

**ACJT1235-10E 12A TRIAC**

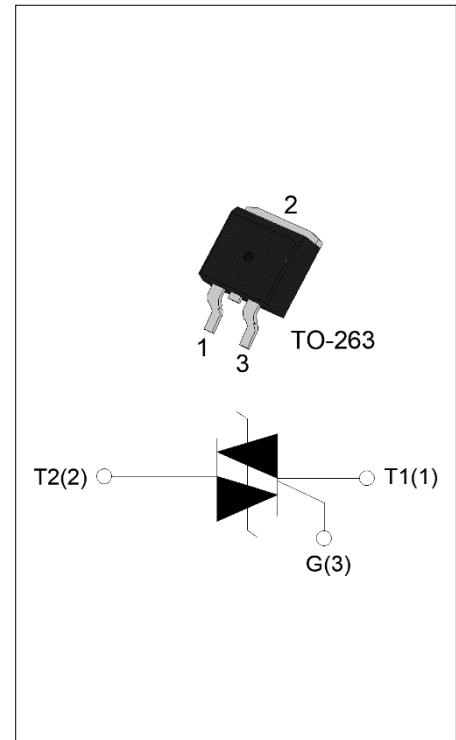
Rev.A.1.1

**DESCRIPTION:**

The ACJT1235-10E 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 ACJT1235-10E embeds a TVS structure to absorb the inductive turn-off energy such as those described in the IEC 61000-4-5 standards. Package TO-263 is RoHS compliant.

**MAIN FEATURES**

| Symbol             | Value    | Unit |
|--------------------|----------|------|
| $I_{T(RMS)}$       | 12       | A    |
| $V_{DRM}/V_{RRM}$  | 1000     | V    |
| $I_{GT\ I/II/III}$ | 35/35/35 | mA   |


**ABSOLUTE MAXIMUM RATINGS**

| Parameter                                                                                                        | Symbol       | Value   | Unit             |
|------------------------------------------------------------------------------------------------------------------|--------------|---------|------------------|
| Storage junction temperature range                                                                               | $T_{stg}$    | -40-150 | °C               |
| Operating junction temperature range                                                                             | $T_j$        | -40-125 | °C               |
| Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )                                                     | $V_{DRM}$    | 1000    | V                |
| Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )                                                       | $V_{RRM}$    | 1000    | V                |
| RMS on-state current ( $T_c \leq 104^\circ\text{C}$ )                                                            | $I_{T(RMS)}$ | 12      | A                |
| Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )            | $I_{TSM}$    | 120     | A                |
| Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )          |              | 132     |                  |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )                                           | $I^2t$       | 72      | A <sup>2</sup> s |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=125^\circ\text{C}$ ) | $di/dt$      | 100     | A/ $\mu\text{s}$ |
| Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )                                              | $I_{GM}$     | 4       | A                |
| Average gate power dissipation ( $T_j=125^\circ\text{C}$ )                                                       | $P_{G(AV)}$  | 0.5     | W                |
| Peak gate power                                                                                                  | $P_{GM}$     | 10      | W                |

|                                                                                      |          |   |    |
|--------------------------------------------------------------------------------------|----------|---|----|
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; non-repetitive, off-state; FIG.8) | $V_{pp}$ | 5 | kV |
|--------------------------------------------------------------------------------------|----------|---|----|

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^{\circ}\text{C}$  unless otherwise specified)

| Symbol      | Test Condition                                                                     | Quadrant     | Value |      | Unit             |
|-------------|------------------------------------------------------------------------------------|--------------|-------|------|------------------|
| $I_{GT}$    | $V_D=12\text{V}$ $R_L=33\Omega$                                                    | I - II - III | MAX.  | 35   | mA               |
| $V_{GT}$    |                                                                                    | I - II - III | MAX.  | 1    | V                |
| $V_{GD}$    | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$<br>$R_L=3.3\text{k}\Omega$                 | I - II - III | MIN.  | 0.2  | V                |
| $I_L$       | $I_G=1.2I_{GT}$                                                                    | I - III      | MAX.  | 50   | mA               |
|             |                                                                                    | II           |       | 70   |                  |
| $I_H$       | $I_T=500\text{mA}$                                                                 |              | MAX.  | 45   | mA               |
| $dV/dt$     | $V_D=670\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                              |              | MIN.  | 800  | V/ $\mu\text{s}$ |
| $(dI/dt)_c$ | $(dV/dt)_c=20\text{V}/\mu\text{s}$ , $T_j=125^{\circ}\text{C}$                     |              | MIN.  | 15   | A/ms             |
| $t_{on}$    | $I_G=40\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$<br>$T_j=25^{\circ}\text{C}$ |              | TYP.  | 5    | $\mu\text{s}$    |
| $t_{off}$   |                                                                                    |              |       | 70   |                  |
| $V_{CL}$    | $I_{CL}=0.1\text{mA}$ $t_p=1\text{ms}$                                             |              | MIN.  | 1050 | V                |

**STATIC CHARACTERISTICS**

| Symbol    | Parameter                                |                           | Value(MAX.) | Unit             |
|-----------|------------------------------------------|---------------------------|-------------|------------------|
| $V_{TM}$  | $I_{TM}=17\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.45        | V                |
| $V_{TO}$  | Threshold voltage                        | $T_j=125^{\circ}\text{C}$ | 0.8         | V                |
| $R_D$     | Dynamic resistance                       | $T_j=125^{\circ}\text{C}$ | 34          | $\text{m}\Omega$ |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$              | $T_j=25^{\circ}\text{C}$  | 10          | $\mu\text{A}$    |
| $I_{RRM}$ |                                          | $T_j=125^{\circ}\text{C}$ | 1           | mA               |

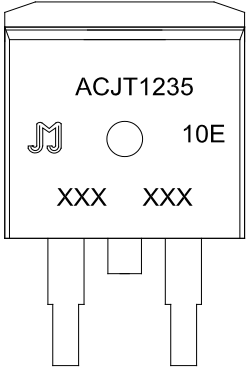
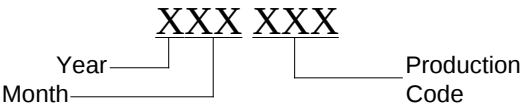
**THERMAL RESISTANCES**

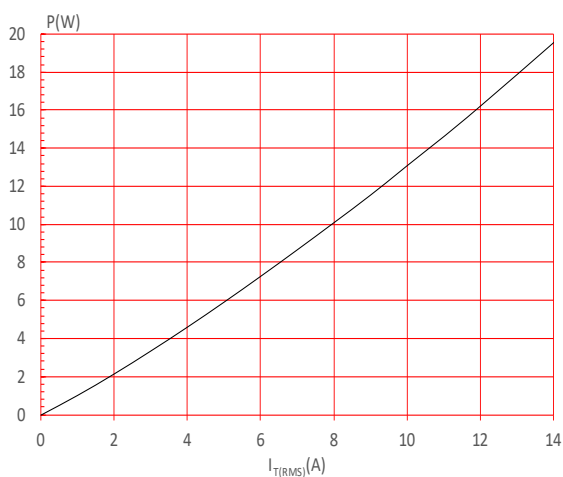
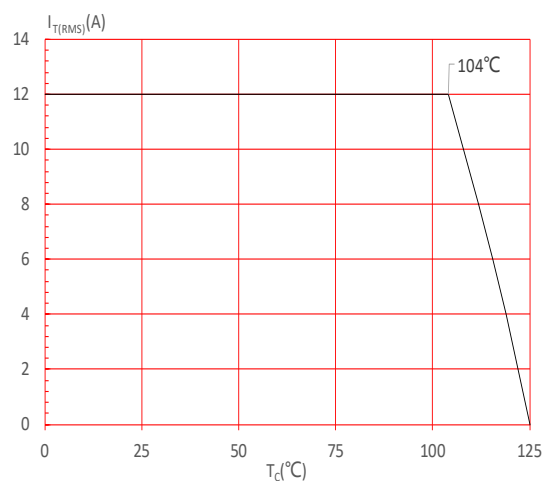
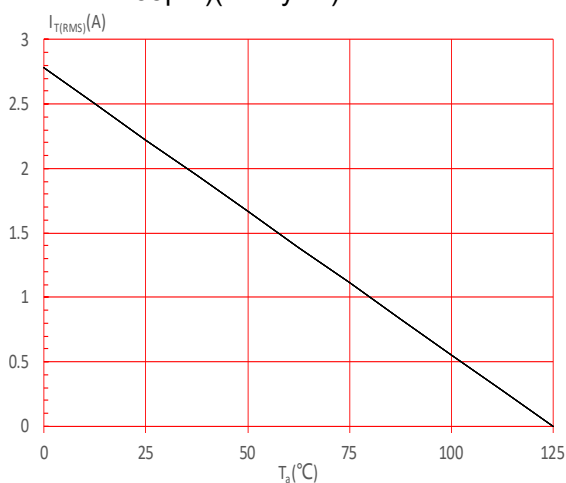
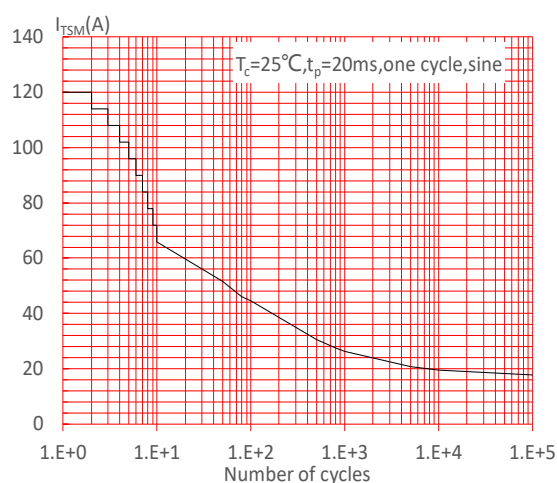
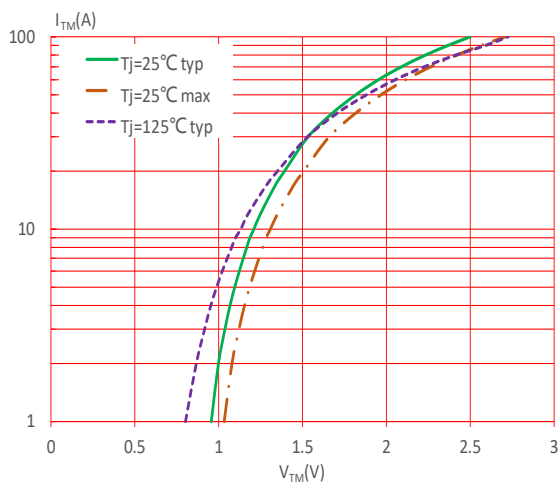
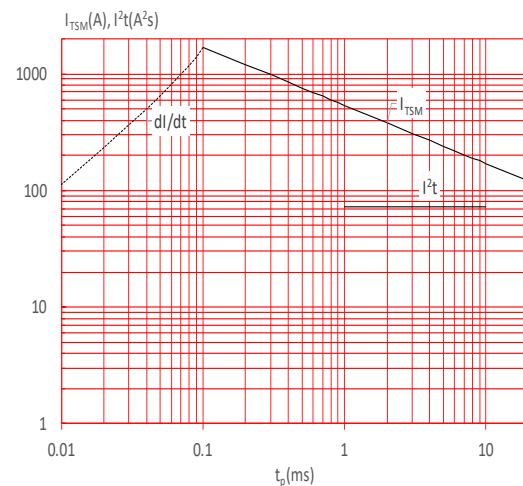
| Symbol        | Parameter                                                | Value | Unit                        |
|---------------|----------------------------------------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (AC)                                    | 1.3   | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (AC, in free air, $S=2\text{cm}^2$ ) | 45    | $^{\circ}\text{C}/\text{W}$ |

ORDERING INFORMATION

|                                   |          |                    |                        |           |                            |          |                               |
|-----------------------------------|----------|--------------------|------------------------|-----------|----------------------------|----------|-------------------------------|
| <u>AC</u>                         | <u>J</u> | <u>T</u>           | <u>12</u>              | <u>35</u> | <u>-10</u>                 | <u>E</u> | <u>-/</u>                     |
| AC switch                         |          | Triacs             |                        |           |                            | E:TO-263 | Blank:Tube<br>-TR:Tape & Reel |
| JieJie Microelectronics Co., Ltd. |          | <u>IT(RMS):12A</u> |                        |           |                            |          |                               |
|                                   |          |                    | <u>35: IGT1-3≤35mA</u> |           |                            |          |                               |
|                                   |          |                    |                        |           | <u>10:VDRM /VRRM≥1000V</u> |          |                               |

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  $I^2t$  ( $di/dt < 100A/μs$ )

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

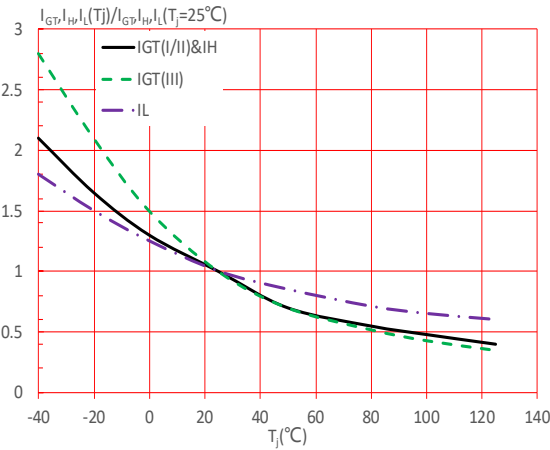
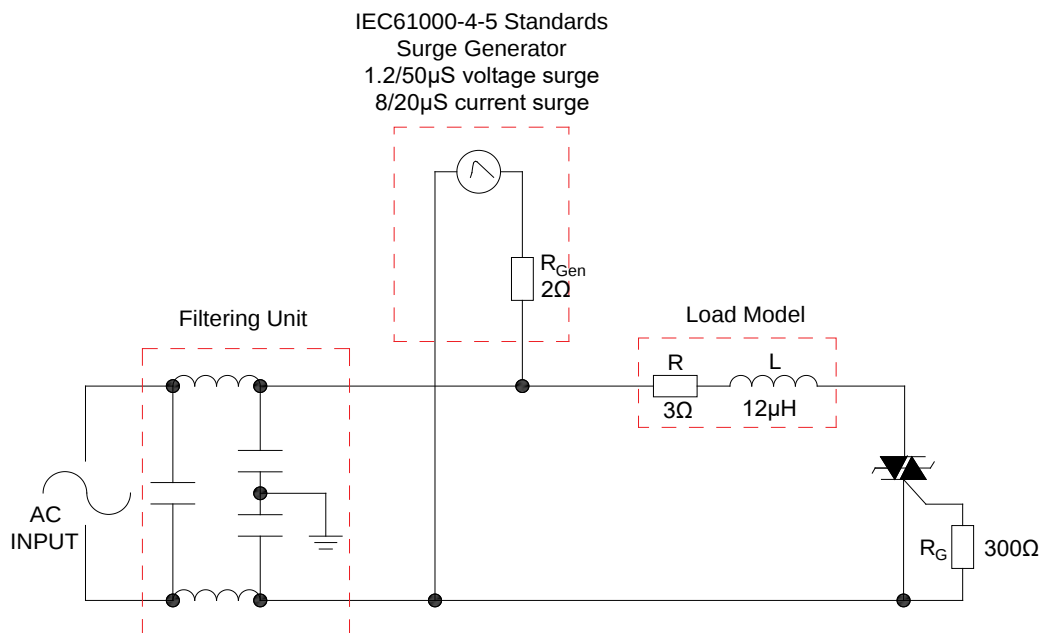
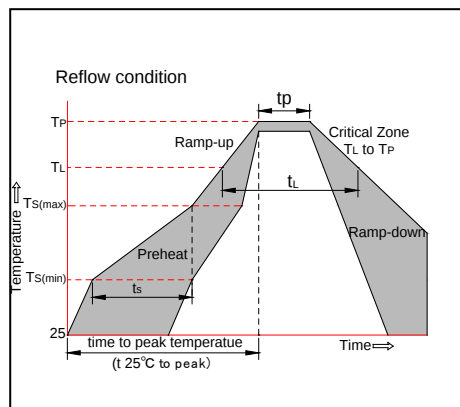


FIG.8: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



## SOLDERING PARAMETERS

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



## ORDERING INFORMATION

| Order code      | Voltage<br>$V_{\text{DRM}}/V_{\text{RRM}}$ (V) | IGT(mA) | Package | Base qty.<br>(pcs) | Delivery<br>mode |
|-----------------|------------------------------------------------|---------|---------|--------------------|------------------|
| ACJT1235-10E    | 1000                                           | 35      | TO-263  | 50                 | Tube             |
| ACJT1235-10E-TR |                                                |         |         | 800                | Tape & Reel      |

## Document Revision History

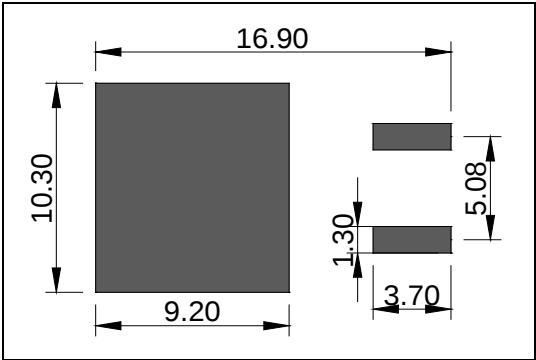
| Date         | Revision | Changes                        |
|--------------|----------|--------------------------------|
| Apr.13, 2023 | A.1.0    | Last updated                   |
| Oct.20, 2025 | A.1.1    | Revise PACKAGE MECHANICAL DATA |

PACKAGE MECHANICAL DATA



| Ref. | Dimensions  |      |       |        |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Millimeters |      |       | Inches |       |       |
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    | 9.90        |      | 10.20 | 0.390  |       | 0.402 |
| A1   | 0.80        |      | 1.20  | 0.031  |       | 0.047 |
| B    | 14.70       |      | 15.80 | 0.579  |       | 0.622 |
| B1   | 2.15        |      | 2.55  | 0.085  |       | 0.100 |
| C    | 9.40        |      | 9.60  | 0.370  |       | 0.378 |
| C1   | 2.40        |      | 2.80  | 0.094  |       | 0.110 |
| D    | 2.40        |      | 2.70  | 0.094  |       | 0.106 |
| E    | 1.20        |      | 1.50  | 0.047  |       | 0.059 |
| F    | 0.75        |      | 0.85  | 0.029  |       | 0.033 |
| G    | 1.00        |      | 1.50  | 0.039  |       | 0.059 |
| H    | 4.40        |      | 4.70  | 0.173  |       | 0.185 |
| I    | 1.80        |      | 2.20  |        |       |       |
| J    | 2.30        |      | 2.70  | 0.091  |       | 0.106 |
| K    | 0.38        |      | 0.55  | 0.015  |       | 0.022 |
| L    | 0           | 0.10 | 0.25  | 0      | 0.004 | 0.010 |
| L1   | 4.65        |      | 5.05  | 0.183  |       | 0.199 |
| L2   | 1.90        |      |       | 0.075  |       |       |
| M    | 1.25        |      | 1.35  | 0.049  |       | 0.053 |
| N    | 4.80        |      | 5.20  |        |       |       |
| O    | 1.30        |      | 1.50  |        |       |       |
| P    | 1.20        |      | 1.50  | 0.047  |       | 0.059 |

FOOTPRINT-TO-263 (dimensions in mm)



Technical drawing of a mechanical part, showing front and side views with dimensions.

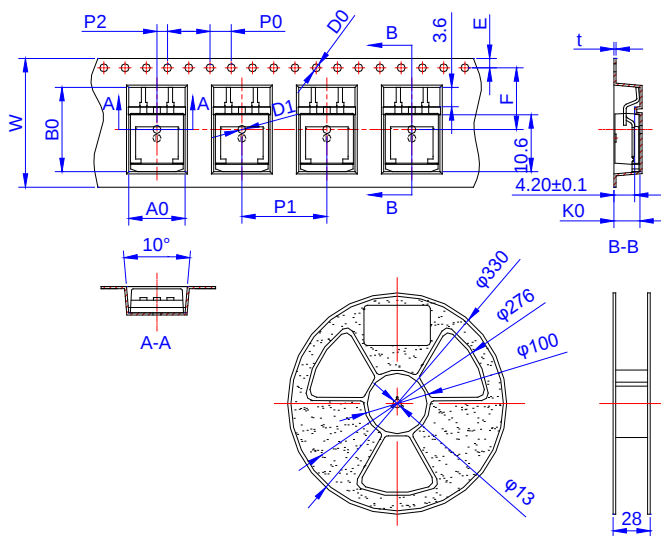
**Front View Dimensions:**

- Overall width:  $530 \pm 0.5$
- Distance from left edge to center of hole: 518
- Distance from center of hole to right edge:  $\pm 0.05$
- Distance from bottom edge to center of hole: 12.9
- Hole diameter:  $\phi 3.0$

**Side View Dimensions:**

- Overall height: 33
- Top flange thickness: 7-0.2
- Distance from top flange to center of hole: 17.9
- Distance from center of hole to bottom flange: 10.9
- Bottom flange thickness: 2.6
- Distance from bottom flange to center of hole: 0.6
- Distance from center of hole to right edge: 1.5
- Distance from right edge to center of hole: 1.5

| PACKAGE | OUTLINE | TUBE<br>(PCS) | INNER BOX<br>(PCS) | PER CARTON |
|---------|---------|---------------|--------------------|------------|
| TO-263  | TUBE    | 50            | 1,000              | 5,000      |



| Ref. | Dimensions  |       |       |        |       |       |
|------|-------------|-------|-------|--------|-------|-------|
|      | Millimeters |       |       | Inches |       |       |
|      | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| W    | 23.70       | 24.00 | 24.30 | 0.933  | 0.945 | 0.957 |
| E    | 1.65        | 1.75  | 1.85  | 0.065  | 0.069 | 0.073 |
| F    | 11.40       | 11.50 | 11.60 | 0.449  | 0.453 | 0.457 |
| D0   | -           | 1.50  | 1.60  | -      | 0.059 | 0.063 |
| D1   | -           | 1.50  | 1.60  | -      | 0.059 | 0.063 |
| P0   | 3.90        | 4.00  | 4.10  | 0.154  | 0.157 | 0.161 |
| P1   | 15.90       | 16.00 | 16.10 | 0.626  | 0.630 | 0.634 |
| P2   | 1.90        | 2.00  | 2.10  | 0.075  | 0.079 | 0.083 |
| A0   | 10.80       | 10.90 | 11.00 | 0.425  | 0.429 | 0.433 |
| B0   | 16.20       | 16.30 | 16.40 | 0.638  | 0.642 | 0.646 |
| K0   | 4.80        | 4.90  | 5.00  | 0.189  | 0.193 | 0.197 |
| t    | 0.35        | 0.40  | 0.45  | 0.014  | 0.016 | 0.018 |

| PACKAGE | OUTLINE | REEL<br>(PCS) | PER CARTON<br>(PCS) | TAPE & REEL |
|---------|---------|---------------|---------------------|-------------|
| TO-263  | TAPING  | 800           | 4,000               | 13 inch     |

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