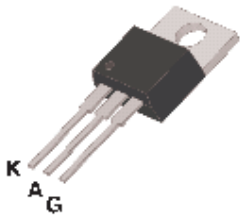
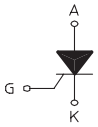
STANDARD SCR

TO-220-AB





On-State Current	Gate Trigger Current
12 Amp	0.5 mA to 25 mA

Off-State Voltage

200 V ÷ 800 V

These series of **S**ilicon **C**ontrolled **R**ectifier use a high performance PNPN technology.

These parts are intended for general purpose applications where high gate sensitivity is required.

Absolute Maximum Ratings, according to IEC publication No. 134

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	On-state Current	180° Conduction Angle, T_c = 110 °C	12	A
$I_{T(AV)}$	Average On-state Current	Half Cycle, Θ = 180 °, T_C = 110 °C	8	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 60 Hz	154	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 50 Hz	140	A
I^2t	Fusing Current	t_p = 10ms, Half Cycle	98	A^2s
I_{GM}	Peak Gate Current	20 µs max.	4	A
P_{GM}	Peak Gate Dissipation	20 µs max.	10	W
$P_{G(AV)}$	Gate Dissipation	20ms max.	1	W
T_j	Operating Temperature		(-40 to +125)	°C
T_{stg}	Storage Temperature		(-40 to +150)	°C
T_{sld}	Soldering Temperature	10s max.	260	°C
V_{RGM}	Reverse Gate Voltage		5	V

SYMBOL	PARAMETER	CONDITIONS	VOLTAGE						Unit
			B	D	E	M	S	N	
V_{DRM} V_{RRM}	Repetitive Peak Off State Voltage	R_{GK} = 1 kΩ	200	400	500	600	700	800	V

STANDARD SCR

Electrical Characteristics

SYMBOL	PARAMETER	CONDITIONS		SENSITIVITY			Uni
				08	09	10	
I_{GT}	Gate Trigger Current	V_D = 12 V_{DC} , R_L = 33Ω. T_j = 25 °C	MIN MAX	0.5 5	2 15	2 25	m A
V_{GT}	Gate Trigger Voltage	V_D = 12 V_{DC} , R_L = 33Ω, T_j = 25 °C	MAX	1.3			V
V_{GD}	Gate Non Trigger Voltage	V_D = V_{DRM} , R_L = 3.3kΩ, R_{GK} = 220Ω T_j = 125 °C	MIN	0.2			V
I_H	Holding Current	I_T = 500 mA,	MAX	15	30	40	mA
I_L	Latching Current	I_G = 1.2 I_{GT}	MAX	30	60	60	mA
dV / dt	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM} , Gate open T_j = 125 °C	MIN	50	200	200	V/µs
dI / dt	Critical Rate of Current Rise	I_G = 2 x I_{GT} Tr ≤ 100 ns, f = 60 Hz, T_j = 125 °C	MIN	50			A/µs
V_{TM}	On-state Voltage	at I_T = 24 Amp, tp = 380 µs, T_j = 25 °C	MAX	1.6			V
V_{t0}	Threshold Voltage	T_j = 125 °C	MAX	0.80			V
r_d	Dynamic resistance	T_j = 125 °C	MAX	30			mΩ
I_{DRM} / I_{RRM}	Off-State Leakage Current	V_D = V_{DRM} , R_{GK} = 1kΩ T_j = 125 °C V_R = V_{RRM} , T_j = 25 °C	MAX MAX	2 5			mA µA
$R_{th(j-c)}$	Thermal Resistance Junction-Case for DC	for AC 360 ° conduction angle		1.3			°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Amb for DC	S = 1 cm^2		60			°C/W

PART NUMBER INFORMATION

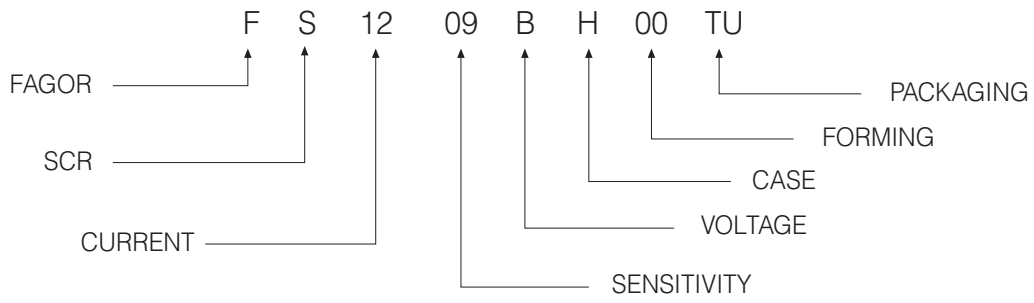


Fig. 1: Maximum average power dissipation versus average on-state current.

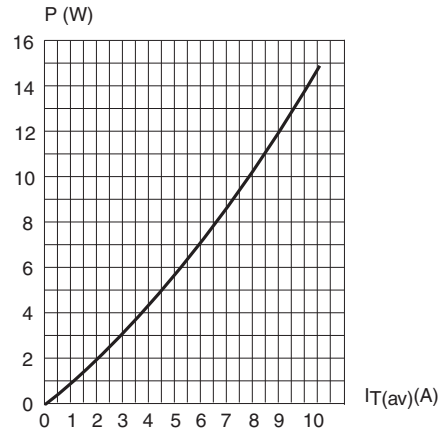


Fig. 2: Average and D.C. on-state current versus case temperature.

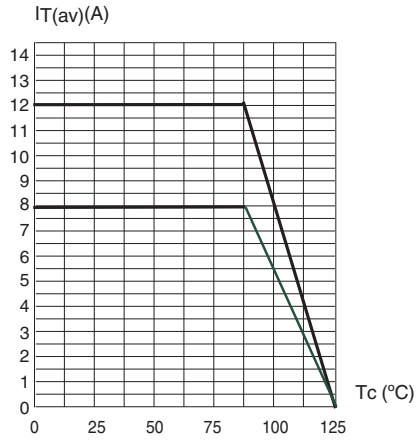


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

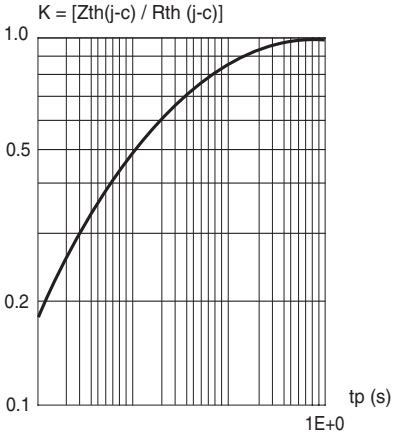


Fig. 4: Relative variation of gate trigger current, holding and latching current versus junction temperature.

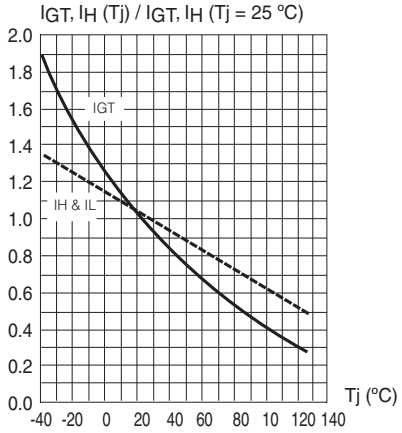


Fig. 5: Non repetitive surge peak on-state current versus number of cycles.

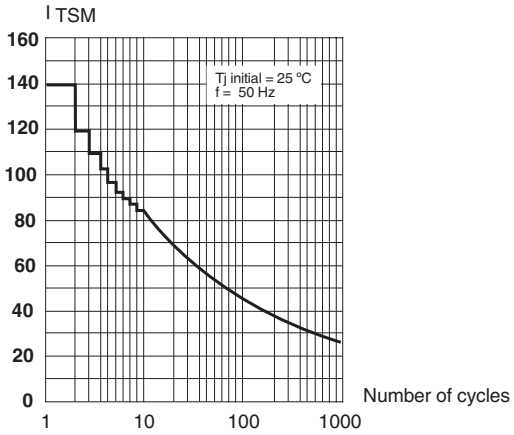


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I²t.

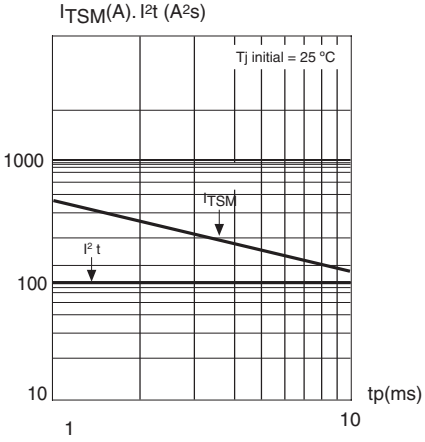
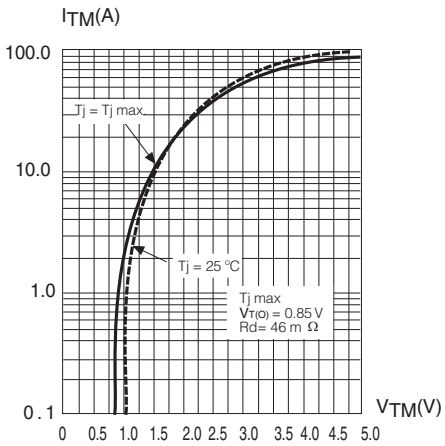
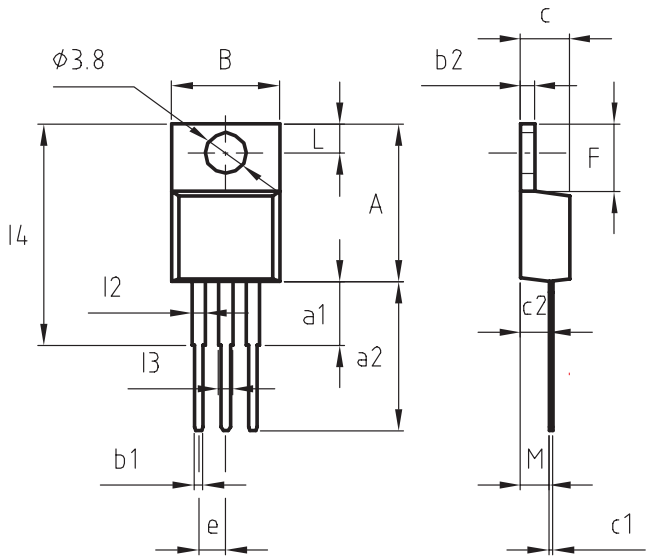


Fig. 7: On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA TO-220AB



REF.	DIMENSIONS Milimeters		
	Min.	Nominal	Max.
A	15.20		15.90
a1		3.75	
a2	13.00		14.00
B	10.00		10.40
b1	0.61		0.88
b2	1.23		1.32
C	4.40		4.60
c1	0.49		0.70
c2	2.40		2.72
e	2.40		2.70
F	6.20		6.60
I	3.75		3.85
l4	15.80	16.40	16.80
L	2.65		2.95
l2	1.14		1.70
l3	1.14		1.70
M		2.60	

Mounting Torque	**1 N.m**

(*) Limiting values and life support applications, see Web page.