

ANSALDO**Ansaldo Trasporti s.p.a.**
Unita' SemiconduttoriVia N. Lorenzi 8 - I 16152 GENOVA - ITALY
Tel. int. +39/(0)10 6556549 - (0)10 6556488
Fax Int. +39/(0)10 6442510
Tx 270318 ANSUSE I -**FAST SWITCHING THYRISTOR****ATF1047**

| | |
|--------------------------|-----------------------------|
| Repetitive voltage up to | 1400 V |
| Mean on-state current | 1305 A |
| Surge current | 16 kA |
| Turn-off time | 30 μs |

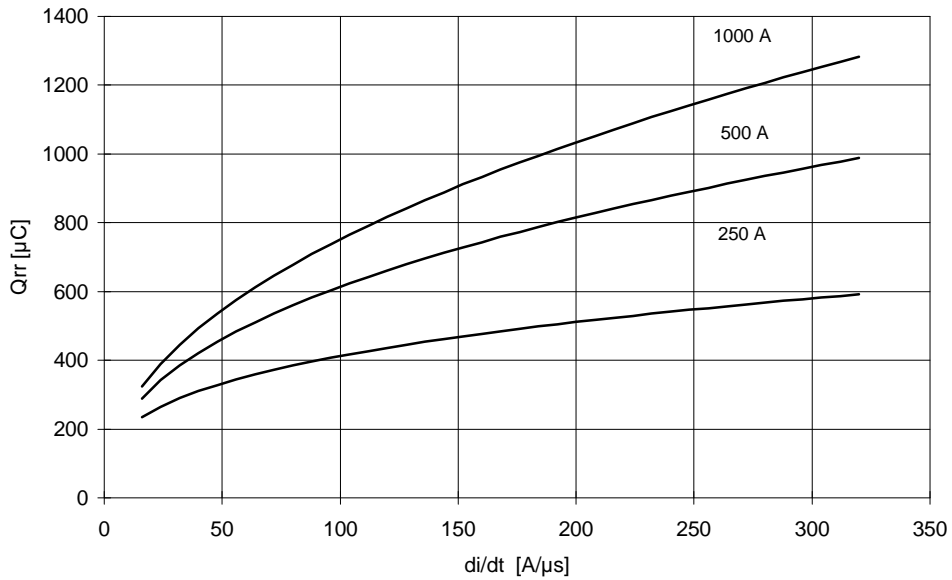
FINAL SPECIFICATION

mag 97 - ISSUE : 05

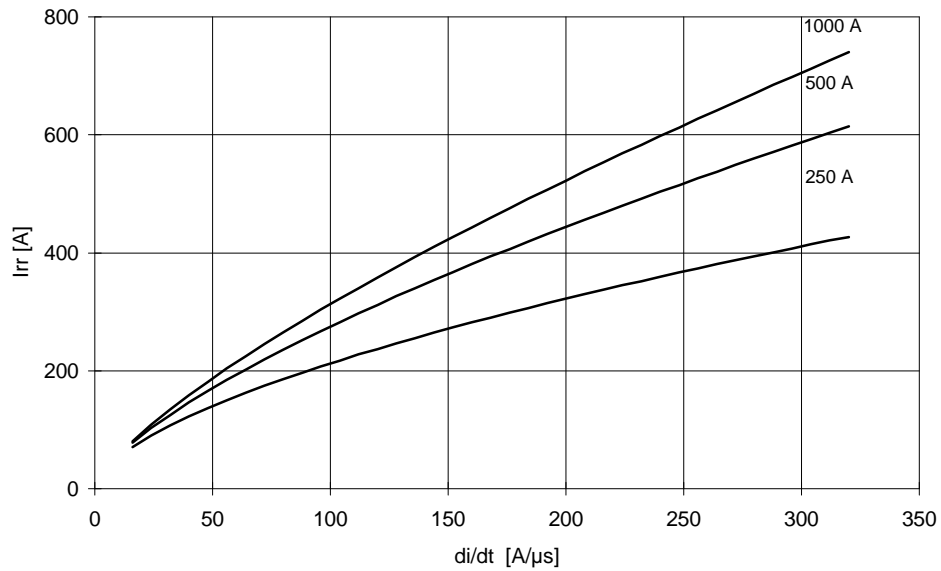
| Symbol | Characteristic | Conditions | T _j [°C] | Value | Unit | | | |
|--|---|---|------------------------|--------------|------------------|--------------|---------------|---------------|
| BLOCKING | | | | | | | | |
| V _{RRM} | Repetitive peak reverse voltage | | 125 | 1400 | V | | | |
| V _{RSM} | Non-repetitive peak reverse voltage | | 125 | 1500 | V | | | |
| V _{DRM} | Repetitive peak off-state voltage | | 125 | 1400 | V | | | |
| I _{RRM} | Repetitive peak reverse current | V=VRRM | 125 | 100 | mA | | | |
| I _{DRM} | Repetitive peak off-state current | V=VDRM | 125 | 100 | mA | | | |
| CONDUCTING | | | | | | | | |
| I _{T(AV)} | Mean on-state current | 180° sin, 50 Hz, Th=55°C, double side cooled | | 1305 | A | | | |
| I _{T(AV)} | Mean on-state current | 180° sin, 1 kHz, Th=55°C, double side cooled | | 1230 | A | | | |
| I _{TSM} | Surge on-state current, non repetitive | sine wave, 10 ms | 125 | 16 | kA | | | |
| I ² t | I ² t | without reverse voltage | | 1280 x1E3 | A ² s | | | |
| V _T | On-state voltage | On-state current = 2000 A | 25 | 2 | V | | | |
| V _{T(TO)} | Threshold voltage | | 125 | 1.32 | V | | | |
| r _T | On-state slope resistance | | 125 | 0.230 | mohm | | | |
| SWITCHING | | | | | | | | |
| di/dt | Critical rate of rise of on-state current, min | From 75% VDRM up to 2000 A, gate 20V 10 ohm | 125 | 500 | A/ μ s | | | |
| dv/dt | Critical rate of rise of off-state voltage, min | Linear ramp up to 70% of VDRM | 125 | 600 | V/ μ s | | | |
| t _d | Gate controlled delay time, typical | VD=100V, gate source 20V, 10 ohm , tr=1 μ s | 25 | 0.6 | μ s | | | |
| t _q | Circuit commutated turn-off time | di/dt = 20 A/ μ s, I = 800 A dV/dt = 200 V/ μ s , up to 75% VDRM | 125 | 30 | μ s | | | |
| Q _{rr} | Reverse recovery charge | di/dt = 60 A/ μ s, I = 1000 A | 125 | 650 | μ C | | | |
| I _{rr} | Peak reverse recovery current | VR = 50 V | | 230 | A | | | |
| I _H | Holding current, typical | VD=5V, gate open circuit | 25 | 80 | mA | | | |
| I _L | Latching current, typical | VD=5V, tp=30 μ s | 25 | 230 | mA | | | |
| GATE | | | | | | | | |
| V _{GT} | Gate trigger voltage | VD=5V | 25 | 3.5 | V | | | |
| I _{GT} | Gate trigger current | VD=5V | 25 | 350 | mA | | | |
| V _{GD} | Non-trigger gate voltage, min. | VD=VDRM | 125 | 0.25 | V | | | |
| V _{FGM} | Peak gate voltage (forward) | | 25 | 30 | V | | | |
| I _{FGM} | Peak gate current | | 25 | 10 | A | | | |
| V _{RGM} | Peak gate voltage (reverse) | | 25 | 5 | V | | | |
| P _{GM} | Peak gate power dissipation | Pulse width 100 μ s | 25 | 150 | W | | | |
| P _{G(AV)} | Average gate power dissipation | | 25 | 3 | W | | | |
| MOUNTING | | | | | | | | |
| R _{th(j-h)} | Thermal impedance, DC | Junction to heatsink, double side cooled | | 26 | °C/kW | | | |
| T _j | Operating junction temperature | | | -30 / 125 | °C | | | |
| F | Mounting force | | | 14.0 / 17.0 | kN | | | |
| | Mass | | | 500 | g | | | |
| ORDERING INFORMATION : ATF1047 S 14 M _____ tq code | | | | | | | | |
| standard specification _____ VDRM&VRRM/100 | | | | | | | | |
| | | | tq code | D 10 μ s | C 12 μ s | B 15 μ s | A 20 μ s | L 25 μ s |
| | | | | M 30 μ s | N 35 μ s | P 40 μ s | R 45 μ s | S 50 μ s |
| | | | | T 60 μ s | U 70 μ s | W 80 μ s | X 100 μ s | Y 150 μ s |

SWITCHING CHARACTERISTICS

REVERSE RECOVERY CHARGE
T_j = 125 °C



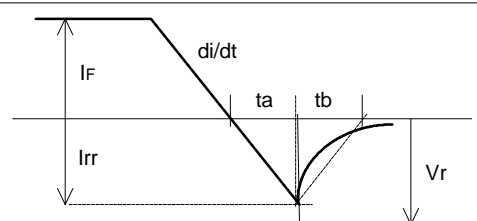
REVERSE RECOVERY CURRENT
T_j = 125 °C



$$t_a = I_{rr} / (di/dt) \quad t_b = t_{rr} - t_a$$

$$\text{Softness (s factor)} \quad s = t_b / t_a$$

$$\text{Energy dissipation during recovery } E_r = V_r \cdot (Q_{rr} - I_{rr} \cdot t_a / 2)$$

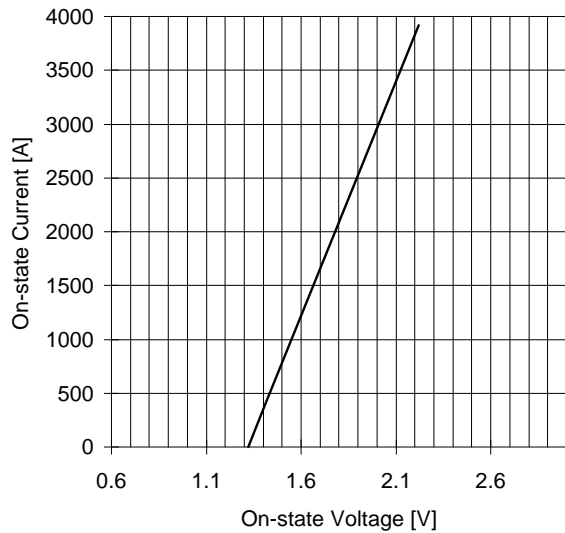


ATF1047 FAST SWITCHING THYRISTOR

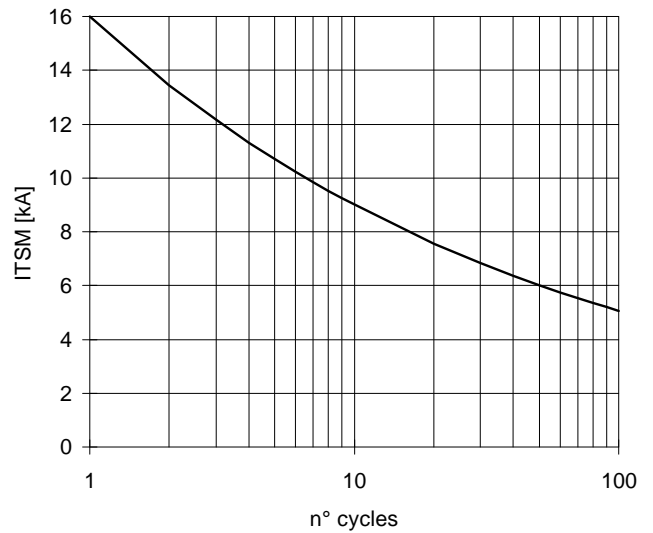
ANSALDO

FINAL SPECIFICATION mag 97 - ISSUE : 05

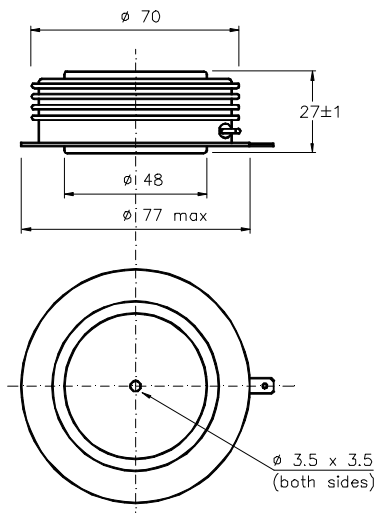
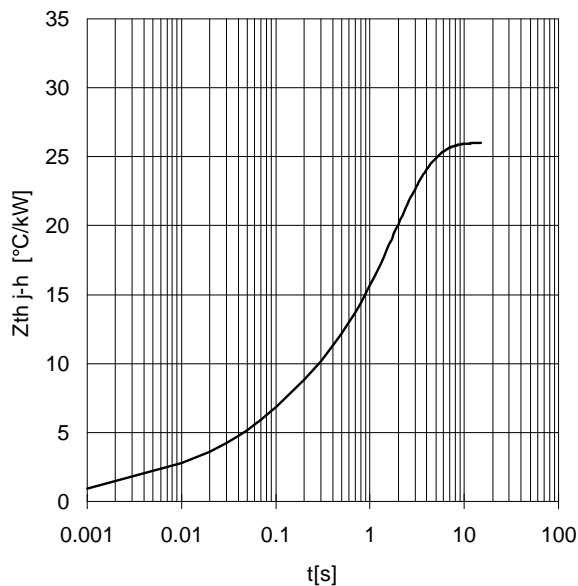
ON-STATE CHARACTERISTIC
T_j = 125 °C



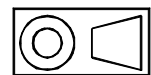
SURGE CHARACTERISTIC
T_j = 125 °C



TRANSIENT THERMAL IMPEDANCE
DOUBLE SIDE COOLED



Dimensions
in mm



Cathode terminal type DIN 46244 - A 4.8 - 0.8

Gate terminal type AMP 60598 - 1

All the characteristics given in this data sheet are guaranteed only with uniform clamping force, cleaned and lubricated heatsink, surfaces with flatness < .03 mm and roughness < 2 μm.

In the interest of product improvement ANSALDO reserves the right to change any data given in this data sheet at any time without previous notice.

If not stated otherwise the maximum value of ratings (symbols over shaded background) and characteristics is reported.

Distributed by

