

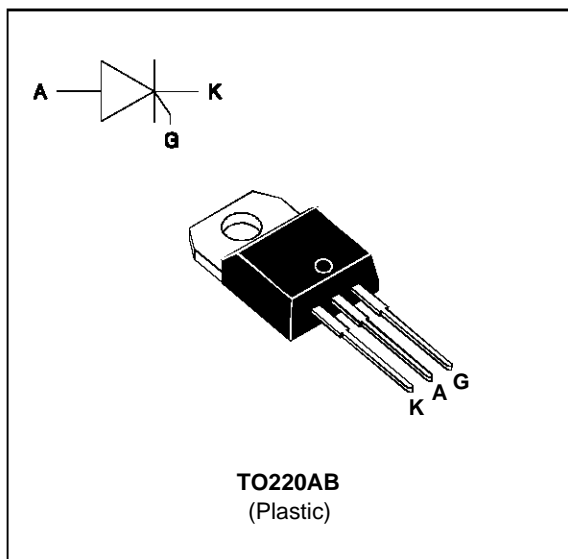
FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

DESCRIPTION

The TYN 0510 ---> TYN 1010 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.

This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | Value | Unit |
|--------------------|---|--------------------------------|------------------|
| $I_{T(RMS)}$ | RMS on-state current (180° conduction angle) | $T_c = 100\text{ °C}$ 10 | A |
| $I_{T(AV)}$ | Average on-state current (180° conduction angle, single phase circuit) | $T_c = 100\text{ °C}$ 6.4 | A |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = 25°C) | $t_p = 8.3\text{ ms}$ 105 | A |
| | | $t_p = 10\text{ ms}$ 100 | |
| I^2t | I^2t value | $t_p = 10\text{ ms}$ 50 | A ² s |
| di/dt | Critical rate of rise of on-state current Gate supply : $I_G = 100\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$ | 50 | A/ μs |
| T_{stg} T_j | Storage and operating junction temperature range | - 40 to + 150 - 40 to + 125 | °C °C |
| T_l | Maximum lead temperature for soldering during 10 s at 4.5 mm from case | 260 | °C |

| Symbol | Parameter | TYN | | | | | | | Unit |
|------------------------|--|------|-----|-----|-----|-----|-----|------|------|
| | | 0510 | 110 | 210 | 410 | 610 | 810 | 1010 | |
| V_{DRM} V_{RRM} | Repetitive peak off-state voltage $T_j = 125\text{ °C}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|--------------|-------------------------|-------|------|
| Rth (j-a) | Junction to ambient | 60 | °C/W |
| Rth (j-c) DC | Junction to case for DC | 2.5 | °C/W |

GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1W$ $P_{GM} = 10W$ ($t_p = 20 \mu s$) $I_{FGM} = 4A$ ($t_p = 20 \mu s$) $V_{RGM} = 5V$.

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | Value | Unit |
|------------------------|--|-------|------------|
| I_{GT} | $V_D=12V$ (DC) $R_L=33\Omega$ $T_j=25^\circ C$ MAX | 15 | mA |
| V_{GT} | $V_D=12V$ (DC) $R_L=33\Omega$ $T_j=25^\circ C$ MAX | 1.5 | V |
| V_{GD} | $V_D=V_{DRM}$ $R_L=3.3k\Omega$ $T_j=110^\circ C$ MIN | 0.2 | V |
| tgt | $V_D=V_{DRM}$ $I_G = 40mA$ $di_G/dt = 0.5A/\mu s$ $T_j=25^\circ C$ TYP | 2 | μs |
| I_L | $I_G= 1.2 I_{GT}$ $T_j=25^\circ C$ TYP | 50 | mA |
| I_H | $I_T= 100mA$ gate open $T_j=25^\circ C$ MAX | 30 | mA |
| V_{TM} | $I_{TM}= 20A$ $t_p= 380\mu s$ $T_j=25^\circ C$ MAX | 1.6 | V |
| I_{DRM} I_{RRM} | V_{DRM} Rated V_{RRM} Rated $T_j=25^\circ C$ MAX | 0.01 | mA |
| | $T_j=110^\circ C$ | 2 | |
| dV/dt | Linear slope up to $V_D=67\%V_{DRM}$ gate open $T_j=110^\circ C$ MIN | 200 | V/ μs |
| tq | $V_D=67\%V_{DRM}$ $I_{TM}= 20A$ $V_R= 25V$ $di_{TM}/dt=30 A/\mu s$ $dV_D/dt= 50V/\mu s$ $T_j=110^\circ C$ TYP | 70 | μs |

Fig.1 : Maximum average power dissipation versus average on-state current.

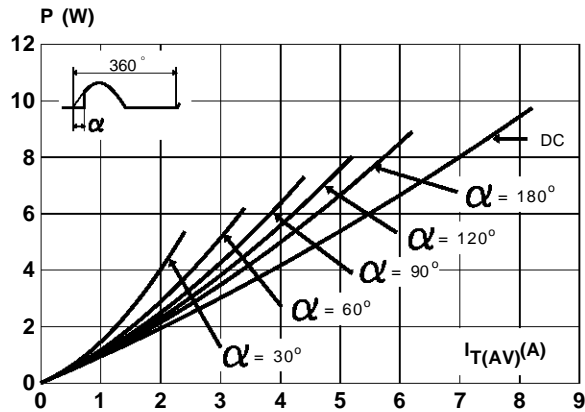


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

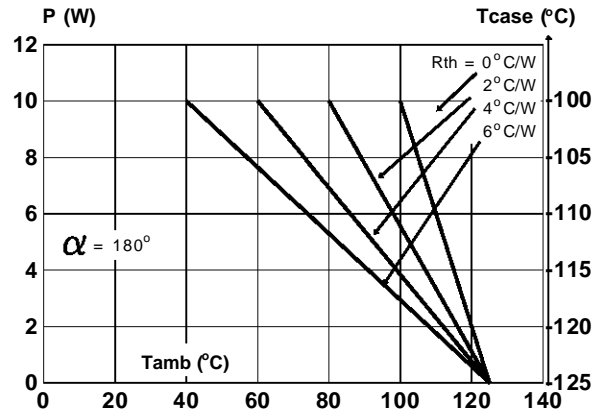


Fig.3 : Average on-state current versus case temperature.

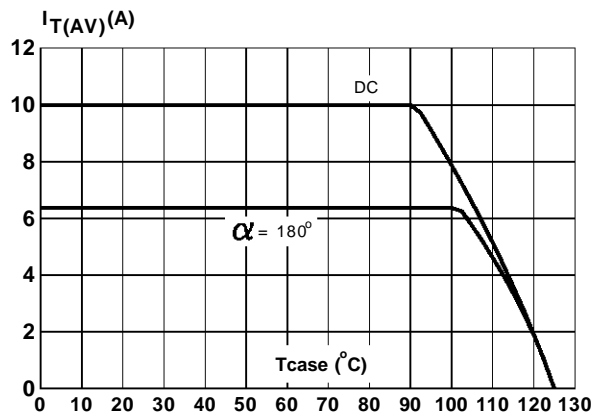


Fig.4 : Relative variation of thermal impedance versus pulse duration.

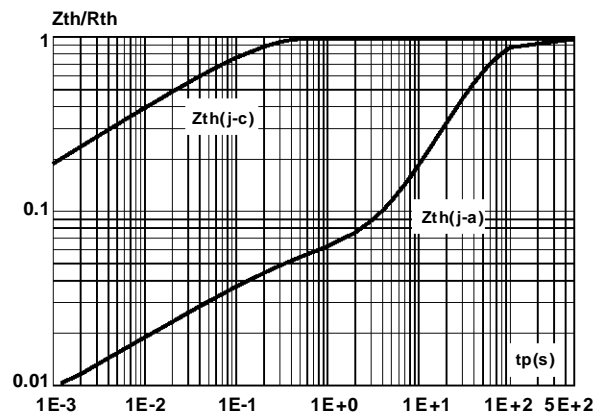


Fig.5 : Relative variation of gate trigger current versus junction temperature.

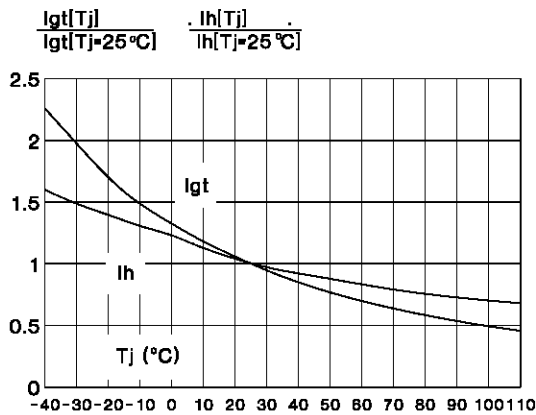
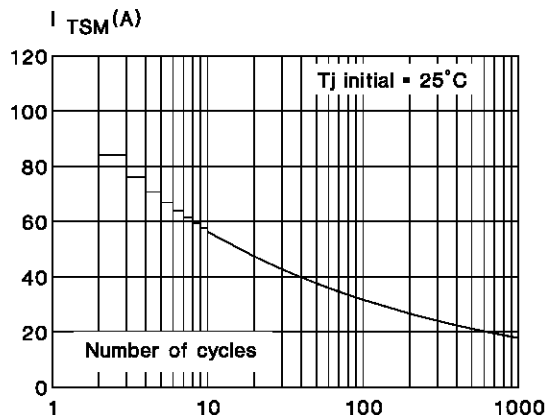


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



TYN 0510 ---> TYN 1010

Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

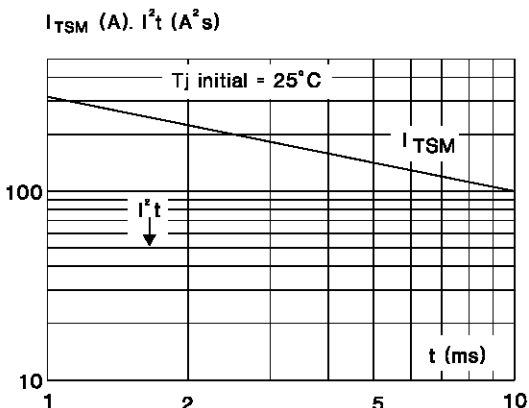
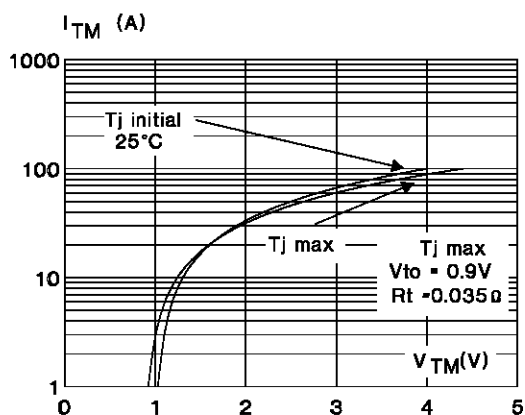
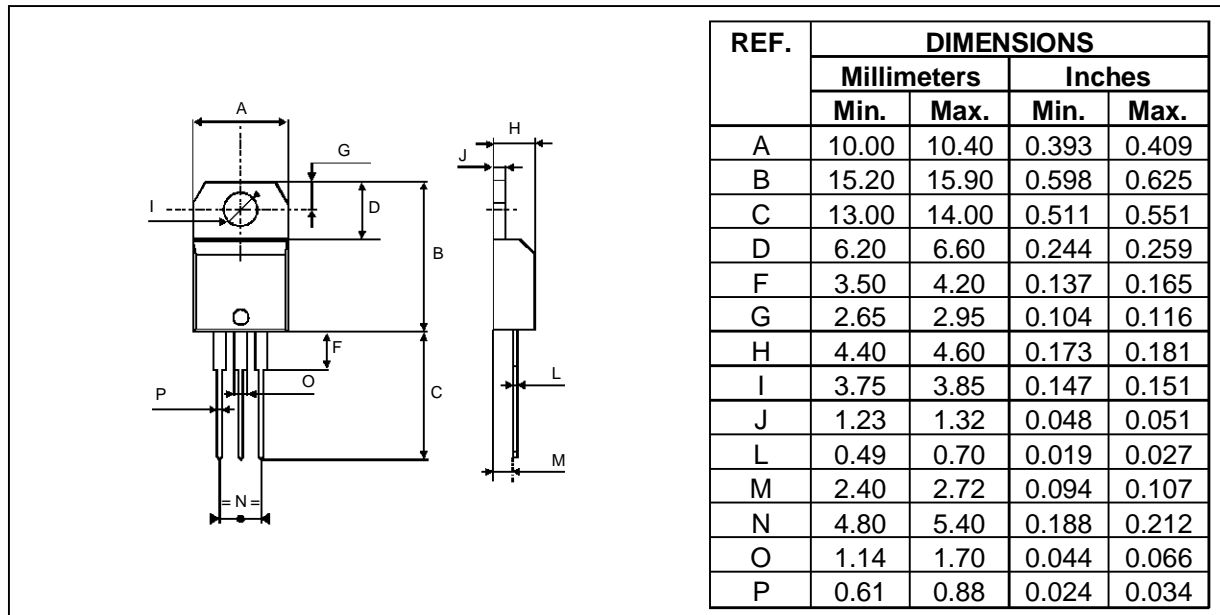


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : C
Marking : type number
Weight : 2.3 g

Recommended torque value : 0.8 m.N.
Maximum torque value : 1 m.N.

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