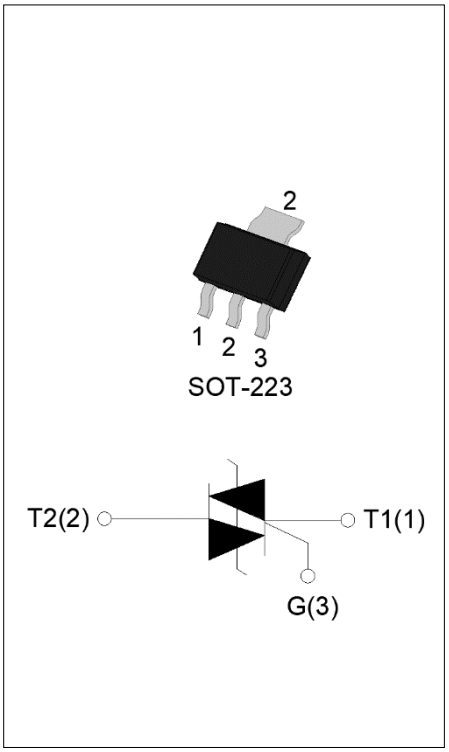
## ACJT105-6V 1A TRIAC

Rev.A.1.1

### DESCRIPTION:

The ACJT105-6V triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. The ACJT105-6V embeds a TVS structure to absorb the inductive turn-off energy such as those described in the IEC 61000-4-5 standards. Package SOT-223 is RoHS compliant.




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 1 | A |
| $V_{DRM}$ /$V_{RRM}$ | 600 | V |
| $I_{GT\ I\ /\ II/III}$ | 5/5/5 | mA |

### ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Storage junction temperature range | $T_{stg}$ | -40-150 | ℃ |
| Operating junction temperature range | $T_j$ | -40-125 | ℃ |
| Repetitive peak off-state voltage ($T_j$=25℃) | $V_{DRM}$ | 600 | V |
| Repetitive peak reverse voltage ($T_j$=25℃) | $V_{RRM}$ | 600 | V |
| RMS on-state current ($T_C$≤90℃) | $I_{T(RMS)}$ | 1 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=20ms , $T_j$=25℃) | $I_{TSM}$ | 15 | A |
| Non repetitive surge peak on-state current (full cycle , $t_p$=16.6ms , $T_j$=25℃) | | 16.5 | |
| $I^2t$ value for fusing ($t_p$=10ms , $T_j$=25℃) | $I^2t$ | 1.25 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$=2×$I_{GT}$ , f=100Hz , $T_j$=125℃) | dI/dt | 50 | A/μs |
| Peak gate current ($t_p$=20μs , $T_j$=125℃) | $I_{GM}$ | 2 | A |
| Average gate power dissipation ($T_j$=125℃) | $P_{G(AV)}$ | 0.1 | W |
| Peak gate power | $P_{GM}$ | 5 | W |

| | | | |
|---|---|---|---|
| Peak pulse voltage ($T_j$=25℃; non-repetitive,off-state;FIG.8) | $V_{pp}$ | 3.5 | kV |

## ELECTRICAL CHARACTERISTICS ($T_j$=25℃ unless otherwise specified)

| Symbol | Test Condition | Quadrant | Value | | Unit |
|---|---|---|---|---|---|
| $I_{GT}$ | $V_D$ =12V $R_L$ =33Ω | Ⅰ-Ⅱ-Ⅲ | MAX. | 5 | mA |
| $V_{GT}$ | | Ⅰ-Ⅱ-Ⅲ | MAX. | 1 | V |
| $V_{GD}$ | $V_D$ =$V_{DRM}$ $T_j$ =125℃ $R_L$ =3.3kΩ | Ⅰ-Ⅱ-Ⅲ | MIN. | 0.2 | V |
| $I_L$ | $I_G$ =1.2$I_{GT}$ | Ⅰ-Ⅲ | MAX. | 10 | mA |
| | | Ⅱ | | 20 | |
| $I_H$ | $I_T$ =100mA | | MAX. | 10 | mA |
| dV/dt | $V_D$=400V Gate Open $T_j$ =125℃ | | MIN. | 700 | V/μs |
| (dI/dt)c | (dV/dt)c=10V/μs, $T_j$=125℃ | | MIN. | 0.5 | A/ms |
| $t_{on}$ | $I_G$=10mA $I_A$=200mA $I_R$=20mA $T_j$=25℃ | | TYP. | 2 | μs |
| $t_{off}$ | | | | 20 | |
| $V_{CL}$ | $I_{CL}$=0.1mA $t_p$=1ms | | MIN. | 700 | V |

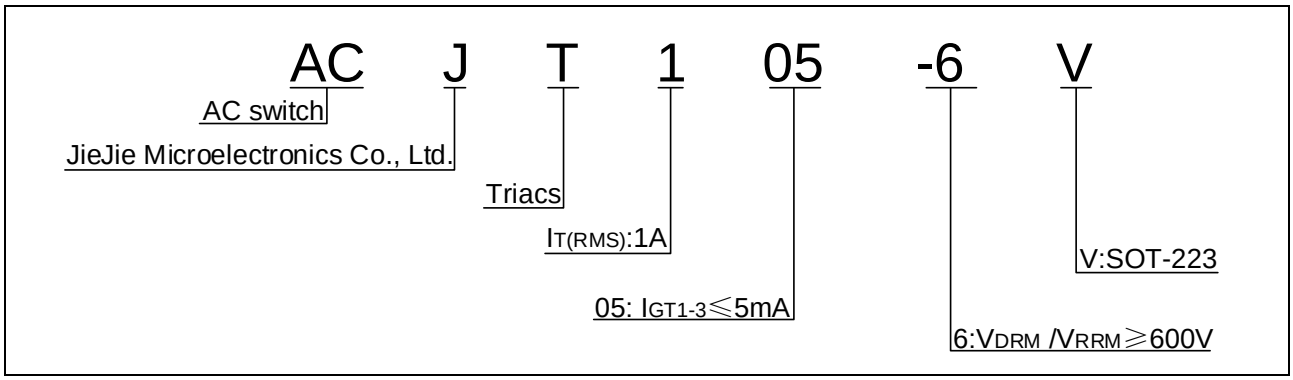
## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$ =1.1A $t_p$=380μs | $T_j$=25℃ | 1.4 | V |
| $V_{TO}$ | Threshold voltage | $T_j$=125℃ | 0.8 | V |
| $R_D$ | Dynamic resistance | $T_j$=125℃ | 287 | mΩ |
| $I_{DRM}$ | $V_D$ =$V_{DRM}$ $V_R$ =$V_{RRM}$ | $T_j$=25℃ | 5 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 0.15 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | junction to case (AC) | 25 | ℃/W |
| $R_{th(j-a)}$ | junction to ambient (AC) | 140 | ℃/W |

## ORDERING INFORMATION




## MARKING

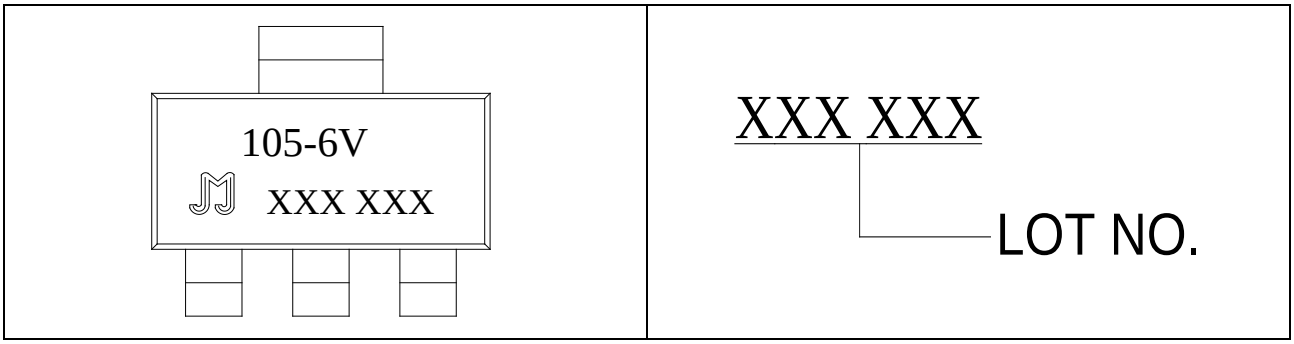


**FIG.1:** Maximum power dissipation versus RMS on-state current

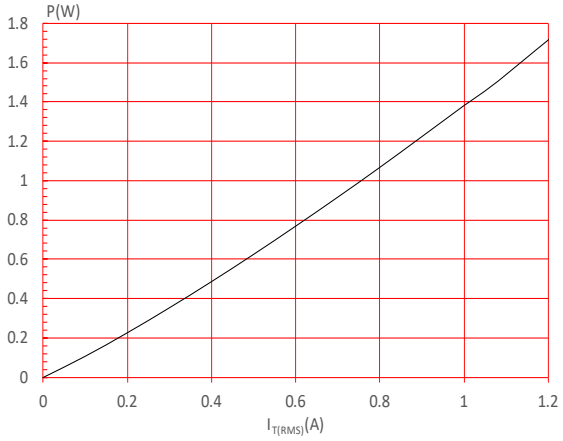



**FIG.2:** RMS on-state current versus case temperature

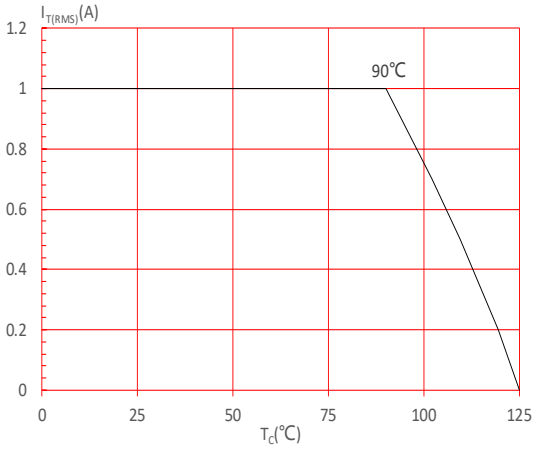



**FIG.3:** RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35μm)(full cycle)

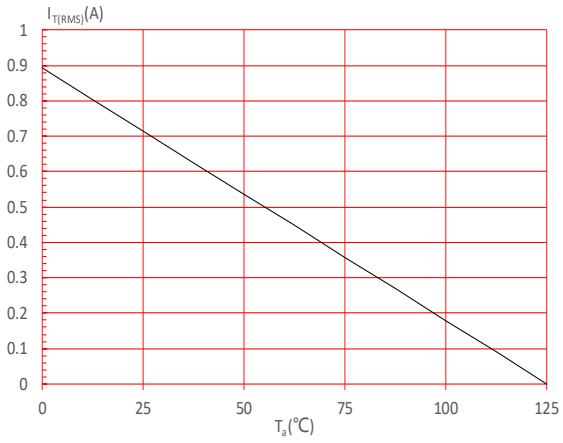



**FIG.4:** Surge peak on-state current versus number of cycles

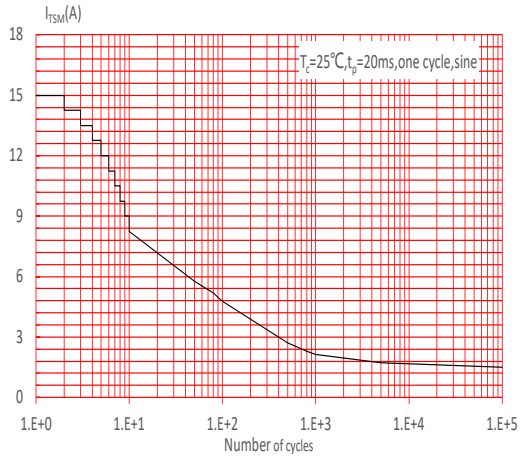



**FIG.5:** On-state characteristics

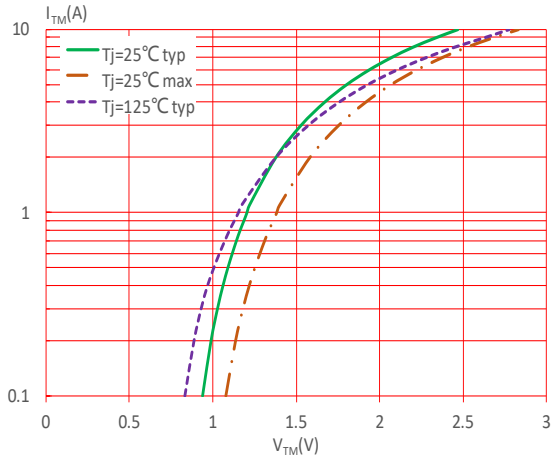



**FIG.6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p$<20ms, and corresponding value of $I^2t$ (dI/dt<50A/μs)

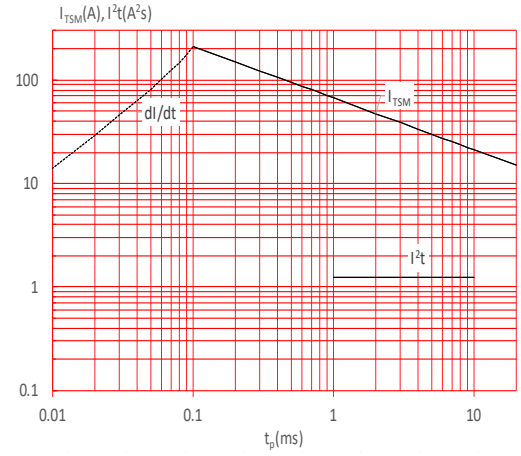


**FIG.7:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

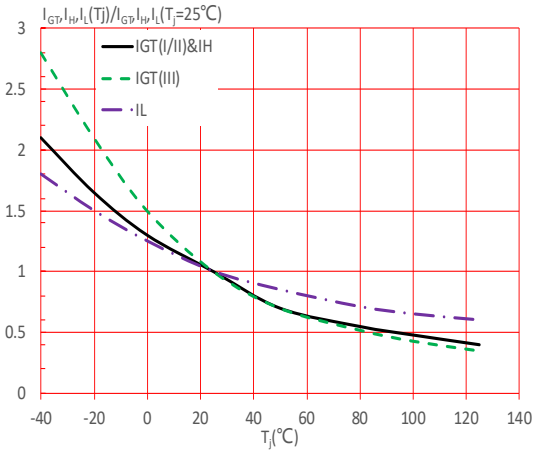
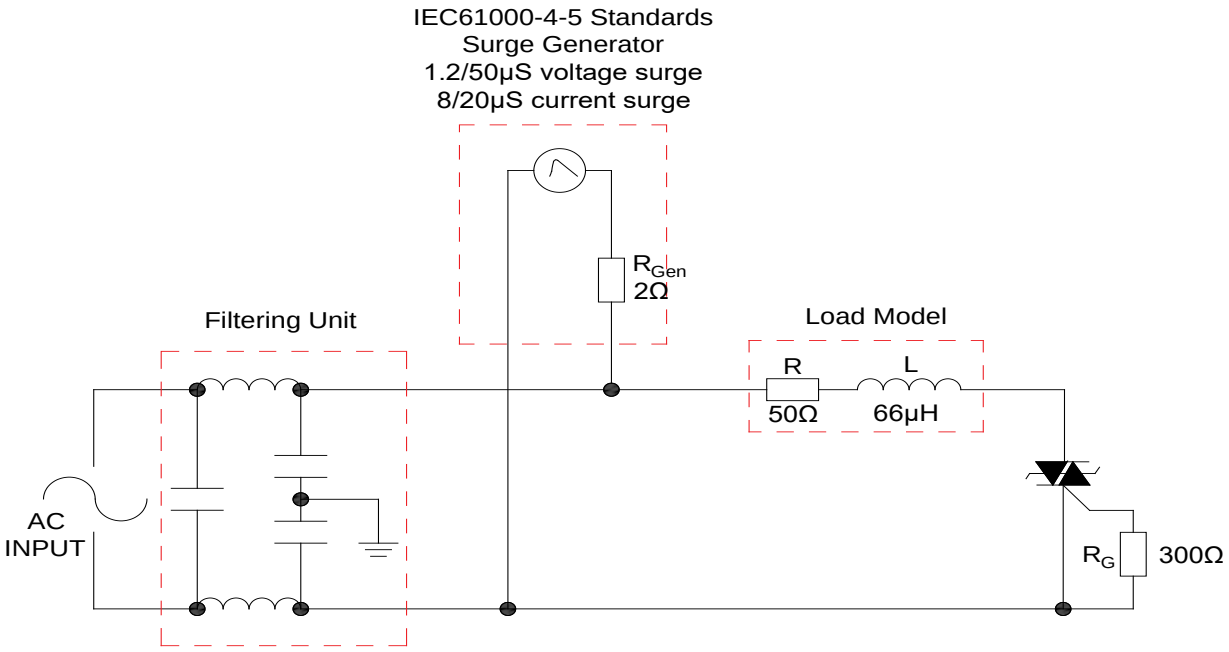
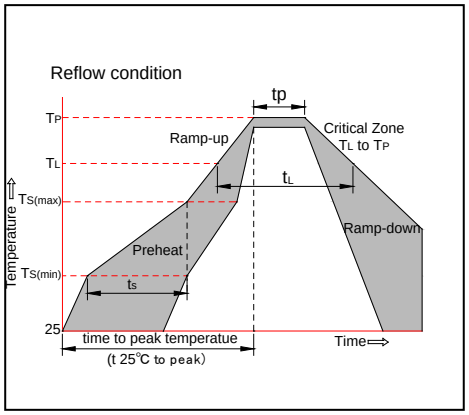


FIG.8：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards




## SOLDERING PARAMETERS

| Reflow Condition | | Pb-Free assembly (see figure at right) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp ($T_L$)to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$)(Liquidus) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃of actual Peak Temp ($t_p$) | | 20-40secs. |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |



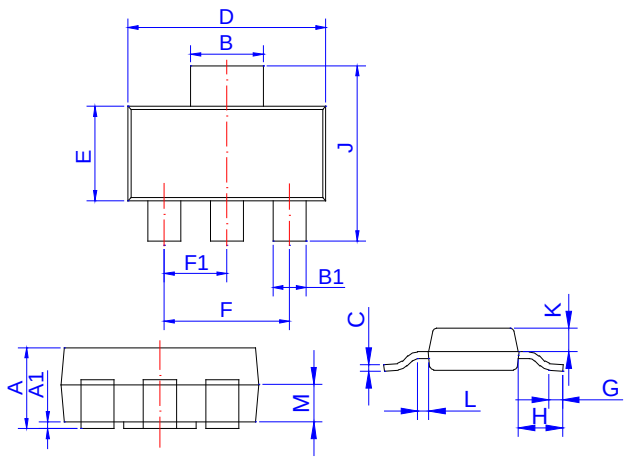
## ORDERING INFORMATION

| Order code | Voltage $V_{DRM}/V_{RRM}$ (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|---|---|---|---|---|---|
| ACJT105-6V | 600 | 5 | SOT-223 | 4,000 | Tape & Reel |

## Document Revision History

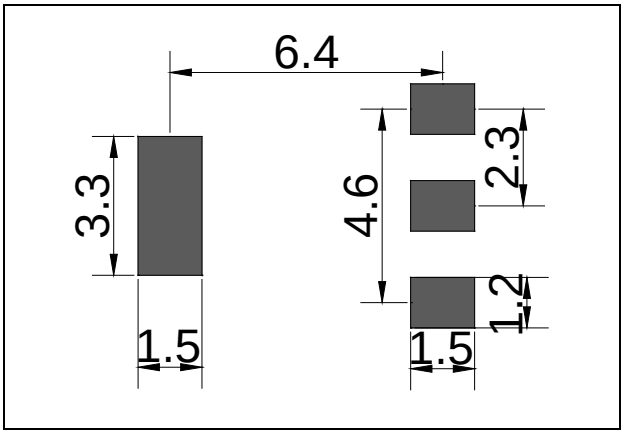
| Date | Revision | Changes |
|---|---|---|
| Apr.13, 2023 | A.1.0 | Last updated |
| Oct.23, 2025 | A.1.1 | Revise PACKAGE MECHANICAL DATA |

## PACKAGE MECHANICAL DATA

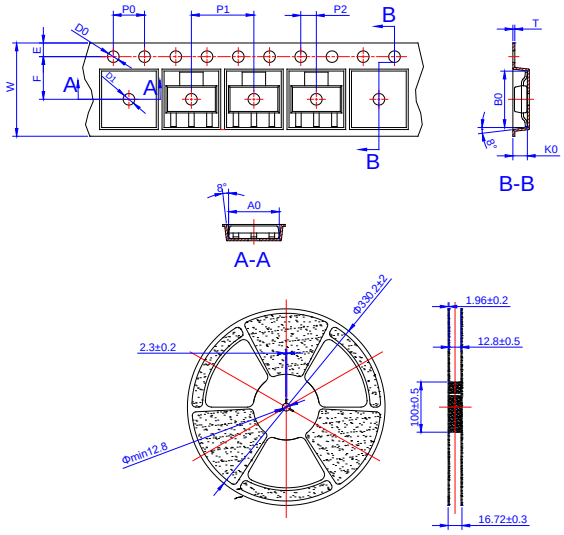



| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 1.50 | 1.60 | 1.80 | 0.059 | 0.063 | 0.071 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| B | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| B1 | 0.60 | 0.70 | 0.80 | 0.024 | 0.028 | 0.031 |
| C | 0.22 | 0.26 | 0.32 | 0.009 | 0.010 | 0.013 |
| D | 6.30 | 6.50 | 6.70 | 0.248 | 0.256 | 0.264 |
| E | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| F | 4.40 | | 4.80 | 0.173 | | 0.189 |
| F1 | 2.20 | | 2.40 | 0.087 | | 0.094 |
| G | 0.50 | | 1.00 | 0.020 | | 0.039 |
| H | 1.50 | 1.75 | 2.00 | 0.059 | 0.069 | 0.079 |
| J | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| K | 0.80 | | 1.00 | 0.031 | | 0.039 |
| L | 0.40 | | 0.80 | 0.016 | | 0.031 |
| M | 0.65 | | 0.80 | 0.026 | | 0.031 |

## FOOTPRINT-SOT-223 (dimensions in mm)



## DELIVERY MODE




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | - | - | 12.30 | - | | 0.482 |
| E | 1.65 | 1.75 | 1.85 | 0.065 | 0.069 | 0.073 |
| F | 5.45 | 5.50 | 5.55 | 0.215 | 0.217 | 0.219 |
| D0 | 1.50 | 1.55 | 1.60 | 0.059 | 0.061 | 0.063 |
| D1 | 1.50 | - | - | 0.059 | - | - |
| 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 | 1.95 | 2.00 | 2.05 | 0.077 | 0.079 | 0.081 |
| 10P0 | 39.80 | 40.00 | 40.20 | 1.567 | 1.575 | 1.583 |
| A0 | 6.85 | 6.95 | 7.05 | 0.269 | 0.273 | 0.276 |
| B0 | 7.15 | 7.25 | 7.35 | 0.280 | 0.284 | 0.288 |
| K0 | 1.95 | 2.05 | 2.15 | 0.076 | 0.080 | 0.084 |
| T | 0.20 | 0.25 | 0.30 | 0.008 | 0.010 | 0.012 |

| PACKAGE | OUTLINE | REEL (PCS) | PER CARTON (PCS) | TAPE & REEL |
|---|---|---|---|---|
| SOT-223 | TAPING | 4,000 | 40,000 | 13 inch |

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