

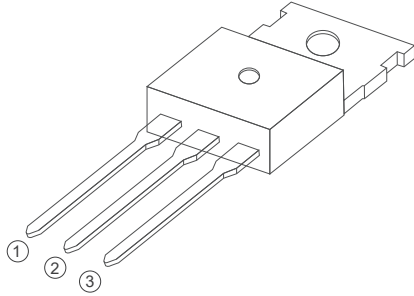
BT139 Series

16A TRIACs

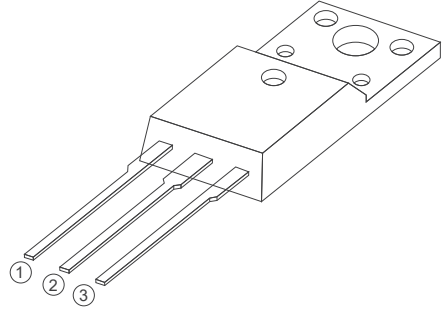
4 Quadrants TRIACs



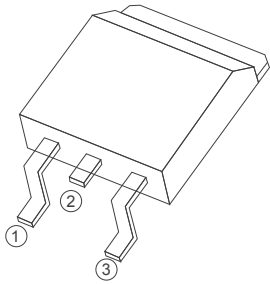
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Electronic CO.,Ltd



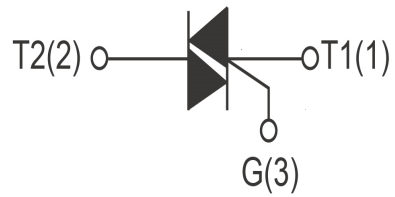
TO-220C



TO-220F Insulated



TO-263



FEATURES

> $I_T(RMS)$: 16A > V_{GT} : 1.5V > V_{DRM} V_{RRM} :800V

APPLICATIONS

Washing machine,vacuums, massager,solid state relay, AC Motor speed regulation and so on.

Absolute Maximum Ratings (T_J=25°C unless otherwise specified)

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|-----------------------------------|---|---------|------------------|
| VDRM VRRM | Repetitive Peak Off-State Voltage | BT139-600 | 600 | V |
| | | BT139-800 | 800 | V |
| IT(RMS) | R.M.S On-State Current | T _c =110°C | 16 | A |
| ITSM | Surge On-State Current | t _p =16.7ms/t _p =10ms | 160/168 | A |
| I ² t | I ² t for fusing | T _p =10ms | 144 | A ² s |
| PG(AV) | Average Gate Power Dissipation | T _J =125°C | 1 | W |
| IGM | Peak Gate Current | T _J =125°C | 4 | A |
| T _J | Operating Junction Temperature | | ~40~125 | °C |
| TSTG | Storage Temperature | | ~40~150 | °C |

Electrical Characteristics (T_J=25°C unless otherwise specified)

| Symbol | Parameter | | Test Conditions | Value | | | | Unit |
|----------|---|----------|--|-------|-----|-----|------|-------|
| | | | | D | E | F | G | |
| IDRM | Repetitive Peak Off-State Current | | T _J =25°C | ≤5 | | | | uA |
| | | | T _J =125°C | ≤1 | | | | mA |
| IRRM | Repetitive Peak Reverse Current | | T _J =25°C | ≤5 | | | | uA |
| | | | T _J =125°C | ≤1 | | | | mA |
| VTM | Forward "on" voltage | | IT=35A t _p =380us | 1.55 | | | | V |
| VGT | Gate trigger voltage | | VD=12V ,RL=30Ω | ≤1.5 | | | | V |
| di/dt | Critical-rate of rise of commutation current. | I,II,III | IG=2XIGT, tr≤100ns, F=100Hz | ≥50 | | | | A /us |
| | | IV | | ≥10 | | | | A /us |
| IGT | Gate trigger current | I,II,III | VD=12V RL=30Ω | ≤5 | ≤10 | ≤25 | ≤50 | mA |
| | | IV | | ≤10 | ≤25 | ≤70 | ≤100 | mA |
| IH | Holding current | | IT=0.2A | ≤10 | ≤25 | ≤30 | ≤60 | mA |
| VDG | Gate non-trigger voltage | ALL | VD=VDRM ,RL=30Ω ,T _J =125°C | ≥0.2 | | | | V |
| dv/dt | Critical-rate of rise of commutation voltage | | T _J =125°C VD=2/3VDRM Gate open circuit | ≥5 | ≥10 | ≥25 | ≥200 | V/us |
| Rth(j-c) | Thermal resistance | | Junction to case | 1.1 | | | | °C/W |
| Rth(j-a) | Thermal resistance | | Junction to ambient | 50 | | | | °C/W |

FIG1

Maximum power dissipation versus RMS on-state current

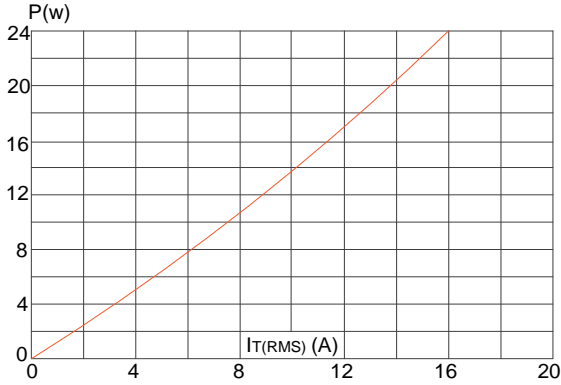


FIG2

RMS on-state current versus case temperature

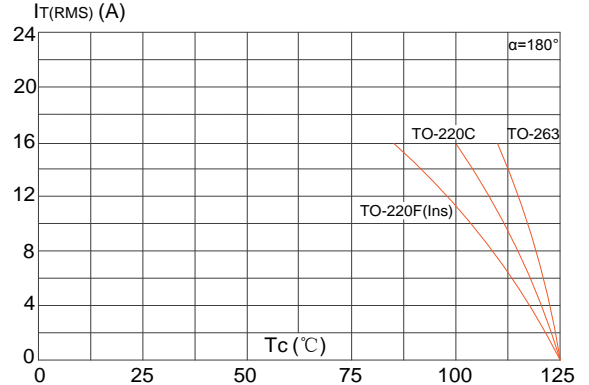


FIG3

Surge peak on-state current versus number of cycles

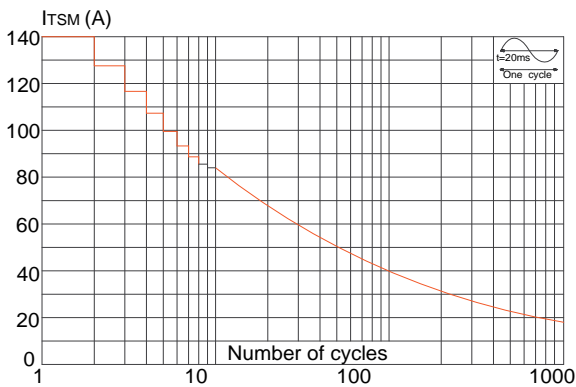


FIG4

On-state characteristics (maximum values)

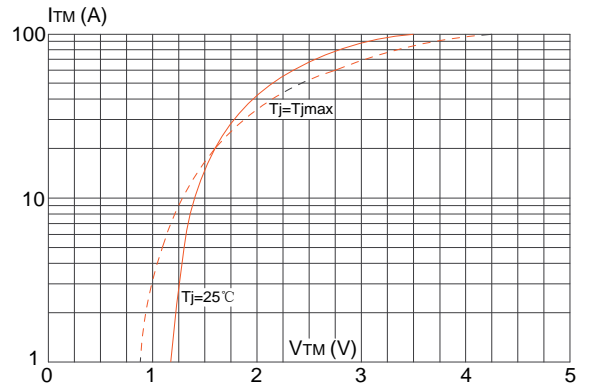


FIG5

Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

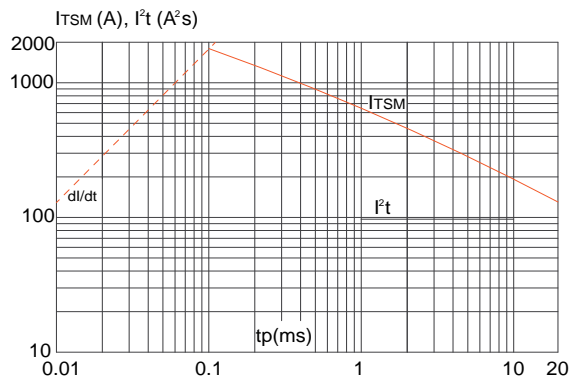


FIG6

Relative variations of gate trigger current, holding current and latching current versus junction temperature

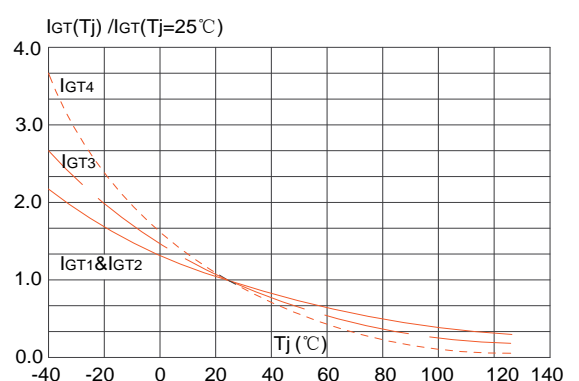


FIG7

FIG.7: Relative variations of holding current versus junction temperature

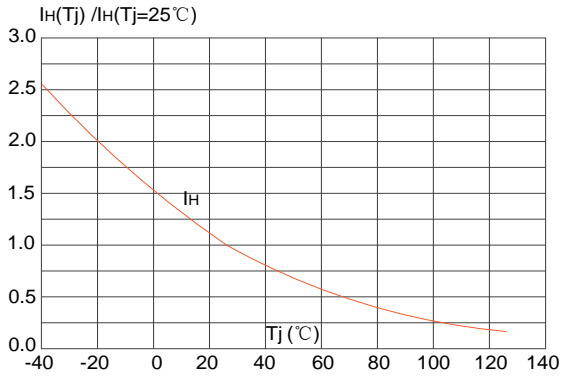
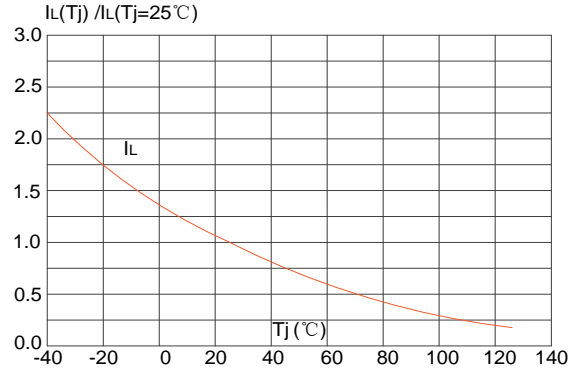
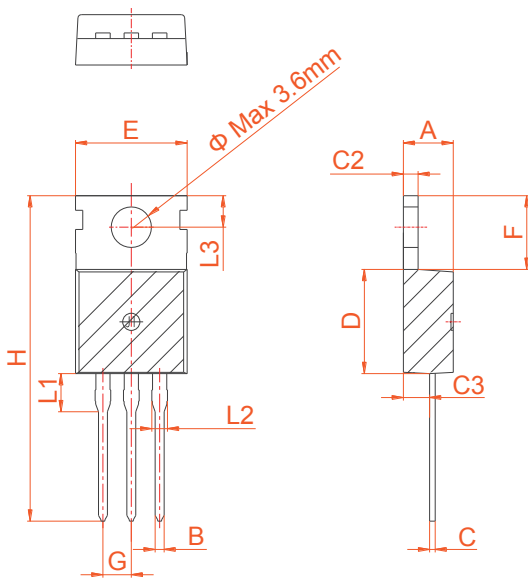


FIG8

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



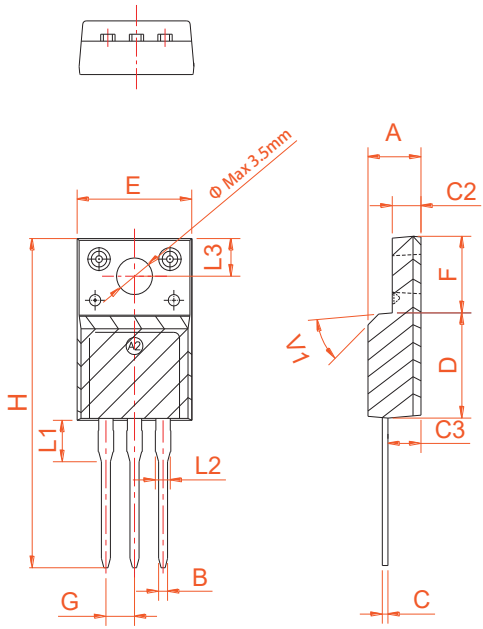
PACKAGE MECHANICAL DATA



TO-220C

| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.70 | | 0.90 | 0.028 | | 0.035 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 1.23 | | 1.32 | 0.048 | | 0.052 |
| C3 | 2.20 | | 2.60 | 0.087 | | 0.102 |
| D | 8.90 | | 9.90 | 0.350 | | 0.390 |
| E | 9.90 | | 10.3 | 0.390 | | 0.406 |
| F | 6.30 | | 6.90 | 0.248 | | 0.272 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.39 | | | 0.133 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| Φ | | 3.6 | | | 0.142 | |

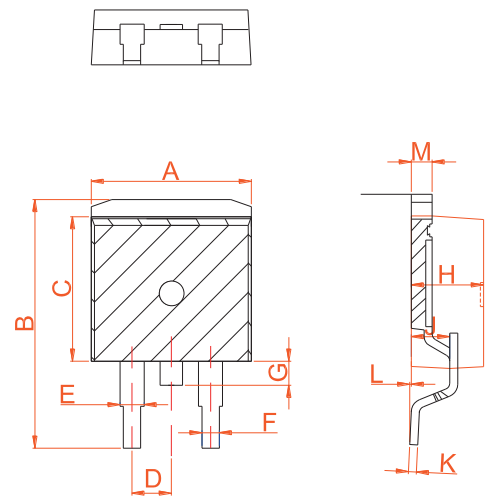
PACKAGE MECHANICAL DATA



TO-220F Ins

| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.50 | | 4.90 | 0.177 | | 0.193 |
| B | 0.74 | 0.80 | 0.83 | 0.029 | 0.031 | 0.033 |
| C | 0.47 | | 0.65 | 0.019 | | 0.026 |
| C2 | 2.45 | | 2.75 | 0.096 | | 0.108 |
| C3 | 2.60 | | 3.00 | 0.102 | | 0.118 |
| D | 8.80 | | 9.30 | 0.346 | | 0.366 |
| E | 9.80 | | 10.4 | 0.386 | | 0.410 |
| F | 6.40 | | 6.80 | 0.252 | | 0.268 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.63 | | | 0.143 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | | 3.30 | | | 0.130 | |
| V1 | | 45° | | | 45° | |

| 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 |



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