

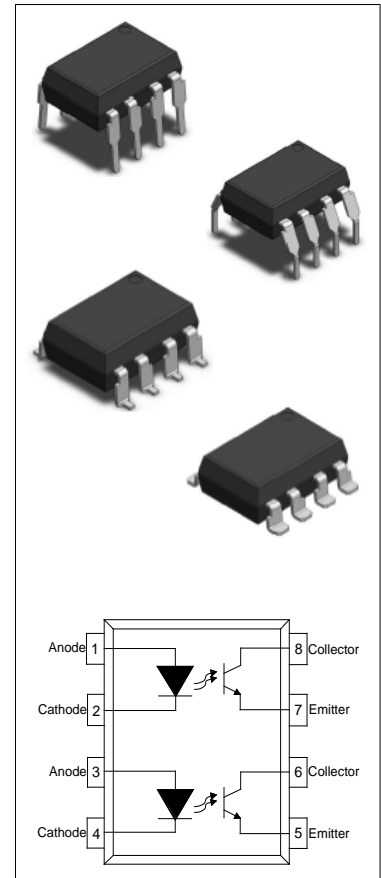


JOC827 Series

Rev.A.1.0

DESCRIPTION:

The JOC827 series provide two channel operation, and each combines an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP8 package with different lead forming options. With the robust coplanar double mold structure, JOC827 provides the most stable isolation feature. The products are widely used in computer peripheral interface and microprocessor system interface.



MAIN FEATURES

- High isolation 5000 VRMS
- DC input with transistor output
- Operating temperature range -55°C to +110°C
- REACH compliance
- Halogen free (Optional)
- 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 |
| | Power Dissipation | P_D | 100 | mW |
| Output | Collector-emitter Voltage | V_{CEO} | 35 | V |
| | Emitter-collector Voltage | V_{ECO} | 6 | V |
| | Collector Current | I_C | 50 | mA |
| | Power Dissipation | P_C | 150 | mW |
| Total Power Dissipation | | P_{tot} | 200 | mW |
| Isolation Voltage | | V_{iso} | 5000 ^② | Vrms |
| Operating Temperature | | T_{opr} | -55~+110 | °C |

| | | | |
|-----------------------|-----------|----------|----|
| Storage Temperature | T_{stg} | -55~+125 | °C |
| Soldering Temperature | T_{sol} | 260 | °C |

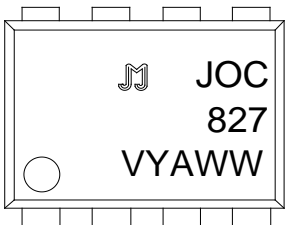
NOTE1: 100 μ s pulse, 100Hz frequency

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 | 1.3 | V |
| | | | $I_F=20mA$ | - | 1.24 | 1.4 | |
| | Reverse Current | I_R | $V_R=6V$ | - | - | 1 | μA |
| | Terminal Capacitance | C_t | $V=0,$ $f=1MHz$ | - | 30 | 250 | pF |
| Output | Collector-Emitter dark current | I_{CEO} | $V_{CE}=20V,$ $I_F=0$ | - | - | 50 | nA |
| | Collector-Emitter breakdown voltage | BV_{CEO} | $I_C=0.1mA$ $I_F=0$ | 35 | - | - | V |
| | Emitter-Collector breakdown voltage | BV_{ECO} | $I_E=0.1mA$ $I_F=0$ | 6 | - | - | V |
| Transfer Characteristics | Current transfer ratio | CTR | $I_F=5mA$ $V_{CE}=5V$ | 130 | - | 400 | % |
| | Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_F=20mA$ $I_C=1mA$ | - | 0.06 | 0.2 | V |
| | Isolation resistance | R_{IO} | DC500V 40~60%R.H. | 5×10^{10} | 10^{11} | - | Ω |
| | Floating Capacitance | C_{IO} | $V=0,$ $f=1MHz$ | - | 0.4 | 1 | pF |
| | Cut-off Frequency | f_c | $V_{CE}=5V,$ $I_C=2mA$ $R_L=100\Omega,$ -3dB | - | 80 | - | kHz |
| | Rise Time | t_r | $V_{CE}=2V,$ $I_C=2mA$ $R_L=100\Omega$ | - | 5 | 18 | μs |
| | Fall Time | t_f | | - | 4 | 18 | μs |
| Response Time | t_{on} | - | | 9 | 25 | μs | |
| | t_{off} | - | | 5 | 25 | μs | |

ORDERING AND MARKING INFORMATION

| MARKING INFORMATION | | | |
|--|-----------------|--|-------------------------------------|
|  | | <p>JOC : Company Abbr. 827 : Part Number V : VDE Option Y : Fiscal Year A : Manufacturing Code WW : Work Week</p> | |
| ORDERING INFORMATION | | | |
| JOC827(Y)(Z)- GV | | | |
| <p>JOC – Company Abbr. 827 – Part Number Y – Lead Form Option (M/S/SL/None) Z – Tape and Reel Option (T1/T2) G – Green V – VDE Option (V or None)</p> | | | |
| Packing Quantity | | | |
| Option | Quantity | Quantity – Inner box | Quantity –Outer box |
| None/M | 45 Units/Tube | 32 Tubes/Inner box | 10 Inner box/Outer box =14.4k Units |
| S(T1/T2) | 1000 Units/Reel | 3 Reels/Inner box | 5 Inner box/Outer box =15k Units |
| SL(T1/T2) | 1000 Units/Reel | 3 Reels/Inner box | 5 Inner box/Outer box =15k Units |

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

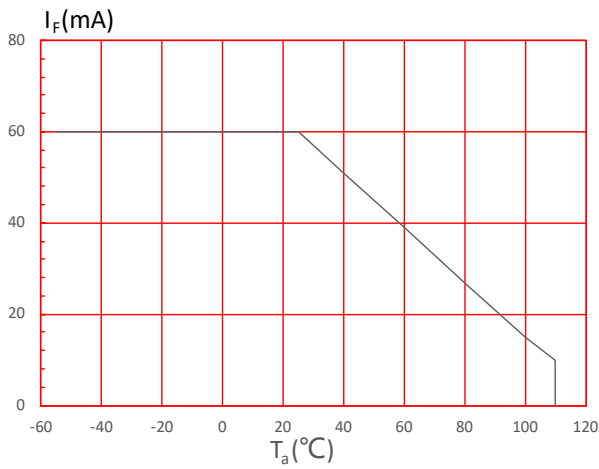


FIG.2: Collector Power Dissipation vs. Ambient Temperature

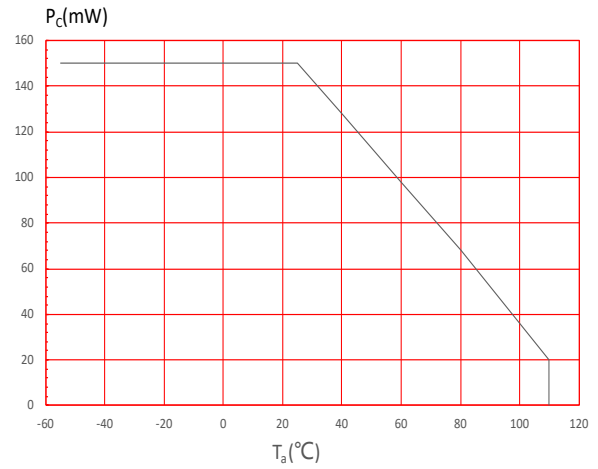


FIG.3: Forward Current vs. Forward Voltage

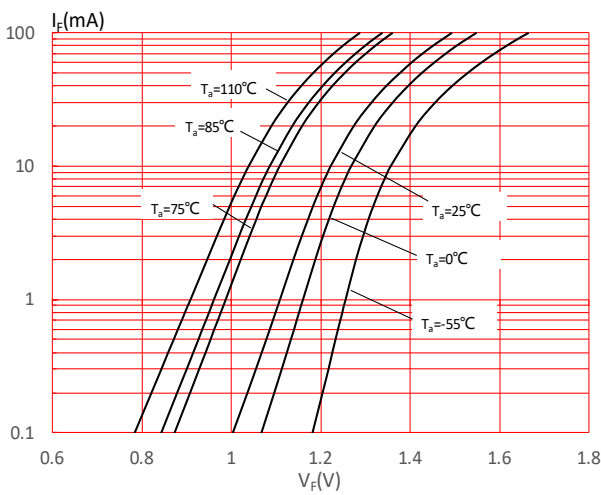


FIG.4: Normalized Collector Dark Current vs. Ambient Temperature

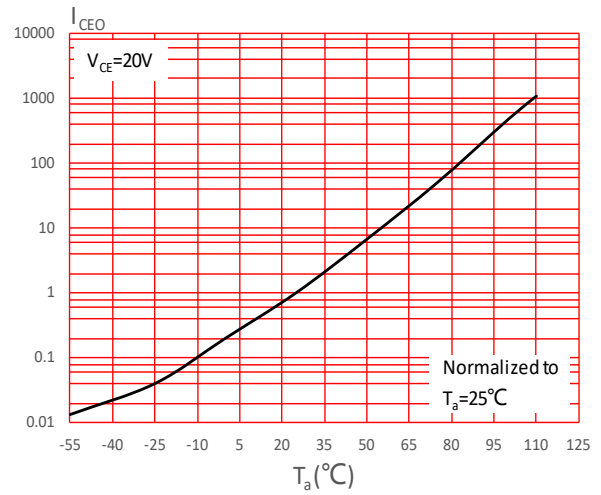


FIG.5: Collector Current vs. Collector-emitter Voltage

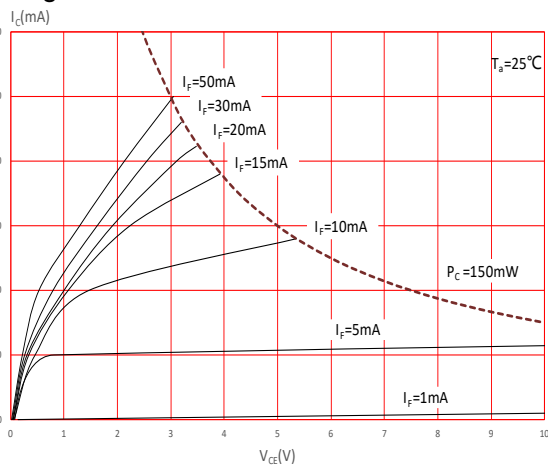


FIG.6: Normalized Current Transfer Ratio vs. Forward Current

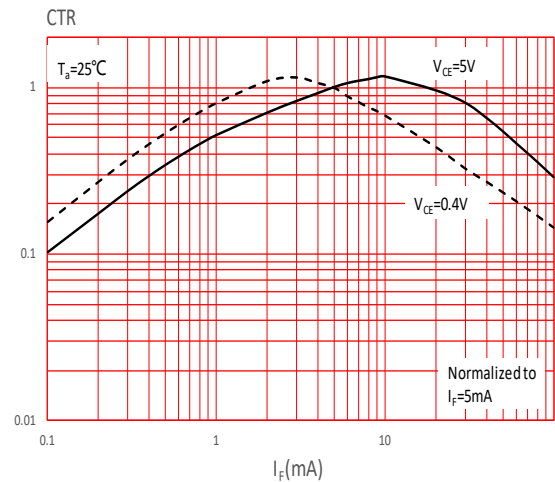


FIG.7: Normalized Current Transfer Ratio vs. Ambient Temperature

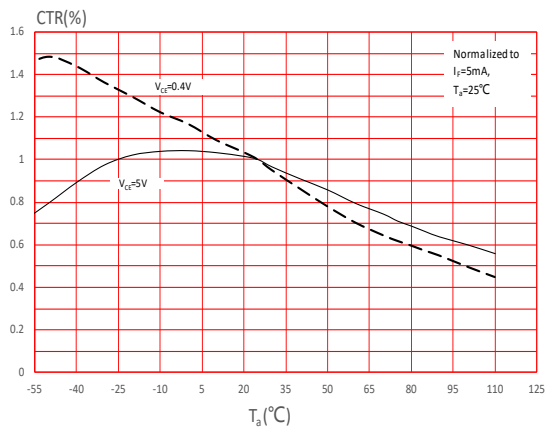


FIG.8: Normalized Collector-emitter Saturation Voltage vs. Ambient Temperature

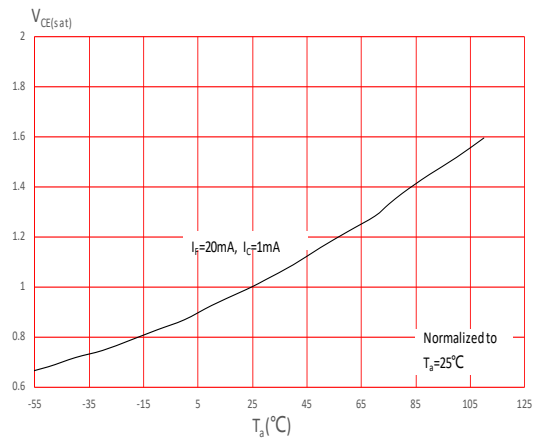


FIG.9: Response Time vs. Load Resistance

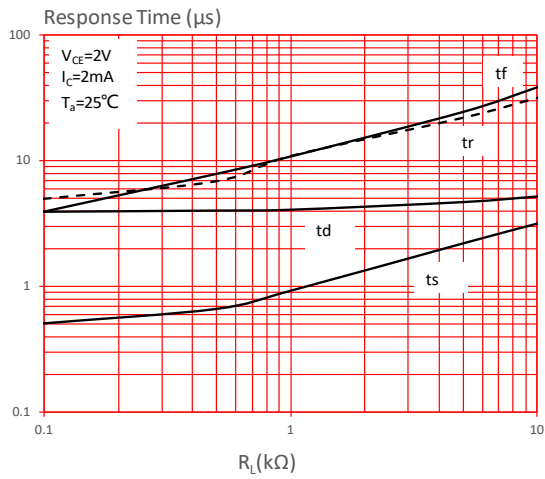
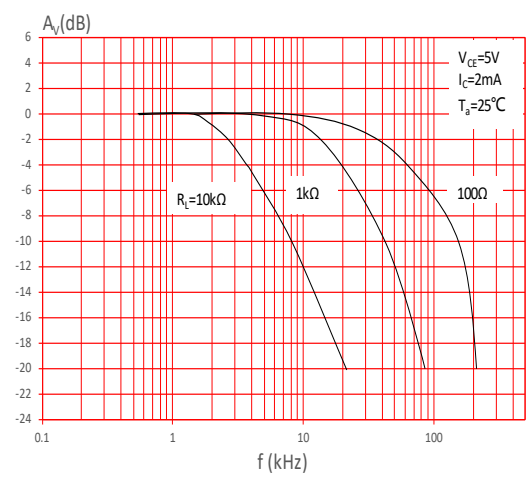


FIG.10: Frequency Response



Test Circuits

FIG.11: Test Circuits of Response Time

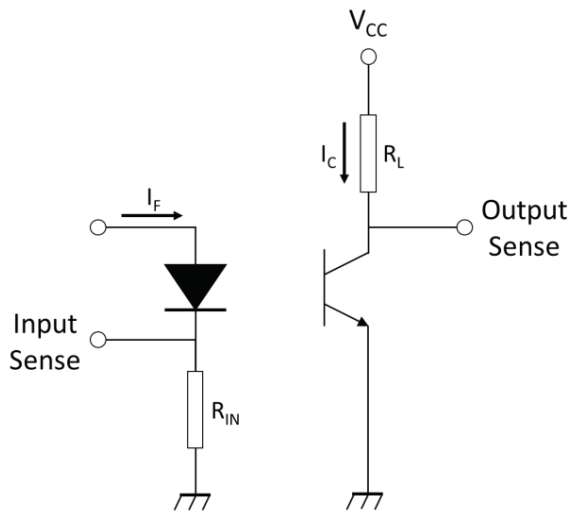


FIG.12: Curves of Response Time

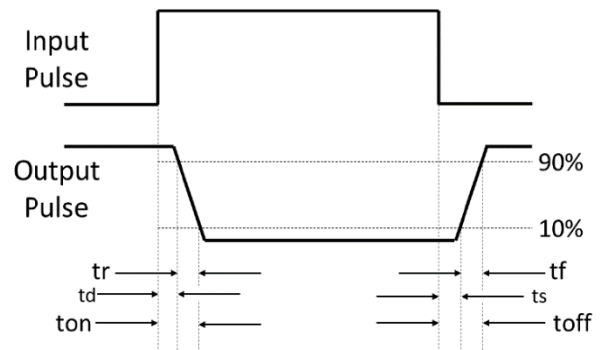
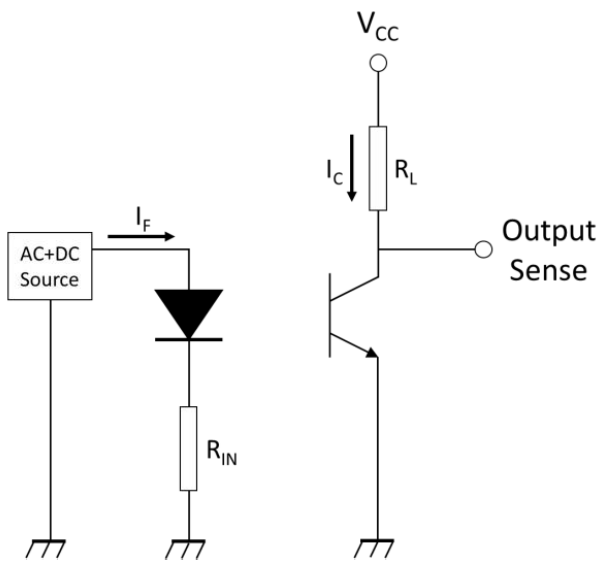
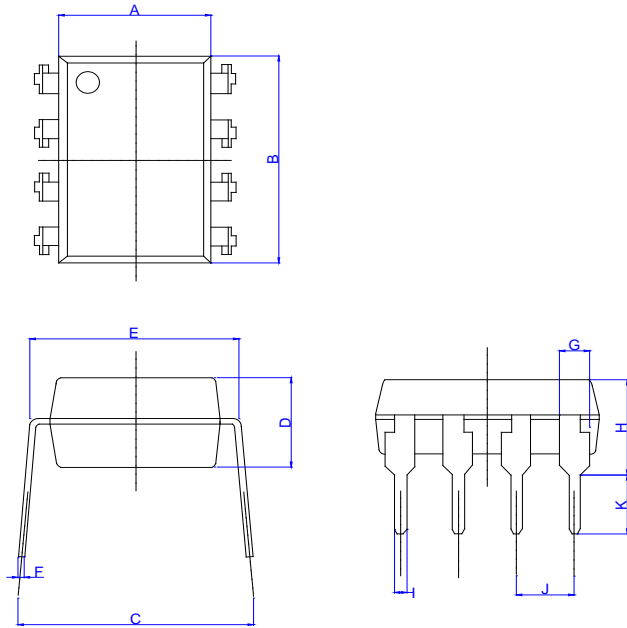


FIG.13: Test Circuits of Frequency Response



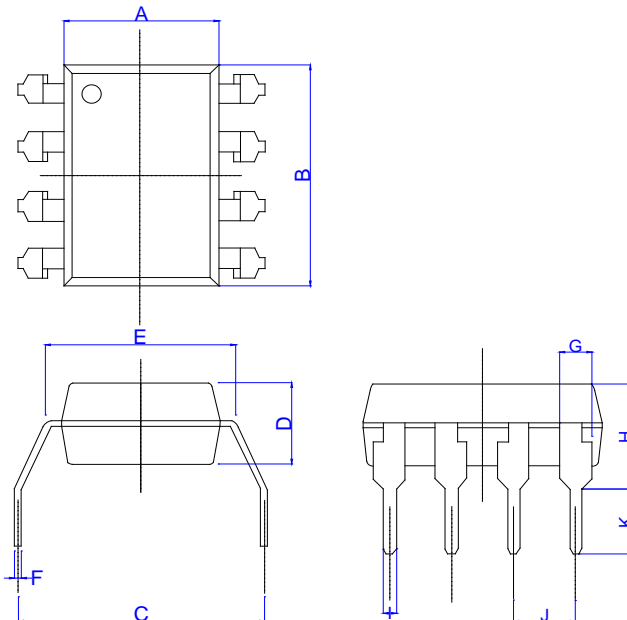
Package Dimension (Unit: mm)

Standard DIP Type:



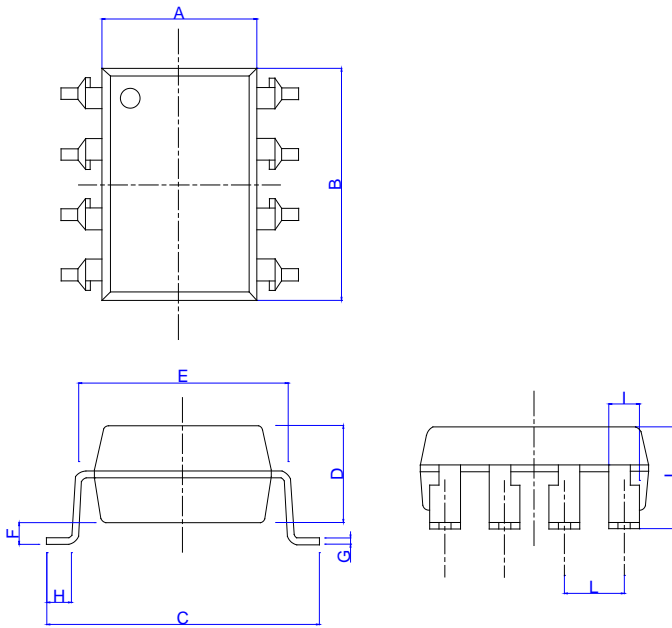
| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.80 | 0.244 | | 0.268 |
| B | 9.36 | | 9.96 | 0.369 | | 0.392 |
| C | 7.62 | | 10.16 | 0.300 | | 0.400 |
| D | 3.00 | | 4.00 | 0.118 | | 0.157 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | 0.16 | | 0.36 | 0.006 | | 0.014 |
| G | 0.90 | | 1.50 | 0.035 | | 0.059 |
| H | 3.50 | | 4.80 | 0.138 | | 0.189 |
| I | 0.40 | | 0.60 | 0.016 | | 0.024 |
| J | 2.29 | | 2.79 | 0.090 | | 0.110 |
| K | 2.40 | | 3.40 | 0.094 | | 0.134 |

Option M Type:



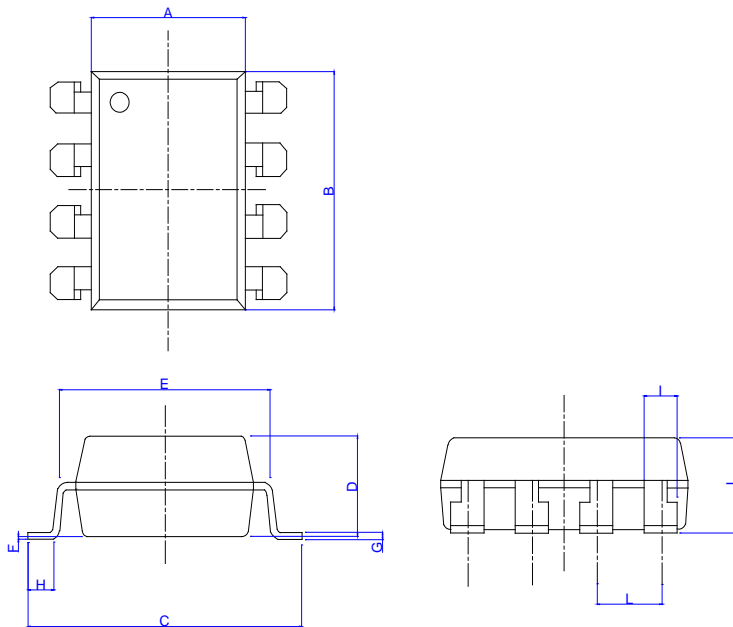
| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.40 | | 6.80 | 0.252 | | 0.268 |
| B | 9.56 | | 9.96 | 0.376 | | 0.392 |
| C | 9.86 | | 10.46 | 0.388 | | 0.412 |
| D | 3.30 | | 3.70 | 0.130 | | 0.146 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | | 0.25 | | | 0.010 | |
| G | 1.20 | | 1.40 | 0.047 | | 0.055 |
| H | 4.28 | | 4.88 | 0.169 | | 0.192 |
| I | | 0.50 | | | 0.020 | |
| J | | 2.54 | | | 0.100 | |
| K | | 2.20 | | | 0.087 | |

Option S Type:



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.40 | | 6.80 | 0.252 | | 0.268 |
| B | 9.56 | | 9.96 | 0.376 | | 0.392 |
| C | 9.85 | | 10.45 | 0.388 | | 0.412 |
| D | 3.30 | | 3.70 | 0.130 | | 0.146 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | | 0.80 | | | 0.031 | |
| G | | 0.25 | | | 0.010 | |
| H | | 0.80 | | | 0.031 | |
| I | 1.20 | | 1.40 | 0.047 | | 0.055 |
| J | 4.00 | | 4.60 | 0.157 | | 0.181 |
| L | | 2.54 | | | 0.100 | |

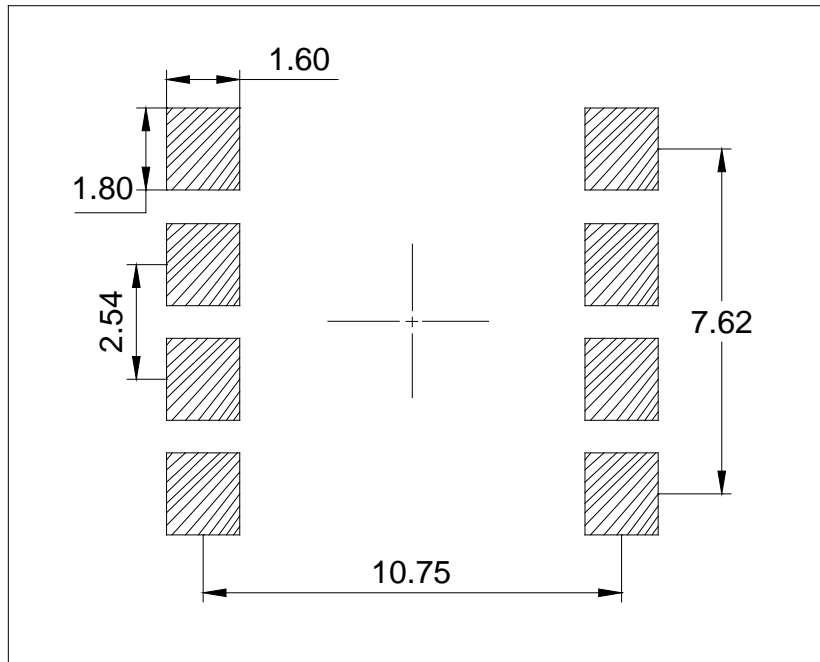
Option SL Type:



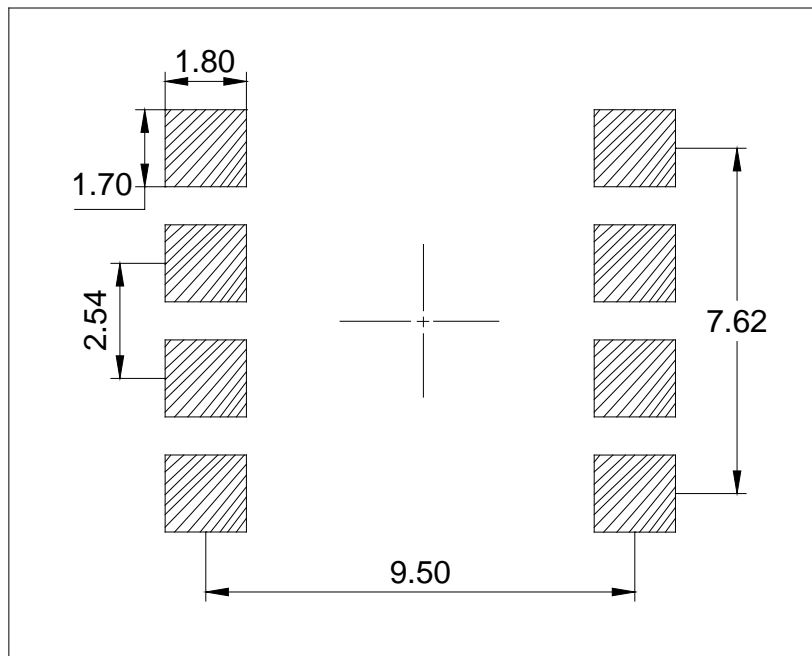
| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 6.20 | | 6.80 | 0.244 | | 0.268 |
| B | 9.36 | | 9.96 | 0.369 | | 0.392 |
| C | 9.50 | | 10.45 | 0.374 | | 0.411 |
| D | 3.00 | | 4.00 | 0.118 | | 0.157 |
| E | 7.32 | | 7.92 | 0.288 | | 0.312 |
| F | 0.10 | | 0.65 | 0.004 | | 0.026 |
| G | 0.16 | | 0.36 | 0.006 | | 0.014 |
| H | 0.80 | | 1.40 | 0.031 | | 0.055 |
| I | 0.90 | | 1.50 | 0.035 | | 0.059 |
| J | 3.30 | | 4.35 | 0.130 | | 0.171 |
| L | 2.29 | | 2.79 | 0.090 | | 0.110 |

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

Option S

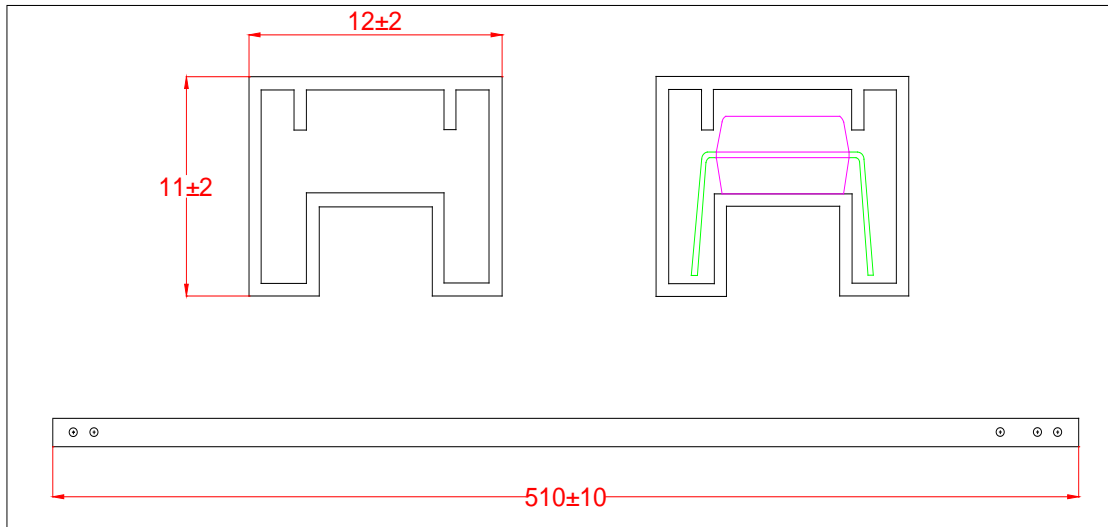


Option SL

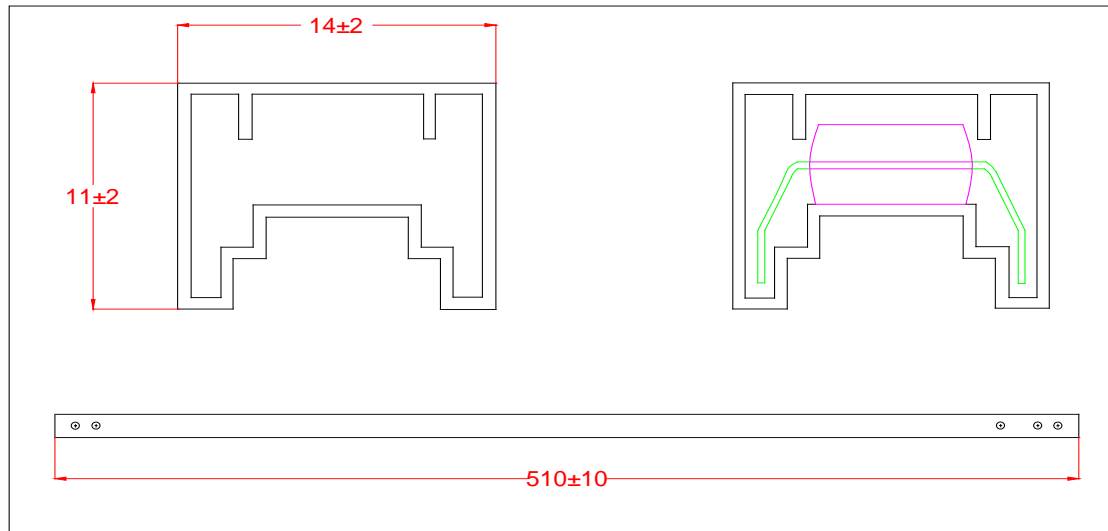


TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP

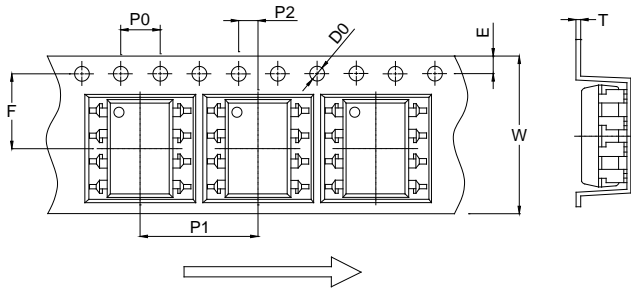


Option M

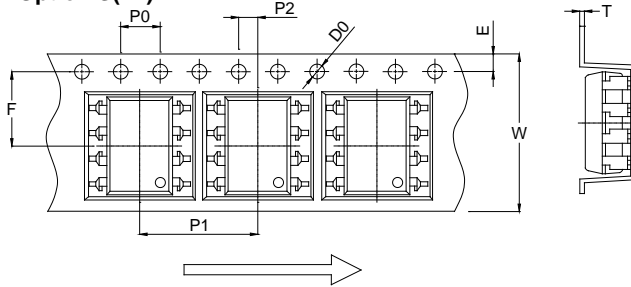


CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S(T1)

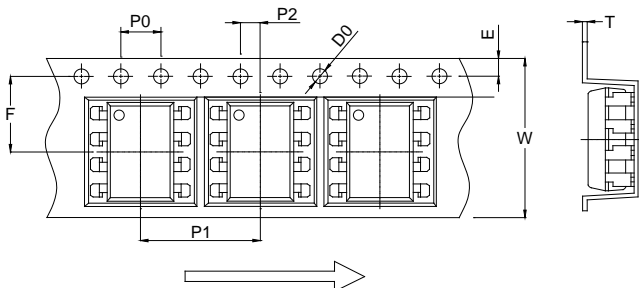


Option S(T2)

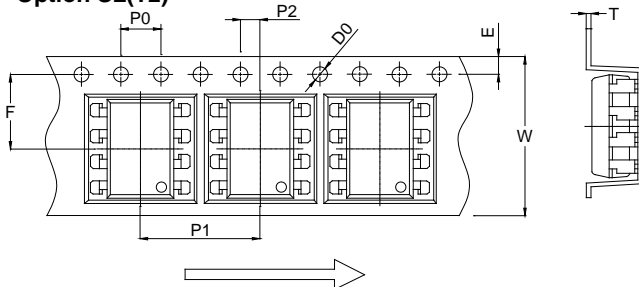


| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| D0 | | 1.50 | 1.65 | | 0.059 | 0.065 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 11.90 | 12.00 | 12.10 | 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 |

Option SL(T1)

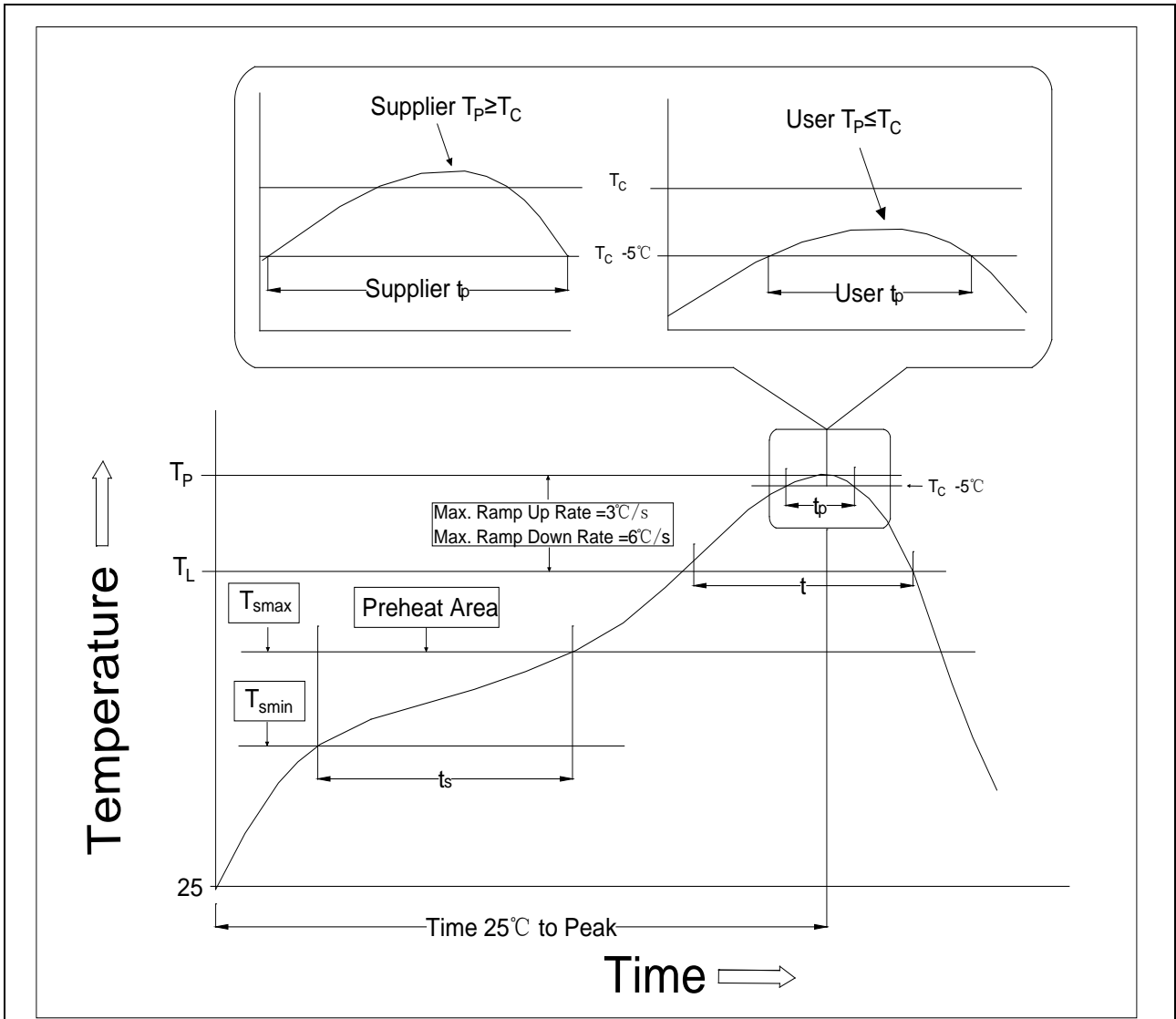


Option SL(T2)



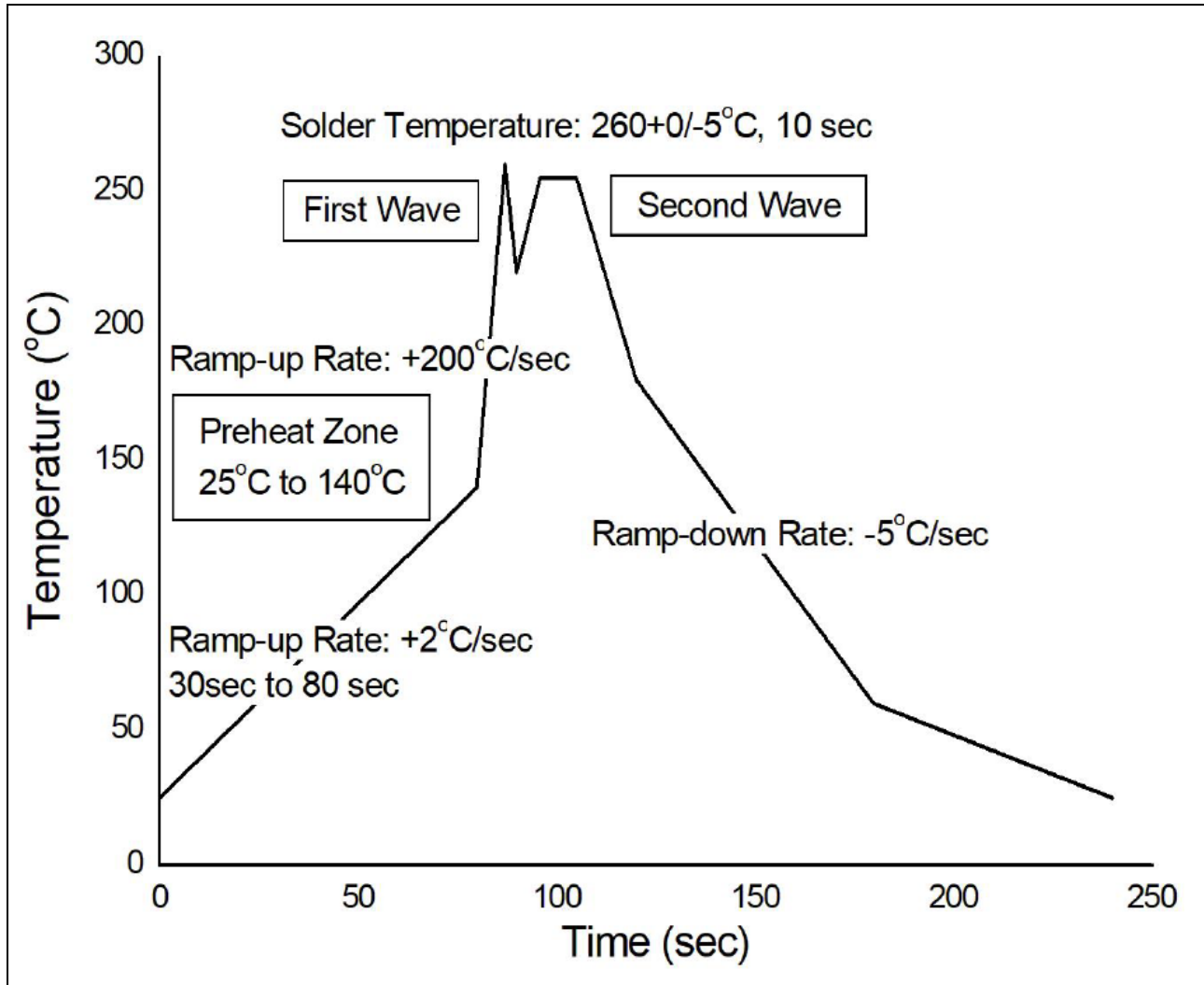
| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| D0 | | 1.50 | 1.60 | | 0.059 | 0.063 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 11.90 | 12.00 | 12.10 |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



| Profile Feature | Sn-Pb Assembly Profile | Pb-Free Assembly Profile |
|---|------------------------|--------------------------|
| Temperature Min. (T _{smin}) | 100 | 150°C |
| Temperature Max. (T _{smax}) | 150 | 200°C |
| Time (t _s) from (T _{smin} to T _{smax}) | 60-120 seconds | 60-120 seconds |
| Ramp-up Rate (t _L to t _P) | 3°C/second max. | 3°C/second max. |
| Liquidus Temperature (T _L) | 183°C | 217°C |
| Time (t _L) Maintained Above (T _L) | 60-150 seconds | 60-150 seconds |
| Peak Body Package Temperature | 235°C+0°C/-5°C | 260°C+0°C/-5°C |
| Time (t _P) within 5°C of 260°C | 20 seconds | 30 seconds |
| Ramp-down Rate (T _P to T _L) | 6°C/second max. | 6°C/second max. |
| Time 25°C to Peak Temperature | 6 minutes max. | 8 minutes max. |

WAVE SOLDERING




HAND SOLDERING BY SOLDERING IRON

| | |
|-----------------------|---------|
| Soldering Temperature | 360±5°C |
| Soldering Time | 3s max. |

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