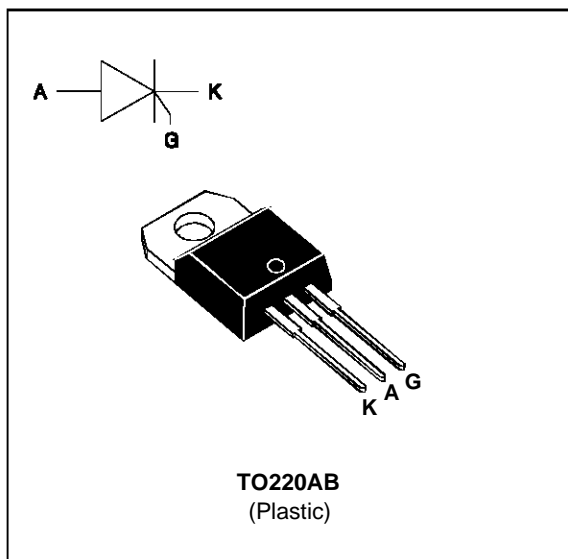


FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :
 INSULATED VOLTAGE = 2500V_(RMS)
 (UL RECOGNIZED : E81734)

DESCRIPTION

The TYN/TXN 0512 ---> TYN/TXN 1012 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) | TXN Tc=80°C TYN Tc=90°C | 12 | A |
| I _{T(AV)} | Average on-state current (180° conduction angle, single phase circuit) | TXN Tc=80°C TYN Tc=90°C | 8 | A |
| I _{TSM} | Non repetitive surge peak on-state current (T _j initial = 25°C) | tp=8.3 ms | 125 | A |
| | | tp=10 ms | 120 | |
| I ² t | I ² t value | tp=10 ms | 72 | A ² s |
| di/dt | Critical rate of rise of on-state current Gate supply : I _G = 100 mA di _G /dt = 1 A/μs | | 100 | 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/TXN | | | | | | | Unit |
|--------------------------------------|--|---------|-----|-----|-----|-----|-----|------|------|
| | | 0512 | 112 | 212 | 412 | 612 | 812 | 1012 | |
| V _{DRM} V _{RRM} | Repetitive peak off-state voltage T _j = 125 °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 | TXN | 3.5 | °C/W |
| | | TYN | 2.5 | |

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 10W (tp = 20 μs) I_{FGM} = 4A (tp = 20 μs) V_{RGM} = 5 V.

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} | $V_D=V_{DRM}$ $R_L=3.3k\Omega$ | $T_j=125^\circ C$ | 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} | $I_{TM}= 24A$ tp= 380μs | $T_j=25^\circ C$ | MAX | 1.6 | V |
| I_{DRM} I_{RRM} | V_{DRM} Rated V_{RRM} Rated | $T_j=25^\circ C$ | MAX | 0.01 | mA |
| | | $T_j=125^\circ C$ | | 3 | |
| dV/dt | Linear slope up to $V_D=67\%V_{DRM}$ gate open | $T_j=125^\circ C$ | MIN | 200 | V/μs |
| tq | $V_D=67\%V_{DRM}$ $I_{TM}= 24A$ $V_R= 25V$ $di_{TM}/dt=30 A/\mu s$ $dV_D/dt= 50V/\mu s$ | $T_j=125^\circ C$ | TYP | 70 | μs |

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

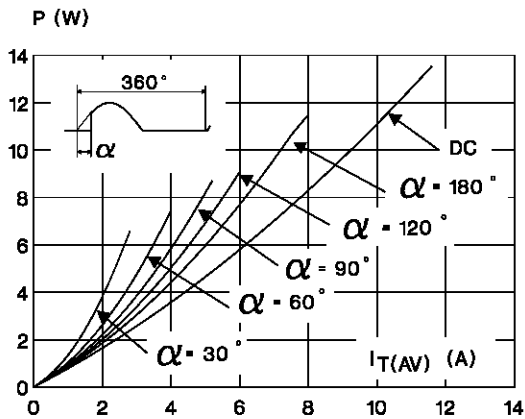


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TXN).

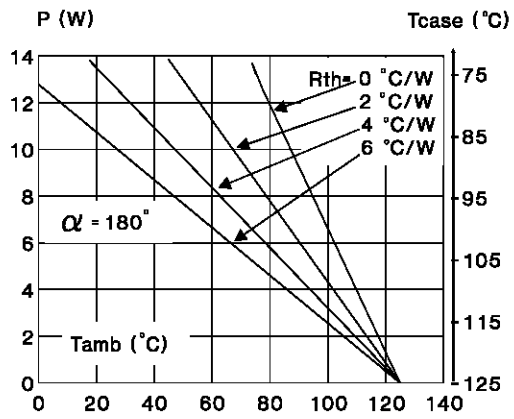


Fig.3 : Maximum average power dissipation versus average on-state current (TYN).

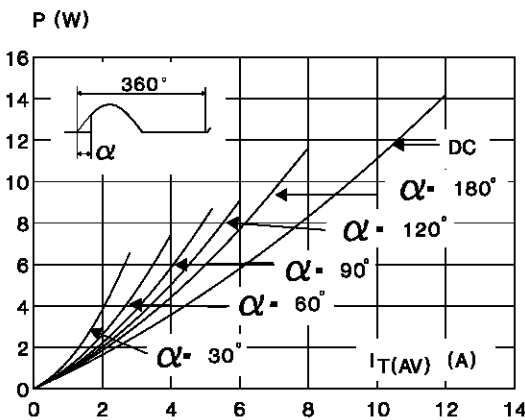


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TYN).

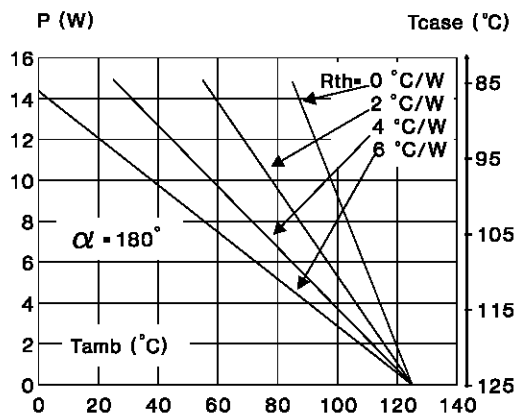


Fig.5 : Average on-state current versus case temperature (TXN).

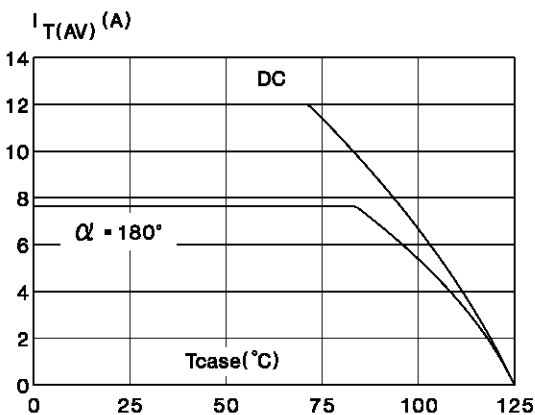


Fig.6 : Average on-state current versus case temperature (TYN).

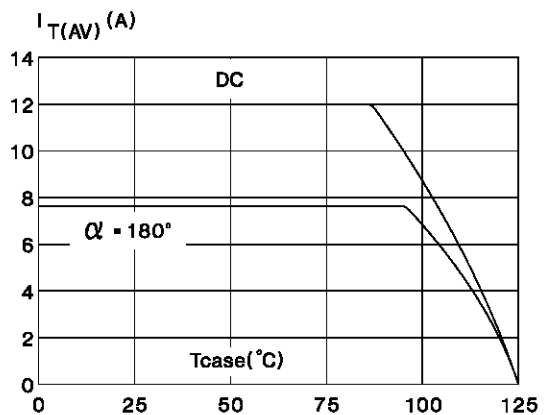


Fig.7 : Relative variation of thermal impedance versus pulse duration.

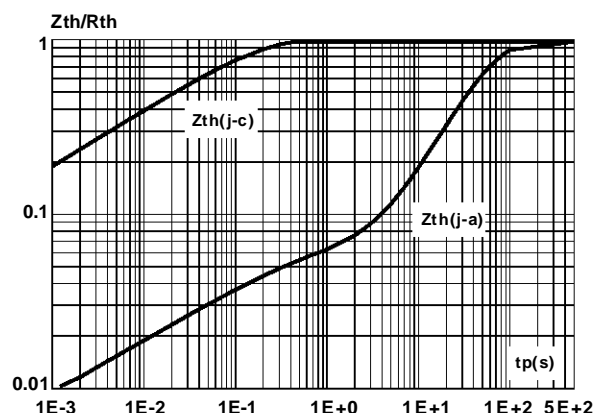


Fig.8 : Relative variation of gate trigger current versus junction temperature.

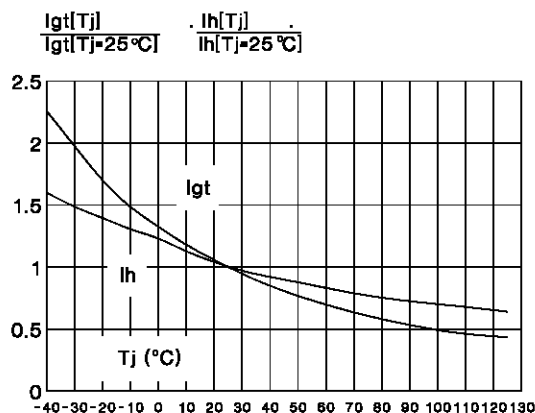


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

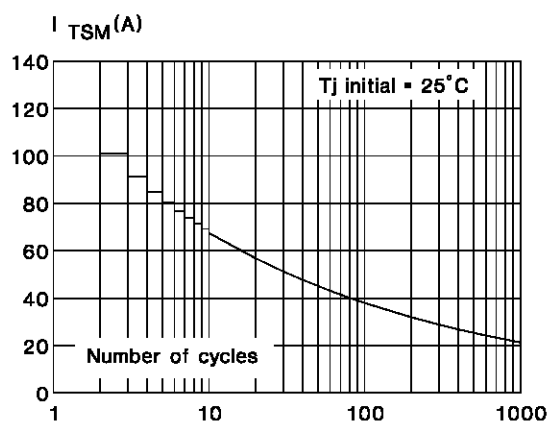


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

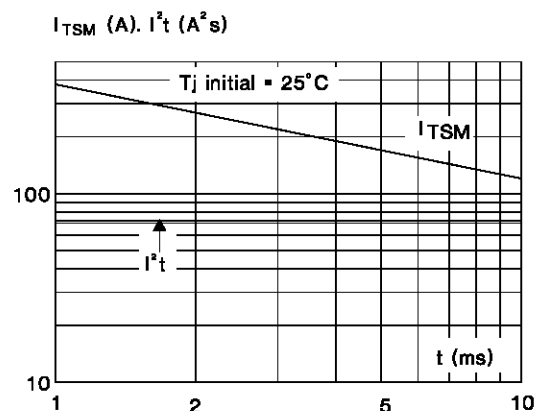
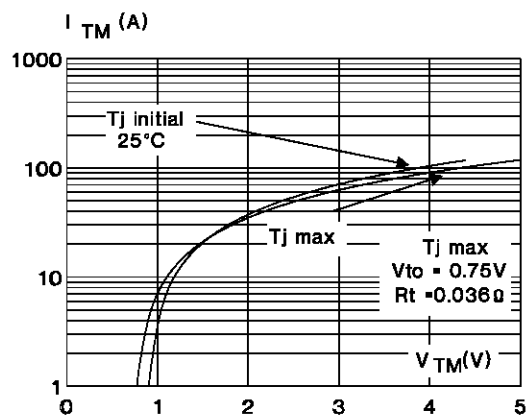
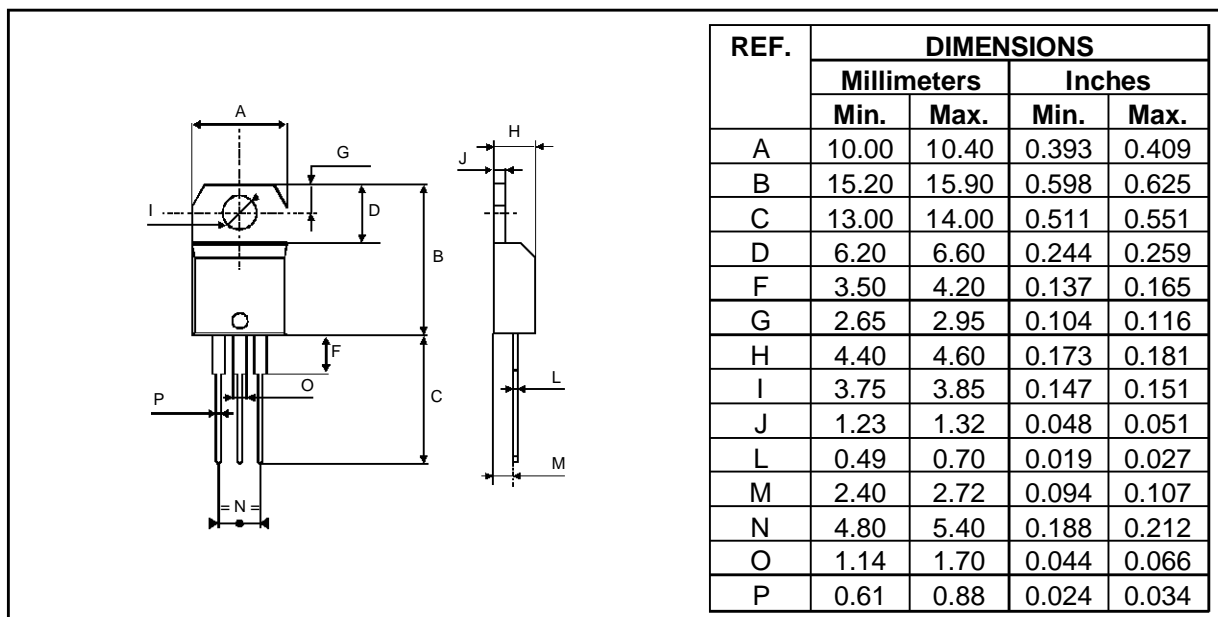


Fig.11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : by conduction (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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