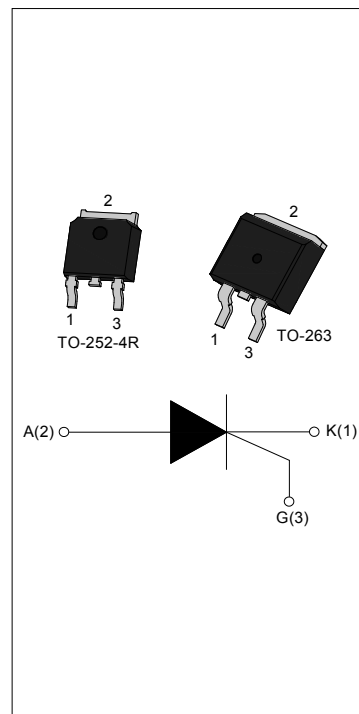




DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT151 series of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. Package TO-252-4R and TO-263 are RoHS compliant. (2011/65/EU)



MAIN FEATURES

| Symbol | Value | Symbol |
|-------------------|---------|--------|
| V_{DRM}/V_{RRM} | 650/800 | V |
| $I_{T(RMS)}$ | 12 | A |
| I_{GT} | ≤15 | mA |

ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|---------------------------------------|--------------|-----------|------------------------|
| Storage junction temperature range | | T_{stg} | -40 - 150 | °C |
| Operating junction temperature range | | T_j | -40 - 150 | °C |
| Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$) | | V_{DRM} | 650/800 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | | V_{RRM} | 650/800 | V |
| RMS on-state current | TO-252-4R ($T_c=115^\circ\text{C}$) | $I_{T(RMS)}$ | 12 | A |
| | TO-263 ($T_c=100^\circ\text{C}$) | | | |
| Non repetitive surge peak on-state current (F=50Hz $t_p=10\text{ms}$) | | I_{TSM} | 120 | A |
| Non repetitive surge peak on-state current (F=60Hz $t_p=8.3\text{ms}$) | | I_{TSM} | 132 | A |
| I^2t value for fusing ($t_p=10\text{ms}$) | | I^2t | 72 | A^2s |
| Repetitive rate of rise of on-state current ($I_G=2 \times I_{GT}$) | | di_T/dt | 50 | $\text{A}/\mu\text{s}$ |
| Peak gate current | | I_{GM} | 2 | A |

| | | | |
|--------------------------------|-------------|-----|---|
| Peak gate power | P_{GM} | 5 | W |
| Average gate power dissipation | $P_{G(AV)}$ | 0.5 | W |

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

| Symbol | Test Condition | Value | | | Unit |
|-----------|---|-------|------|------|------------|
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V_D=12V R_L=33\Omega$ | - | 4 | 15 | mA |
| V_{GT} | | - | 0.75 | 1.5 | V |
| V_{GD} | $V_D=V_{DRM} T_j=150^{\circ}C R_L=3.3K\Omega$ | 0.2 | - | - | V |
| I_L | $I_G=1.2I_{GT}$ | - | 12 | 40 | mA |
| I_H | $I_T=500mA$ | - | 12 | 30 | mA |
| dV/dt | $V_D=540V$ Gate Open $T_j=150^{\circ}C$ | 50 | - | - | V/ μs |
| dV/dt | $V_D=436V$ Gate Open $T_j=150^{\circ}C$ | 80 | - | - | V/ μs |
| t_{on} | $I_{GT}=20mA I_A=100mA I_R=10mA$ $T_j=25^{\circ}C$ | - | 2 | - | μs |
| t_{off} | | - | 30 | - | μs |
| R_d | Dynamic resistance $T_j=125^{\circ}C$ | - | - | 35 | m Ω |

STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|-----------|---------------------------|--------------------|------------|---------|
| V_{TM} | $I_{TM}=23A t_p=380\mu s$ | $T_j=25^{\circ}C$ | 1.6 | V |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^{\circ}C$ | 10 | μA |
| I_{RRM} | | $T_j=150^{\circ}C$ | 1 | mA |

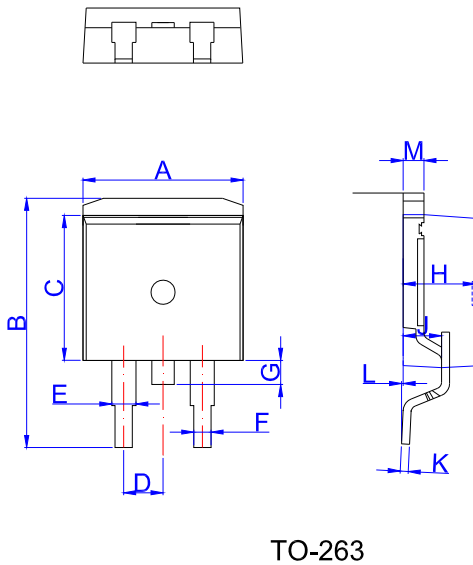
THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|---------------------|-----------|-------|---------------|
| $R_{th(j-c)}$ | Junction to case | TO-252-4R | 1.3 | $^{\circ}C/W$ |
| | | TO-263 | 2.0 | |
| $R_{th(j-a)}$ | Junction to ambient | TO-252-4R | 70 | |
| | | TO-263 | 45 | |

ORDERING INFORMATION

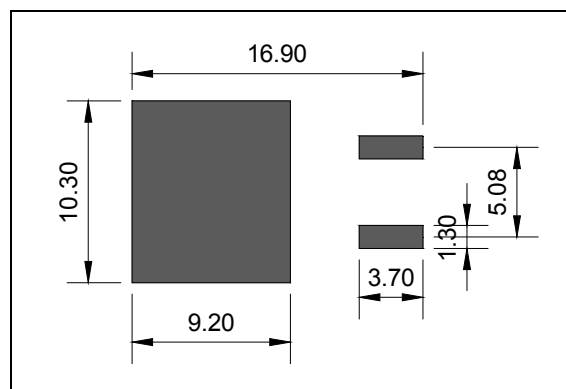
| | | | | | |
|---------------------------------|---|------|------------------|---|--|
| JieJie Microelectronics Co.,Ltd | J | CT | 151 | K | -650R |
| | | SCRs | $I_{T(RMS)}:12A$ | | 650R: $V_{DRM}/V_{RRM} \geq 650V$ 800R: $V_{DRM}/V_{RRM} \geq 800V$ |
| | | | | | E:TO-263 K:TO-252-4R ETR:TO-263(Tape&Reel) KTR:TO-252-4R(Tape&Reel) |

PACKAGE MECHANICAL DATA

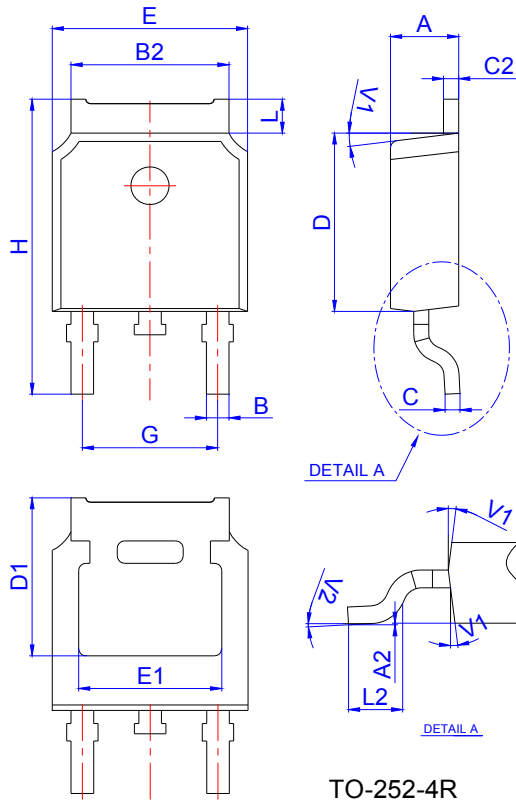


| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 9.90 | | 10.20 | 0.390 | | 0.402 |
| B | 14.70 | | 15.80 | 0.579 | | 0.622 |
| C | 9.4 | | 9.6 | 0.37 | | 0.378 |
| D | | 2.54 | | | 0.100 | |
| E | 1.20 | | 1.40 | 0.047 | | 0.055 |
| F | 0.75 | | 0.85 | 0.029 | | 0.033 |
| G | | | 1.75 | | | 0.069 |
| H | 4.40 | | 4.70 | 0.173 | | 0.185 |
| 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 |
| M | 1.25 | | 1.35 | 0.049 | | 0.053 |

FOOTPRINT-TO-263 (dimensions in mm)

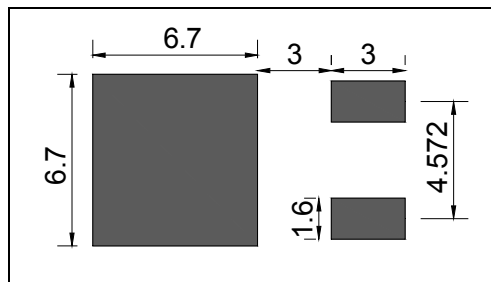


PACKAGE MECHANICAL DATA

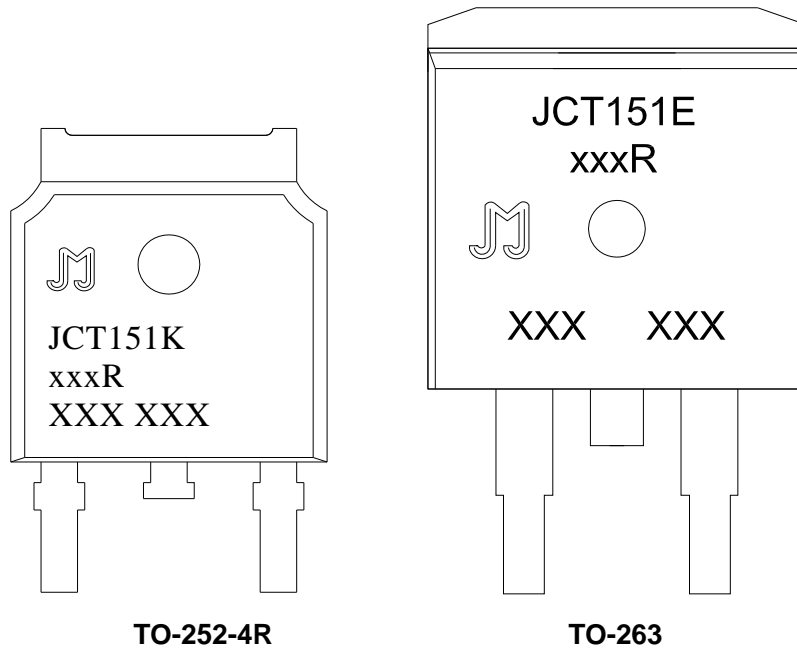


| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|----------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 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° |

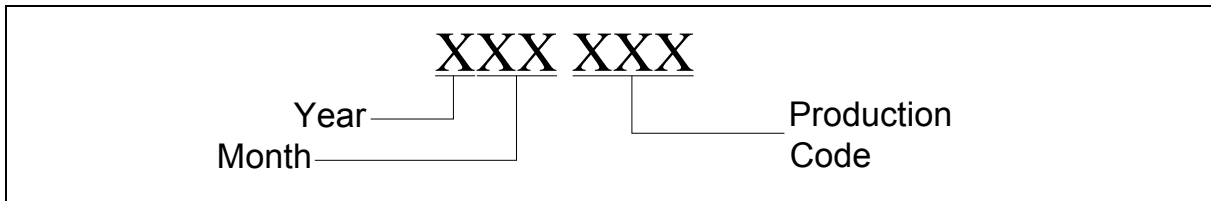
FOOTPRINT-TO-252-4R (dimensions in mm)



MARKING



NOTE: xxxR---650R/800R



PACKAGE INFORMATION

| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|-----------|---------|------------|------------------|-------------|
| TO-263 | TUBE | 50 | 1,000 | 6,000 |
| TO-252-4R | TUBE | 80 | 4,000 | 32,000 |
| PACKAGE | OUTLINE | REEL (PCS) | PER CARTON (PCS) | TAPE & REEL |
| TO-263 | TAPING | 800 | 4,000 | 13 inch |
| TO-252-4R | TAPING | 2,500 | 25,000 | 13 inch |

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

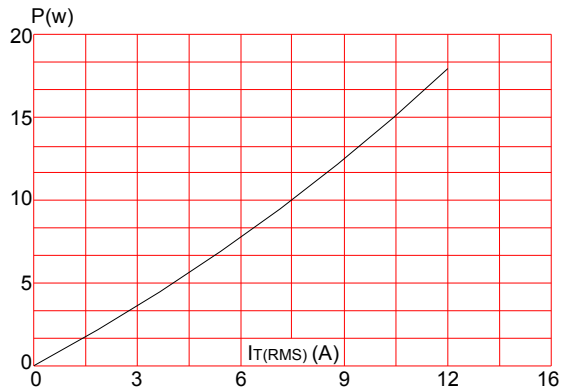


FIG.3: Surge peak on-state current versus number of cycles

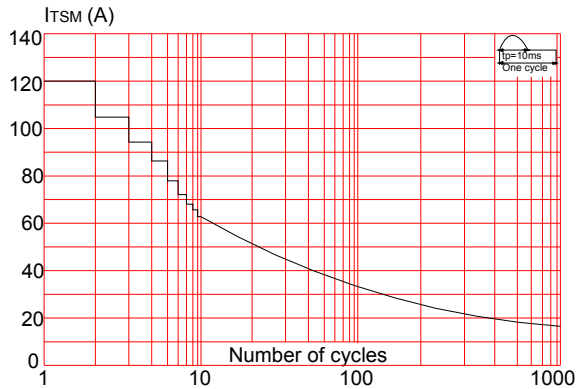


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

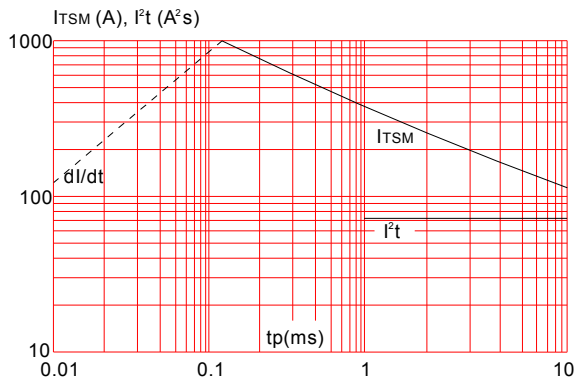


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: $35\mu\text{m}$) (full cycle)

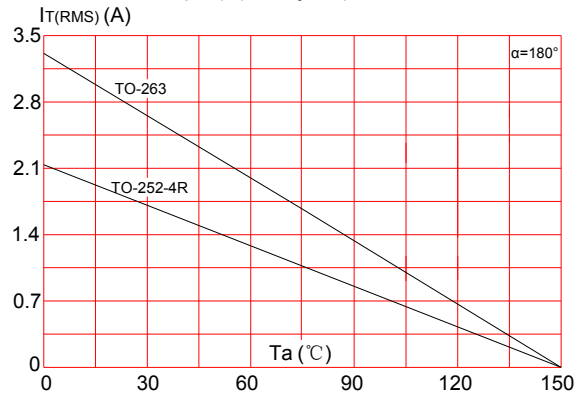


FIG.4: On-state characteristics (maximum values)

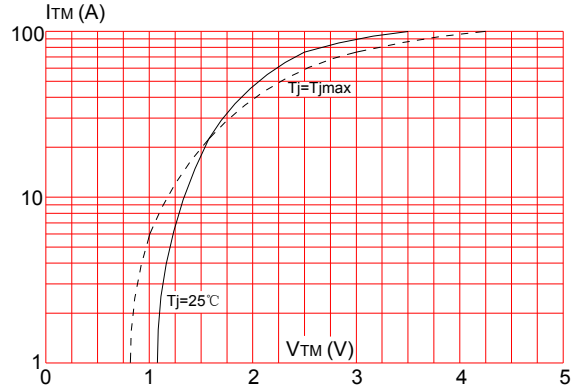
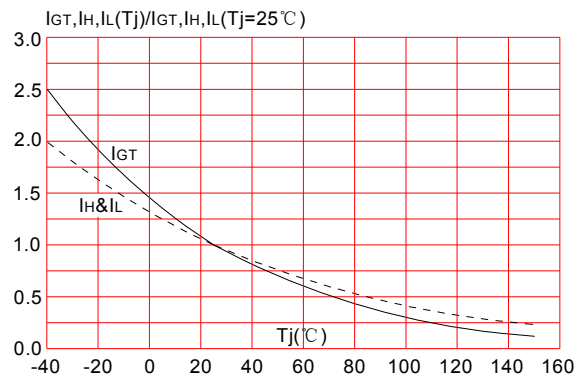
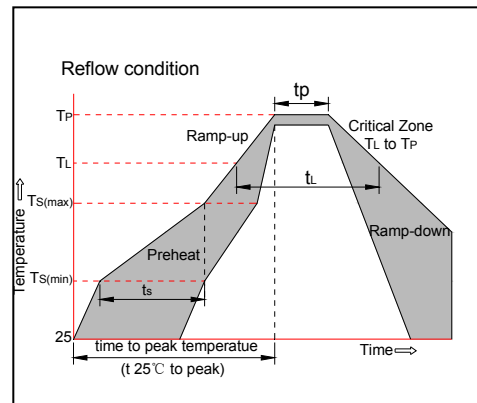


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature




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) (ts) | 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 |



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