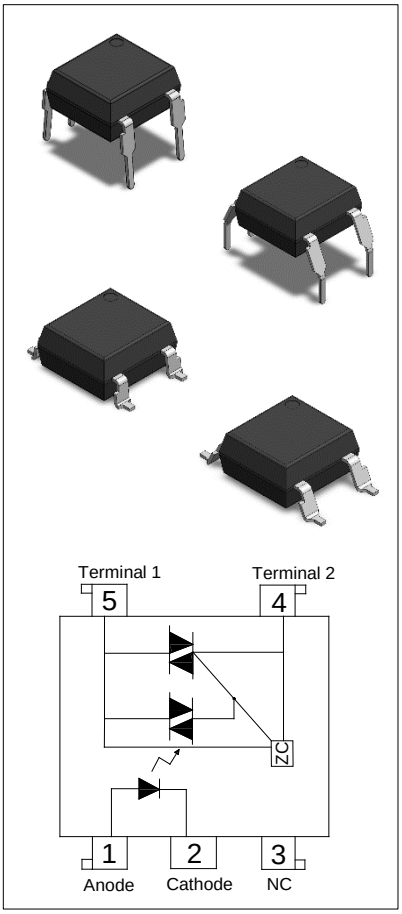
## H11GXF Series

Rev.A.1.0

### DESCRIPTION:

The H11GXF series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon zero-cross 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 |
| | On-state RMS Current | H11G0F | $I_{T(RMS)}$ | 0.3 | A |
| | | H11G1F | | 0.6 | |
| | | H11G2F | | 0.9 | |
| | Non repetitive surge peak on-state current (full cycle , $t_p$=20ms) | H11G0F | $I_{TSM}$ | 3 | A |
| | | H11G1F | | 6 | |
| | | H11G2F | | 9 | |

| | | | |
|---|---|---|---|
| Isolation Voltage | $V_{iso}$ | 5000② | Vrms |
| Operating Temperature | $T_{opr}$ | -40~85 | ℃ |
| Storage Temperature | $T_{stg}$ | -40~125 | ℃ |
| Soldering Temperature | $T_{sol}$ | 260③ | ℃ |

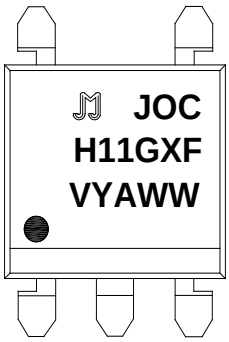
**NOTE1**: 100μs pulse, 100Hzfrequency
**NOTE2**: AC for 1minute, R.H.=40~60%
**NOTE3**: For 10 seconds

## 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 |
| 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 |
| Zero Crossing | Inhibit Voltage | $V_{IH}$ | $I_F$=10mA | - | - | 20 | V |
| | Leakage in Inhibit State | $I_{OFF2}$ | $I_F$=10mA, $V_{OFF}$=600V | - | - | 500 | μA |

## ORDERING AND MARKING INFORMATION

### MARKING INFORMATION




JOC : Company Abbr.
H11GXF : Part Number & Rank
V : VDE Option
Y : Fiscal Year
A : Manufacturing Code
WW : Work Week

### ORDERING INFORMATION

**H11GXF(Y)(Z)-GV**

H11GXF – 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)

### 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

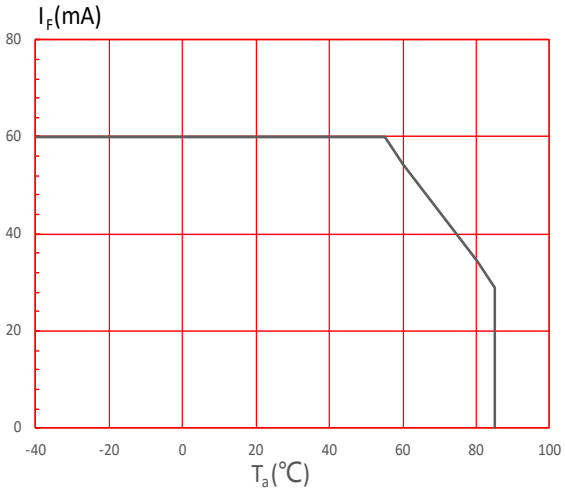



**FIG.2:** On-state Terminal Current vs. Ambient Temperature

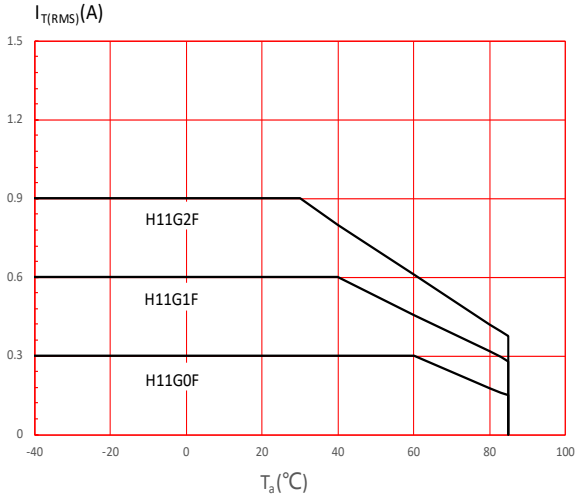



**FIG.3:** Forward Current vs. Forward Voltage

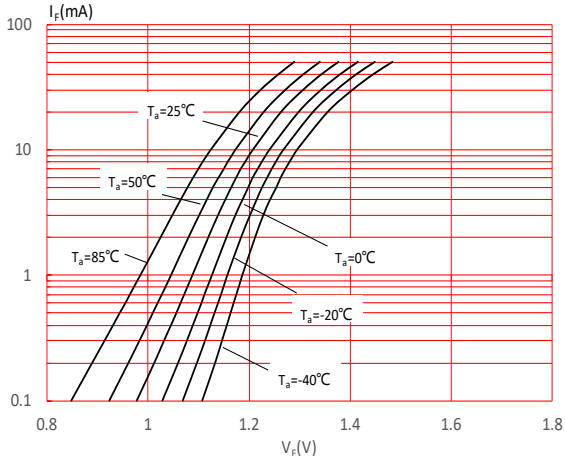



**FIG.4:** Forward Voltage vs. Ambient Temperature

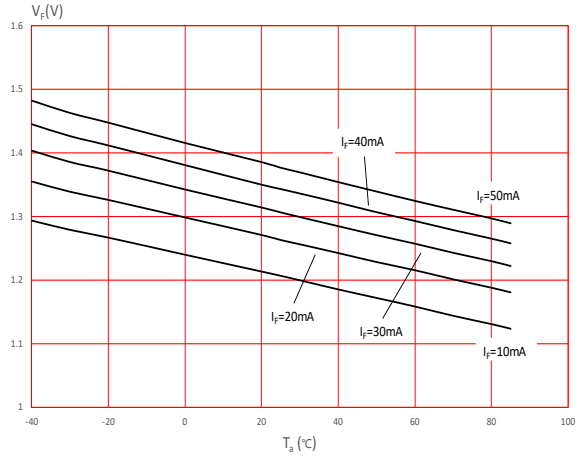



**FIG.5:** Off-state Terminal Current vs Off-state Terminal Voltage

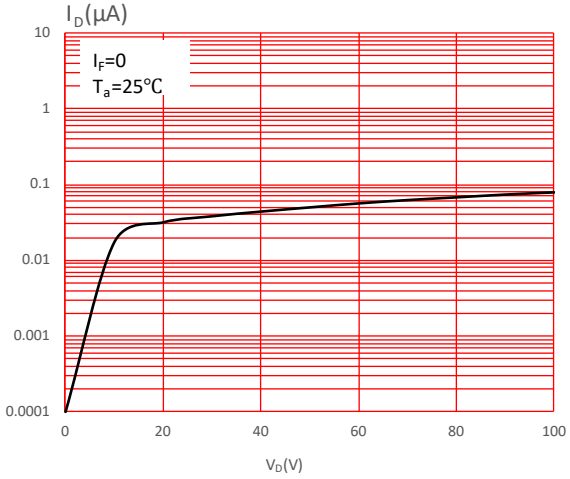



**FIG.6:** Normalized Trigger Current vs. Ambient Temperature

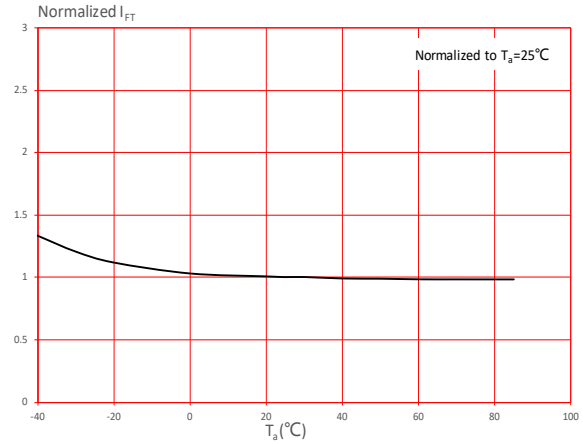


**FIG.7:** On-state Terminal Voltage vs. Ambient Temperature

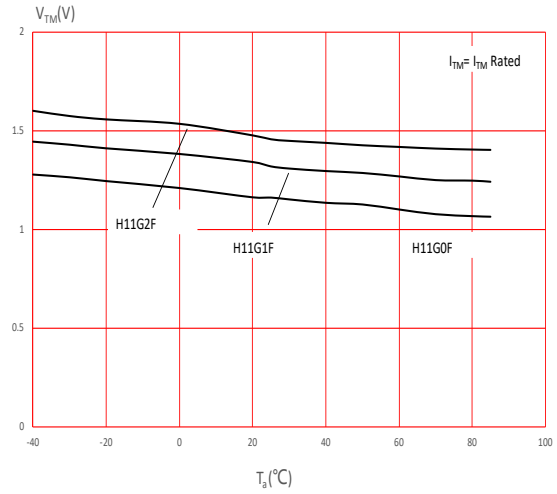



**FIG.8:** Normalized Holding Current vs. Ambient Temperature

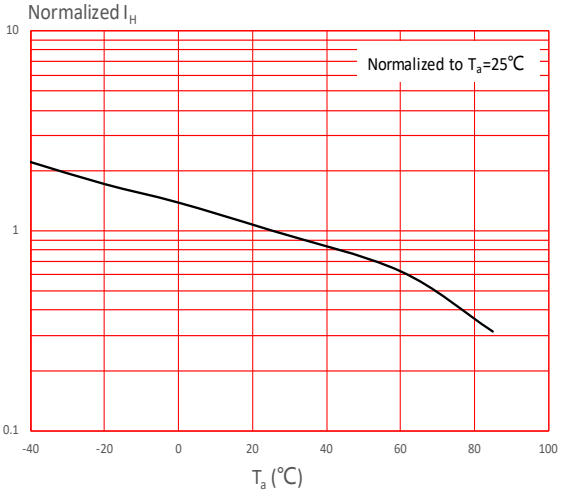



**FIG.9:** Turn On Time vs. Forward Current

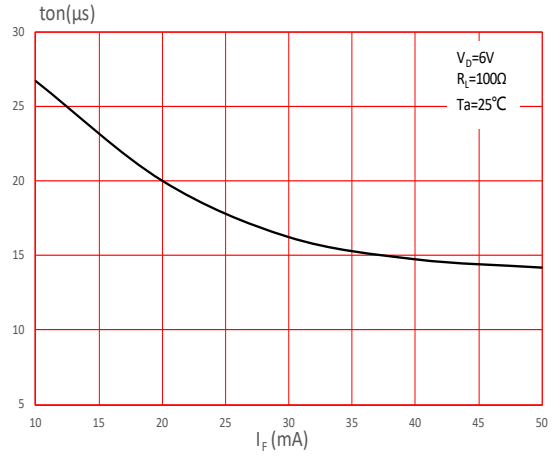
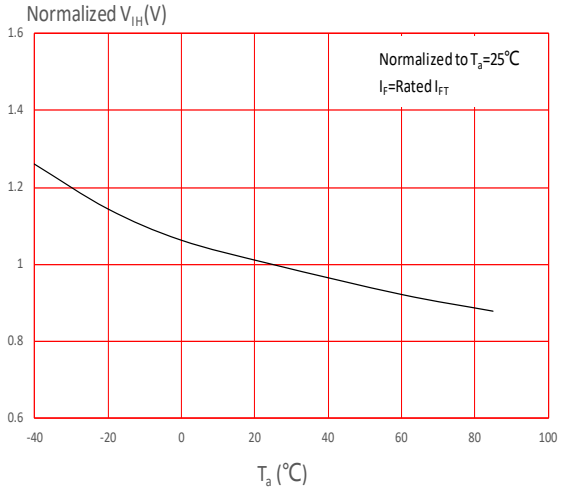



**FIG.10:** Normalized Inhibit Voltage vs. Ambient Temperature



## TEST CIRCUITS

**FIG.11:** Test Circuits of Turn On Time

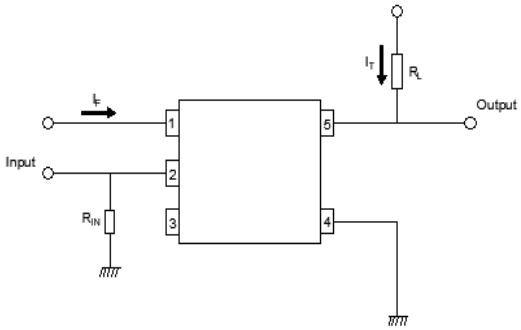
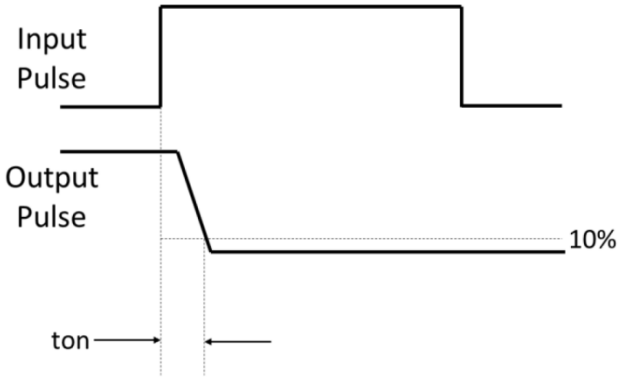
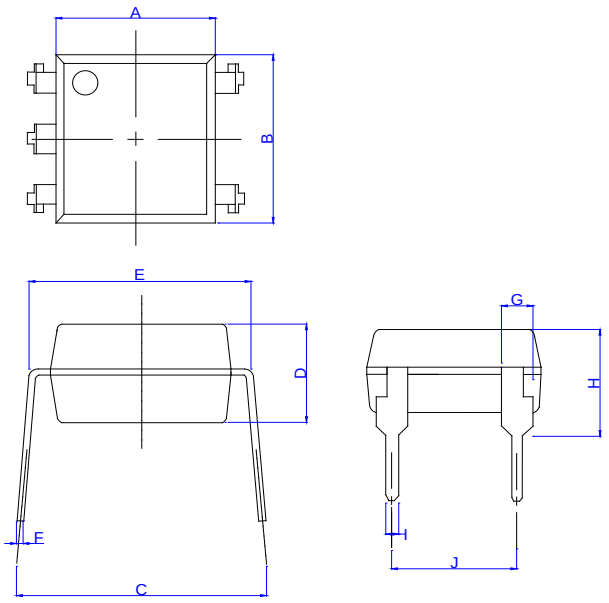



**FIG.12:** Waveforms of Turn On Time



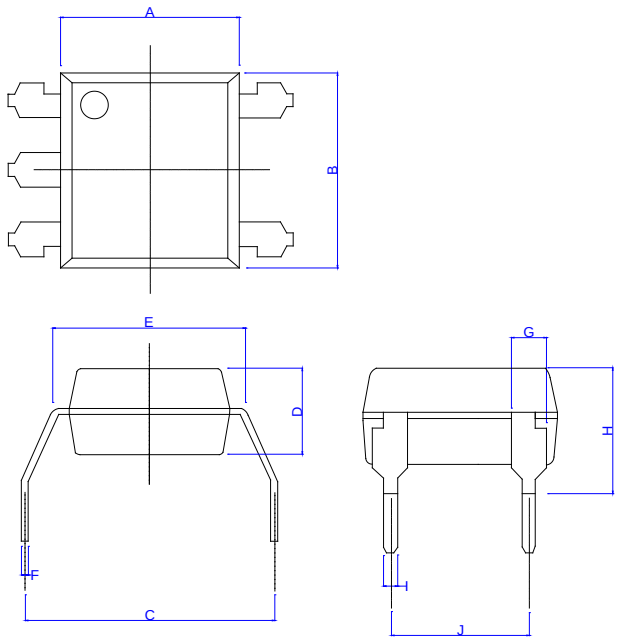
## Package Dimension (Unit: mm）

### Standard DIP Type:



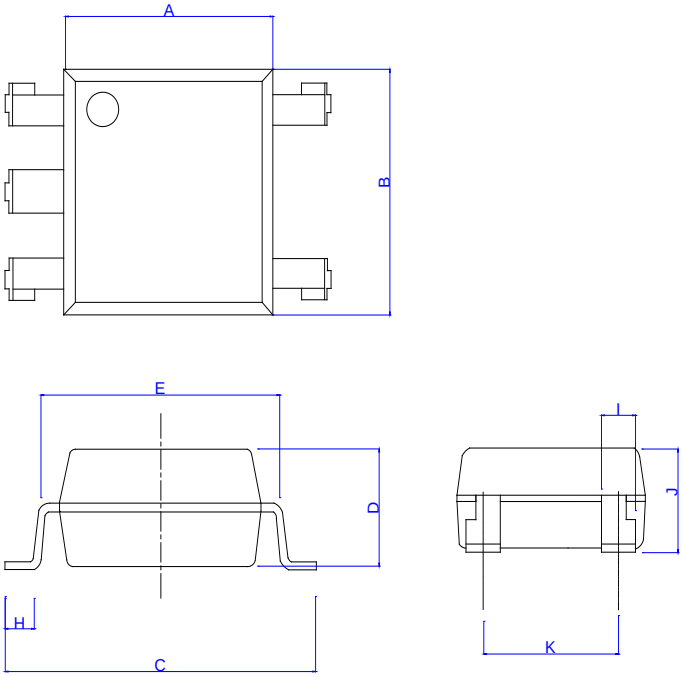

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.80 | 0.245 | | 0.269 |
| B | 6.82 | | 7.42 | 0.270 | | 0.293 |
| C | 7.62 | | 9.50 | 0.301 | | 0.375 |
| D | 3.30 | | 3.70 | 0.130 | | 0.146 |
| 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:



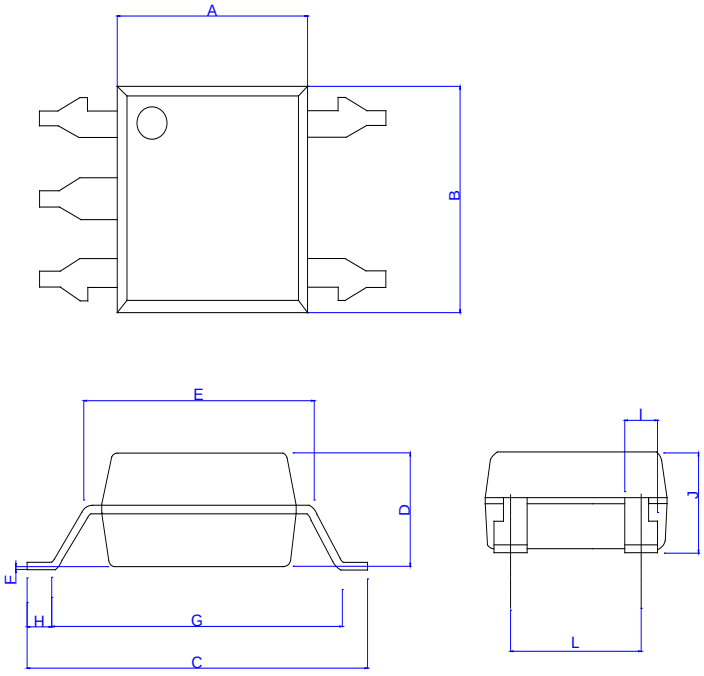

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.80 | 0.245 | | 0.269 |
| B | 6.82 | | 7.42 | 0.270 | | 0.293 |
| C | 9.86 | | 10.46 | 0.390 | | 0.413 |
| D | 3.30 | | 3.70 | 0.130 | | 0.146 |
| 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 | |

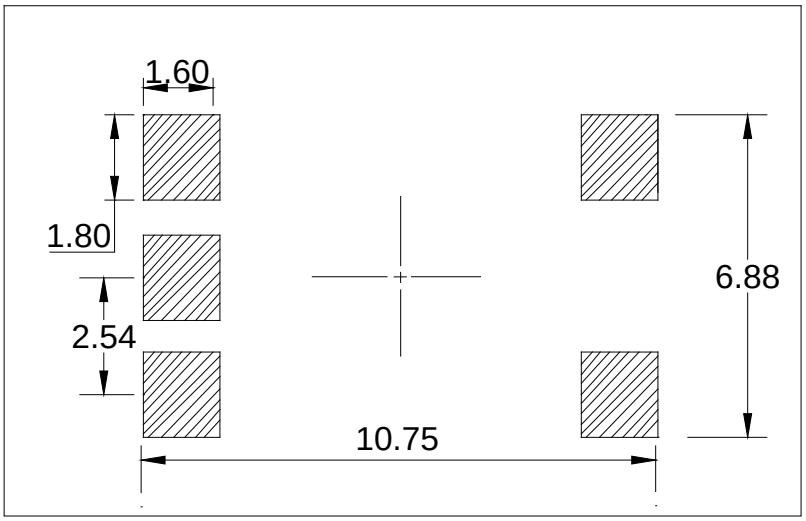
**Option SLM Type:**



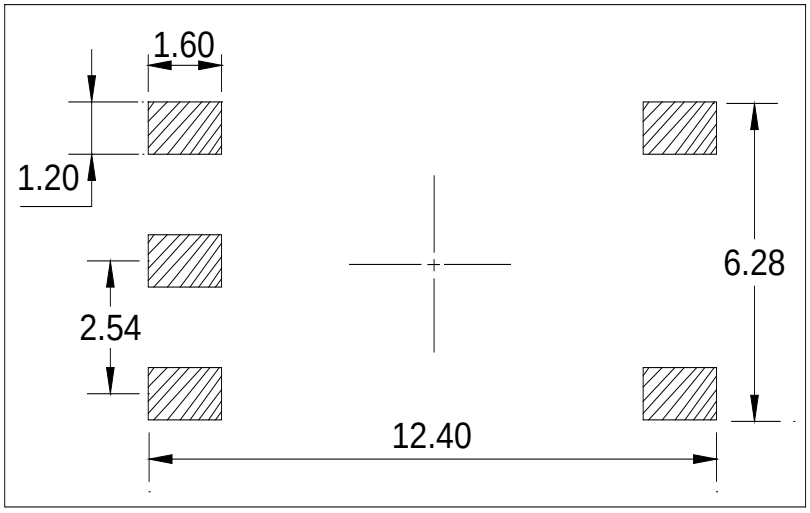

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.80 | 0.245 | | 0.269 |
| B | 6.82 | | 7.42 | 0.270 | | 0.293 |
| C | 11.50 | | 12.10 | 0.455 | | 0.478 |
| D | 3.20 | | 3.80 | 0.126 | | 0.150 |
| 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:**

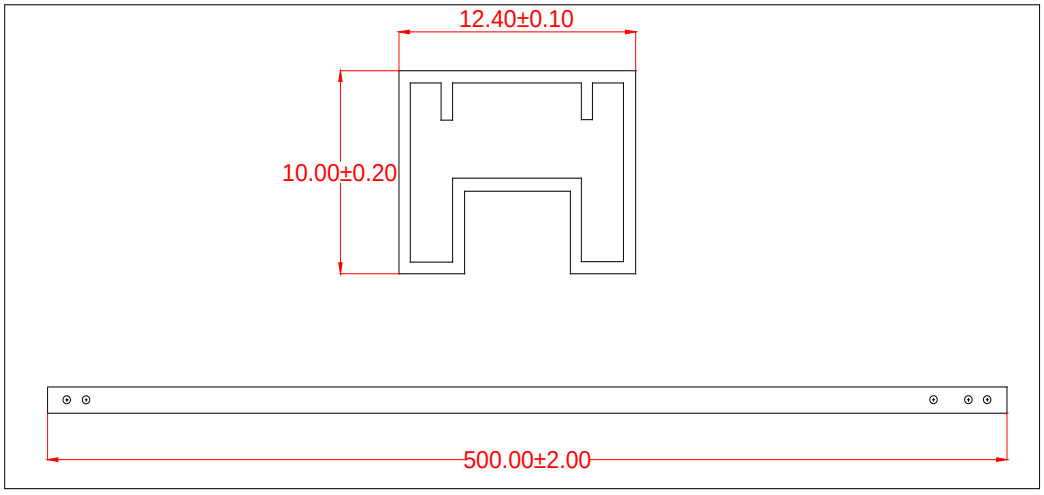



**Surface Mount (Gullwing) Lead Forming:**



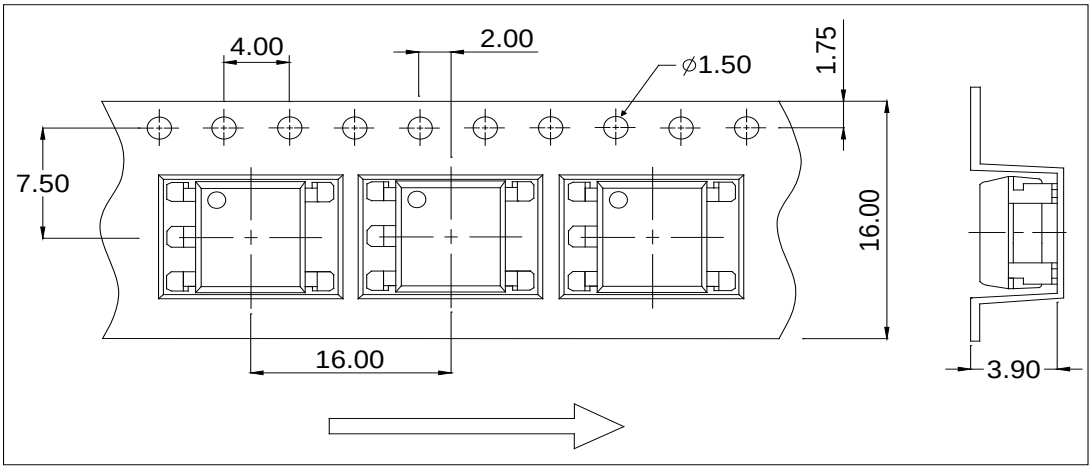
## TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

### Standard DIP/M

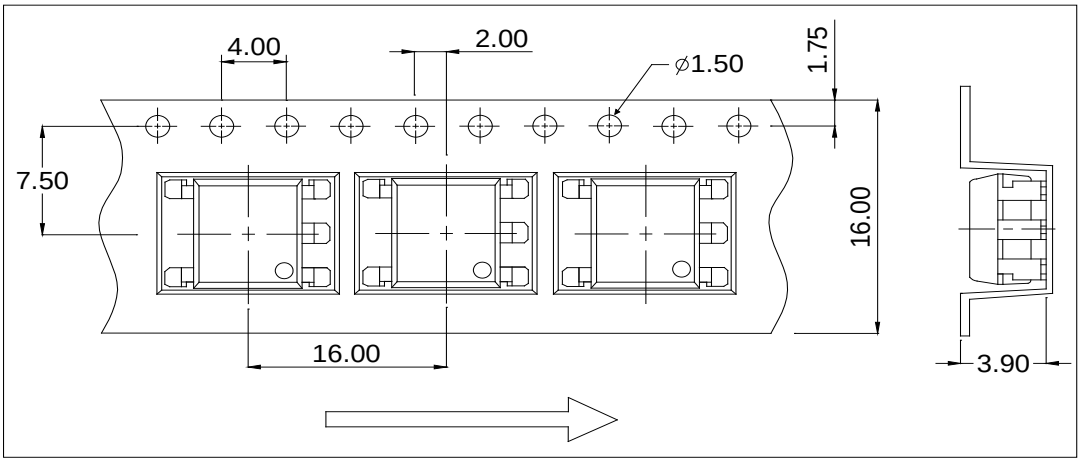



## CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

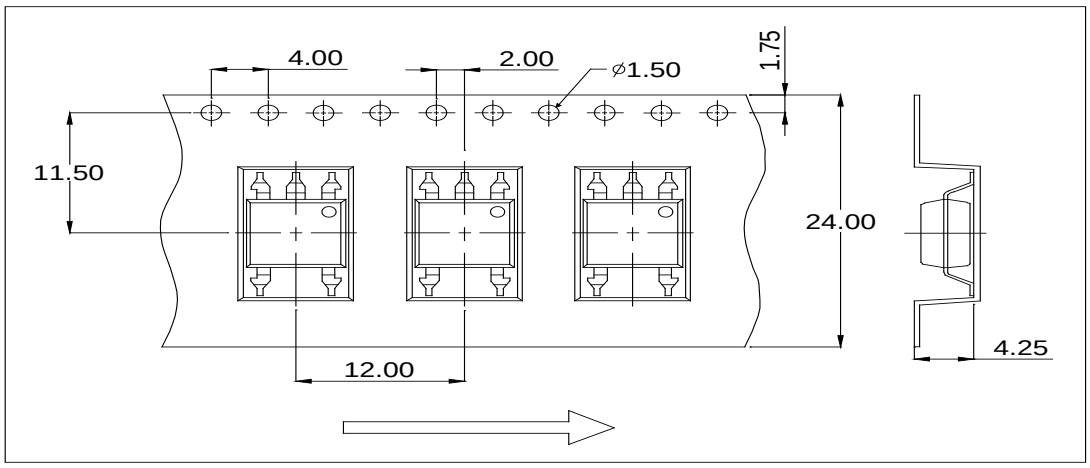
### Option SL(T1)



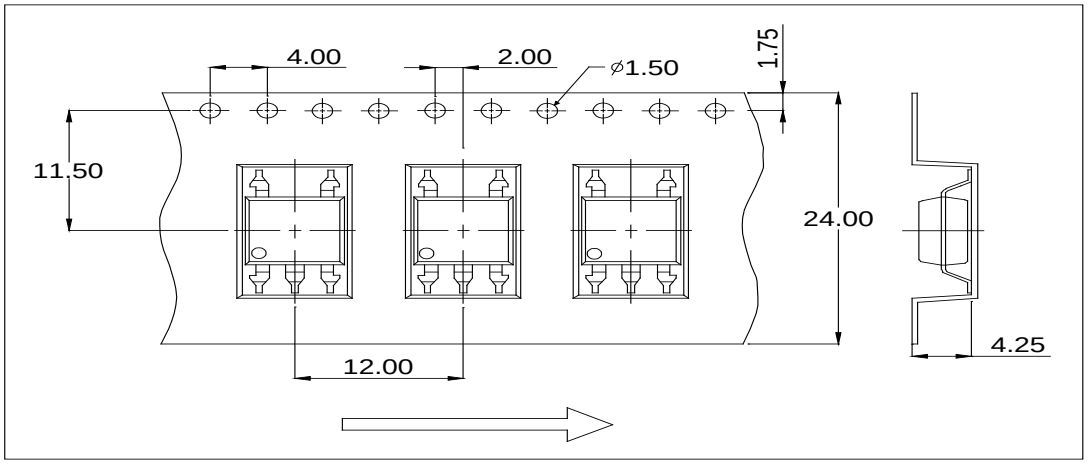

### Option SL(T2)



**Option SLM(T1)**

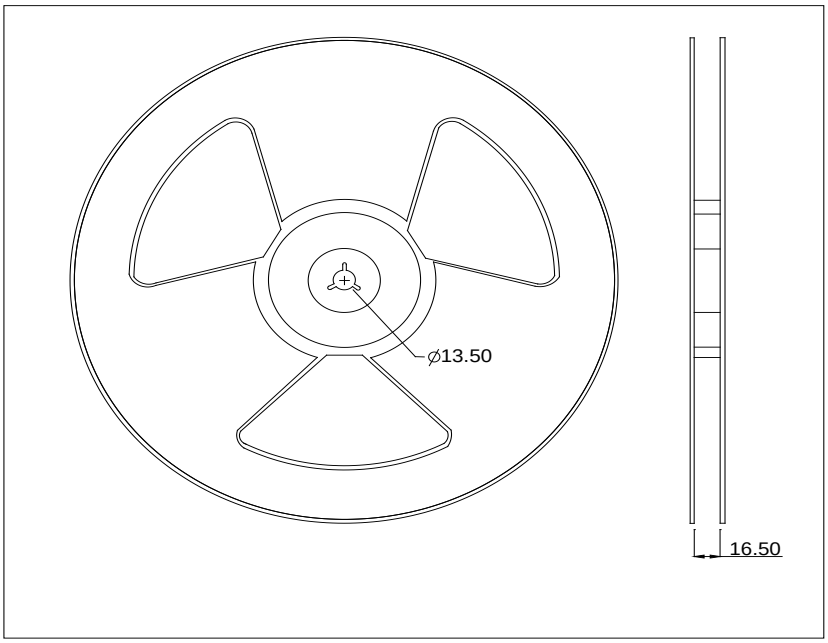



**Option SLM(T2)**

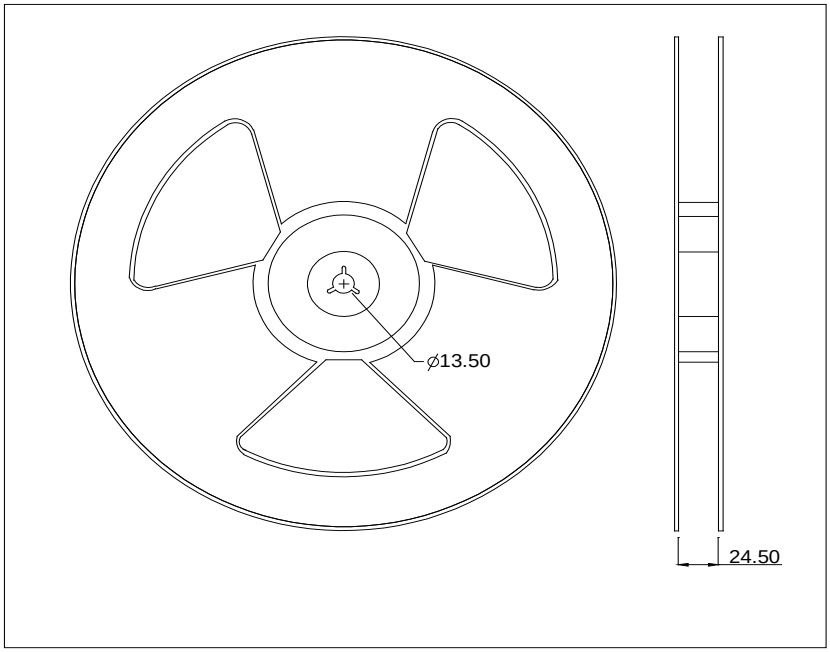


## REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

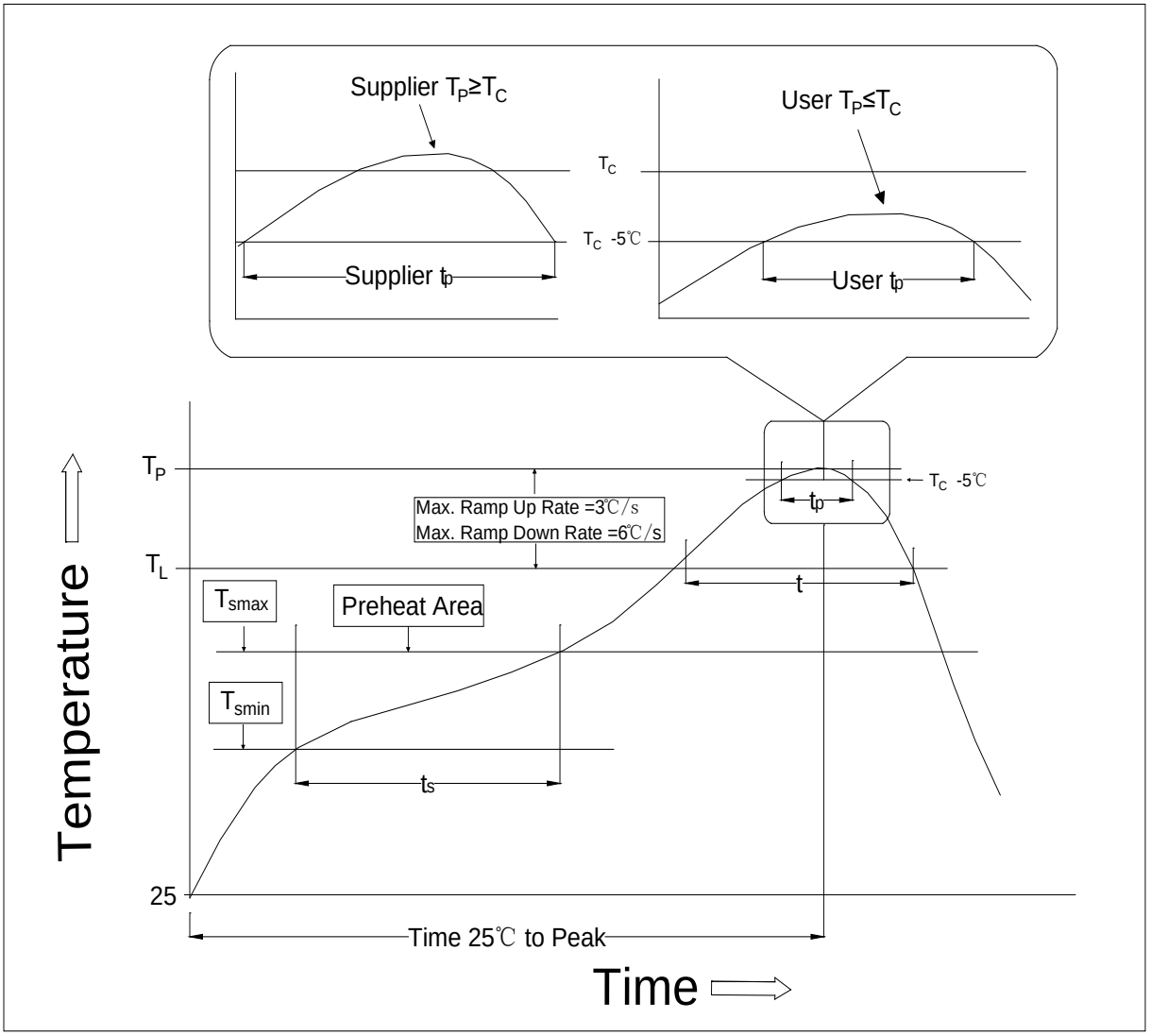
### Option SL




### Option SLM



## REFLOW INFORMATION




| | |
|---|---|
| Temperature Min. (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. |

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co., Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it. Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.

is a registered trademark of Jiangsu JieJie Microelectronics Co., Ltd.