

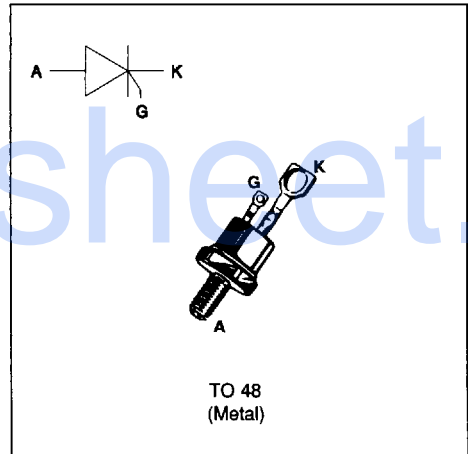
SCR
FEATURES

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

DESCRIPTION

The 2N 5204 ---> 2N 5207 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
$I_T(\text{RMS})$	RMS on-state current (180° conduction angle)	$T_c = 75^\circ\text{C}$	35	A
$I_T(\text{AV})$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 75^\circ\text{C}$	22.5	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3$ ms	360	A
		$t_p = 10$ ms	330	
I^2t	I^2t value	$t_p = 10$ ms	545	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 400$ mA $di_G/dt = 1$ A/ μ s		100	A/ μ s
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150	°C
			- 40 to + 125	°C
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	2N				Unit
		5204	5205	5206	5207	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.0	°C/W

GATE CHARACTERISTICS (maximum values)

PG (AV) = 1W PGM = 60W (tp = 20 μs) IFGM = 10A (tp = 20 μs) VFGM = 16V (tp = 20 μs) VRGM = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Value	Unit	
IGT	VD=12V (DC) RL=33Ω	Tj=25°C	MAX	40	mA
VGT	VD=12V (DC) RL=33Ω	Tj=25°C	MAX	1.5	V
VGD	VD=VDRM RL=3.3kΩ	Tj= 125°C	MIN	0.25	V
tgt	VD=VDRM IG = 200mA dIG/dt = 1.5A/μs	Tj=25°C	TYP	2	μs
IL	IG= 1.2 IGT	Tj=25°C	TYP	200	mA
IH	IT= 500mA gate open	Tj=25°C	MAX	100	mA
VTM	ITM= 70A tp= 380μs	Tj=25°C	MAX	2.3	V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		3.3	
dV/dt	Linear slope up to VD=67%VDRM gate open	Tj= 125°C	MIN	200	V/μs
Tq	VD=67%VDRM ITM= 70A VR= 30V dITM/dt=30 A/μs dVD/dt= 20V/μs	Tj= 125°C	TYP	100	μs

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

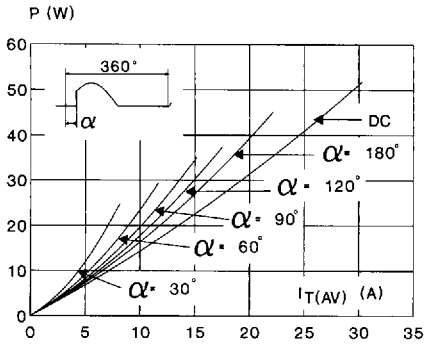


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

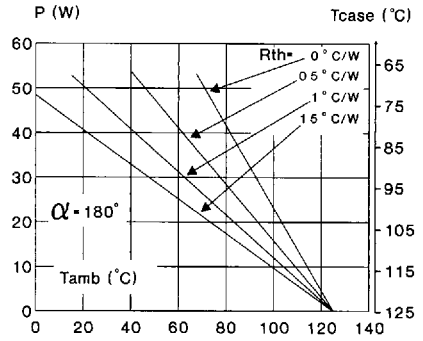


Fig.3 : Average on-state current versus case temperature.

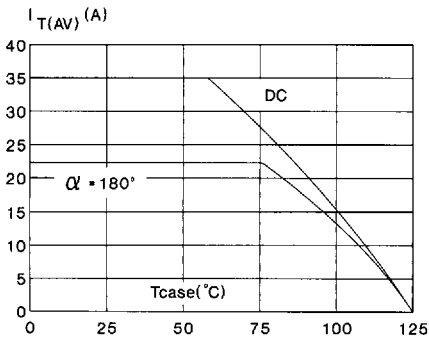


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

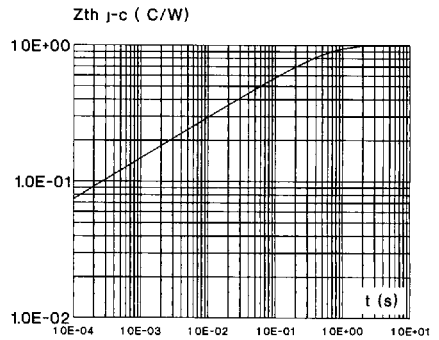


Fig.5 : Relative variation of gate trigger current versus junction temperature.

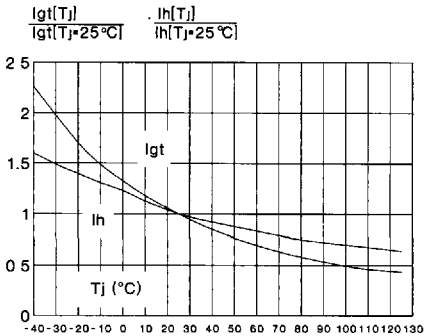
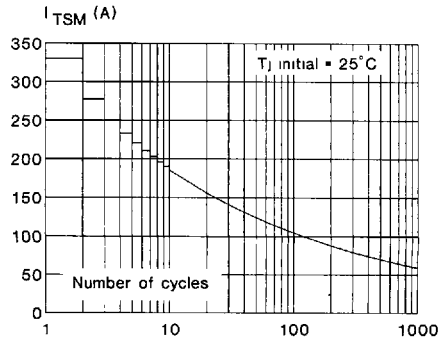


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



2N 5204 ---> 2N 5207

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 .

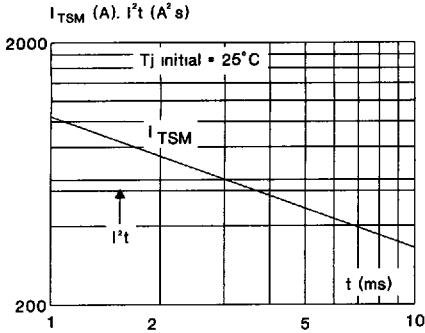
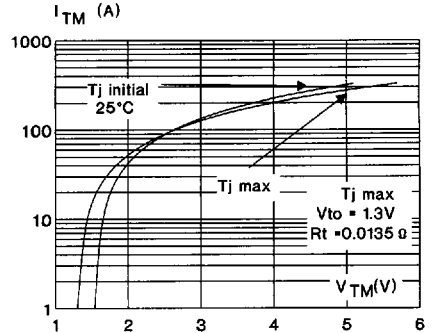
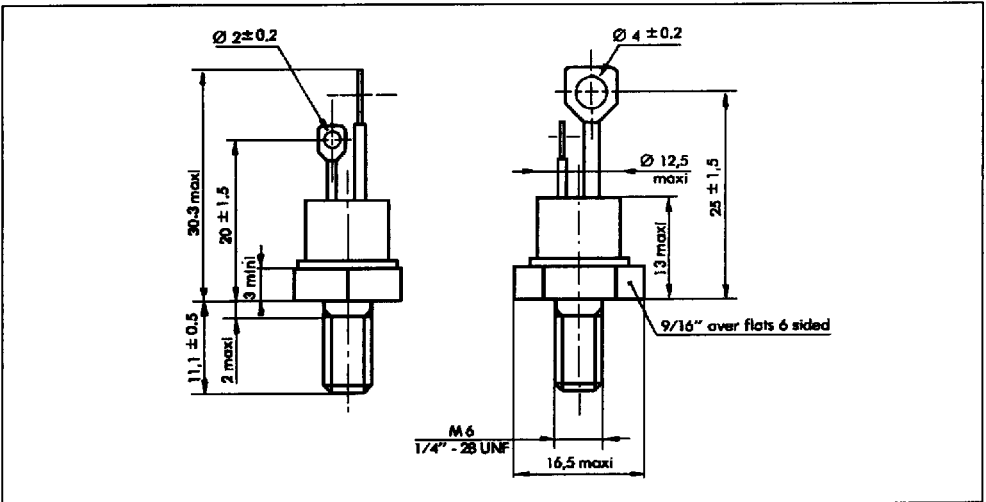


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)
TO 48 Metal



Cooling method : by conduction (method C)
 Marking : type number
 Weight : 13.5 g
 Polarity : Anode (or A2) to case
 Stud torque : 3.5mAN min / 3.8 mAN max