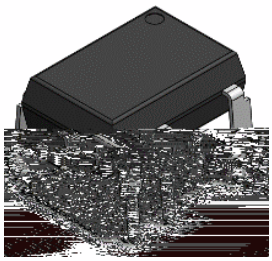
JOCSR2XBM-D7P/S Series

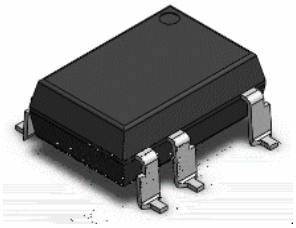
Rev.A.1.0

DESCRIPTION:

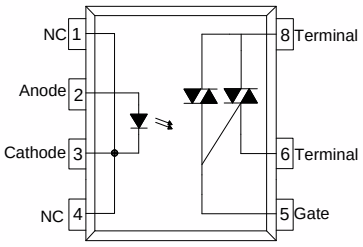
The products are 7-pin solid-state relay opto-couplers. The device combines an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon random-phase photo triac to drive a power triac in a plastic DIP7 package with different lead forming options. The products are 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.



JOCSR2XBM-D7P



JOCSR2XBM-D7S



MAIN FEATURES:

High isolation 5000 Vrms
DC input with triac output
Operating temperature range - 40°C to 110 °C
REACH & RoHS compliance
HBM: H3B; 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	A
	Reverse Voltage		V_R	6	V
	Power Dissipation		P_D	75	mW
Output	Repetitive peak off-state voltage		V_{DRM}	600	V
	Repetitive peak reverse voltage		V_{RRM}	600	V
	Critical rate of rise of on-state current		dI/dt	100	A/μs
	On-state RMS Current	JOCSR23BM (T_a≤96)	$I_{T(RMS)}$	0.3	A
		JOCSR26BM (T_a≤76)		0.6	
		JOCSR29BM (T_a≤58)		0.9	
		JOCSR2BBM (T_a≤40)		1.2	

	Non repetitive surge peak on-state current (full cycle , t_p=20ms)	JOCSR23BM	I_{TSM}	3	A
		JOCSR26BM		6	
		JOCSR29BM		9	
		JOCSR2BBM		12	
	junction to case (AC)		$R_{th(j-c)}$	40	/W
Isolation Voltage			V_{iso}	5000	Vrms
Operating Temperature			T_{opr}	-40~110	
Junction Temperature			T_j	125	
Storage Temperature			T_{stg}	-40~125	
Soldering Temperature			T_{sol}	260	
Peak pulse voltage (T_j=25 ; non-repetitive,off-state)			V_{pp}	3	kV

NOTE1: 100μs pulse, 100Hz frequency

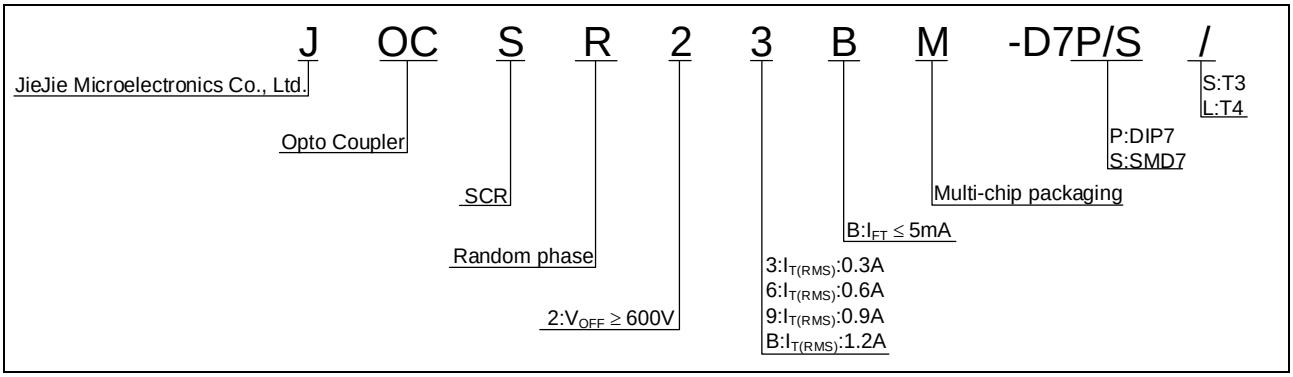
NOTE2: AC for 1minute, R.H.=40~60%

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

Parameter			Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage		V_F	I_F=10mA	-	1.2	1.5	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	-	-	5	μA
			I_{RRM}		-	-	5	
	Peak On-state Voltage, Either Direction	JOCSR23BM	V_{TM}	I_{TM}=0.3A	-	-	1.2	V
		JOCSR26BM		I_{TM}=0.6A	-	-	1.4	
		JOCSR29BM		I_{TM}=0.9A	-	-	1.45	
		JOCSR2BBM		I_{TM}=1.2A	-	-	1.5	
	Critical Rate of Rise of Off-state voltage		dV/dt	V_D=400V, Gate Open I_F=0, T_j=125	1000	-	-	V/μs
	Critical Rate of Rise of Commutating Voltage							

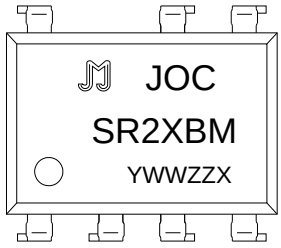
	Holding Current	I_H	V_D=6V	-	-	25	mA
	Isolation Resistance	R_{ISO}	DC500V 40~60%R.H.	10^{12}	10^{14}	-	Ω
	Response Time	t_{on}	V_D=6V, R_L=100Ω, I_F=20mA	-	20	100	μs

ORDERING INFORMATION



Packing Quantity	
Option	**Quantity**
DIP	0 Units/Tube
SMD	1200 Units/Reel

MARKING



Characteristics Curves

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

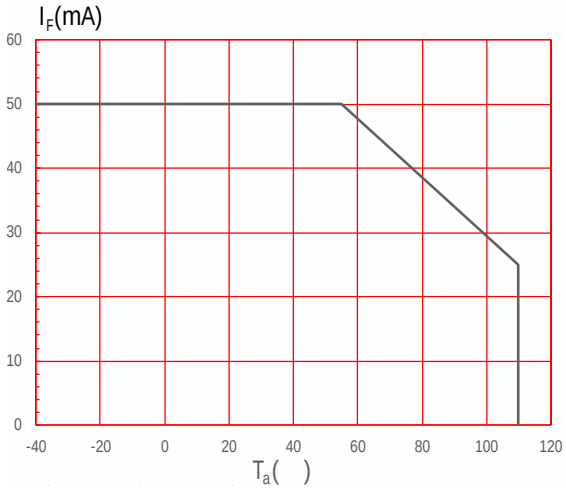


FIG.2: On-state Terminal Current vs. Ambient Temperature

FIG.7: On-state characteristics

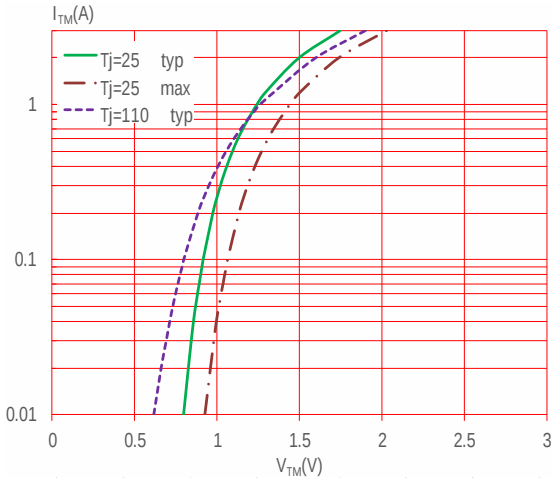
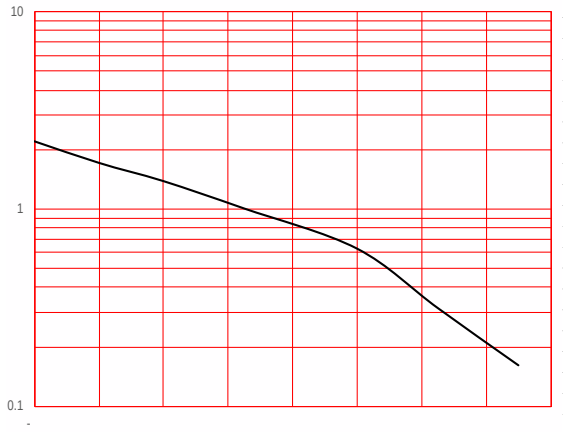


FIG.8: Normalized Holding Current vs. Ambient Temperature



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

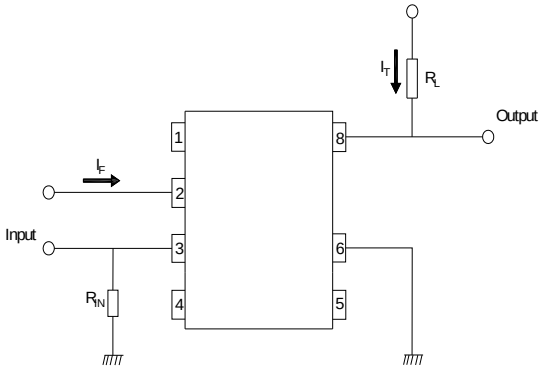
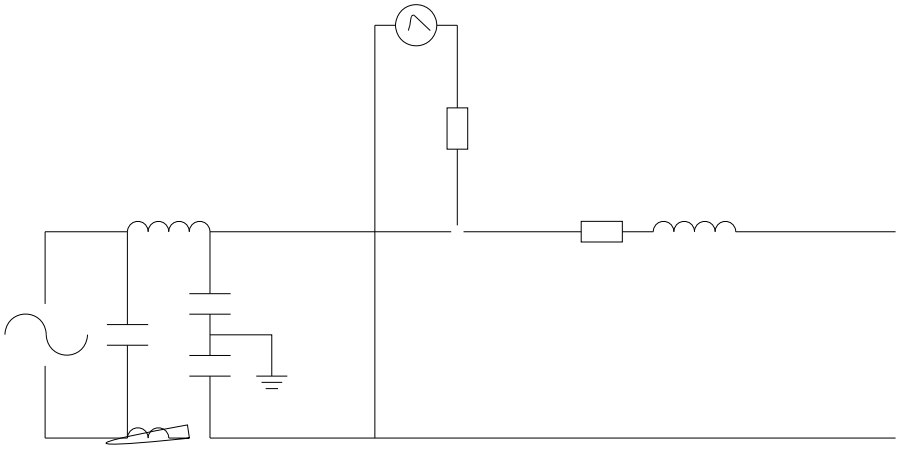
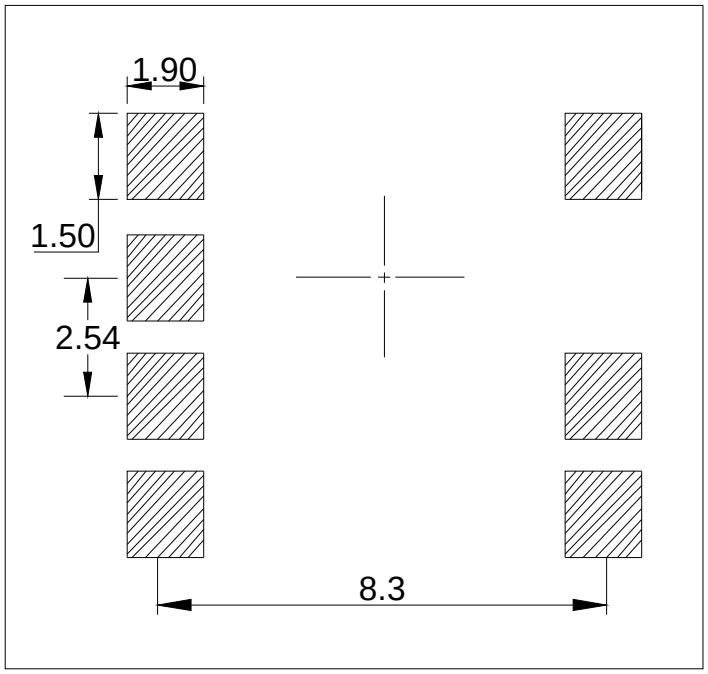


FIG.11: Waveforms of Turn On Time

FIG.12: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards

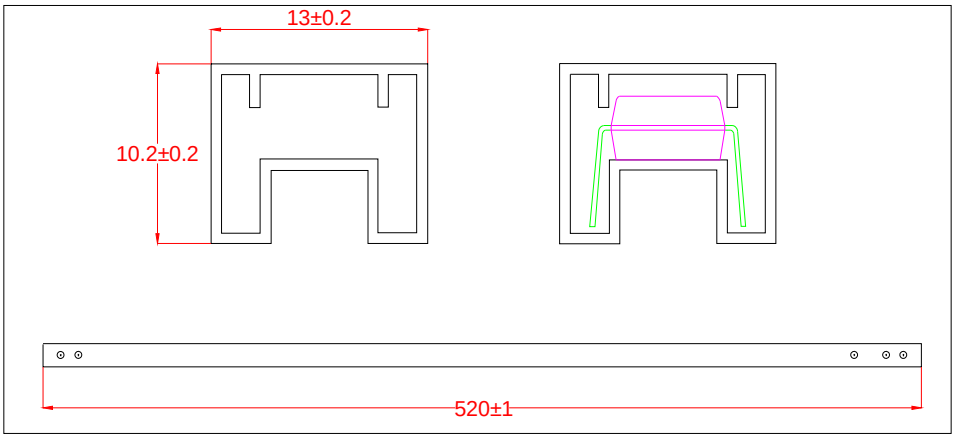


RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



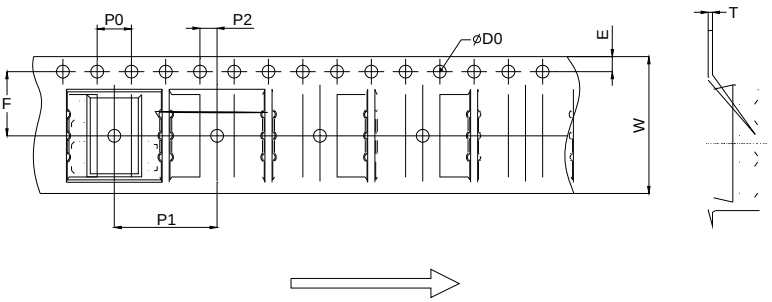
TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP



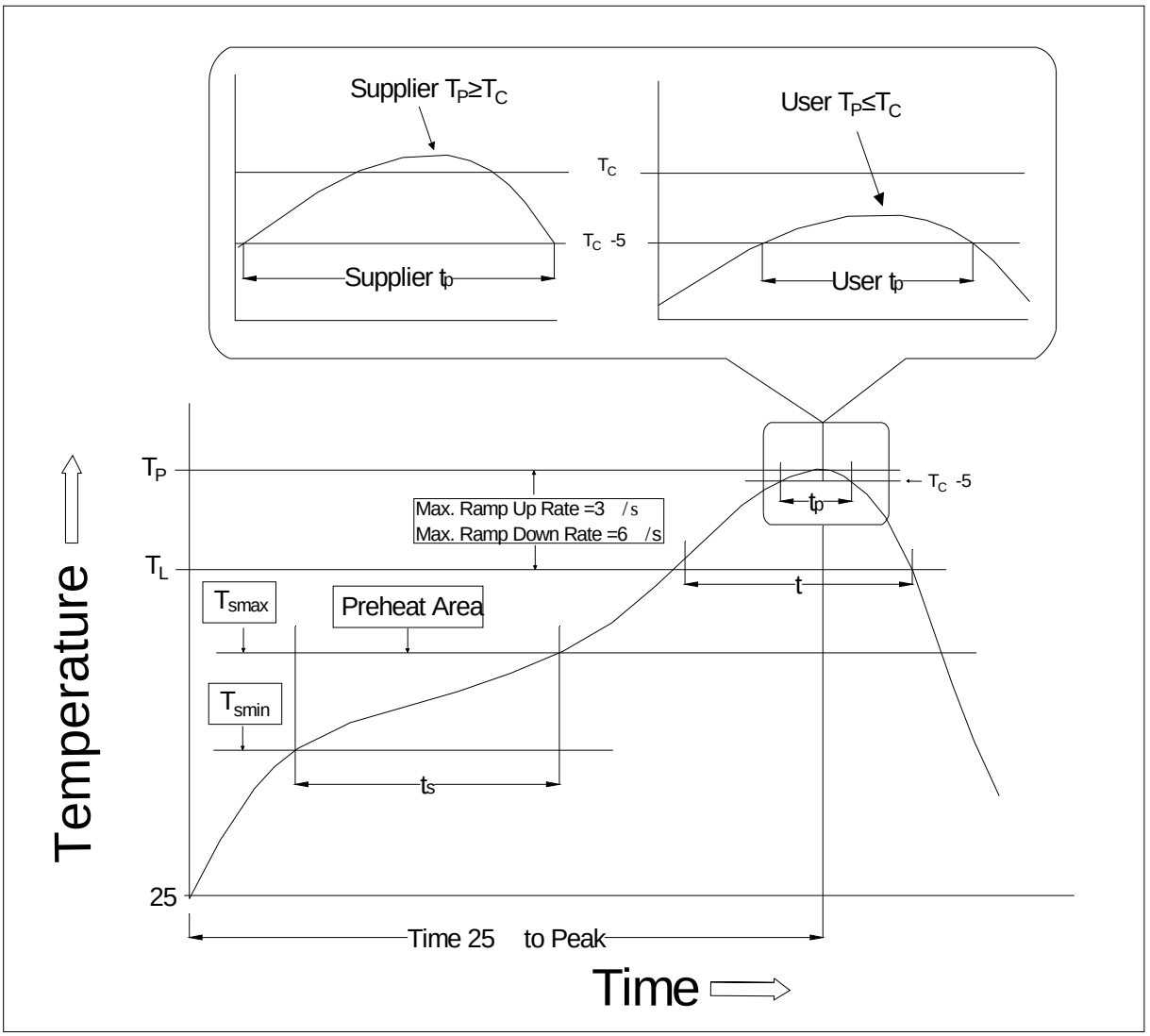
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S/L



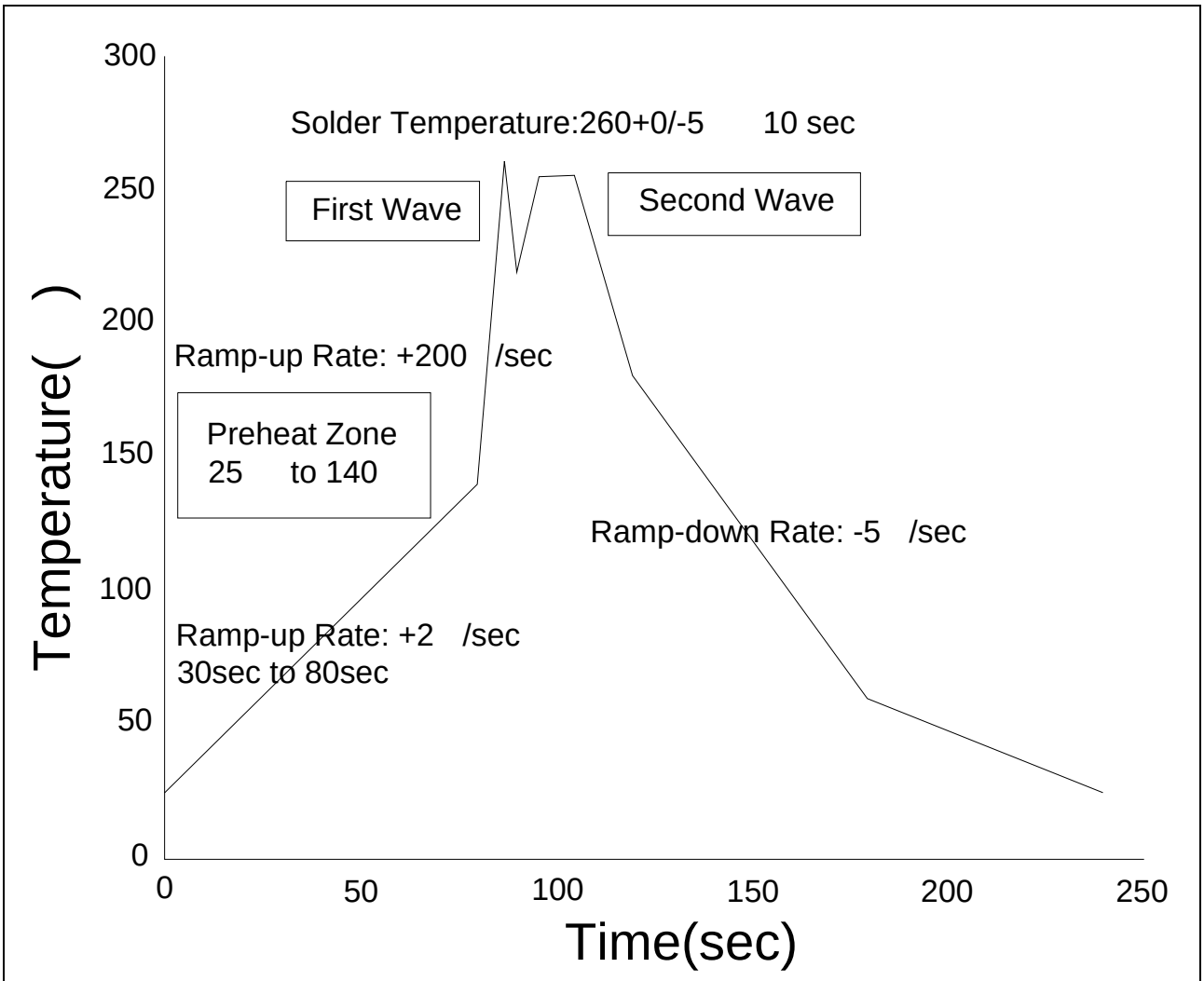
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D0		1.50	1.60		0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	11.90	12.00	12.10	0.469	0.472	0.476
P2	1.90	2.00	2.10	0.075	0.079	0.083
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
T	0.35	0.40	0.45	0.014	0.016	0.018
W	15.90	16.00	16.20	0.626	0.630	0.638

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.

WAVE SOLDERING



HAND SOLDERING BY SOLDERING IRON	
Soldering Temperature	360 ± 5
Soldering Time	3s max.

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.