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FAST SWITCHING THYRISTOR

ATF624

New design for induction heating power converters

Repetitive voltage up to	**1400 V**
Mean forward current	**1526 A**
Surge current	**15 kA**

TARGET SPECIFICATION

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Symbol	Characteristic	Conditions	Tj [°C]	Value
BLOCKING				
V_{RRM}	Repetitive peak reverse voltage		125	1400
V_{RSM}	Non-repetitive peak reverse voltage		125	1500
V_{DRM}	Repetitive peak off-state voltage		125	1400
I_{RRM}	Repetitive peak reverse current	V=VRRM	125	100
I_{DRM}	Repetitive peak off-state current	V=VDRM	125	100
CONDUCTING				
$I_{T(AV)}$	Mean forward current	180° sin ,50 Hz, Th=55°C, double side cooled		1946
$I_{T(AV)}$	Mean forward current	180° sin ,50 Hz, Tc=80°C, double side cooled		1526
I_{TSM}	Surge forward current	Sine wave, 10 ms	125	15
I^2t	I^2t	without reverse voltage		1125 x 10^3
V_T	On-state voltage	On-state current = 2000 A	25	2,00
$V_{T(TO)}$	Threshold voltage		125	1,42
r_T	On-state slope resistance		125	0,145
SWITCHING				
di/dt	Critical rate of rise of on-state current, min.	From 75% VDRM to 1200A	125	800
dv/dt	Critical rate of rise of off-state voltage, min.	Linear ramp up to VDRM= 1400 V, Gate Open	125	600
t_d	Gate controlled delay time, typical	VD=67% VDRM; IT=1500A; diT/dt=60 A/µs IFG=2 A, tr ≤ 0,5 µs	25	1,5
t_q	Circuit commutated turn-off time, typical	dv/dt = 200 V/µs VD=1050 V	125	25
		di/dt = -25 A/µs, IT= 1000 A		
		VR=50 V		
Q_{rr}	Reverse recovery charge	di/dt = -60A/µs, IT= 1000 A	125	650
I_{rr}	Peak reverse recovery current	VR=100 V		200
I_H	Holding current, typical	gate open circuit	25	250
I_L	Latching current, typical		25	
GATE				
V_{GT}	Gate trigger voltage	VD=5 V	25	3,00
I_{GT}	Gate trigger current	VD=5 V	25	300
V_{GD}	Non-trigger gate voltage, min.	VD=VDRM	125	0,25
V_{FGM}	Peak gate voltage (forward)			30
I_{FGM}	Peak gate current			10
V_{RGM}	Peak gate voltage (reverse)			5
P_{GM}	Peak gate power dissipation	Pulse width 100 µs		30
P_G	Average gate power dissipation			4
MOUNTING				
$R_{th(j-h)}$	Thermal impedance, DC	Junction to heatsink, double side cooled		17
$R_{th(c-h)}$	Thermal impedance	Case to heatsink, double side cooled		2
T_j	Operating junction temperature			-30 / 125
F	Mounting force			17.0 / 21.0
	Mass			520

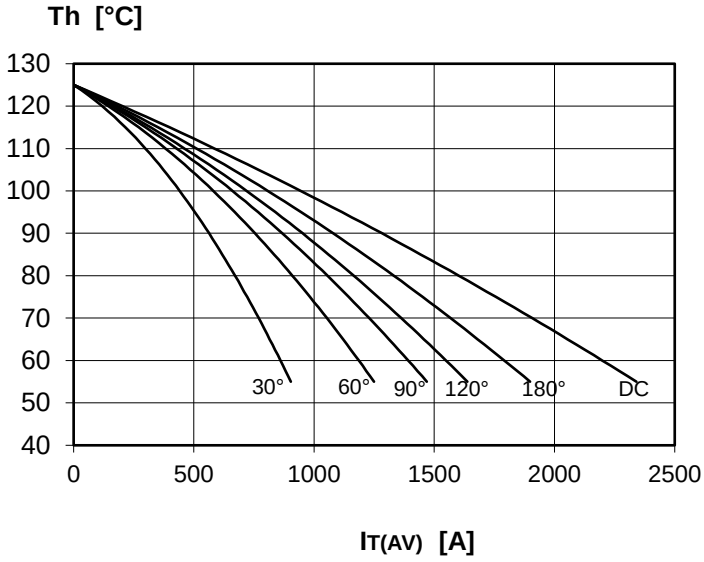
ORDERING INFORMATION : ATF624 S 14S

- 14 → VRRM/100
- S → standard specification
- tq code

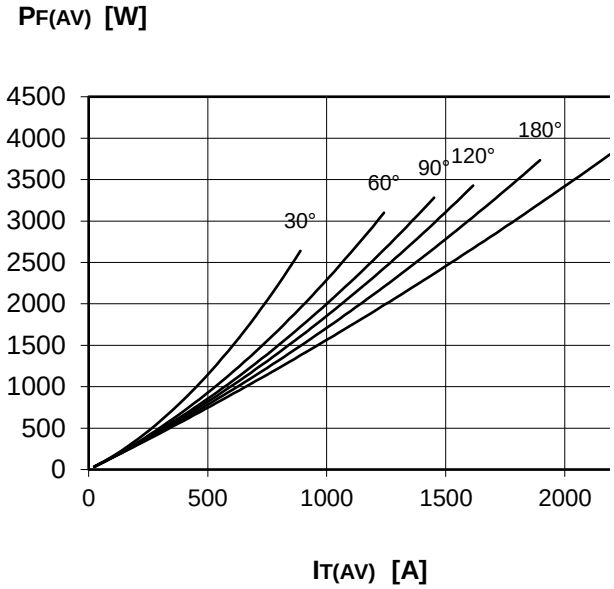
tq code

D 10 µs	C 12 µs	B 15 µs	A 20 µs
M 30 µs	N 35 µs	P 40 µs	R 45 µs
T 60 µs	U 70 µs	W 80 µs	X 100µs

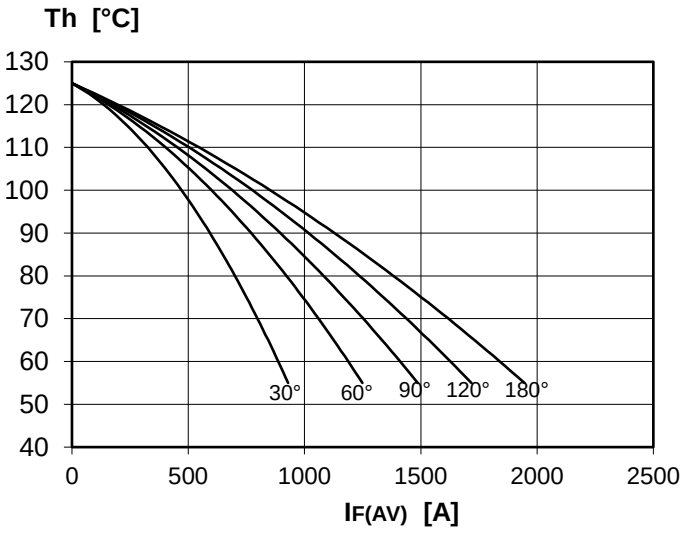
Dissipation characteristics



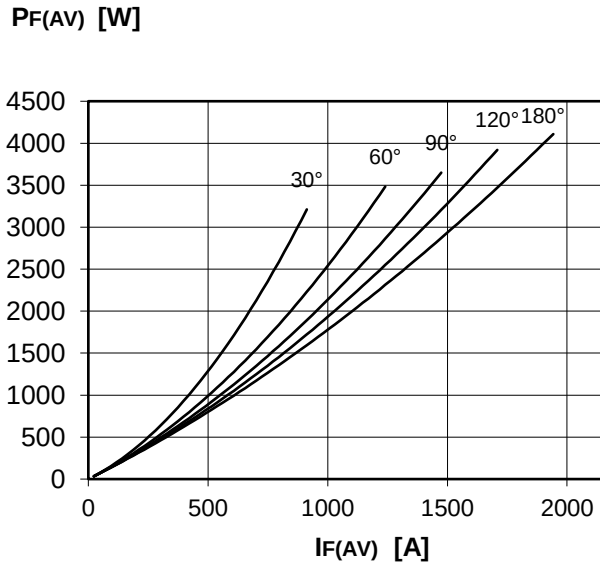
Max permissible heatsink temperature vs. mean on state current (square wave; 50 Hz)



On state power losses vs. mean on state current wave; 50 Hz)

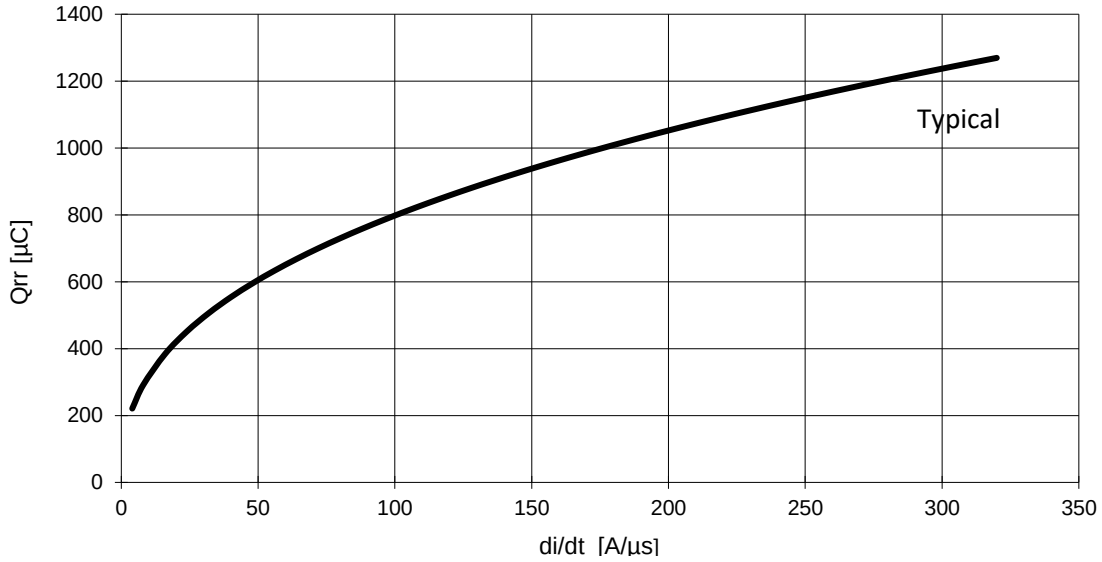


Max permissible heatsink temperature vs. mean on state current (sine wave; 50 Hz)

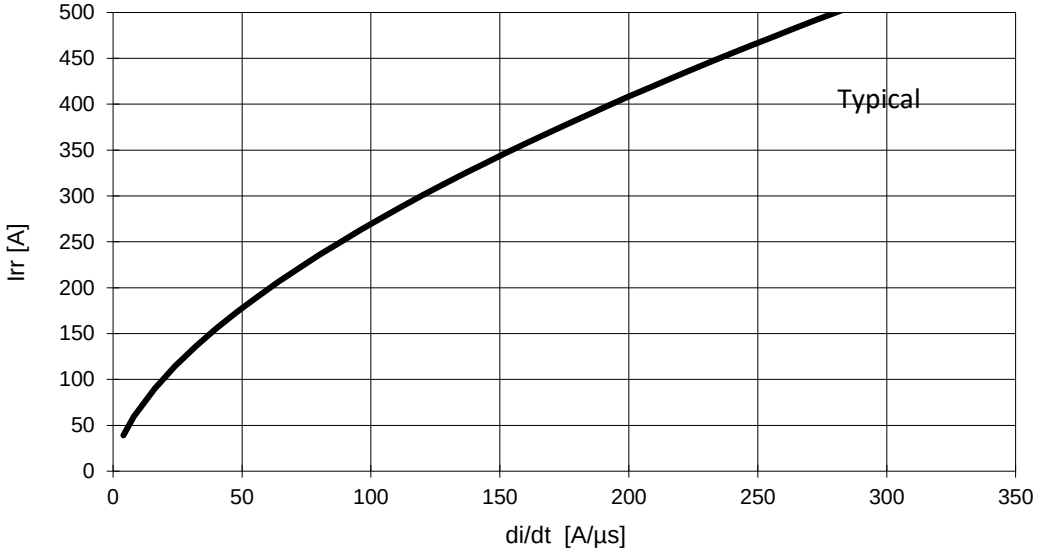


On state power losses vs. mean on state current wave; 50 Hz)

REVERSE RECOVERY CHARGE
@ Tj = 125 °C
IT = 1000 A

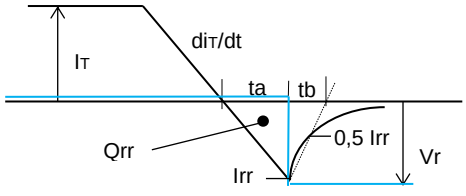


REVERSE RECOVERY CURRENT
@ Tj = 125 °C
IT = 1000 A



ta = Irr / (diT/dt) tb = trr - ta

Energy dissipation during recovery Eoff = Vr · (Qrr - Irr ·ta / 2)

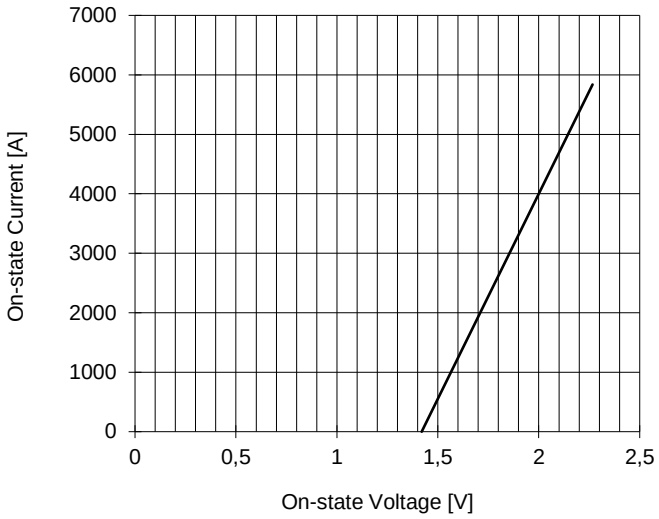


ATF624 FAST SWITCHING THYRISTOR

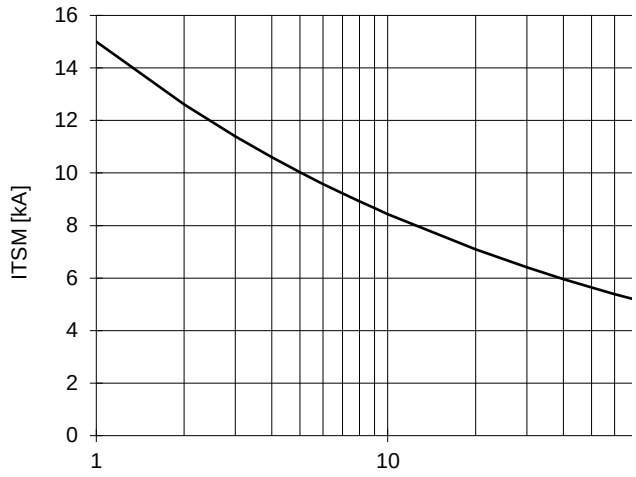
POSEICO POWER ELECTRONICS

TARGET SPECIFICATION Aug. 18 - Issue: 2

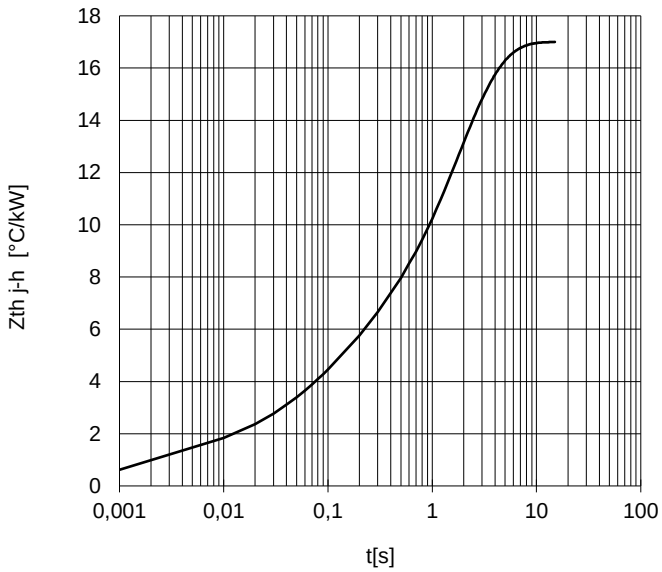
ON-STATE CHARACTERISTIC
Tj = 125 °C

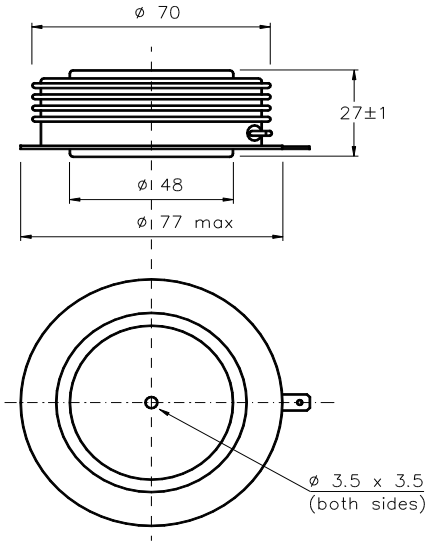


SURGE CHARACTERISTIC
Tj = 125 °C



TRANSIENT THERMAL IMPEDANCE
DOUBLE SIDE COOLED





Dimensions in mm

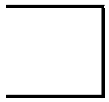
Cathode terminal type DIN 46244 - A 4.8 - 0.8

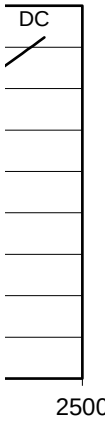
Gate terminal type AMP 60598 - 1

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 POSEICO SpA 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 (simbols over shaded background) and characteristics is reported.

Distributed by

Unit	
V	
V	
V	
mA	
mA	
A	
A	
kA	
A^2s	
V	
V	
mohm	
A/µs	
V/µs	
µs	
µs	
µC	
A	
mA	
mA	
V	
mA	
V	
V	
A	
V	
W	
W	
°C/kW	
°C/kW	
°C	
kN	
g	
L 25 µs	
S 50 µs	
Y 150µs	





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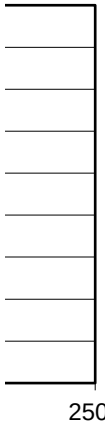

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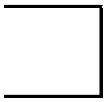

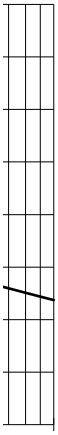
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