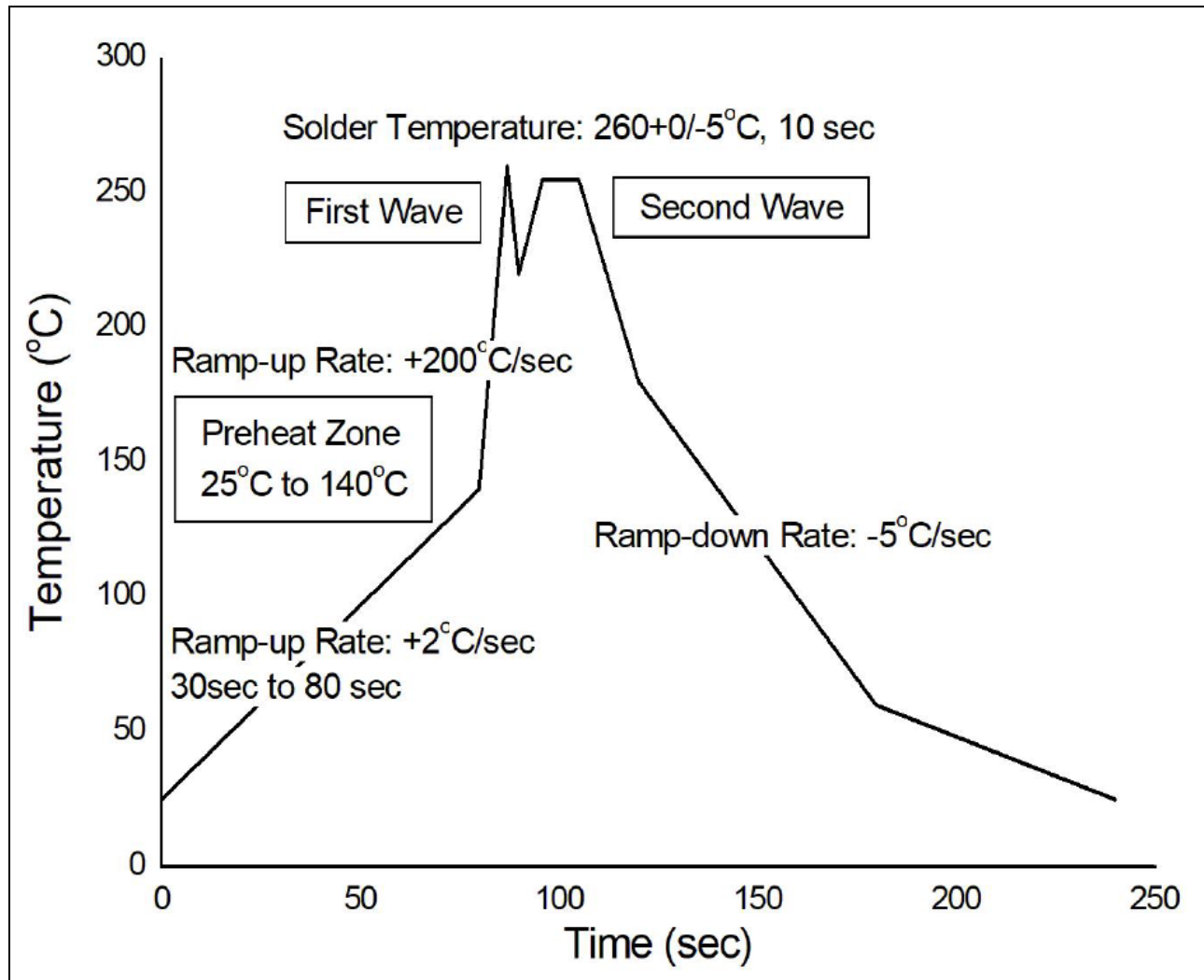


REFLOW INFORMATION



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

WAVE SOLDERING



HAND SOLDERING BY SOLDERING IRON

Soldering Temperature	360±5°C
Soldering Time	3s max.

Document Revision History

Date	Revision	Changes
Feb.21, 2025	A.1.0	Last update
Nov.7, 2025	A.1.1	Add (dV/dt)c

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