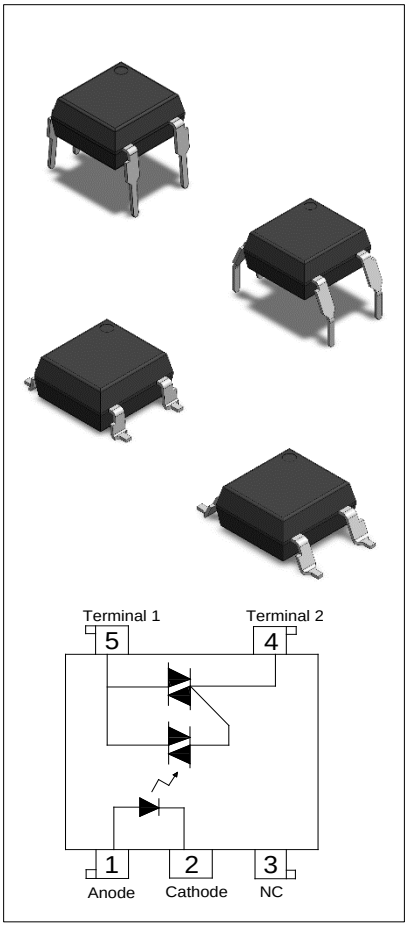
H11BXF Series

Rev.A.1.1

DESCRIPTION:

The H11BXF 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 DIP5 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
	Critical rate of rise of on-state current		dI/dt	70	A/μs
	On-state RMS Current	H11B0F	$I_{T(RMS)}$	0.3	A
		H11B1F		0.6	
	Non repetitive surge peak on-state current (full cycle , t_p=20ms)	H11B0F	I_{TSM}	3	A
		H11B1F		6	
Isolation Voltage			V_{iso}	5000②	Vrms

Operating Temperature	T_{opr}	-40~85	℃
Storage Temperature	T_{stg}	-40~125	℃
Soldering Temperature	T_{sol}	260③	℃

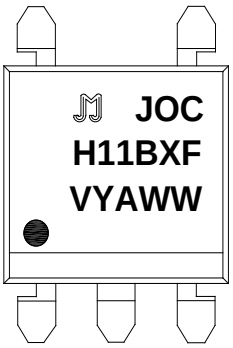
NOTE1: 100μs pulse, 100Hzfrequency
NOTE2: AC for 1minute, R.H.=40~60%
NOTE3: For 10 seconds

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	VD=400V, Gate Open IF=0, T_j=85℃	1000	-	-	V/μs
	Critical Rate of Rise of Commutating Voltage	(dV/dt)c	(dI/dt)c =3A/ms, T_j=85℃	20	-	-	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



JOC : Company Abbr.
H11BXF : Part Number & Rank
VYAWW : LOT NO.

ORDERING INFORMATION

H11BXF(Y)(Z)-GV

H11BXF – Part Number & Rank (X=0/1)
Y – Lead Form Option (None/M/SL/SLM)
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/M	65 Units/Tube	32 Tubes/Inner box	10 Inner box/Outer box =20.8k Units
SL(T1/T2)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box =15k Units
SLM(T1/T2)	1000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box =10k Units

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

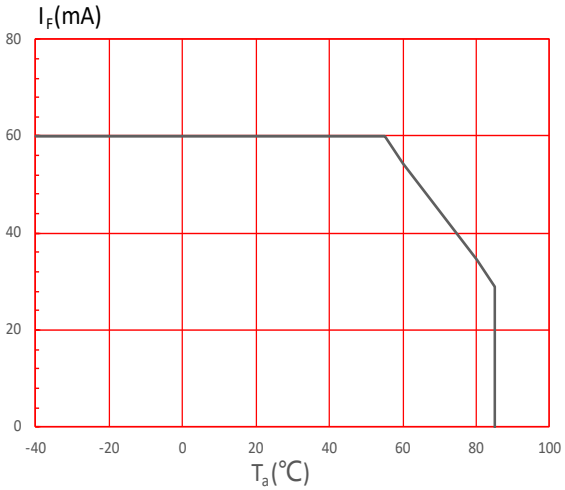


FIG.2: On-state Terminal Current vs. Ambient Temperature

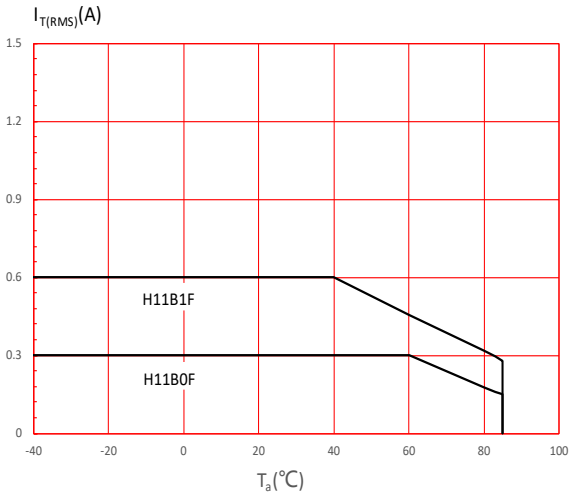


FIG.3: Forward Current vs. Forward Voltage

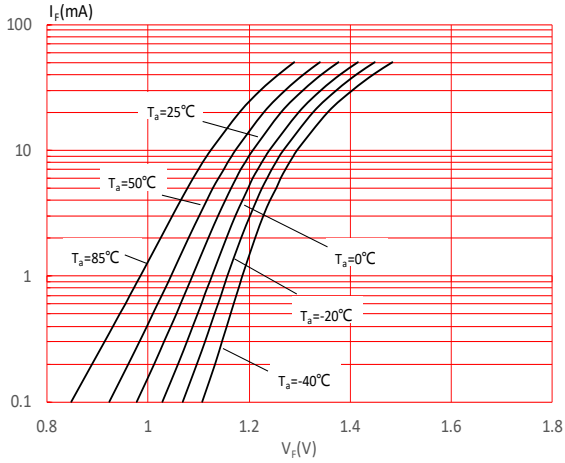


FIG.4: Forward Voltage vs. Ambient Temperature

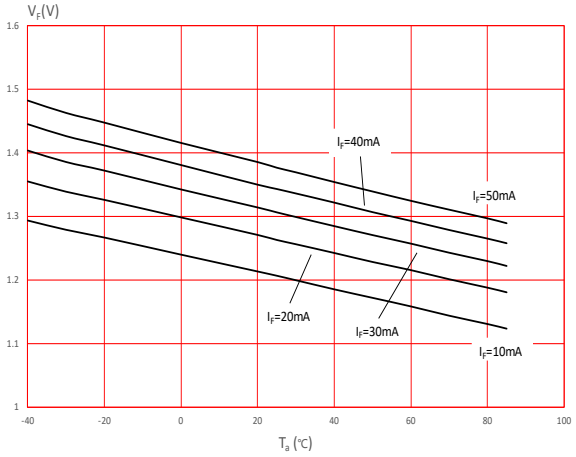


FIG.5: Off-state Terminal Current vs Off-state Terminal Voltage

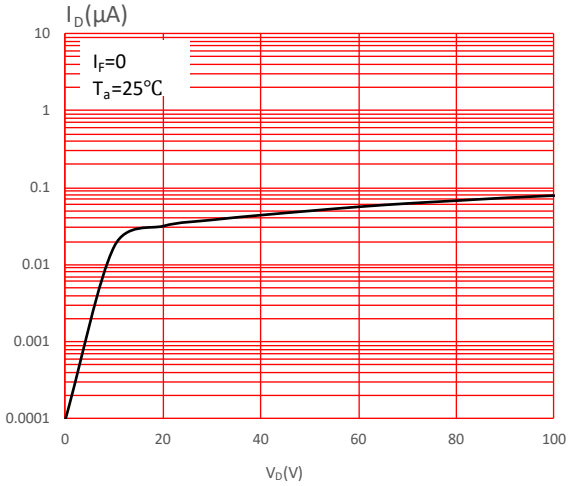


FIG.6: Normalized Trigger Current vs. Ambient Temperature

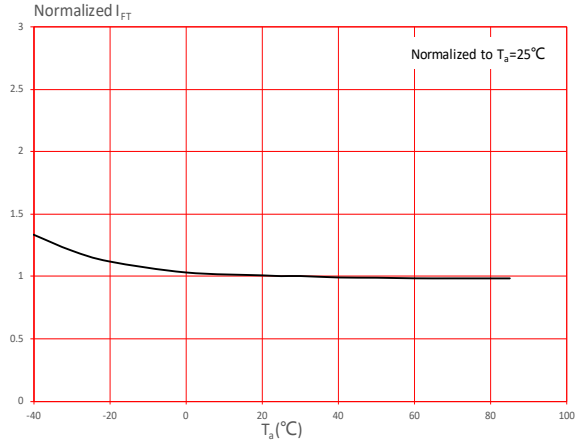


FIG.7: On-state Terminal Voltage vs. Ambient Temperature

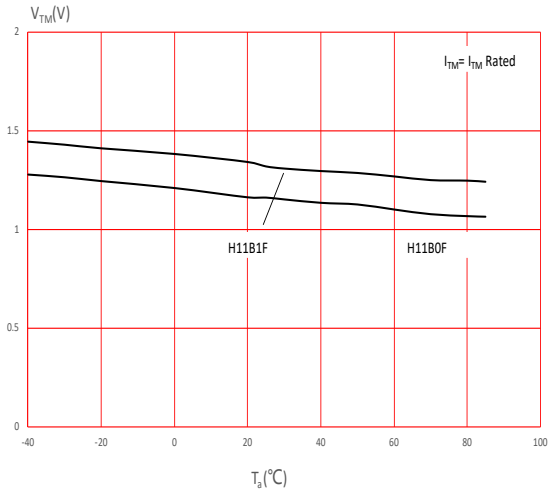


FIG.8: Normalized Holding Current vs. Ambient Temperature

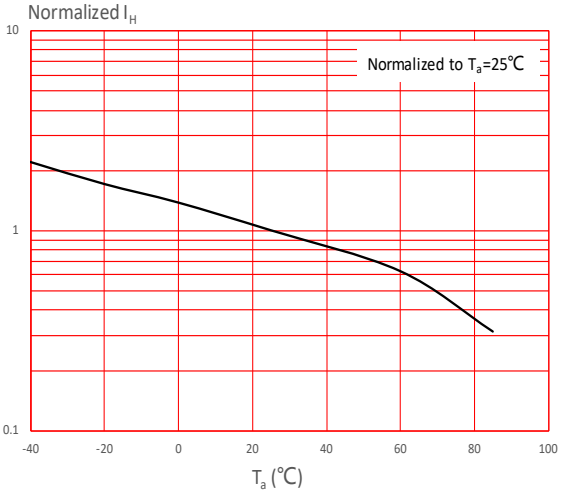
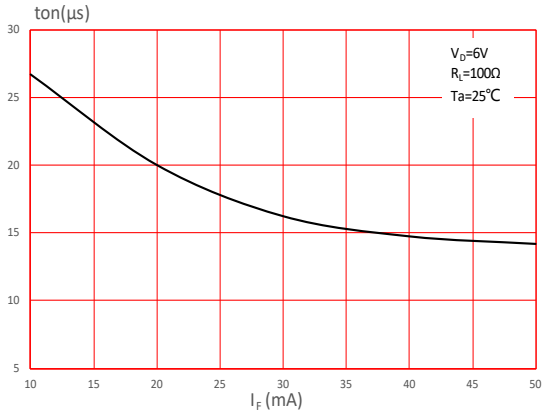


FIG.9: Turn On Time vs. Forward Current



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

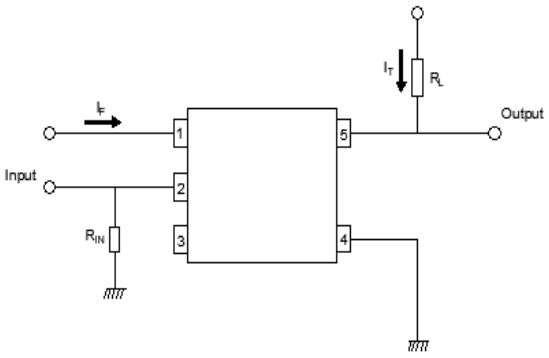
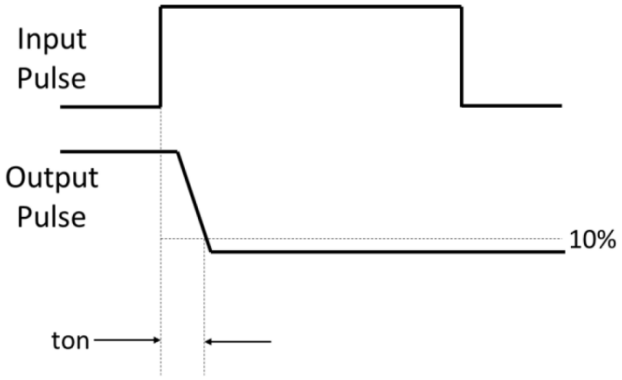
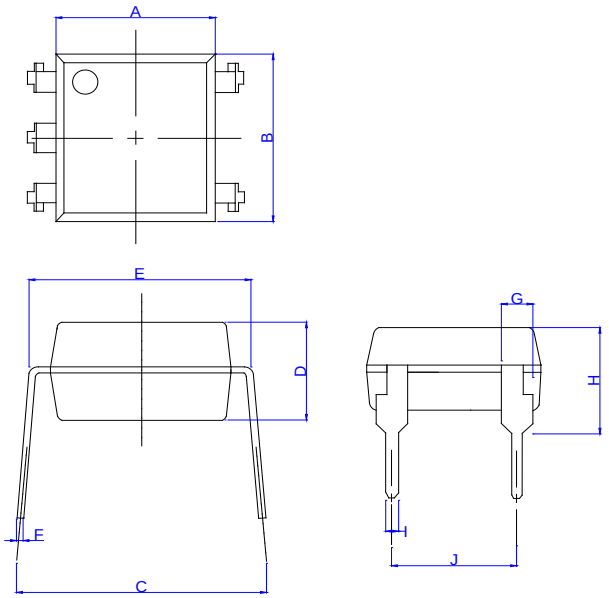


FIG.11: Waveforms of Turn On Time



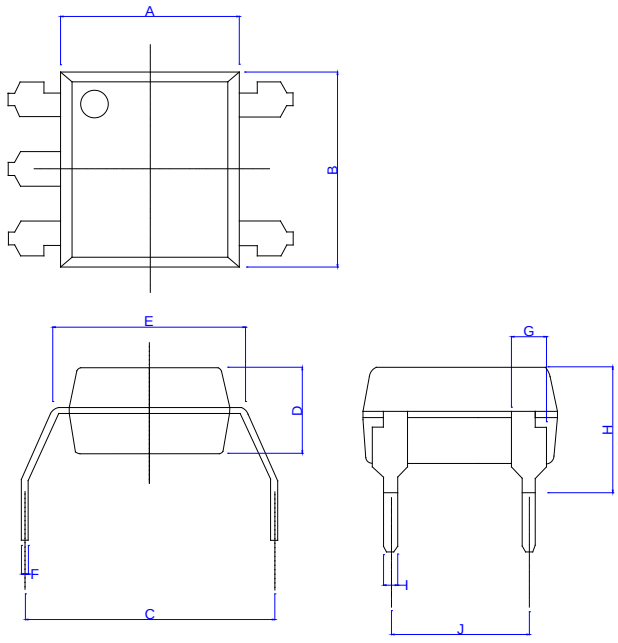
Package Dimension (Unit: mm）

Standard DIP Type:



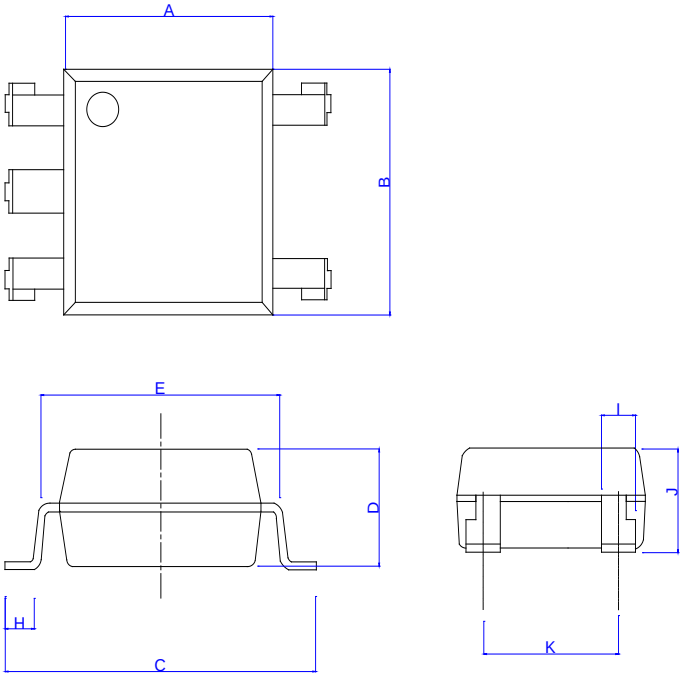
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	7.62		9.50	0.301		0.375
D	3.30		3.70	0.130		0.146
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G			1.30			0.051
H	4.20		4.80	0.166		0.190
I		0.50			0.020	
J		5.08			0.201	

Option M Type:



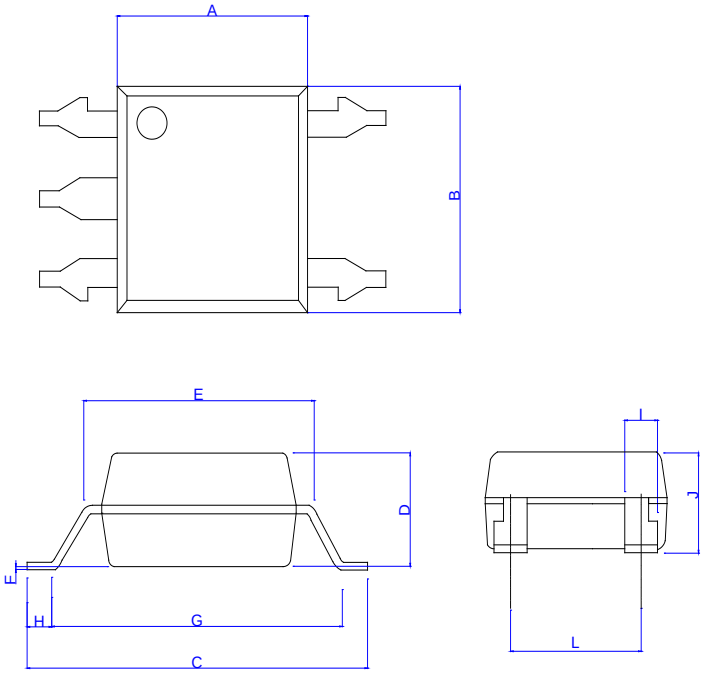
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	9.86		10.46	0.390		0.413
D	3.30		3.70	0.130		0.146
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G			1.30			0.051
H	4.20		4.80	0.166		0.190
I		0.50			0.020	
J		5.08			0.201	

Option SL Type:



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	9.85		10.45	0.389		0.413
D	3.20		3.80	0.126		0.150
E	7.32		7.92	0.289		0.313
H	0.60			0.024		
I			1.30			0.051
J	3.35		3.95	0.132		0.156
K		5.08			0.201	

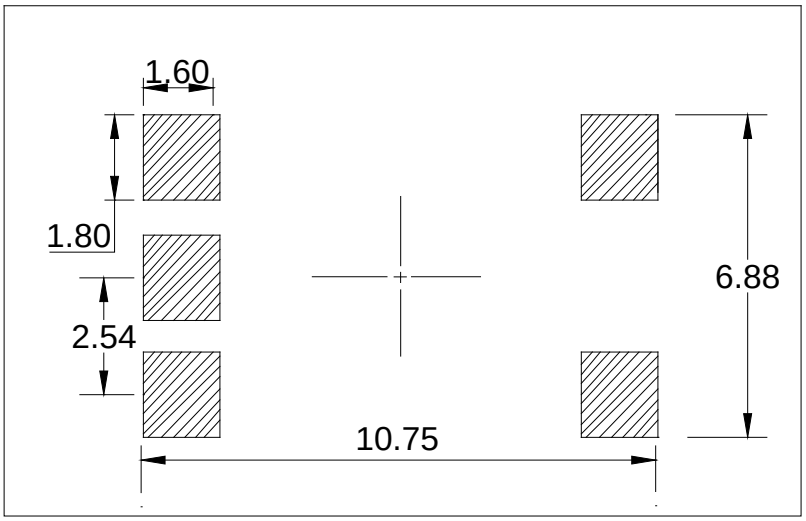
Option SLM Type:



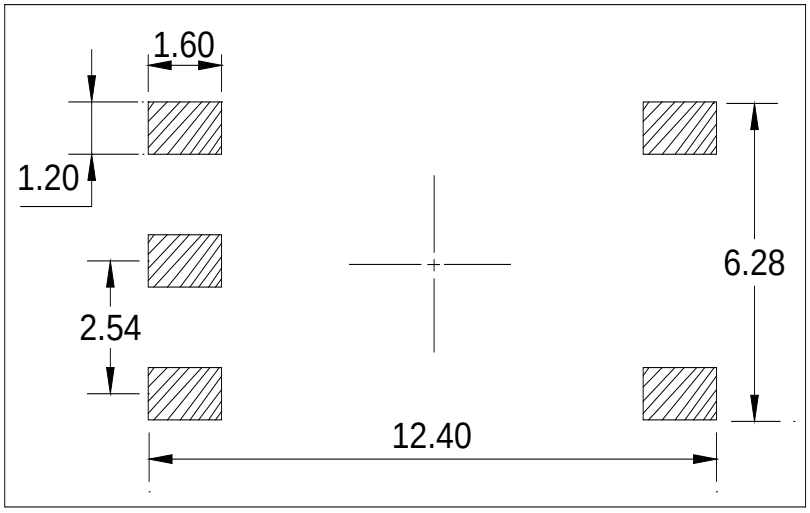
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	11.50		12.10	0.455		0.478
D	3.20		3.80	0.126		0.150
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G	10.20		10.80	0.403		0.427
H	0.60			0.024		
I			1.30			0.051
J	3.35		3.95	0.132		0.156
L		5.08			0.201	

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

SL:

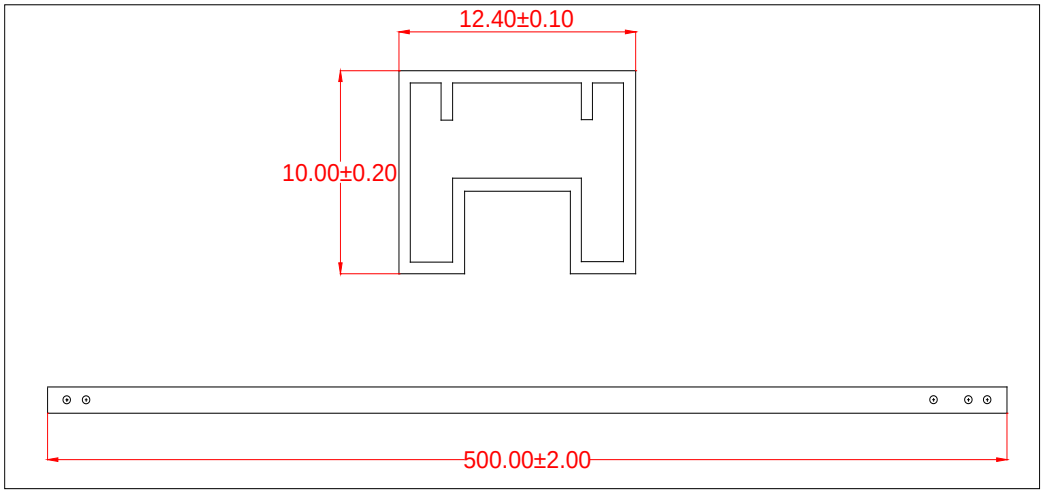


SLM:



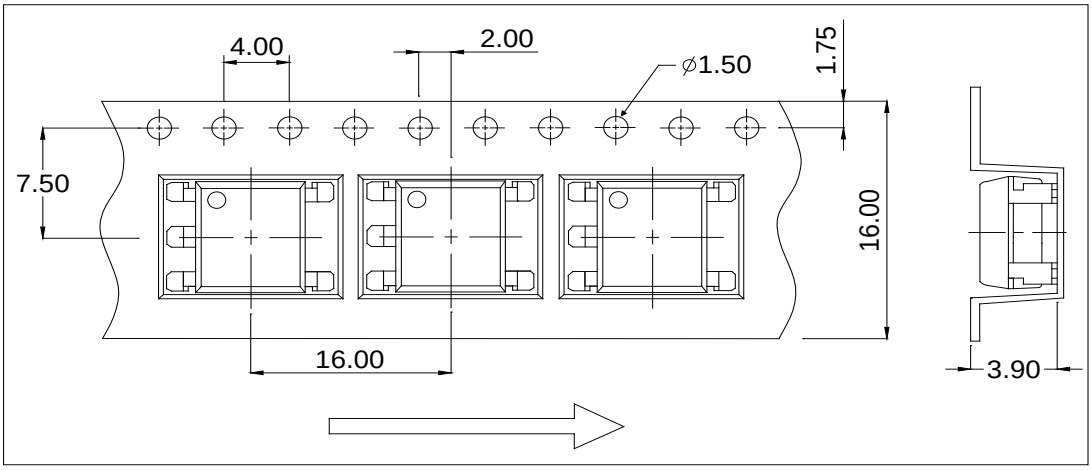
TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP/M

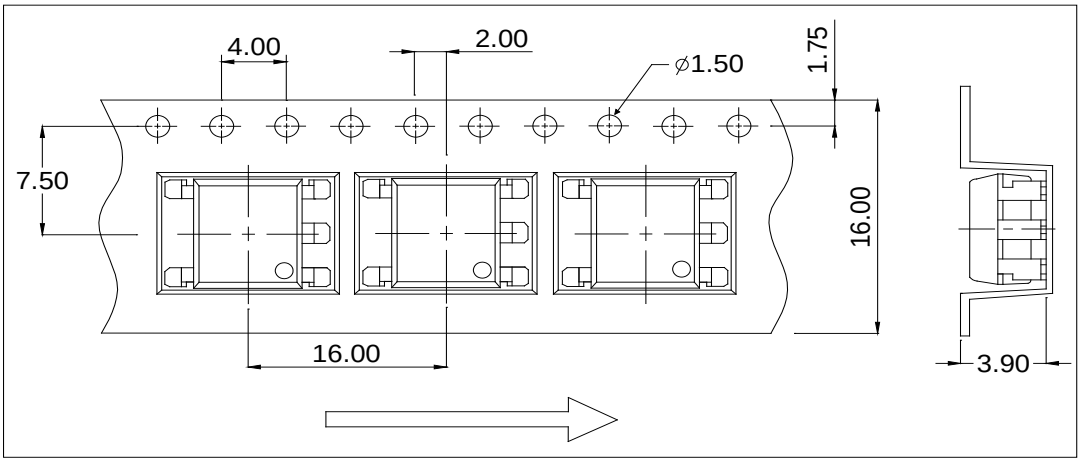


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

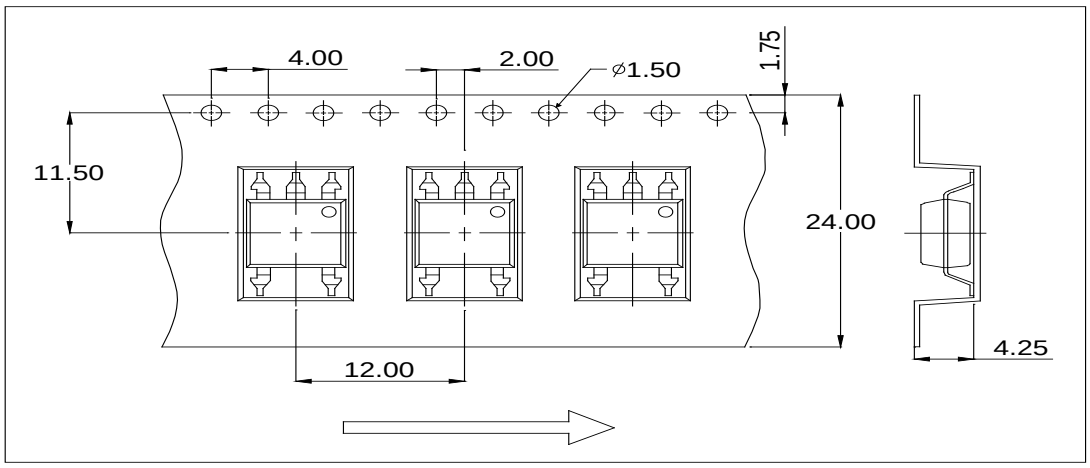
Option SL(T1)



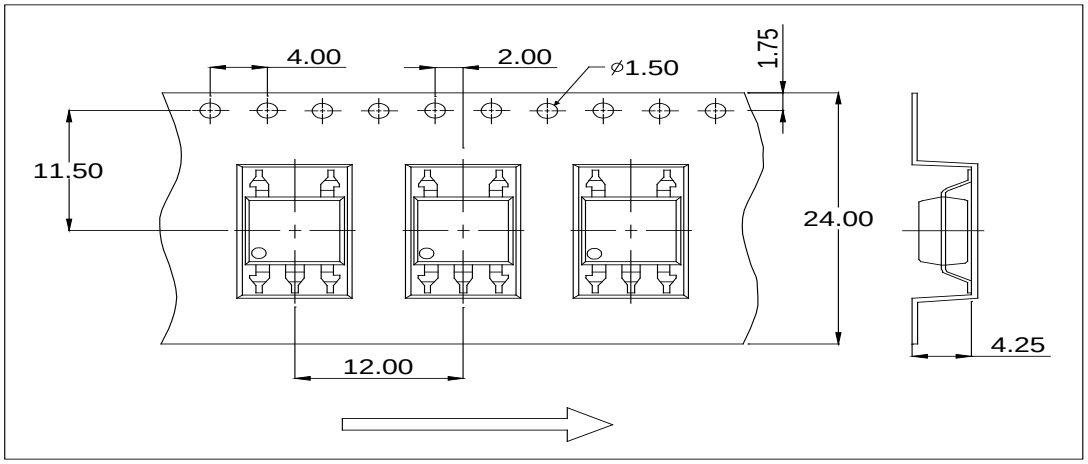
Option SL(T2)



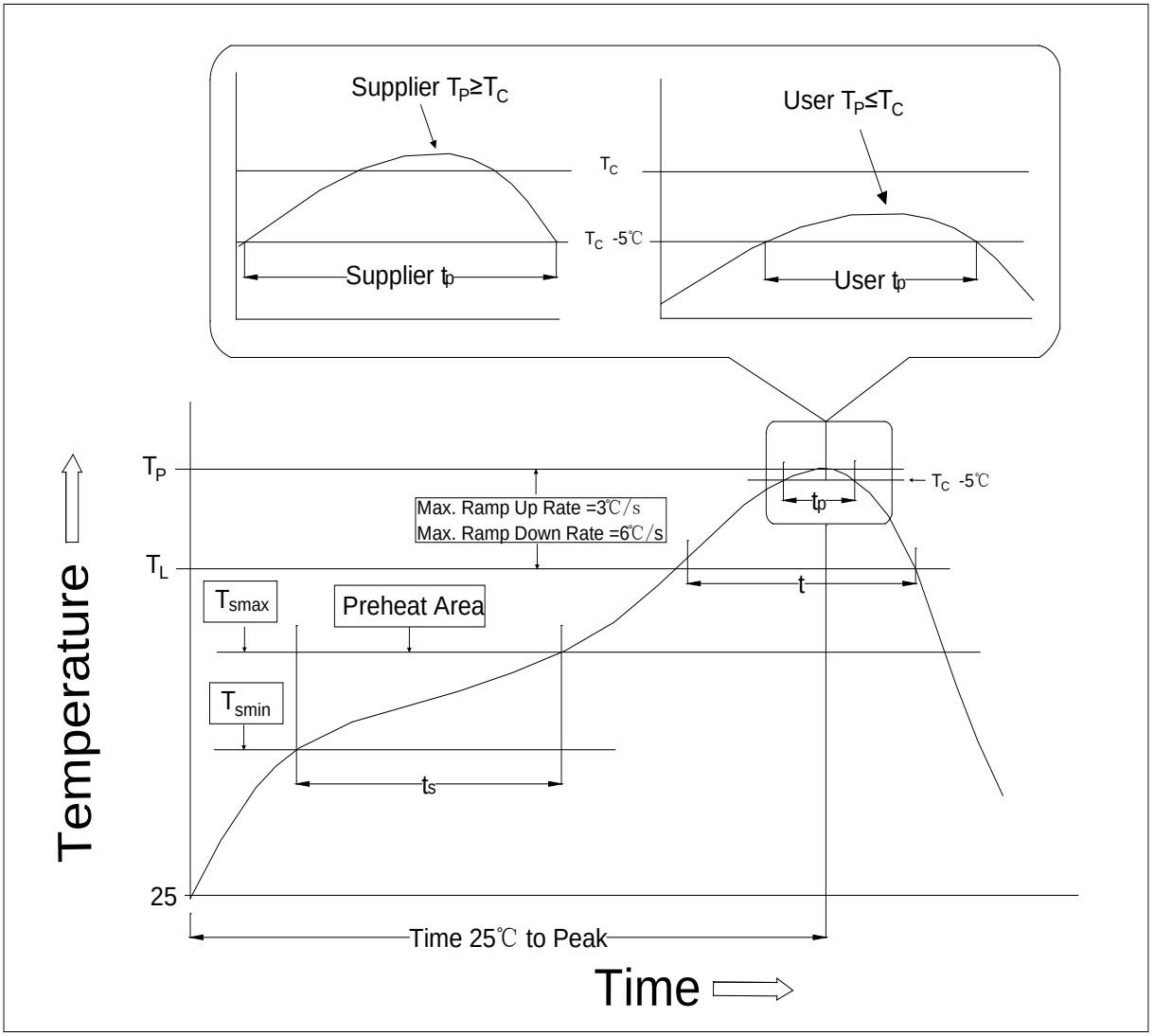
Option SLM(T1)



Option SLM(T2)

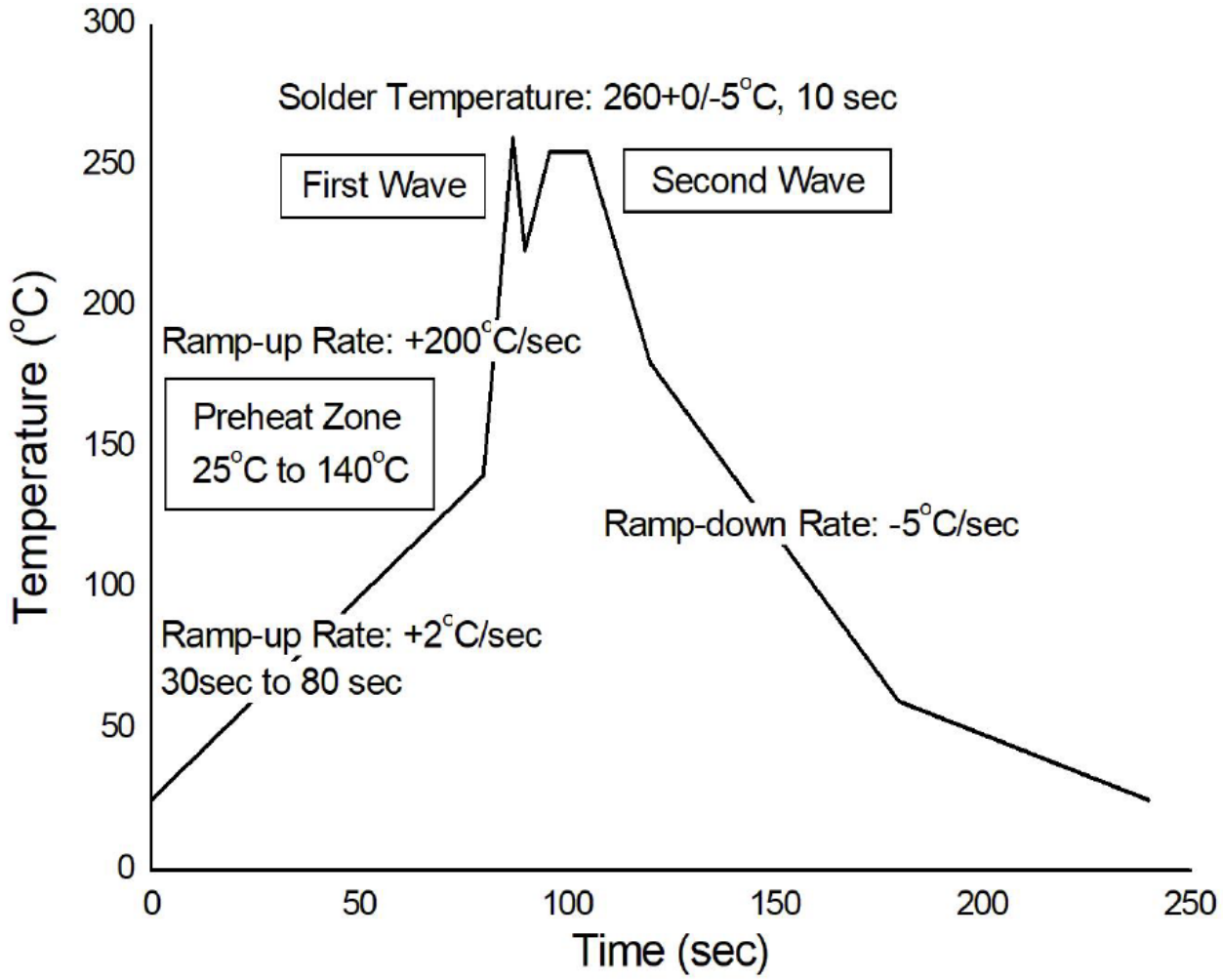


REFLOW INFORMATION



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.
Liquidus 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.

Document Revision History

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