

DESCRIPTION:

The products are 6-pin optical relays. The device combines an AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit. The detector consists of a high-speed photovoltaic diode array and driver circuitry. The products are widely used in accumulation, automotive battery management system, automobile battery and power system insulation testing, industrial controls and EMR/reed relay replacement.

MAIN FEATURES:

High isolation 5000 Vrms

Single channel normally on Single-Pole-Single-Throw Relay

Operating temperature range -40°C to 110°C

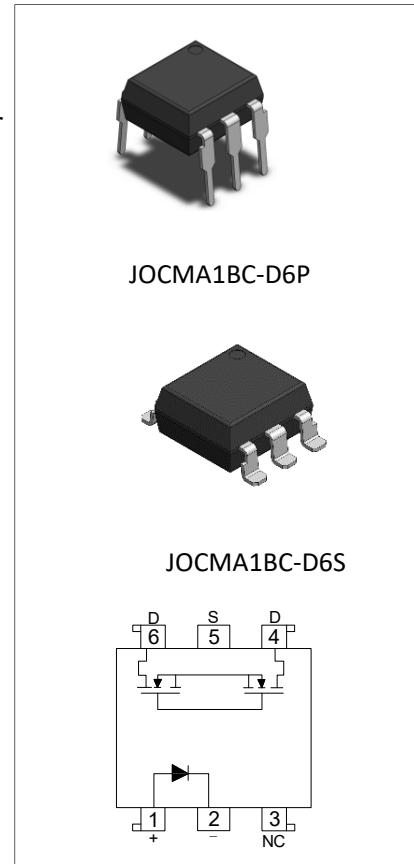
REACH & RoHS compliance

HBM: H3A; 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 ^① | A |
| | Reverse Voltage | V_R | 6 | V |
| | Power Dissipation | P_D | 75 | mW |
| Output | Switching Voltage | V_O | 20 | V |
| | Continuous Load Current | I_O | 6 | A |
| | Power Dissipation | P_C | 360 | mW |
| Operating Temperature | | T_{opr} | -40~110 | °C |
| Junction Temperature | | T_j | 125 | °C |
| Storage Temperature | | T_{stg} | -55~125 | °C |
| Total Power Dissipation | | P_{tot} | 450 | mW |
| Isolation Voltage | | V_{iso} | 5000 ^② | Vrms |

| | | | |
|-----------------------|-----------|-----|----|
| Soldering Temperature | T_{sol} | 260 | °C |
|-----------------------|-----------|-----|----|

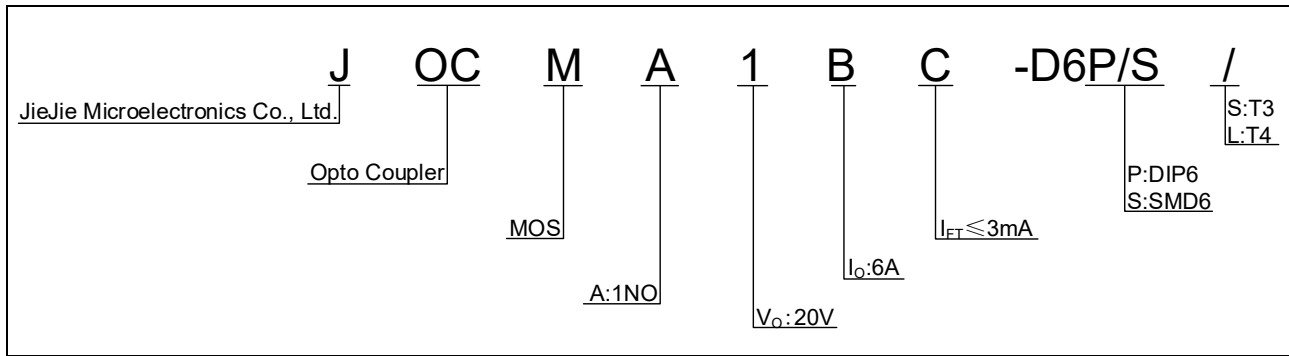
NOTE1: 100 μ s pulse, 100Hz frequency

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

ELECTRICAL CHARACTERISTICS (Temperature=25°C)

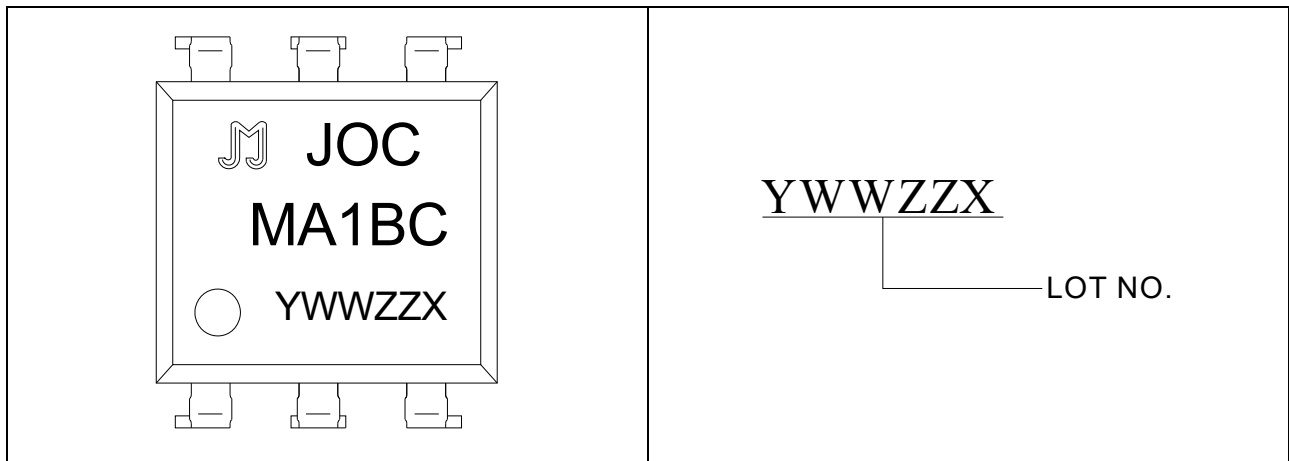
| Parameter | | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------|------------------------------|--------------|---------------------------|--------|-----------|------|------------|
| Input | Forward Voltage | V_F | $I_F=10mA$ | - | 1.2 | 1.5 | V |
| | Reverse Current | I_R | $V_R=6V$ | - | - | 1 | μA |
| | Terminal Capacitance | C_t | $V=0, f=1MHz$ | - | 70 | - | pF |
| | Reset Current | $I_{F(OFF)}$ | $I_O=I_{O(MAX)}$ | 0.1 | - | - | mA |
| Output | Open-circuit leakage current | I_{Leak} | $V_O=20V$ | - | - | 1 | μA |
| | ON Resistance | R_{ON} | $I_O=I_{O(MAX)}, I_F=5mA$ | - | 5 | 50 | m Ω |
| Transfer Characteristics | LED Trigger Current | I_{FT} | $I_O=I_{O(MAX)}$ | - | - | 3 | mA |
| | Floating Capacitance | C_{IO} | $V=0, f=1MHz$ | - | 3 | - | pF |
| | Isolation Resistance | R_{ISO} | DC500V 40~60%R.H. | 10^9 | 10^{14} | - | Ω |
| | Turn On Time | t_{on} | $I_O=6A, I_F=5mA$ | - | 2.5 | 5 | ms |
| | Turn Off Time | t_{off} | $I_O=6A, I_F=5mA$ | - | 0.1 | 1 | ms |

ORDERING INFORMATION



| Packing Quantity | |
|------------------|-----------------|
| Option | Quantity |
| DIP | 60 Units/Tube |
| SMD | 1200 Units/Reel |

MARKING



Characteristics Curves

FIG.1: Forward Current vs. Forward Voltage

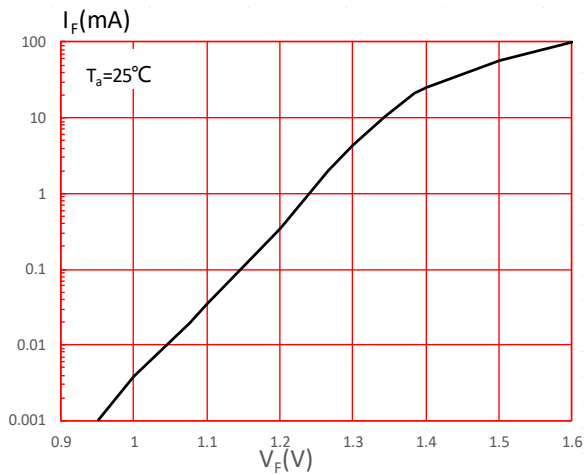


FIG.2: Max. Allowable LED Forward Current vs. Ambient Temperature

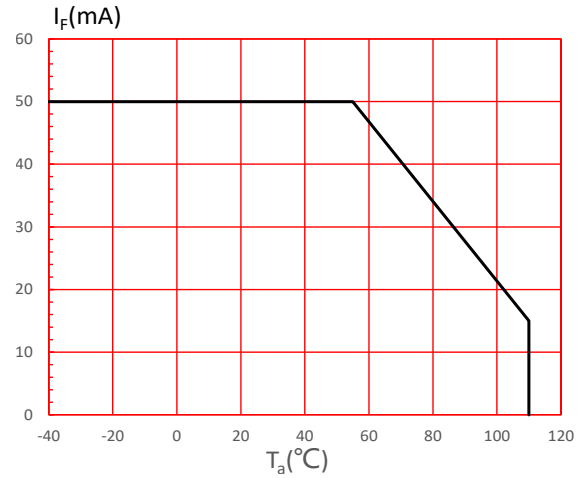


FIG.3: LED Operate Current vs. Ambient Temperature

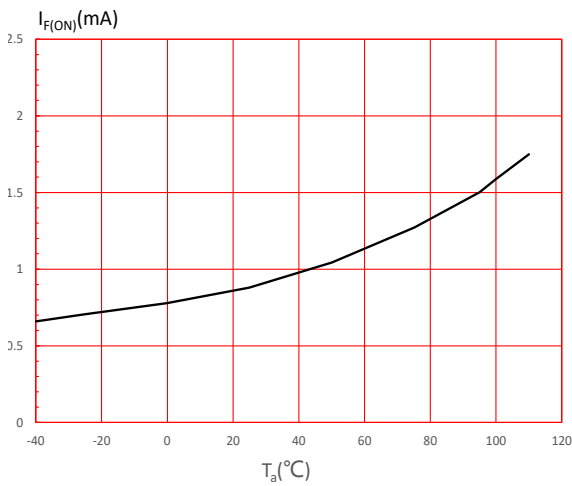


FIG.4: On Resistance vs. Ambient Temperature

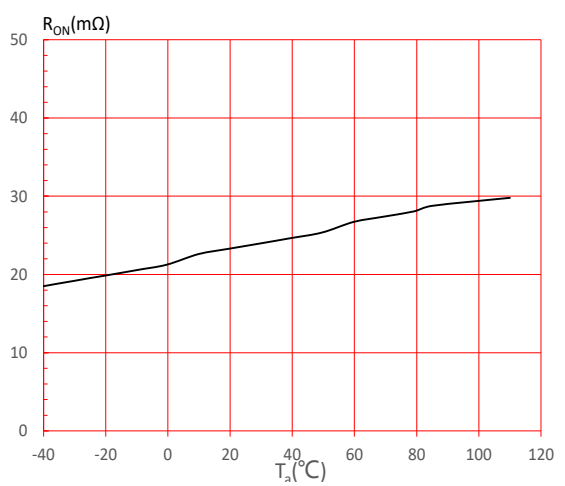


FIG.5: Turn On Time vs. Ambient Temperature

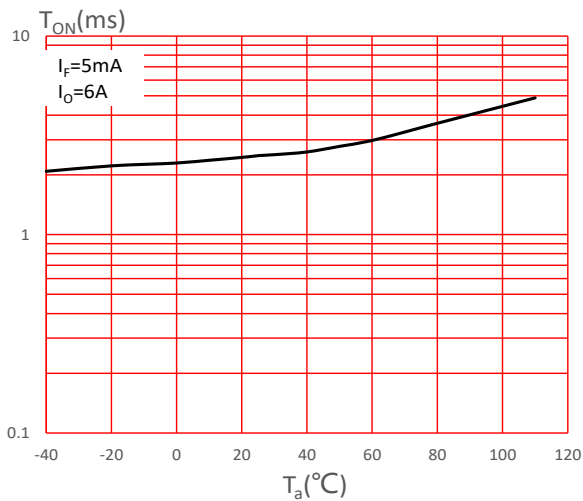


FIG.6: Turn Off Time vs. Ambient Temperature

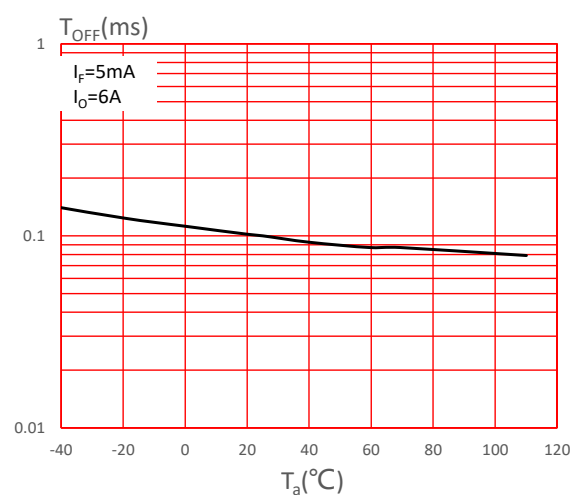


FIG.7: Output Current vs. Output Voltage

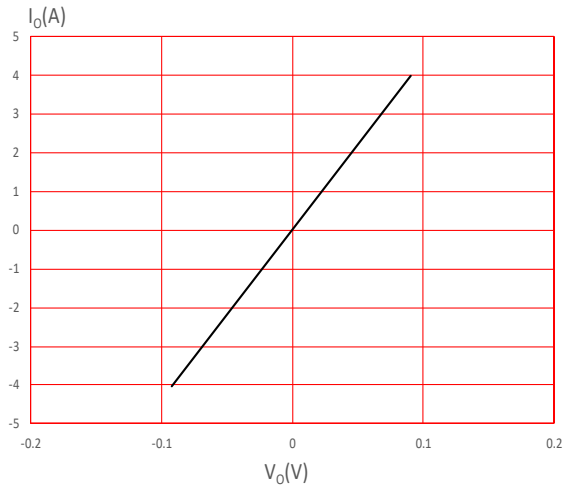
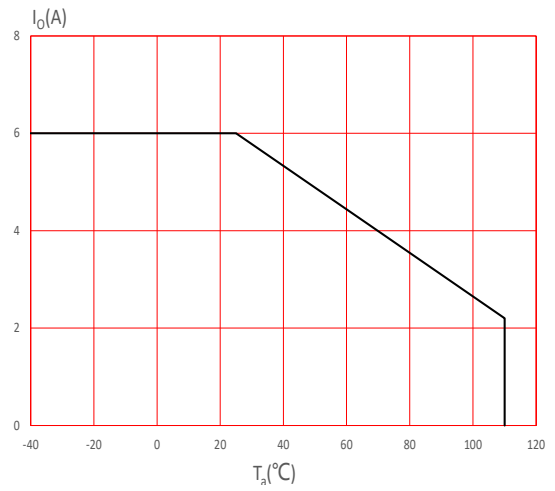


FIG.8: Output Current vs. Ambient Temperature



TEST CIRCUITS

FIG.9: Wiring diagram

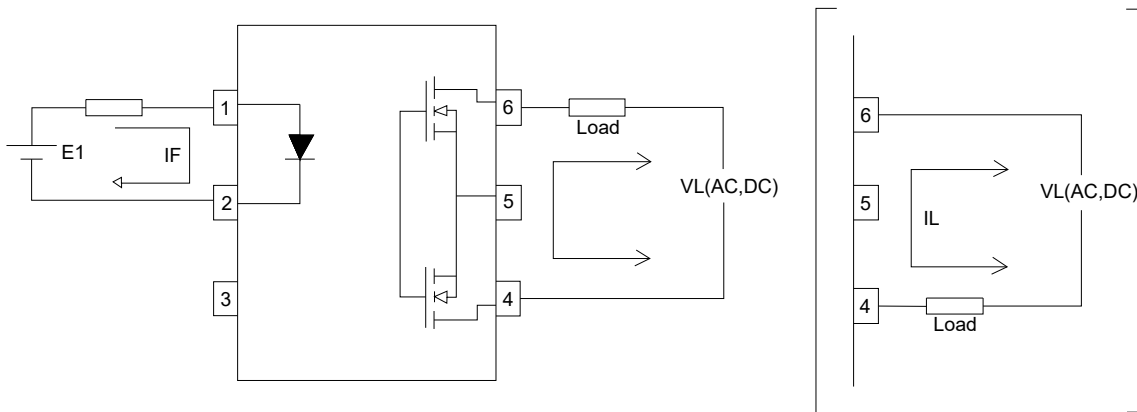
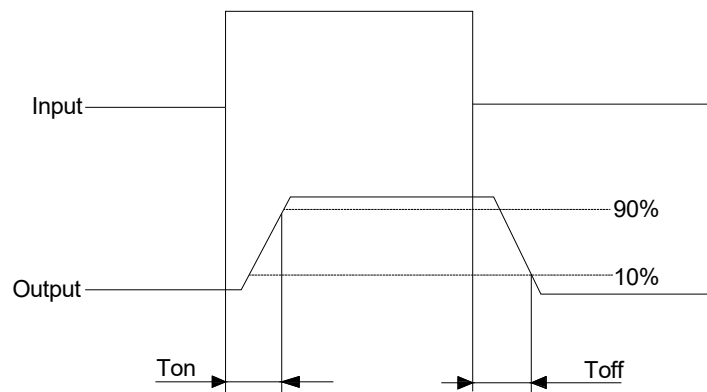
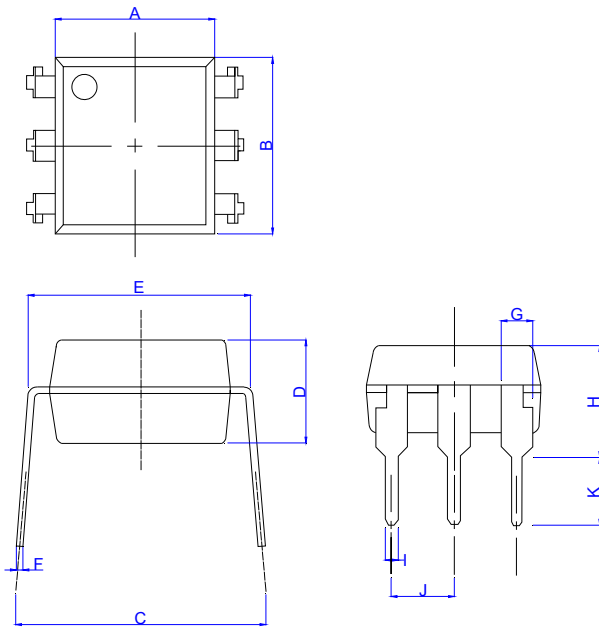


FIG.10: The test method of Ton and Toff



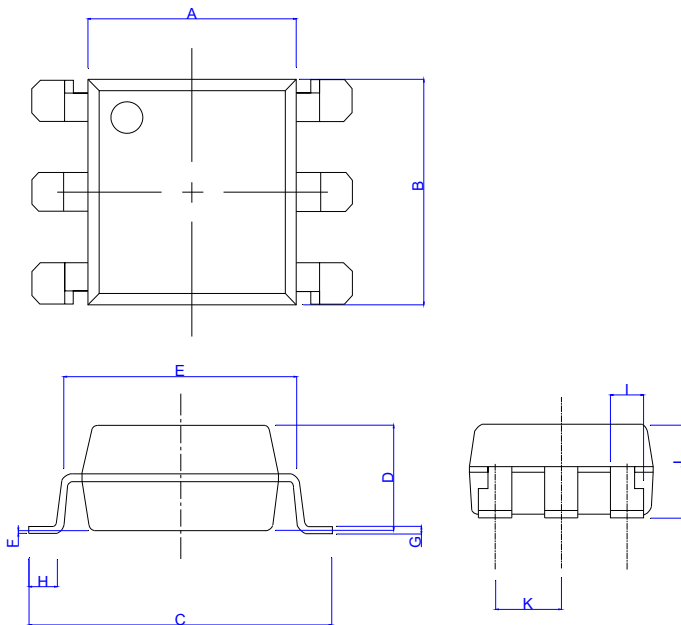
Package Dimension (Unit: mm)

Standard DIP Type:



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.60 | 0.244 | | 0.260 |
| B | 6.92 | | 7.32 | 0.272 | | 0.288 |
| C | 7.15 | | 8.95 | 0.281 | | 0.352 |
| D | 3.20 | | 3.60 | 0.126 | | 0.142 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | 0.15 | | 0.35 | 0.006 | | 0.014 |
| G | 1.15 | | 1.35 | 0.045 | | 0.053 |
| H | 3.90 | | 4.50 | 0.154 | | 0.177 |
| I | 0.40 | | 0.60 | 0.016 | | 0.024 |
| J | 2.29 | | 2.79 | 0.090 | | 0.110 |
| K | 2.24 | | 3.24 | 0.088 | | 0.128 |

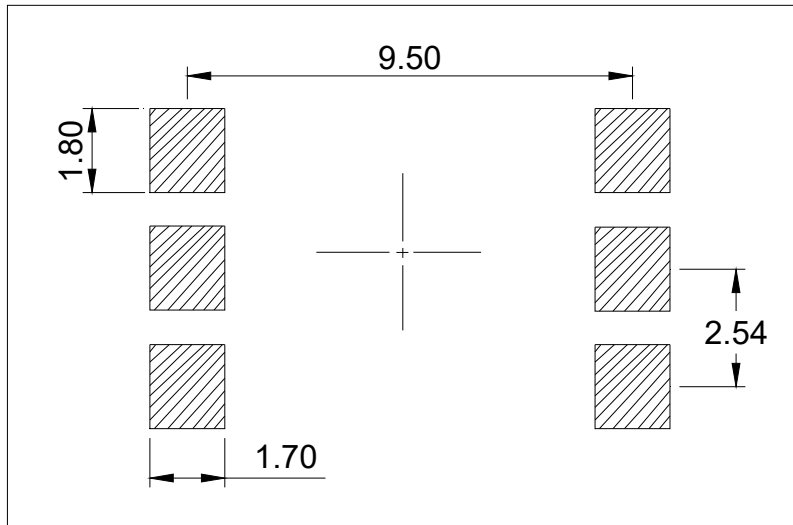
Option SMD Type:



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.60 | 0.244 | | 0.260 |
| B | 6.92 | | 7.32 | 0.272 | | 0.288 |
| C | 9.50 | | 10.50 | 0.375 | | 0.413 |
| D | 3.20 | | 3.60 | 0.126 | | 0.142 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | 0.05 | | 0.35 | 0.002 | | 0.014 |
| G | 0.16 | | 0.36 | 0.006 | | 0.014 |
| H | 0.60 | | 1.40 | 0.024 | | 0.055 |
| I | 0.90 | | 1.50 | 0.035 | | 0.059 |
| J | 3.30 | | 3.90 | 0.130 | | 0.154 |
| K | 2.29 | | 2.79 | 0.090 | | 0.110 |

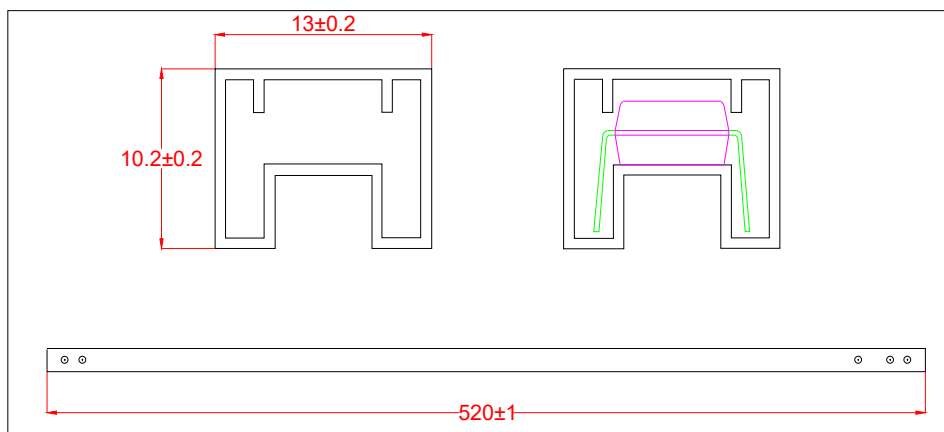
RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

Option SMD



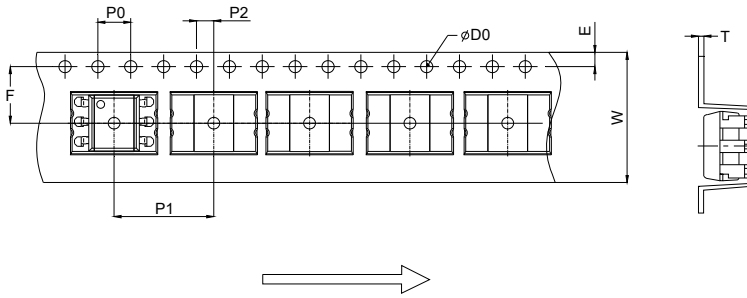
TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP



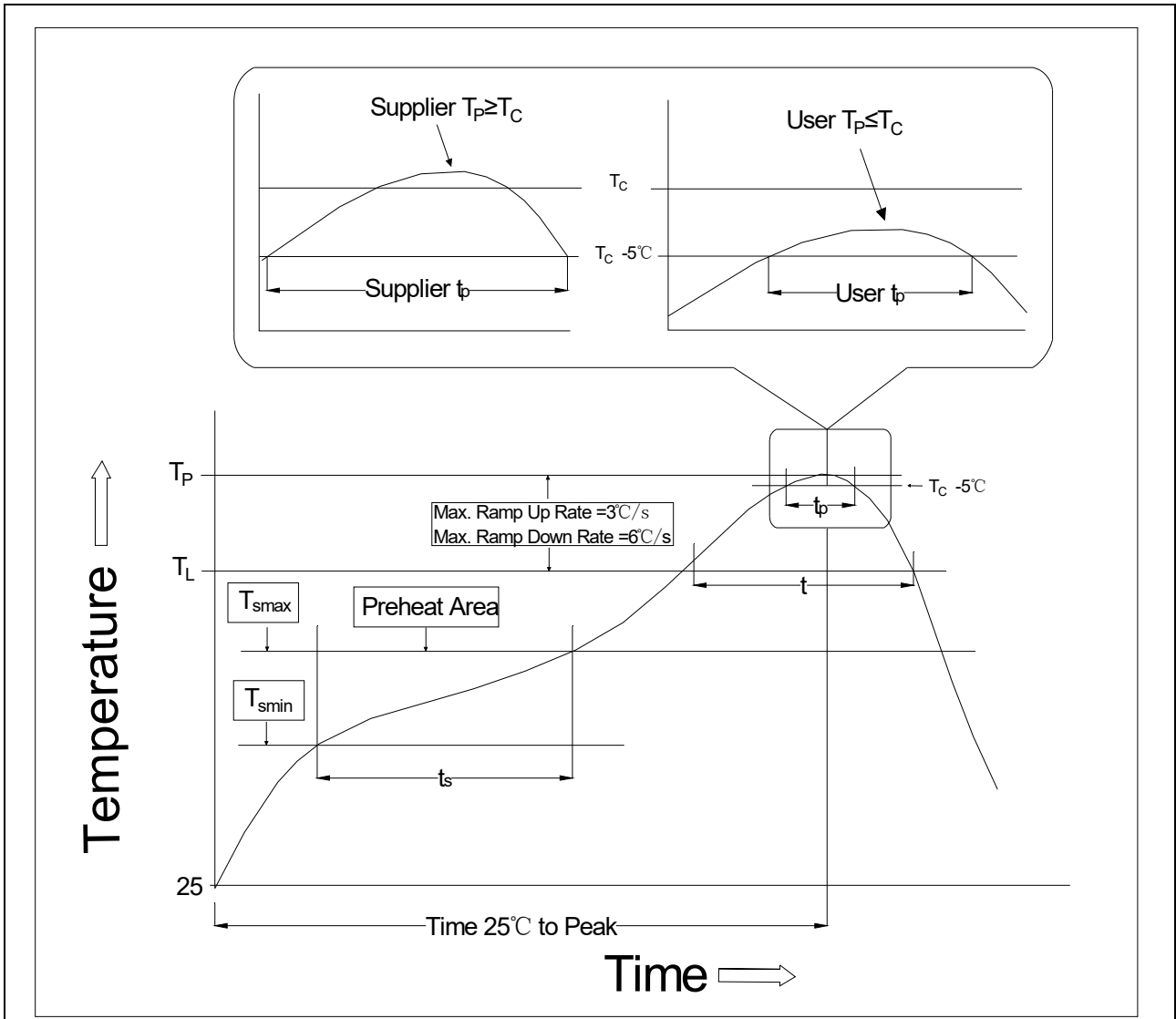
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S/L



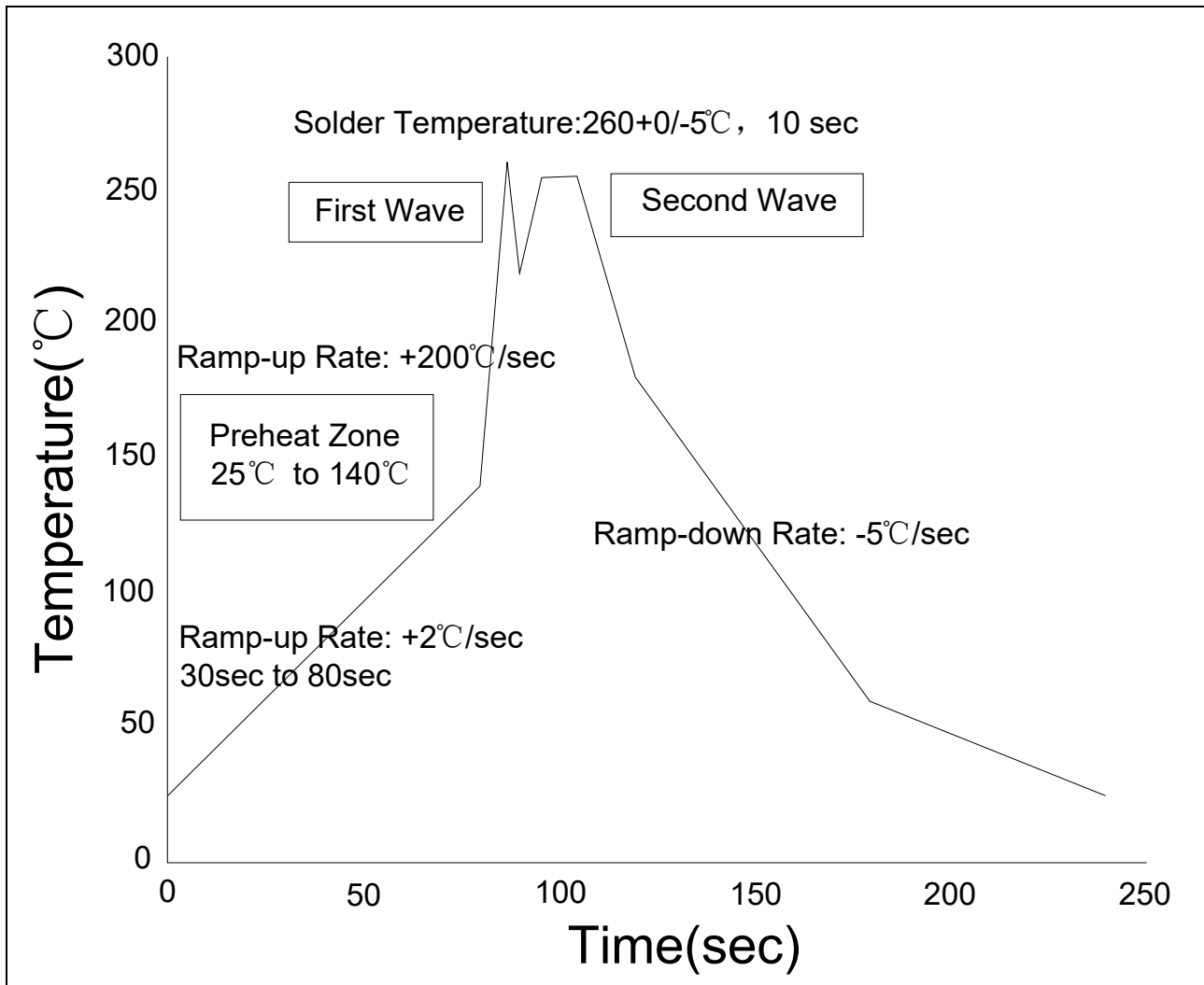
| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| D0 | | 1.50 | 1.60 | | 0.059 | 0.063 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 11.90 | 12.00 | 12.10 | 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 | 15.70 | 16.00 | 16.30 | 0.618 | 0.630 | 0.642 |

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. |
| Liquidus 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. |

WAVE SOLDERING



HAND SOLDERING BY SOLDERING IRON


| | |
|-----------------------|-----------------------------|
| Soldering Temperature | $360 \pm 5^{\circ}\text{C}$ |
| Soldering Time | 3s max. |

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.
2. Avoid direct contact between the epoxy body and any tools or surfaces exceeding its maximum storage temperature.
3. Application of pressure on the epoxy body is prohibited at elevated temperatures. In specific scenarios, any applied force must not exceed 2.5N.
4. Ensure the component has cooled to ambient temperature before proceeding with any subsequent manufacturing steps.
5. The component has a shelf life of one year when stored under standard conditions.
6. Recommend storage Temp.: 0~40°C;
Recommend storage humidity: <60%;
MSL level: MSL 1

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