



JST137K-800G 8A TRIAC

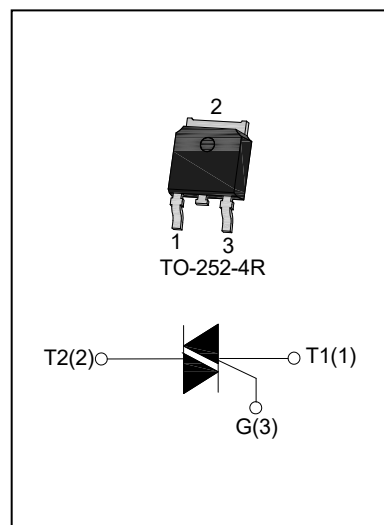
Rev.1

DESCRIPTION:

JST137K-800E triac with low holding and latching current are especially recommended for use on middle and small resistance type power load. Package TO-252-4R is RoHS compliant. (2011/65/EU)

MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|-------|------|
| $I_{T(RMS)}$ | 8 | A |
| V_{DRM}/V_{RRM} | 800 | V |



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} | 800 | V |
| Repetitive peak reverse voltage($T_j=25^\circ\text{C}$) | | V_{RRM} | 800 | V |
| RMS on-state current | TO-252-4R ($T_C=100^\circ\text{C}$) | $I_{T(RMS)}$ | 8 | A |
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | | I_{TSM} | 65 | A |
| I^2t value for fusing ($t_p=10\text{ms}$) | | I^2t | 21 | A^2s |
| Peak gate current | | I_{GM} | 2 | A |
| Critical rate of rise of on-state current($I_G=2 \times I_{GT}$) | I - II - III | di/dt | 50 | $\text{A}/\mu\text{s}$ |
| | IV | | 10 | |
| Average gate power dissipation | | $P_{G(AV)}$ | 0.5 | W |
| Peak gate power | | P_{GM} | 5 | W |

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

| Symbol | Test Condition | Quadrant | Value | | Unit |
|----------|--|--------------|-------|-----|------------------|
| I_{GT} | $V_D=12\text{V } R_L=30\Omega$ | I - II - III | MAX | 50 | mA |
| | | IV | | 100 | |
| V_{GT} | | ALL | MAX | 1.3 | V |
| V_{GD} | $V_D=V_{DRM} T_j=125^{\circ}\text{C}$ $R_L=3.3\text{K}\Omega$ | ALL | MIN | 0.2 | V |
| I_L | $I_G=1.2I_{GT}$ | I - III | MAX | 70 | mA |
| | | II - IV | | 100 | |
| I_H | $I_T=100\text{mA}$ | | MAX | 60 | mA |
| dv/dt | $V_D=2/3V_{DRM}$ Gate Open $T_j=125^{\circ}\text{C}$ | | MIN | 200 | V/ μs |

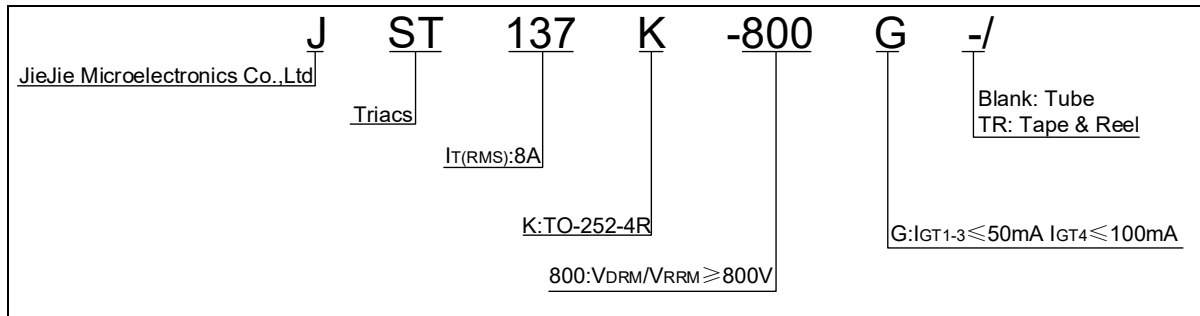
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|-----------|---|---------------------------|------------|---------------|
| V_{TM} | $I_{TM}=10\text{A } t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$ | 1.6 | V |
| V_{TO} | Threshold voltage | $T_j=125^{\circ}\text{C}$ | 0.99 | V |
| R_d | Dynamic resistance | $T_j=125^{\circ}\text{C}$ | 36 | m Ω |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^{\circ}\text{C}$ | 5 | μA |
| I_{RRM} | | $T_j=125^{\circ}\text{C}$ | 1 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|----------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case(AC) | 2.4 | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient | 70 | $^{\circ}\text{C}/\text{W}$ |

ORDERING INFORMATION



MARKING

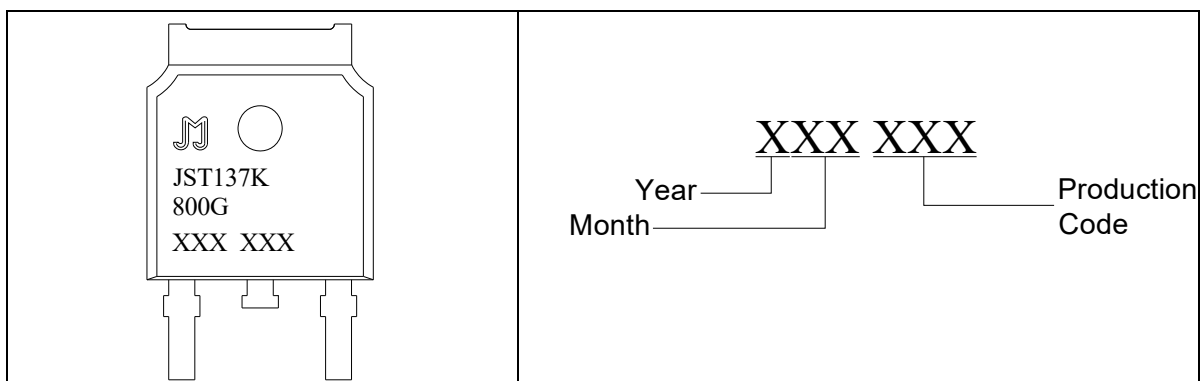


FIG.1: Maximum power dissipation versus RMS on-state current

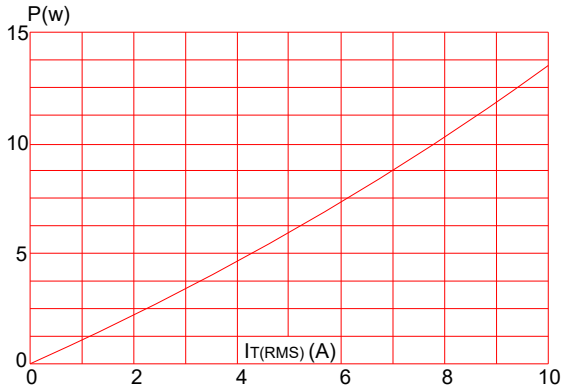


FIG.2: RMS on-state current versus case temperature

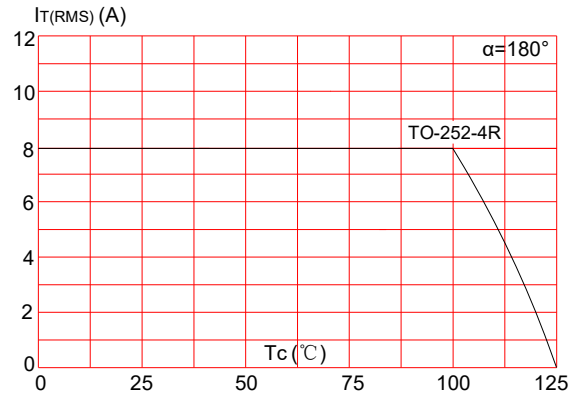


FIG.3: RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35µm)(full cycle)

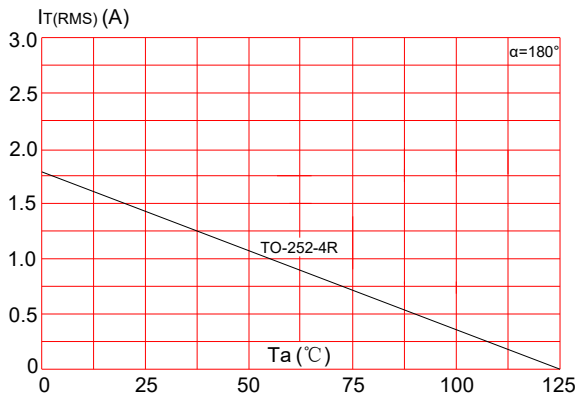


FIG.4: Surge peak on-state current versus number of cycles

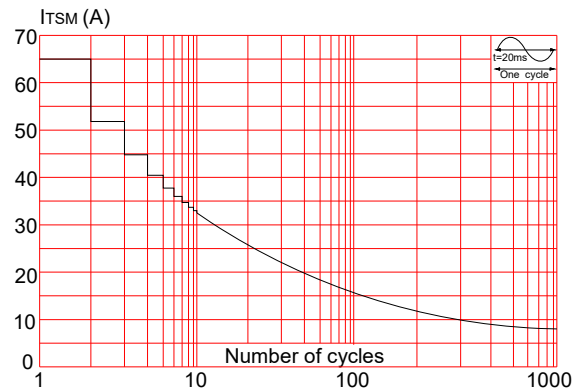


FIG.5: On-state characteristics (maximum values)

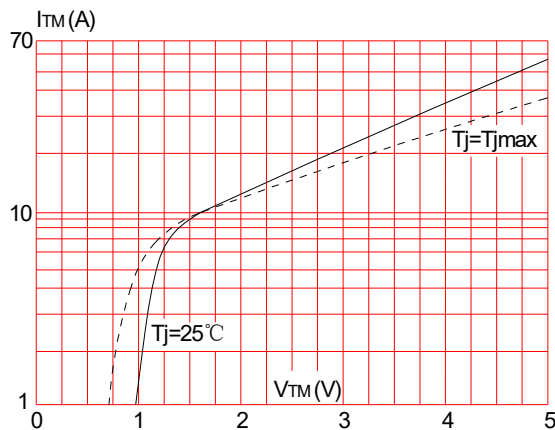


FIG.6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($I - II - III: di/dt < 50\text{A}/\mu\text{s}$; $IV: di/dt < 10\text{A}/\mu\text{s}$)

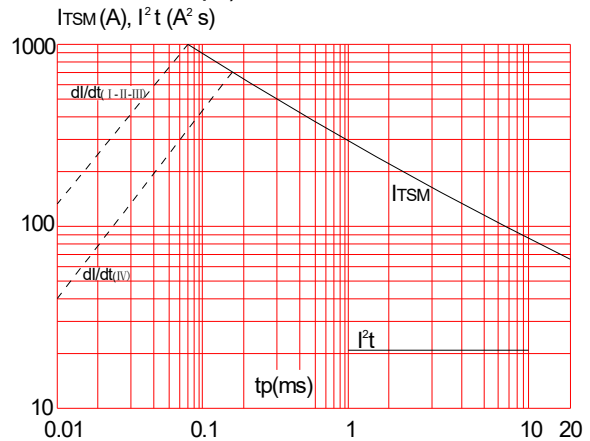


FIG.7: Relative variations of gate trigger current versus junction temperature

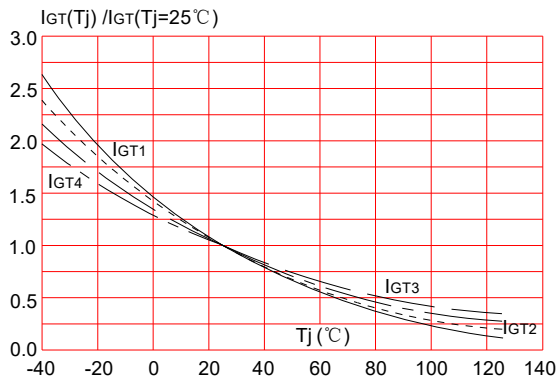


FIG.8: Relative variations of holding current versus junction temperature

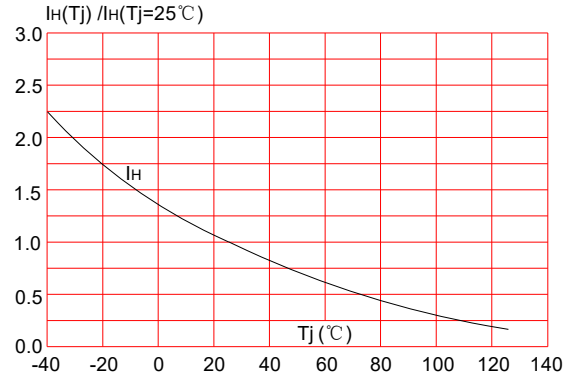
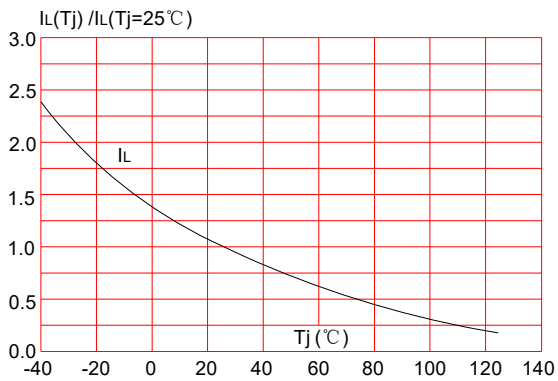
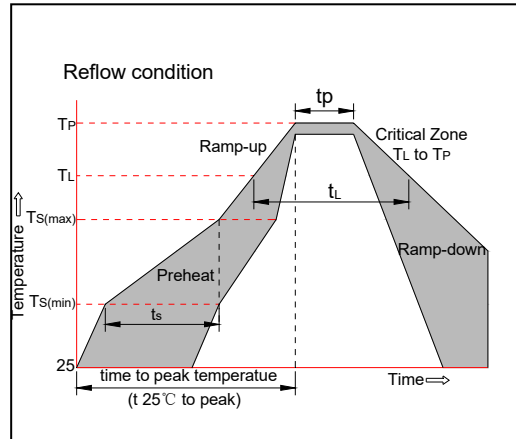


FIG.9: Relative variations of latching current versus junction temperature



SOLDERING PARAMETERS

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



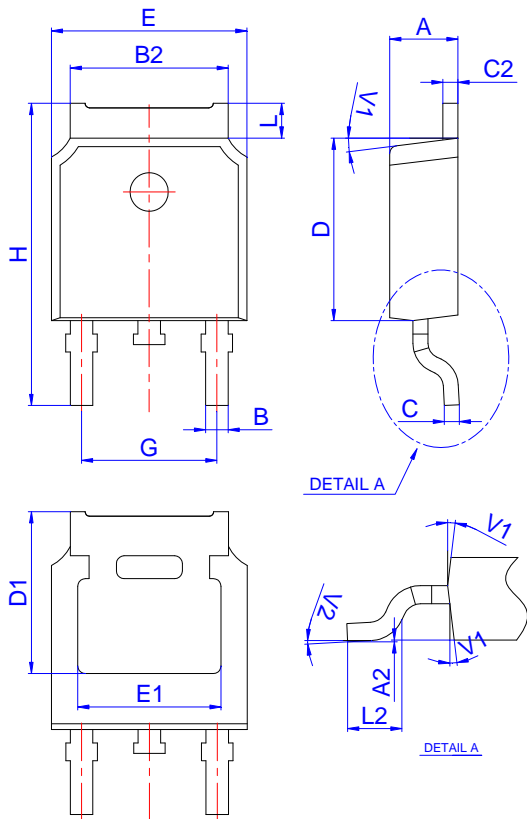
ORDERING INFORMATION

| Order code | Voltage V _{DRM} /V _{R_{RM}} (V) | IGT(mA) | | Package | Base qty. (pcs) | Delivery mode |
|--------------|--|------------|-----|-----------|--------------------|------------------|
| | | I -II -III | IV | | | |
| JST137K-800G | 800 | 50 | 100 | TO-252-4R | 4,000 | Tape & Reel |
| | | | | | 80 | Tube |

Document Revision History

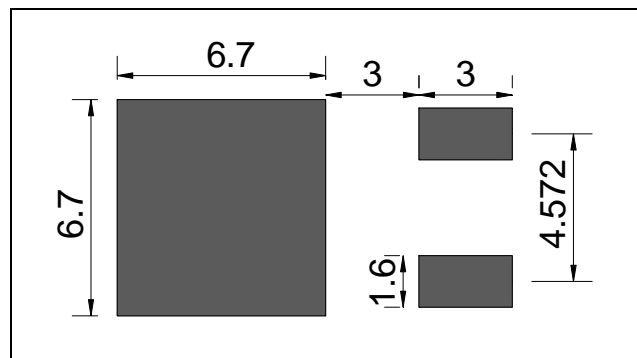
| Date | Revision | Changes |
|--------------|----------|-------------|
| May 18, 2022 | 1 | Last update |

PACKAGE MECHANICAL DATA

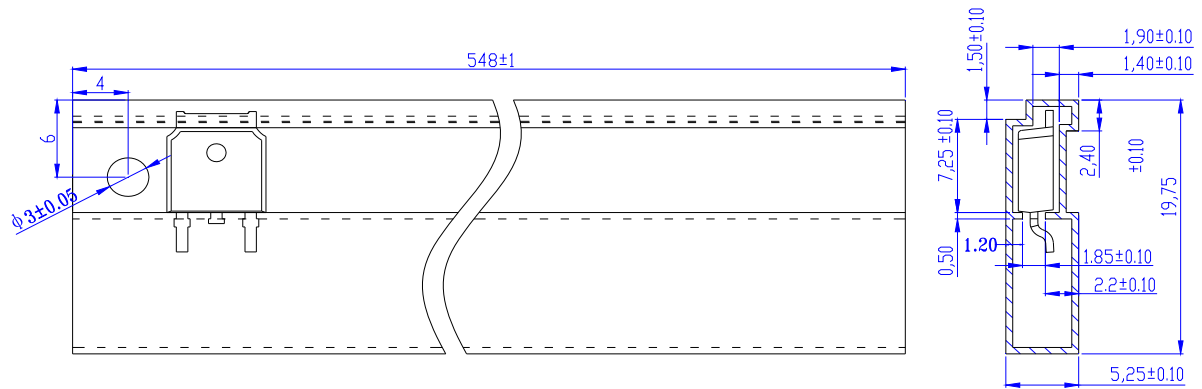


| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|----------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

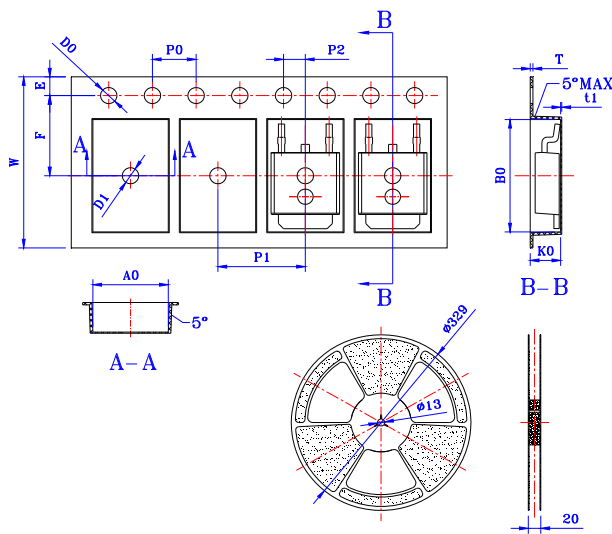
FOOTPRINT-TO-252-4R (dimensions in mm)



DELIVERY MODE



| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|-----------|---------|------------|-----------------|------------|
| TO-252-4R | TUBE | 80 | 4,000 | 20,000 |




| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | 15.90 | 16.00 | 16.10 | 0.626 | 0.630 | 0.634 |
| 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 |
| D0 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| D1 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| 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 |
| 10P0 | 39.80 | 40.00 | 40.20 | 1.567 | 1.575 | 1.583 |
| A0 | 6.85 | 6.90 | 7.00 | 0.270 | 0.272 | 0.276 |
| B0 | 10.45 | 10.50 | 10.60 | 0.411 | 0.413 | 0.417 |
| K0 | 2.68 | 2.78 | 2.88 | 0.106 | 0.109 | 0.113 |
| T | 0.24 | - | 0.27 | 0.009 | - | 0.011 |
| ti | 0.10 | - | - | 0.004 | - | - |

| PACKAGE | OUTLINE | REEL (PCS) | PER CARTON (PCS) | TAPE & REEL |
|-----------|---------|------------|------------------|-------------|
| TO-252-4R | TAPING | 2,500 | 25,000 | 13 inch |



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