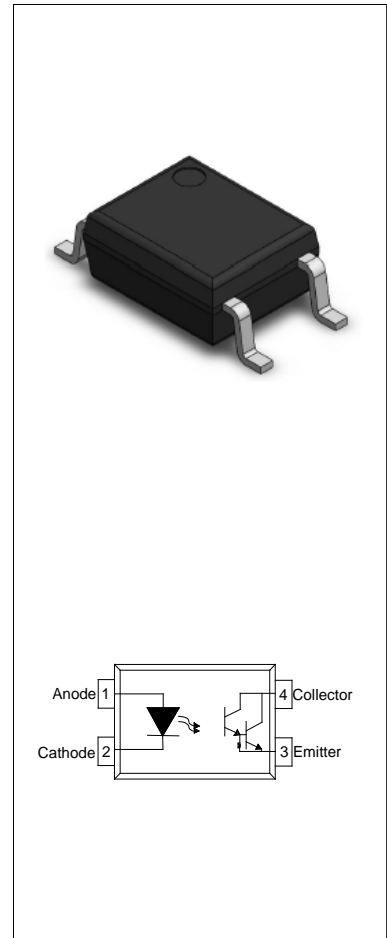


DESCRIPTION:

The JOC355 combines an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar darlington phototransistor detector in a plastic SOP4 package. With the robust coplanar double mold structure, JOC355 provides the most stable isolation feature. The products are widely used in sequence controller telephone/fax, system appliances, measuring instrument and programmable logic controller.



MAIN FEATURES

Current transfer ratio (CTR: 600%-7500% @ $I_F=1\text{mA}$, $V_{CE}=2\text{V}$)

High isolation voltage between input and output

($V_{iso}=3,750\text{Vrms}$)

Operating temperature up to +110°C

Collector-Emitter voltage $BV_{CEO} \geq 40\text{V}$

CQC approved

VDE approved

UL approved

The products comply with REACH and HF

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} | 40 | V |
| | Emitter-collector Voltage | V_{ECO} | 6 | V |
| | Collector Current | I_C | 80 | mA |
| | Power Dissipation | P_C | 150 | mW |
| Total Power Dissipation | | P_{tot} | 200 | mW |

| | | | |
|-----------------------|-----------|-------------------|------------------|
| Isolation Voltage | V_{iso} | 3750 ^② | V _{rms} |
| Operating Temperature | T_{opr} | -55~+110 | °C |
| Storage Temperature | T_{stg} | -55~+125 | °C |
| Soldering Temperature | T_{sol} | 260 | °C |

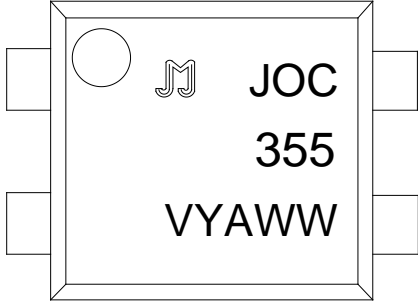
NOTE1: 100μs pulse, 100Hz frequency

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 | $I_F=10mA$ | - | 1.24 | 1.4 | V |
| | | | $I_F=20mA$ | - | 1.28 | 1.5 | |
| | 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} | $V_{CE}=10V,$ $I_F=0$ | - | - | 50 | nA |
| | Collector-Emitter breakdown voltage | BV_{CEO} | $I_C=0.1mA$ $I_F=0$ | 40 | - | - | V |
| | Emitter-Collector breakdown voltage | BV_{ECO} | $I_E=0.1mA$ $I_F=0$ | 6 | - | - | V |
| Transfer Characteristics | Current transfer ratio | CTR ^① | $I_F=1mA$ $V_{CE}=2V$ | 600 | - | 7500 | % |
| | Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_F=20mA$ $I_C=5mA$ | - | 0.8 | 1 | V |
| | Isolation resistance | R_{io} | DC500V 40~60%R.H. | 5×10^{10} | 10^{11} | - | Ω |
| | Floating Capacitance | C_{io} | $V=0,$ $f=1MHz$ | - | 0.6 | 1 | pF |
| | Cut-off Frequency | f_c | $V_{CE}=5V,$ $I_C=2mA$ $R_L=100\Omega,$ -3dB | - | 6 | - | kHz |
| | Rise Time | t_r | $V_{CE}=2V,$ $I_C=2mA$ | - | 5 | 18 | μs |
| | Fall Time | t_f | $R_L=100\Omega$ | - | 4 | 18 | μs |

ORDERING AND MARKING INFORMATION

| MARKING INFORMATION | | | |
|--|-----------------|--|----------------------------------|
|  | | <p>JOC : Company Abbr. 355 : Part Number VYAWW : LOT NO.</p> | |
| ORDERING INFORMATION | | | |
| JOC355(Z)-GV | | | |
| <p>JOC – Company Abbr. 355 – Part Number 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 |
| T1 | 3000 Units/Reel | 3 Reels/Inner box | 5 Inner box/Outer box =45k Units |
| T2 | 3000 Units/Reel | 3 Reels/Inner box | 5 Inner box/Outer box =45k Units |

Characteristics Curves

FIG.1: Forward Current vs. Ambient Temperature

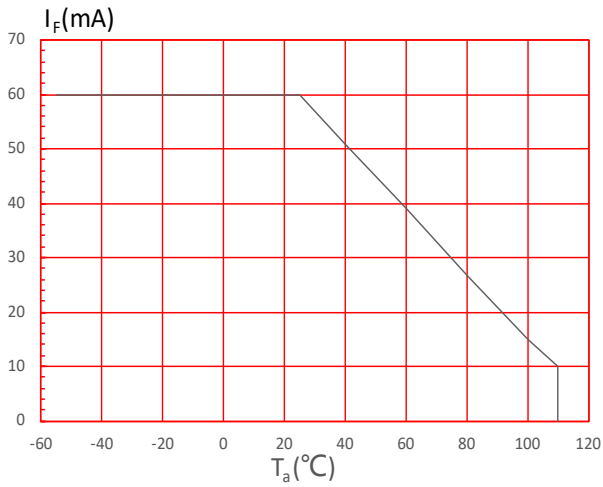


FIG.2: Collector Power Dissipation vs. Ambient Temperature

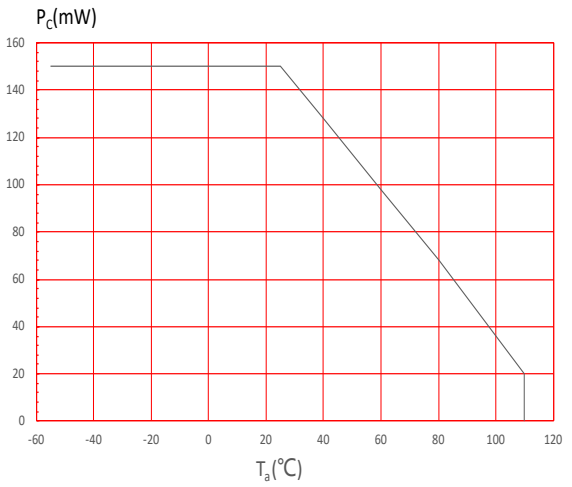


FIG.3: Forward Current vs. Forward Voltage

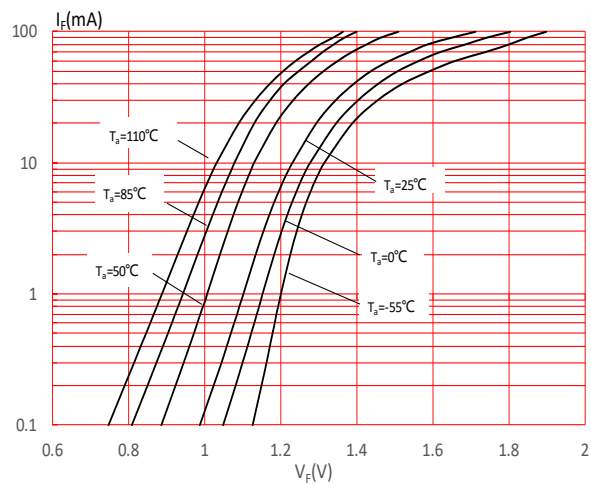


FIG.4: Normalized Collector Dark Current vs. Ambient Temperature

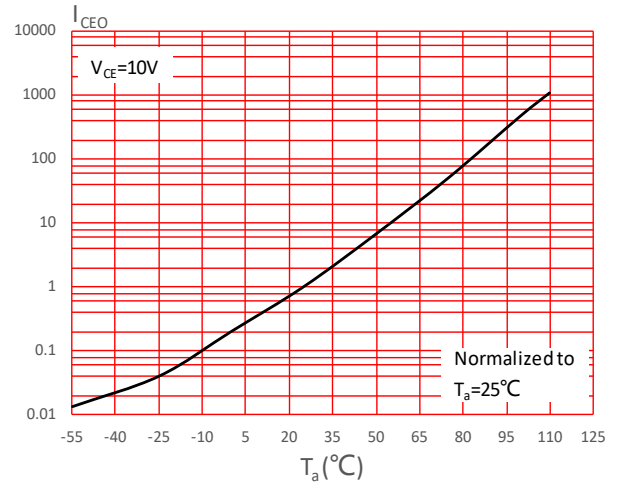


FIG.5: Collector Current vs. Collector-emitter Voltage

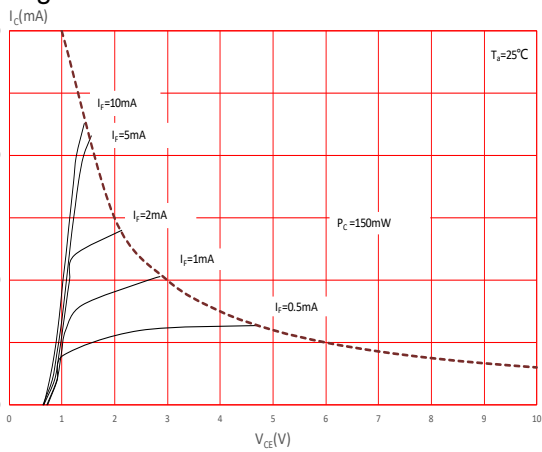


FIG.6: Normalized Current Transfer Ratio vs. Forward Current

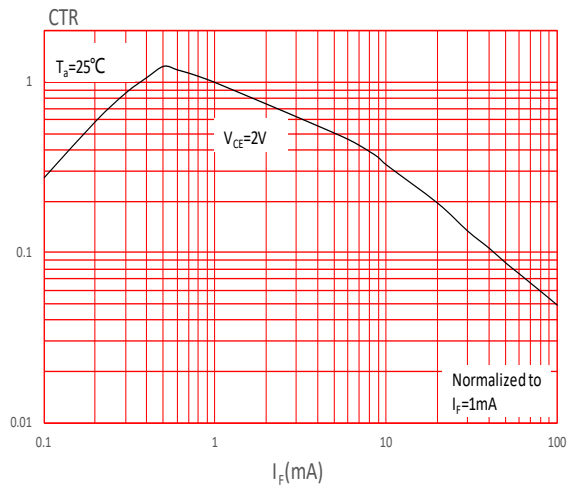


FIG.7: Normalized Current Transfer Ratio vs. Ambient Temperature

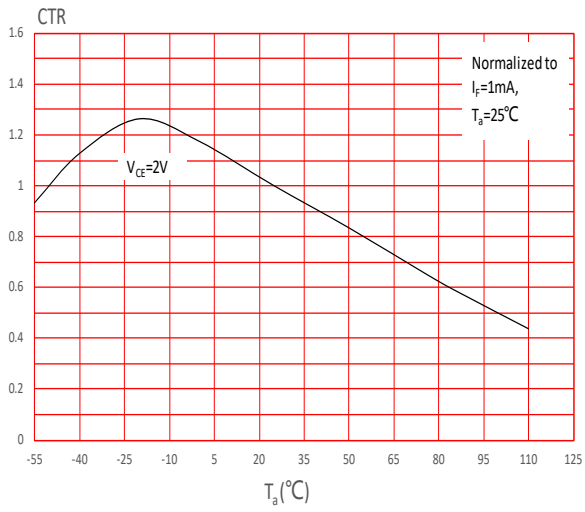


FIG.9: Response Time vs. Load Resistance

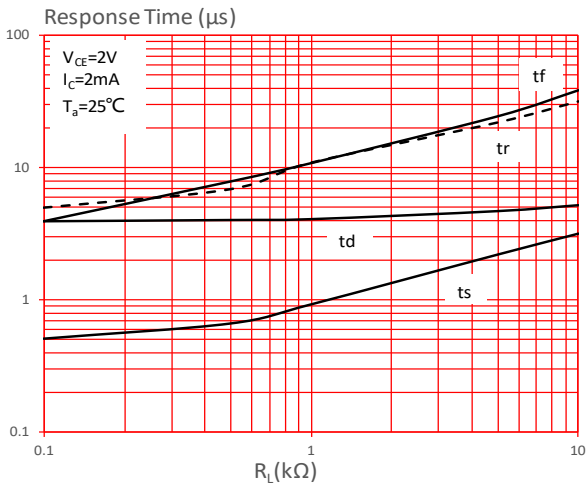


FIG.8: Normalized Collector-emitter Saturation Voltage vs. Ambient Temperature

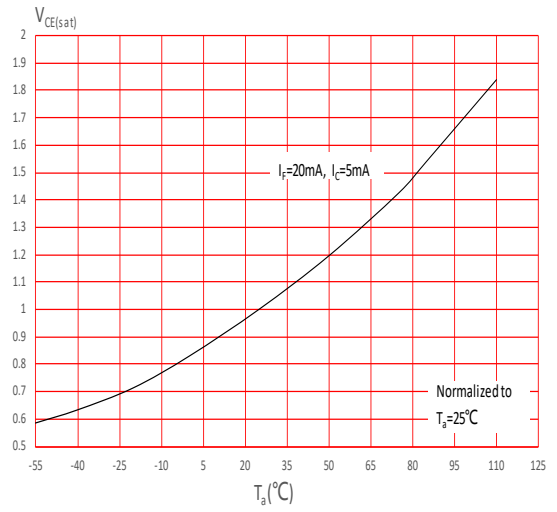
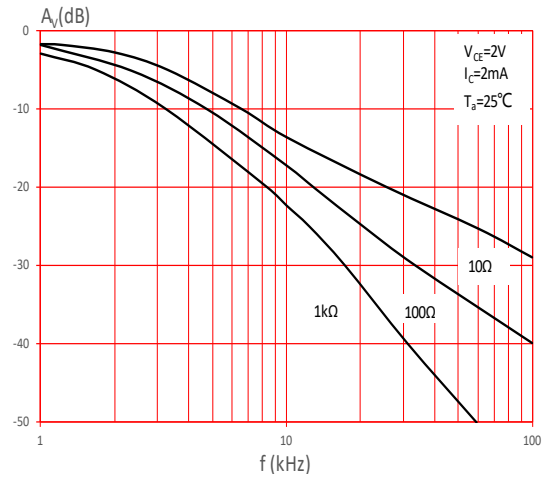


FIG.10: Frequency Response



Test Circuits

FIG.11: Test Circuits of Response Time

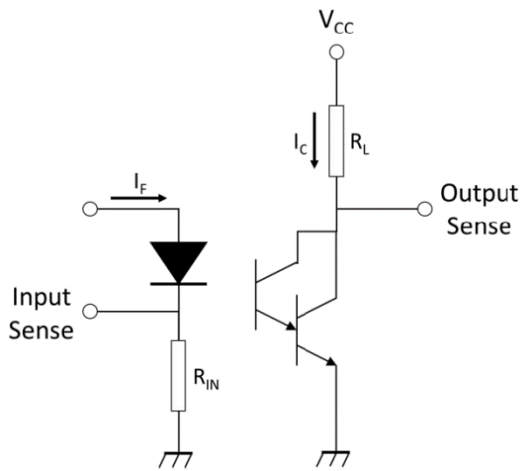


FIG.12: Curves of Response Time

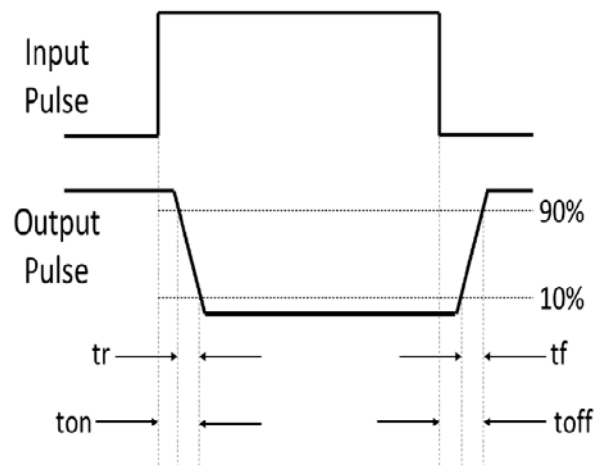
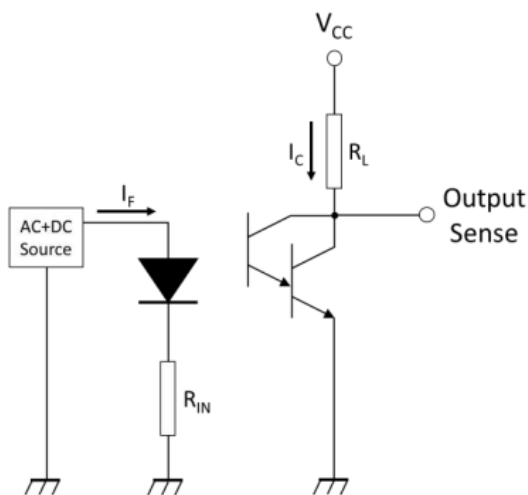
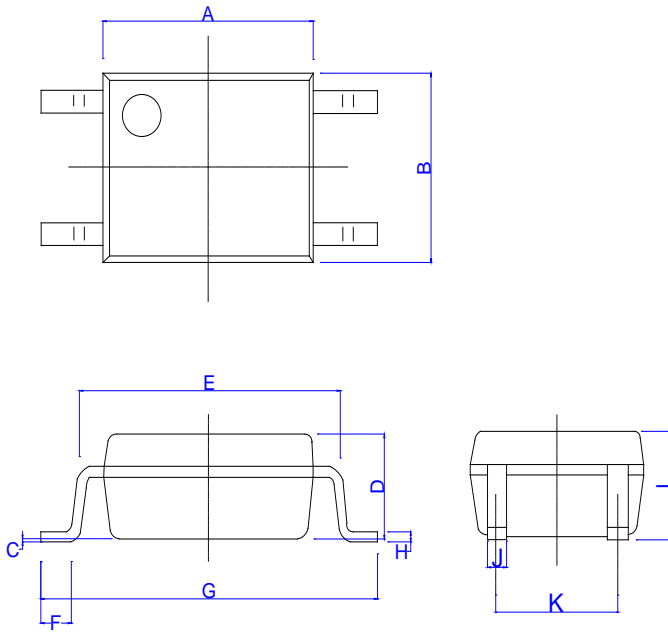


FIG.13: Test Circuits of Frequency Response

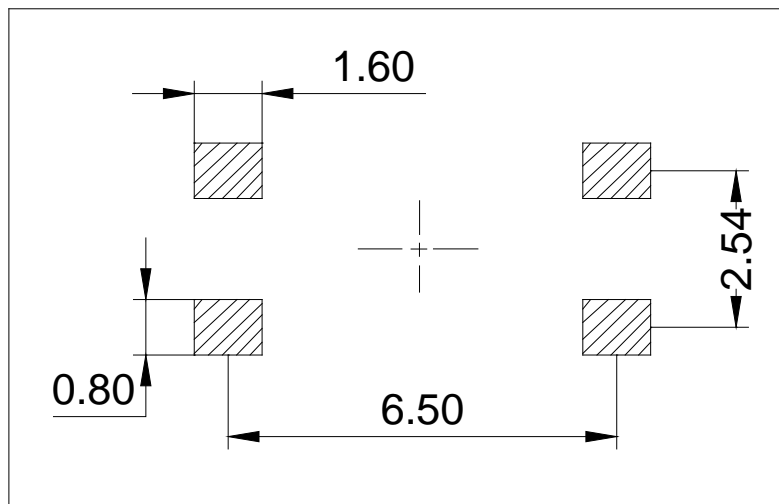


Package Dimension (Unit: mm)



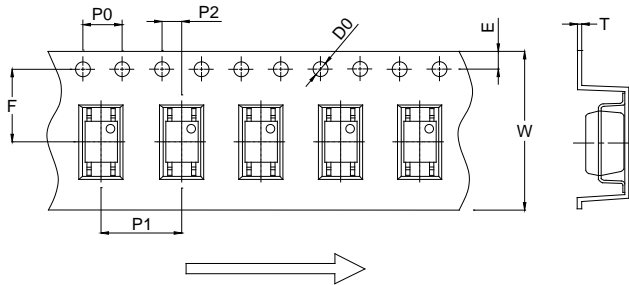
| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.20 | | 4.85 | 0.165 | | 0.191 |
| B | 3.30 | | 4.40 | 0.130 | | 0.173 |
| C | 0.00 | | 0.20 | 0.000 | | 0.008 |
| D | 1.75 | | 2.80 | 0.069 | | 0.110 |
| E | 4.90 | | 5.80 | 0.193 | | 0.228 |
| F | 0.30 | | 0.90 | 0.012 | | 0.035 |
| G | 6.30 | | 7.30 | 0.248 | | 0.287 |
| H | 0.10 | | 0.30 | 0.004 | | 0.012 |
| I | 1.80 | | 2.90 | 0.071 | | 0.114 |
| J | 0.25 | | 0.55 | 0.010 | | 0.022 |
| K | 2.29 | | 2.79 | 0.090 | | 0.110 |

RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



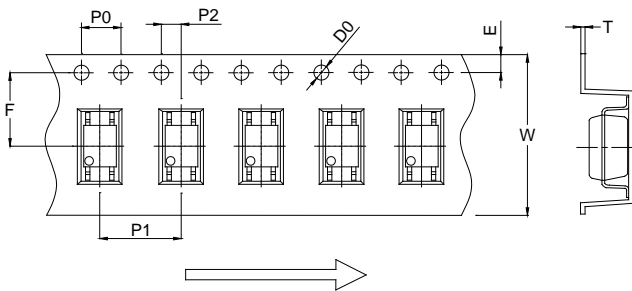
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option T1



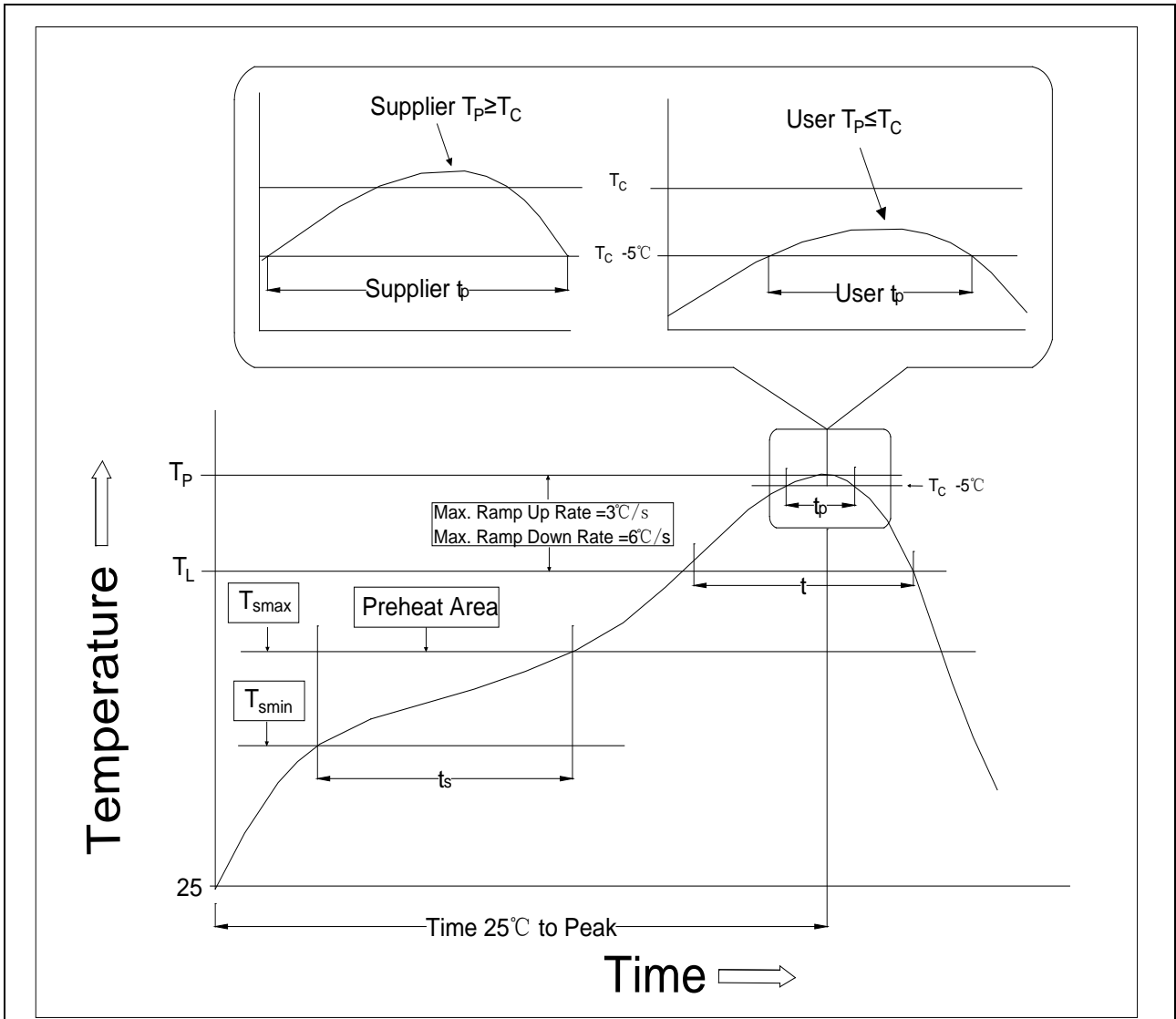
| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| D0 | | 1.45 | 1.65 | | 0.057 | 0.065 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 7.90 | 8.00 | 8.10 | 0.311 | 0.315 | 0.319 |
| 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 | 0.15 | 0.30 | 0.45 | 0.006 | 0.012 | 0.018 |
| W | 15.70 | 16.00 | 16.30 | 0.618 | 0.630 | 0.642 |

Option T2



| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| D0 | | 1.45 | 1.65 | | 0.057 | 0.065 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 7.90 | 8.00 | 8.10 | 0.311 | 0.315 | 0.319 |
| 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 | 0.15 | 0.30 | 0.45 | 0.006 | 0.012 | 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. |

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