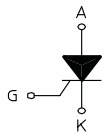
STANDARD SCR

TO220-F
(FULLY ISOLATED CASE)



On-State Current
12 Amp

Gate Trigger Current
2 mA to 15 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	146	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
V_{iso}	R.M.S. isolation voltage 50/60 Hz sinusoidal waveform		2.500	Vac

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

STANDARD SCR

Electrical Characteristics

SYMBOL	PARAMETER	CONDITIONS		SENSITIVITY	Uni
				09	
I_{GT}	Gate Trigger Current	V_D = 12 V_{DC} , R_L = 140Ω. T_j = 25 °C	MIN MAX	2 15	m A
V_{GT}	Gate Trigger Voltage	V_D = 12 V_{DC} , R_L = 140Ω, 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	20	mA
I_L	Latching Current	I_G = 1.2 I_{GT}	MAX	40	mA
dV / dt	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM} , Gate open T_j = 125 °C	MIN	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	1.5	V
$V_{t(o)}$	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, V_R = V_{RRM} ,	T_j = 125 °C T_j = 25 °C	MAX MAX	0.5 5	mA µA
$R_{th(j-c)}$	Thermal Resistance Junction-Case for DC	for AC 360 ° conduction angle		2.9	°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Amb for DC	S = 1 cm^2		50	°C/W

PART NUMBER INFORMATION

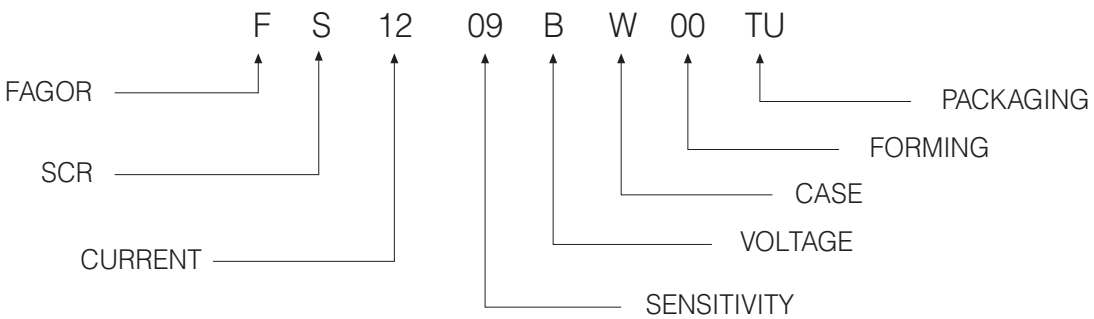


Fig. 1: Maximum average power dissipation versus average on-state current.

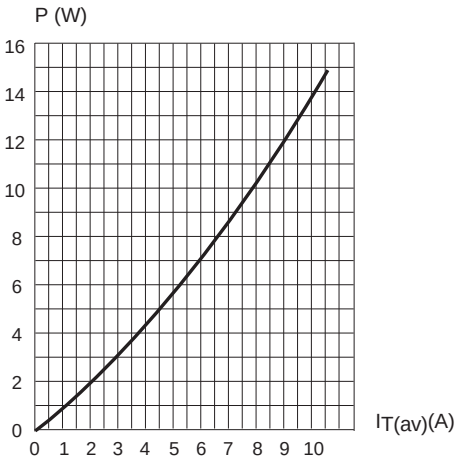


Fig. 2: Average and D.C. on-state current versus case temperature.

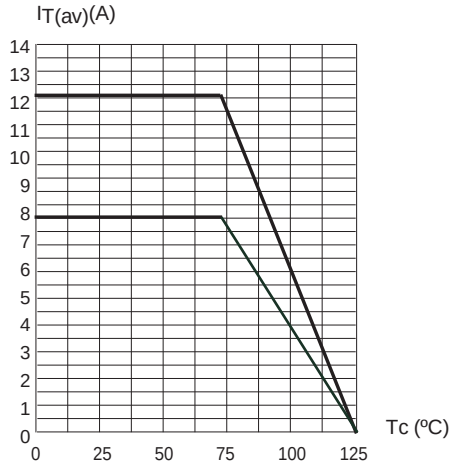


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

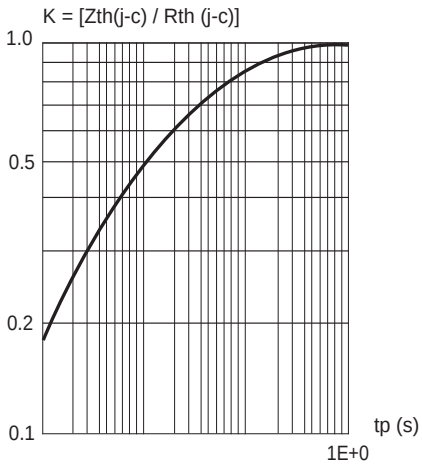


Fig. 4: Relative variation of gate trigger current, holding and latching current versus junction temperature.

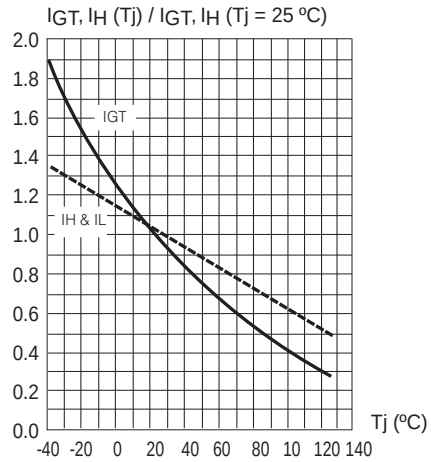


Fig. 5: Non repetitive surge peak on-state current versus number of cycles.

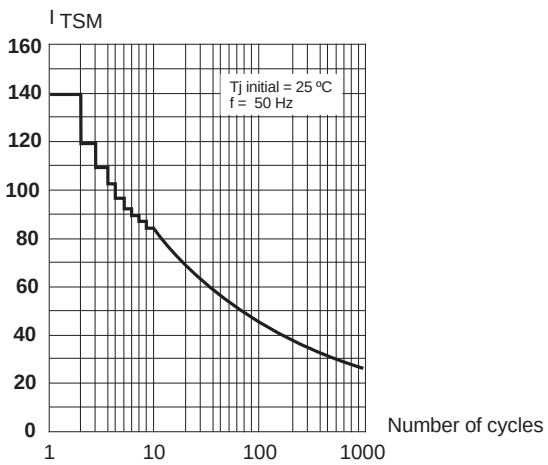


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I^2t.

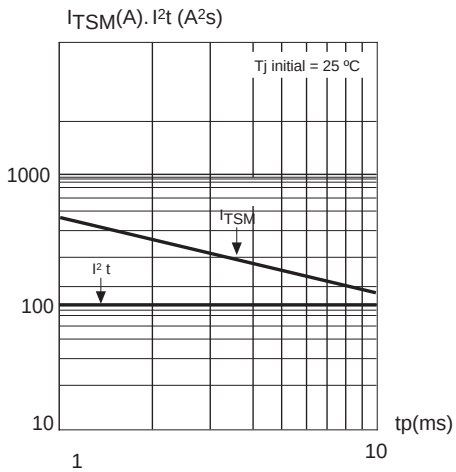
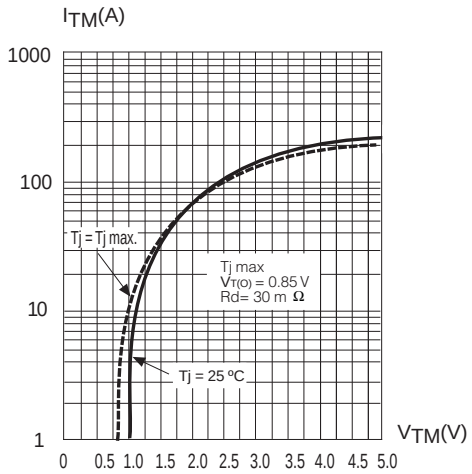
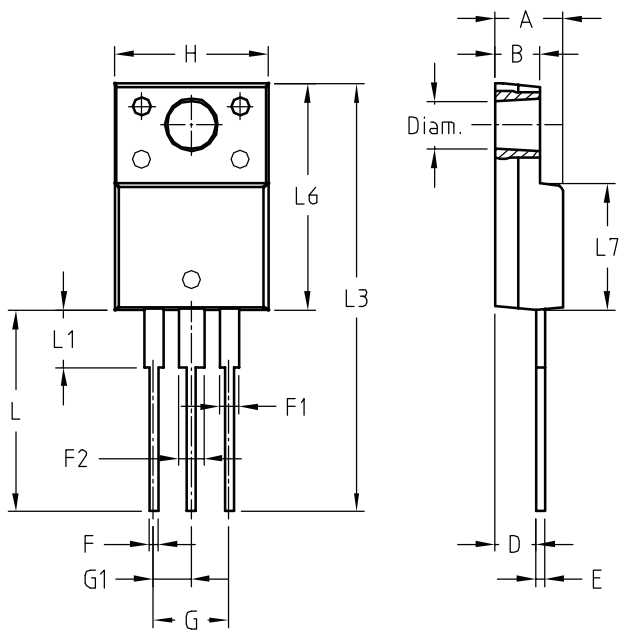


Fig. 7: On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA TO220-F



REF.	DIMENSIONS		
	Milimeters		
	Min.	Nominal	Max.
A	3.55	4.50	4.90
B	2.34	3.00	3.70
D	2.03	2.70	2.96
E	0.35	0.60	0.70
F	0.25	0.60	1.01
F1	0.70	1.30	1.78
F2	0.70	1.70	1.78
G	4.88	5.00	5.28
G1	2.34	2.50	2.74
H	9.65	10.15	10.67
L	12.70	13.35	14.73
L1	2.93	3.75	6.35
L3	26.90	28.35	31.20
L6	14.22	15.00	16.50
L7	8.30	8.40	9.59
Diam.	3.00	3.20	3.28