

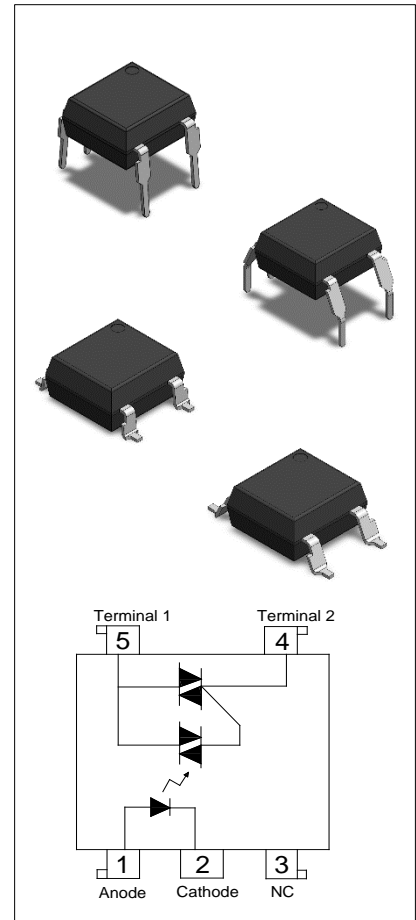


H11BXF Series

Rev.A.1.0

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}	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	
	On-state RMS Current	H11B0F	$I_{T(RMS)}$	0.3	A
		H11B1F		0.6	
		H11B2F		0.9	
	Non repetitive surge peak on-state current (full cycle , $t_p=20ms$)	H11B0F	I_{TSM}	3	A
		H11B1F		6	
H11B2F		9			

Isolation Voltage	V_{iso}	5000 ^②	Vrms
Operating Temperature	T_{opr}	-40~85	°C
Storage Temperature	T_{stg}	-40~125	°C
Soldering Temperature	T_{sol}	260 ^③	°C

NOTE1 : 100μs pulse, 100Hz frequency

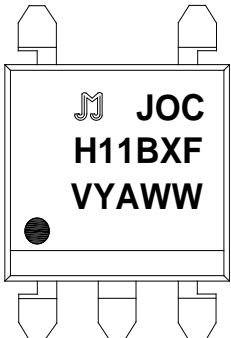
NOTE2 : AC for 1minute, R.H.=40~60%

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}	$I_{TM}=I_{TM} \text{ Rated}$	-	-	2	V
	Critical Rate of Rise of Off-state voltage	dV/dt	$V_D=400V, \text{ Gate Open } I_F=0, T_j=85^\circ C$	1000	-	-	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			
		<p>JOC : Company Abbr. H11BXF : Part Number & Rank V : VDE Option Y : Fiscal Year A : Manufacturing Code WW : Work Week</p>	
ORDERING INFORMATION			
H11BXF(Y)(Z)-GV			
<p>H11BXF – Part Number & Rank (X=0/1/2) 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)</p>			
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

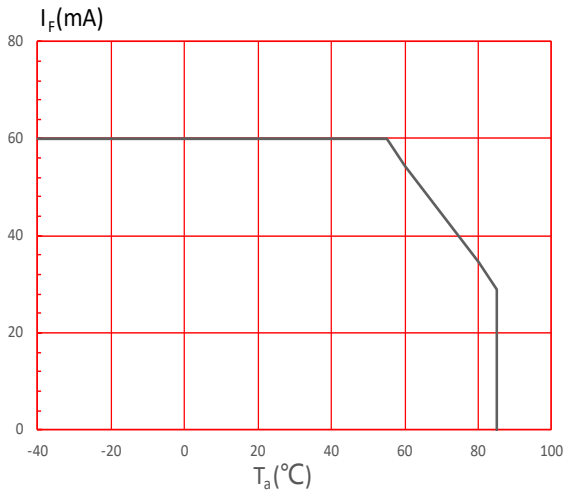


FIG.3: Forward Current vs. Forward Voltage

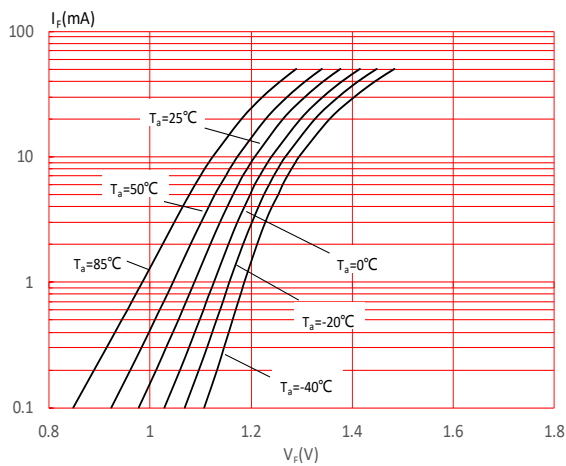


FIG.5: Off-state Terminal Current vs Off-state Terminal Voltage

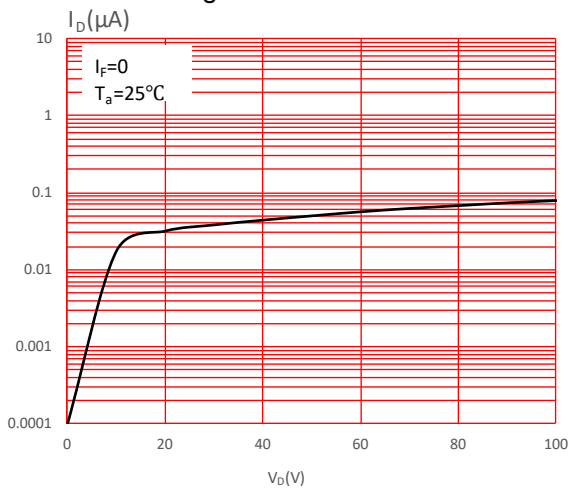


FIG.2: On-state Terminal Current vs. Ambient Temperature

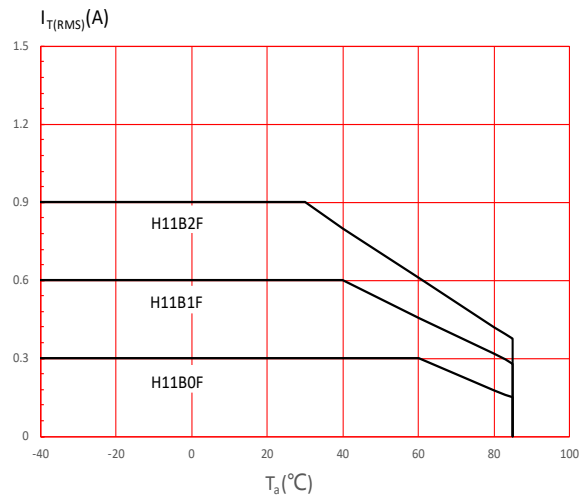


FIG.4: Forward Voltage vs. Ambient Temperature

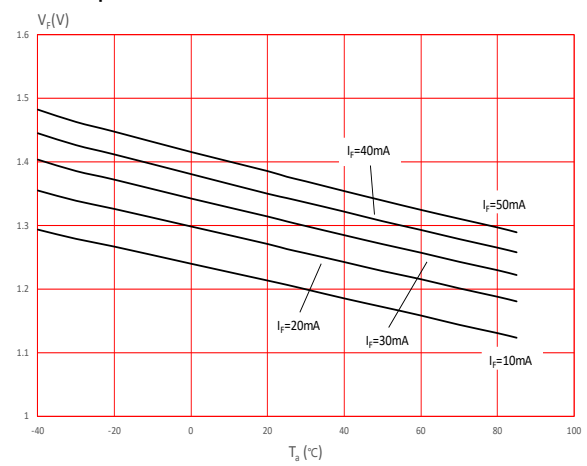


FIG.6: Normalized Trigger Current vs. Ambient Temperature

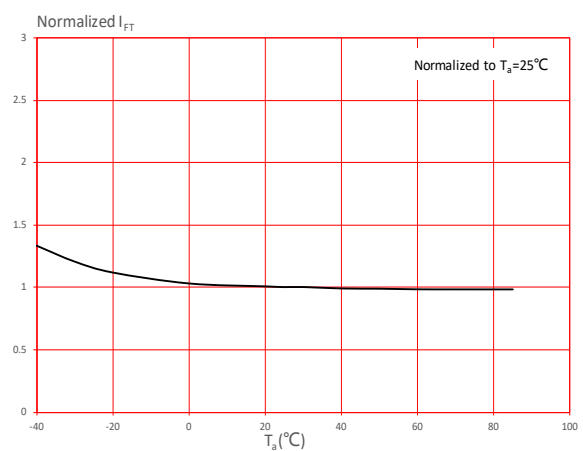


FIG.7: On-state Terminal Voltage vs. Ambient Temperature

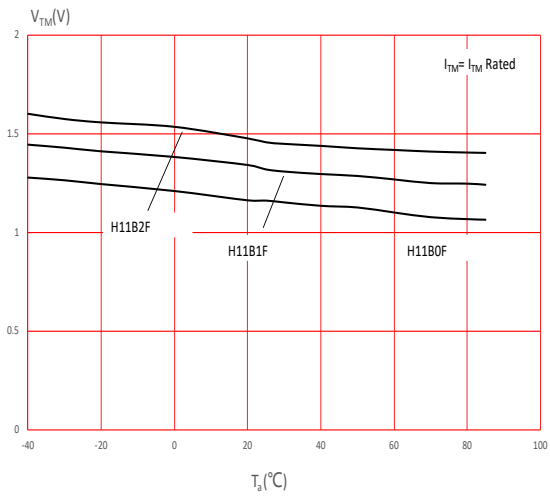


FIG.8: Normalized Holding Current vs. Ambient Temperature

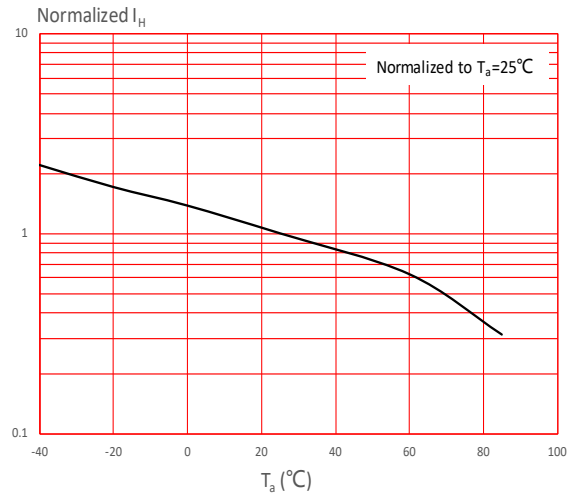
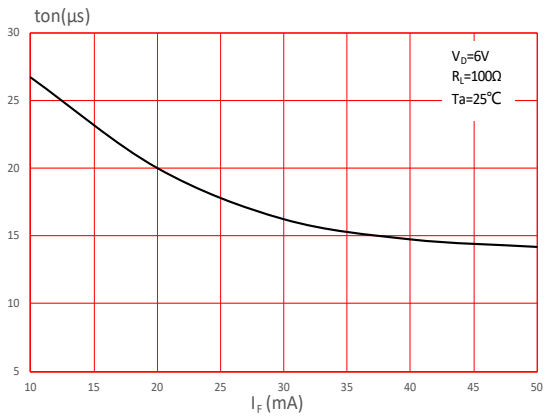


FIG.9: Turn On Time vs. Forward Current



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

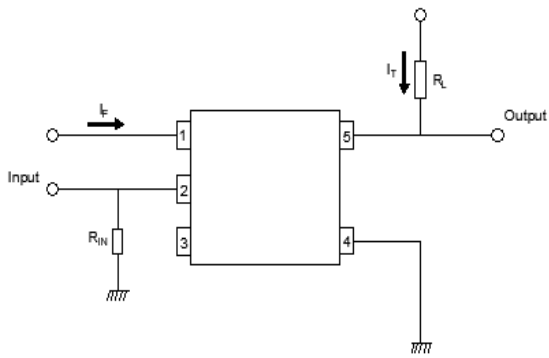
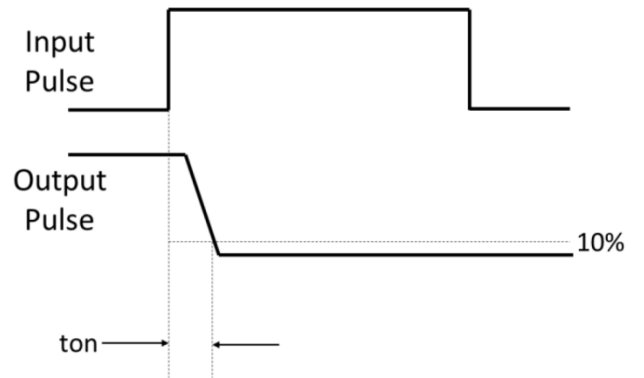
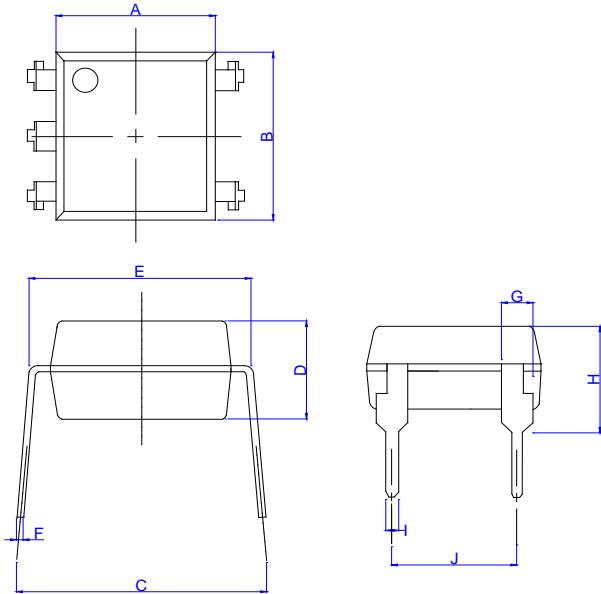


FIG.11: Waveforms of Turn On Time



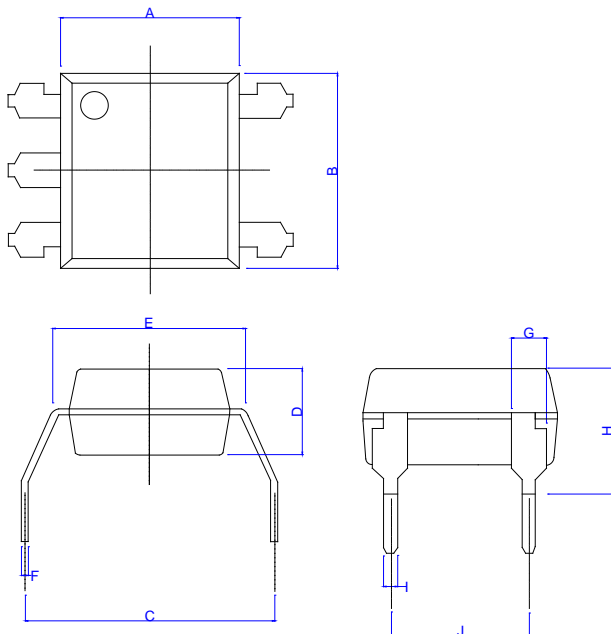
Package Dimension (Unit: mm)

Standard DIP Type:



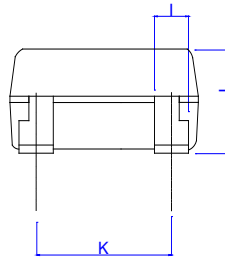
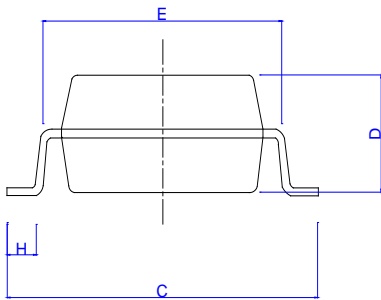
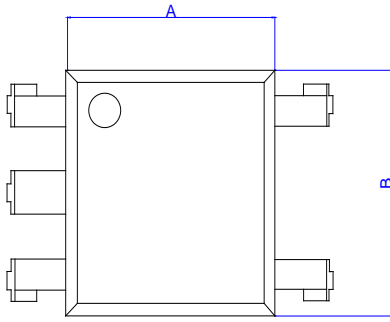
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	7.62		9.50	0.301		0.375
D	3.30		3.70	0.130		0.146
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G			1.30			0.051
H	4.20		4.80	0.166		0.190
I		0.50			0.020	
J		5.08			0.201	

Option M Type:



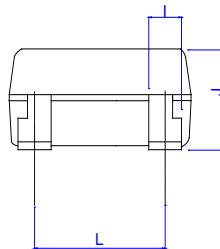
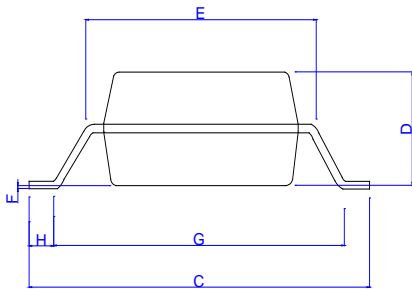
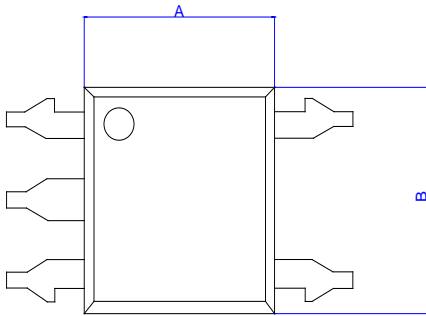
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	9.86		10.46	0.390		0.413
D	3.30		3.70	0.130		0.146
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G			1.30			0.051
H	4.20		4.80	0.166		0.190
I		0.50			0.020	
J		5.08			0.201	

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	

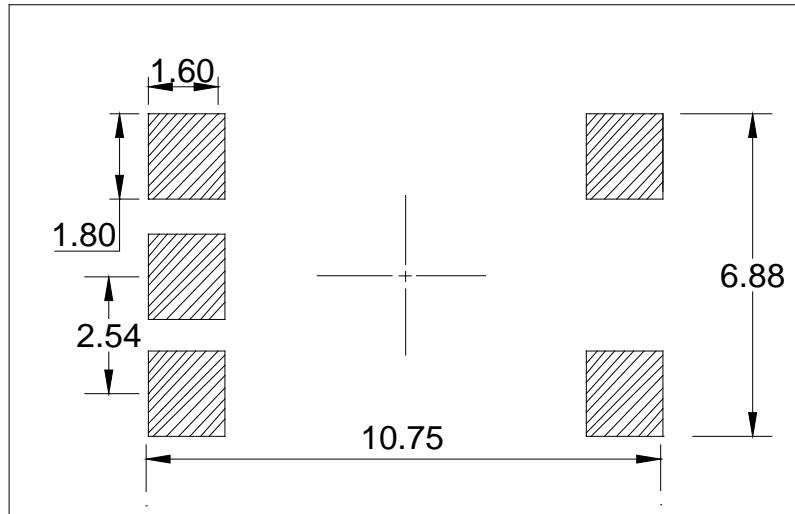
Option SLM Type:



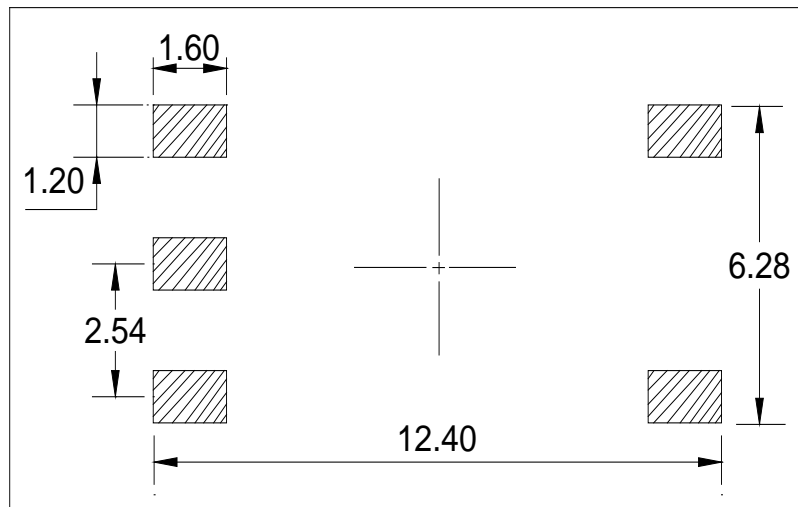
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.20		6.80	0.245		0.269
B	6.82		7.42	0.270		0.293
C	11.50		12.10	0.455		0.478
D	3.20		3.80	0.126		0.150
E	7.32		7.92	0.289		0.313
F		0.25			0.010	
G	10.20		10.80	0.403		0.427
H	0.60			0.024		
I			1.30			0.051
J	3.35		3.95	0.132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

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming:

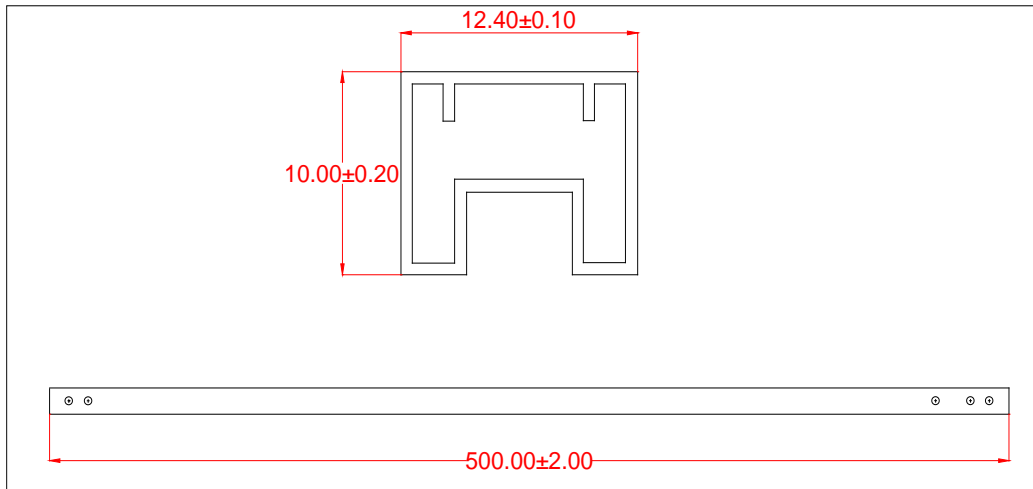


Surface Mount (Gullwing) Lead Forming:



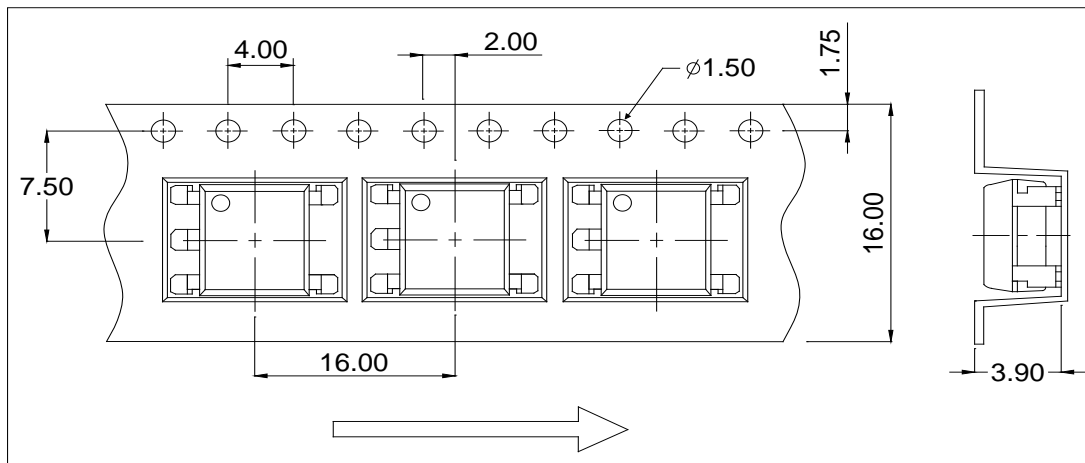
TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP/M

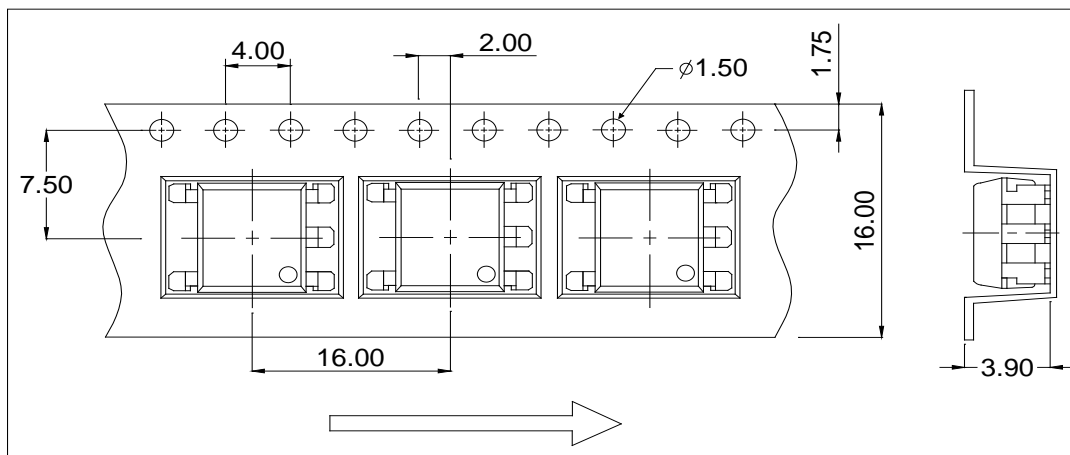


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

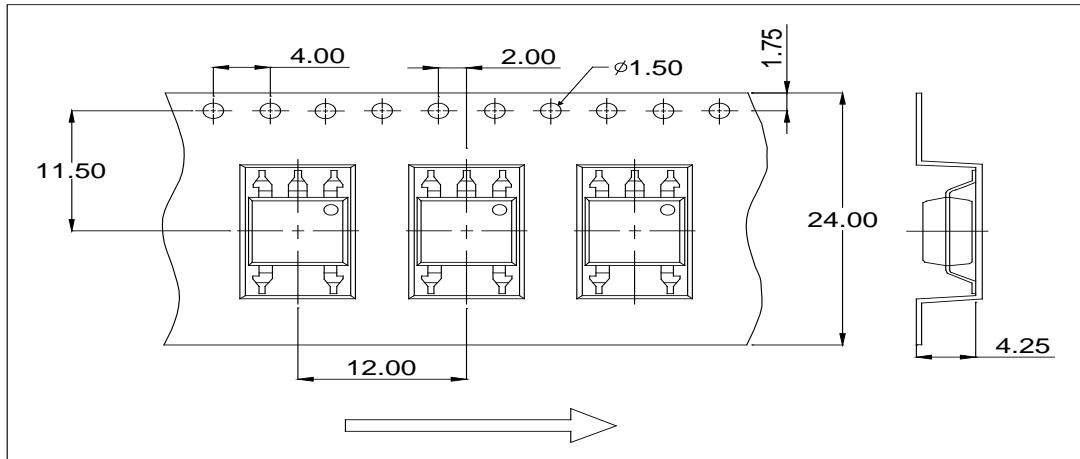
Option SL(T1)



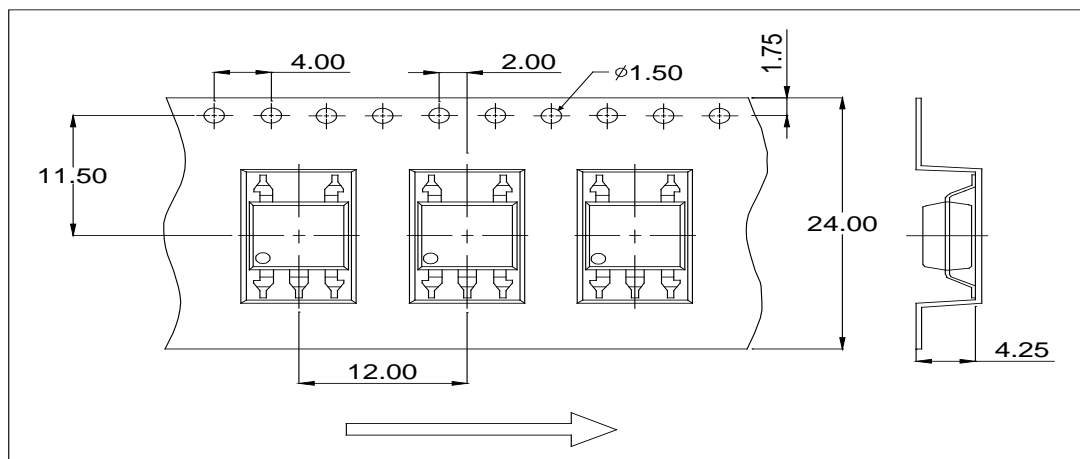
Option SL(T2)



Option SLM(T1)

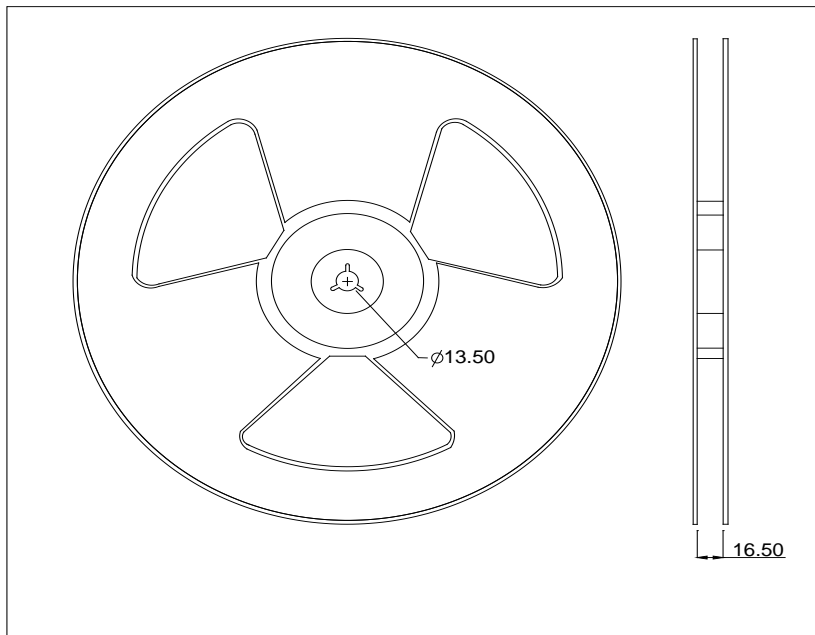


Option SLM(T2)

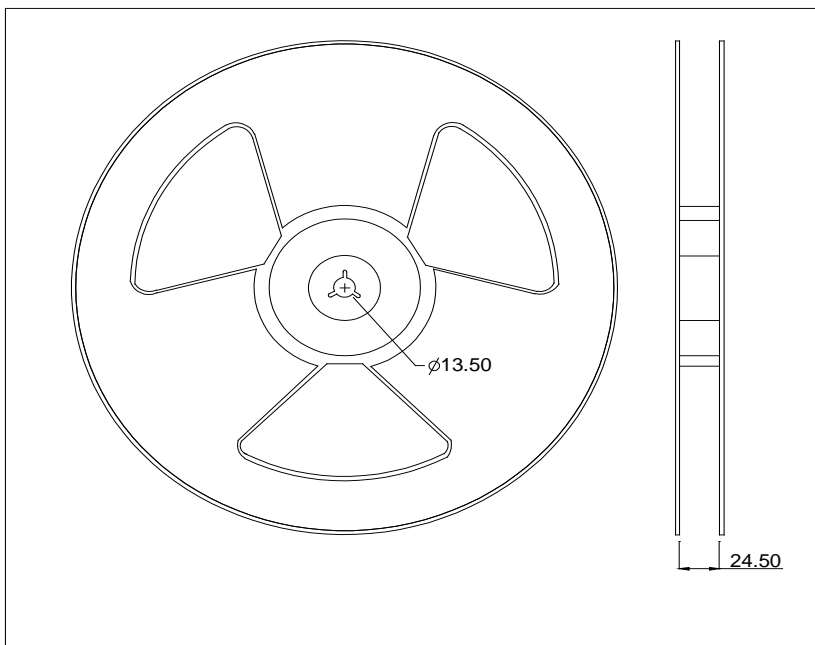


REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

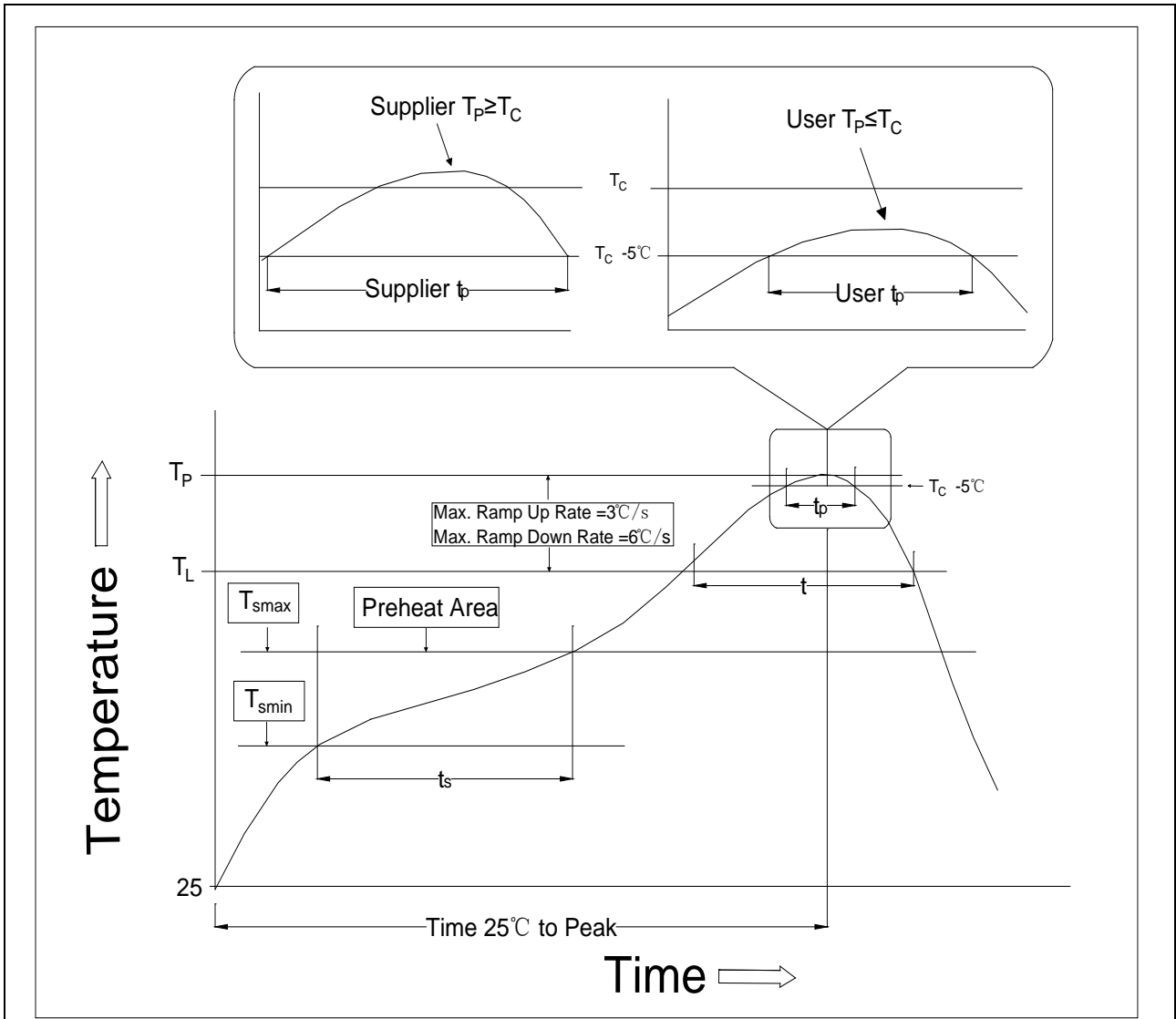
Option SL



Option SLM



REFLOW INFORMATION



Temperature Min. (T _{smin})	150 °C
Temperature Max. (T _{smax})	200 °C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217 °C
Time (t _L) Maintained Above (T _L)	60-120 seconds
Peak Body Package Temperature	260 °C +0 °C / -5 °C
Time (t _P) within 5 °C of 260 °C	10 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max.

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