

RS16xxHxF Series 16A TRIACS

DESCRIPTION:

High current density due to double mesa technology, glass passivation, guaranteed maximum junction temperature 150° C.

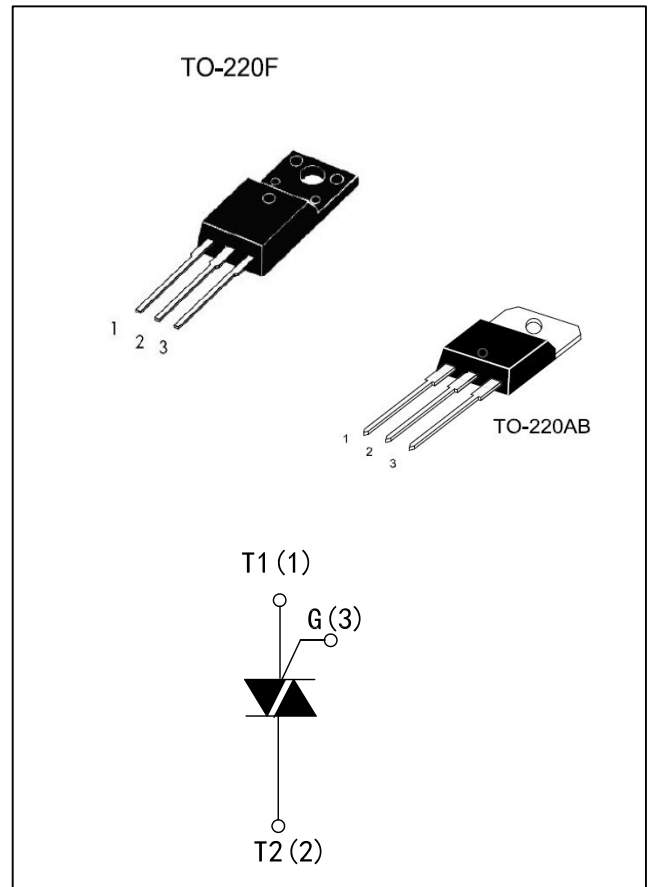
RS16xxH series triacs are suitable for general purpose AC switching, They can be used as an ON/OFF function in applications such as static relays, washing machine, soymlk maker, flush toilet, hair drier, induction motor staing circuits...or for phase contol operation light dimmers, motor speed controllers.

RS1610H-1620H-1635H-1650H are 3 quadrants triacs, They are specially recommended for use on inductive loads.

RS16xxHxF series are full pack plastic e, they provide a 2000V RMS isolation voltage from all three terminals to external heat sink.

MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|-------------|------|
| $I_{T(RMS)}$ | 16 | A |
| V_{DRM}/V_{RRM} | 600 and 800 | V |
| V_{TM} | ≤ 1.55 | V |



ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|--|--|--------------|-------------|------------------------|
| Storage junction temperature range | | T_{stg} | -40 to +150 | °C |
| Operating junction temperature range | | T_j | -40 to +150 | °C |
| Repetitive Peak Off-state Voltage | $T_j=25^\circ\text{C}$ | V_{DRM} | 600and800 | V |
| Repetitive Peak Reverse Voltage | $T_j=25^\circ\text{C}$ | V_{RRM} | 600and800 | |
| Non repetitive Surge Peak Off-state Voltage | $t_p=10\text{ms}, T_j=25^\circ\text{C}$ | V_{DSM} | 700and900 | V |
| Non repetitive Peak Reverse Voltage | | V_{RSM} | 700and900 | |
| RMS on-state current (full sine wave) | | $I_{T(RMS)}$ | 16 | A |
| Non repetitive surge peak on-state current (full cycle, $T_j=25^\circ\text{C}$) | $f = 60\text{ Hz}$ $t=16.7\text{ms}$ | I_{TSM} | 168 | A |
| | $f = 50\text{ Hz}$ $t=20\text{ms}$ | | 160 | |
| I^2t Value for fusing | | I^2t | 144 | A^2s |
| Critical rate of rise of on-state current $I_G=2 \times I_{GT}$, $t_r \leq 100\text{ ns}$, $f=120\text{Hz}$, $T_j=150^\circ\text{C}$ | | di/dt | 50 | $\text{A}/\mu\text{s}$ |
| Peak gate current | $t_p=20\mu\text{s}, T_j=150^\circ\text{C}$ | I_{GM} | 4 | A |
| Peak gate power | $t_p=20\mu\text{s}, T_j=150^\circ\text{C}$ | P_{GM} | 5 | W |
| Average gate power dissipation $T_j=150^\circ\text{C}$ | | $P_{G(AV)}$ | 1 | W |

ELECTRICAL CHARACTERISTICS(T_j=25°C unless otherwise specified)

| Symbol | Test Condition | Quadrant | | Limits | | | | Unit |
|----------------------|---|----------|------|---------|---------|---------|---------|------|
| | | | | RS1610H | RS1620H | RS1635H | RS1650H | |
| I _{GT} | V _D =12V R _L =33Ω | I-II-III | MAX. | 10 | 20 | 35 | 50 | mA |
| V _{GT} | | I-II-III | MAX. | 1.5 | | | | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3KΩ T _j =150°C | I-II-III | MIN. | 0.2 | | | | V |
| I _L | I _G =1.2I _{GT} | I-III | MAX. | 20 | 40 | 50 | 70 | mA |
| | | II | MAX. | 35 | 55 | 70 | 100 | mA |
| I _H | I _T =100mA | | MAX. | 20 | 30 | 45 | 60 | mA |
| dV/dt | V _D =67%V _{DRM} gate open T _j =150°C | | MIN. | 200 | 500 | 1000 | 1500 | V/μs |
| (dV/dt) _c | V _D =400V (dI/dt) _c =-7A/ms T _j =150°C | | MIN. | 1 | 5 | 15 | 20 | V/μs |

STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|--------------------------------------|---|-----------------------|-------------|------|
| V _{TM} | I _{TM} =22.5A, t _p =380μs | T _j =25°C | 1.55 | V |
| I _{DRM} I _{RRM} | V _D =V _{DRM} V _R =V _{RRM} | T _j =25°C | 10 | μA |
| | | T _j =150°C | 4.0 | mA |

THERMAL RESISTANCES

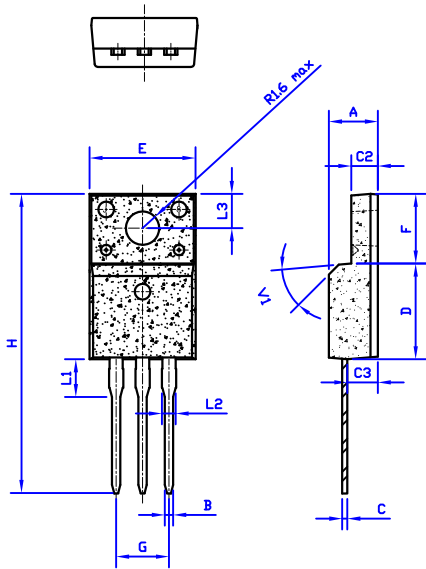
| Symbol | Parameter | | Value | Unit |
|----------------------|----------------------|---------|-------|------|
| R _{th(J-C)} | Junction to Case(AC) | TO-220F | 3.0 | °C/W |

ORDERING INFORMATION

| | |
|--|--|
| R S 16 xx H x F | |
| SIKA CO., LIMITED TRIAC SERIES I _{T(RMS)} : 16A 10:I _{GT} 123≤10mA 20:I _{GT} 123≤20mA 35:I _{GT} 123≤35mA 50:I _{GT} 123≤50mA | F:TO-220F A:TO-220A B:TO-220B E:D ² PAK 6:V _{DRM} /V _{RRM} ≥600V 8:V _{DRM} /V _{RRM} ≥800V High junction temperature |

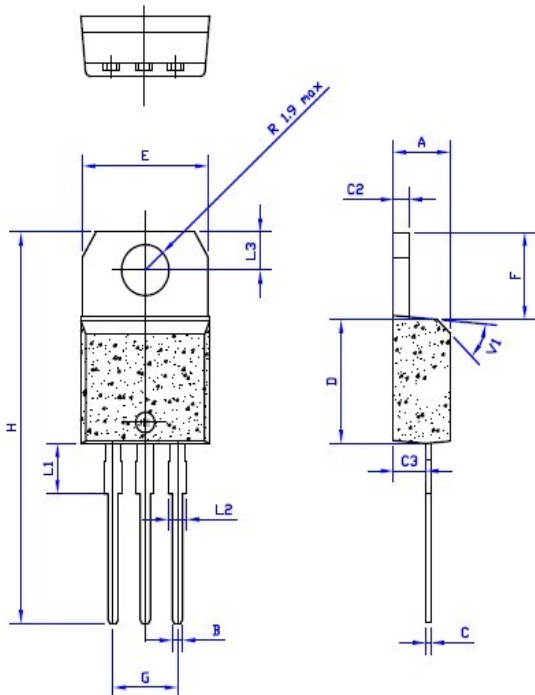
PACKAGE MECHANICAL DATA

TO-220F



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.4 | | 4.8 | 0.173 | | 0.189 |
| B | 0.74 | 0.8 | 0.83 | 0.029 | 0.031 | 0.033 |
| C | 0.5 | | 0.75 | 0.020 | | 0.030 |
| C2 | 2.4 | | 2.7 | 0.094 | | 0.106 |
| C3 | 2.6 | | 3.0 | 0.102 | | 0.118 |
| D | 8.8 | | 9.3 | 0.346 | | 0.367 |
| E | 9.7 | | 10.3 | 0.382 | | 0.406 |
| F | 6.4 | | 6.8 | 0.252 | | 0.268 |
| G | 5.0 | | 5.2 | 0.197 | | 0.205 |
| H | 28.0 | | 29.8 | 11.0 | | 11.7 |
| L1 | | 3.63 | | | 0.143 | |
| L2 | 1.14 | | 1.7 | 0.044 | | 0.067 |
| L3 | | 3.3 | | | 0.130 | |
| V1 | | 40° | | | 40° | |

TO-220A insulated package and TO-220B non-insulated package



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.4 | | 4.6 | 0.173 | | 1.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.034 |
| C | 0.46 | | 0.70 | 0.018 | | 0.027 |
| C2 | 1.23 | | 1.32 | 0.048 | | 0.051 |
| C3 | 2.4 | | 2.72 | 0.094 | | 0.107 |
| D | 8.6 | | 9.7 | 0.338 | | 0.382 |
| E | 9.8 | | 10.4 | 0.386 | | 0.409 |
| F | 6.2 | | 6.6 | 0.244 | | 0.259 |
| G | 4.8 | | 5.4 | 0.189 | | 0.213 |
| H | 28.0 | | 29.8 | 11.0 | | 11.7 |
| L1 | | 3.75 | | | 0.147 | |
| L2 | 1.14 | | 1.7 | 0.044 | | 0.066 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 40° | | | 40° | |

FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

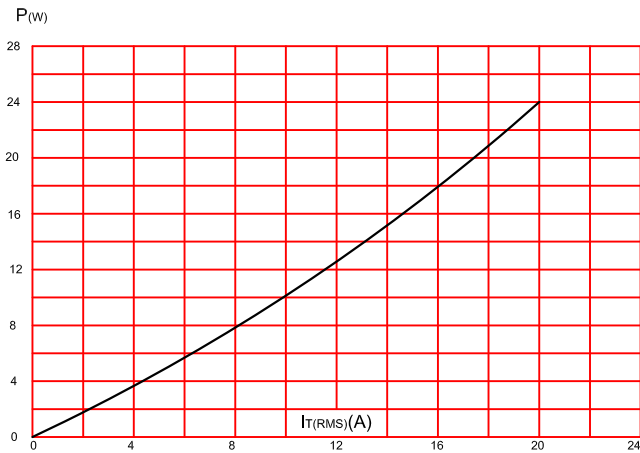


FIG.2:RMS on-state current versus case temperature(full cycle)

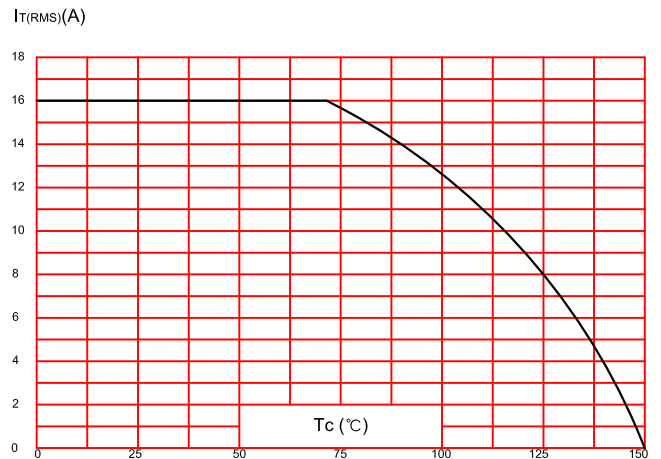


FIG.3:On-state characteristics (maximum values).

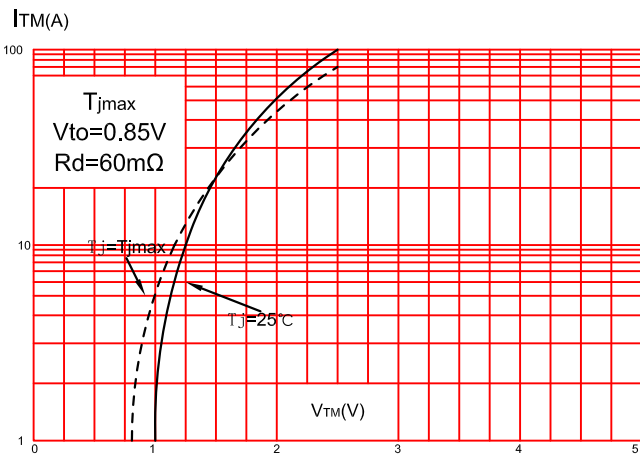


FIG.4:Surge peak on-state current versus number of cycles.

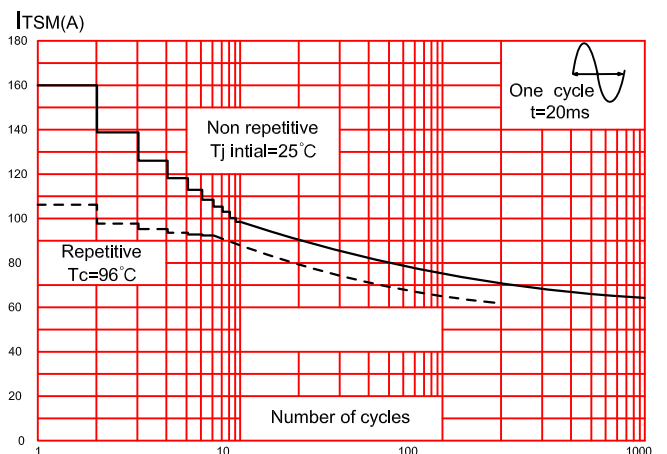


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t .

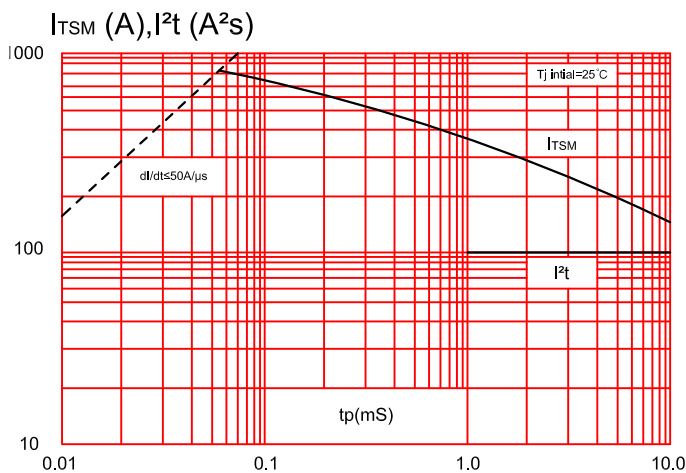
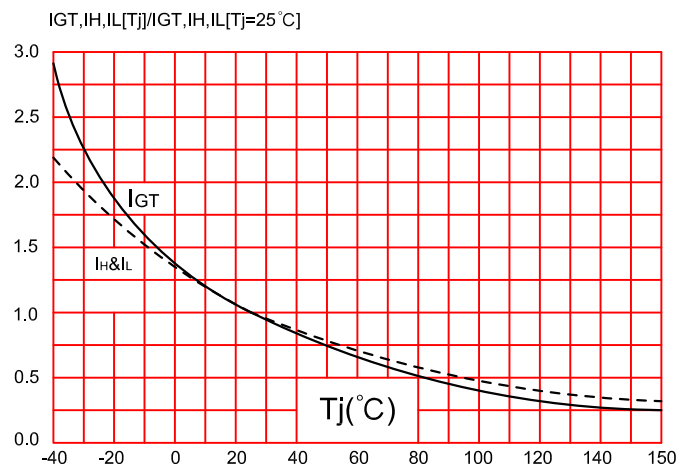


FIG.6:Relative variations of gate trigger current, holding current and latching current versus junction temperature(typical values)



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