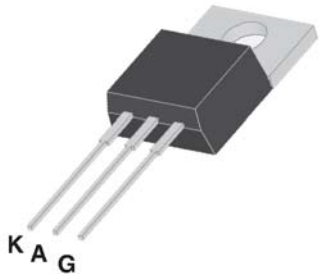
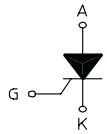
SENSITIVE GATE SCR

TO-220-AB





On-State Current
4 Amp

Gate Trigger Current
< 200 µA

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	4	A
$I_{T(AV)}$	Average On-state Current	Half Cycle, Θ = 180 °, T_C = 110 °C	2.5	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 60 Hz	33	A
I_{TSM}	Non-repetitive On-State Current	Half Cycle, 50 Hz	30	A
I^2t	Fusing Current	t_p = 10ms, Half Cycle	4.5	A^2s
I_{GM}	Peak Gate Current	20 µs max.	4	A
P_{GM}	Peak Gate Dissipation	20 µs max.	5	W
$P_{G(AV)}$	Gate Dissipation	20ms max.	0.5	W
T_j	Operating Temperature		(-40 to +150)	°C
T_{stg}	Storage Temperature		(-40 to +150)	°C
T_{sld}	Soldering Temperature	10s max.	260	°C

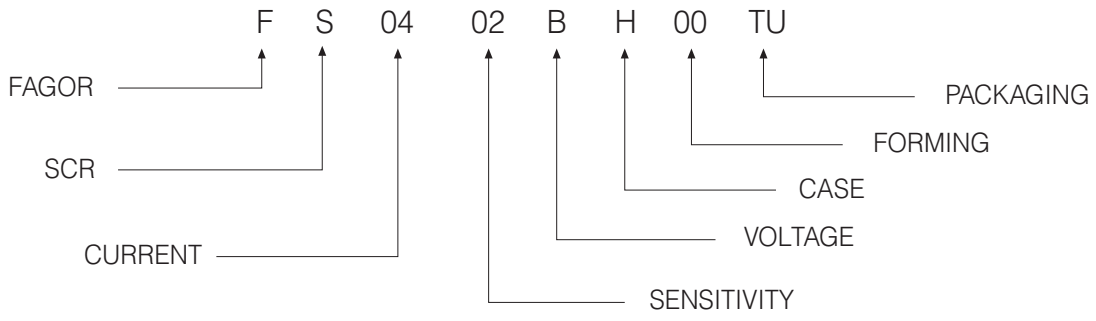
SYMBOL	PARAMETER	CONDITIONS	VOLTAGE					Unit
			B	D	M	S	N	
V_{DRM} V_{RRM}	Repetitive Peak Off State Voltage	R_{GK} = 1 kΩ	200	400	600	700	800	V

SENSITIVE GATE SCR

Electrical Characteristics

SYMBOL	PARAMETER	CONDITIONS			SENSITIVITY			Unit
					01	02	04	
I_{GT}	Gate Trigger Current	V_D = 12 V_{DC}, R_L = 140Ω. T_j = 25 °C		MIN	1	0	15	
				MAX	20	200	50	µA
V_{GT}	Gate Trigger Voltage	V_D = 12 V_{DC}, R_L = 140Ω, T_j = 25 °C		MAX	0.8			V
V_{GD}	Gate Non Trigger Voltage	V_D = V_{DRM}, R_L = 3.3kΩ, R_{GK} = 220Ω T_j = 125 °C		MIN	0.1			V
V_{RGM}	Reverse Gate Voltage	I_{RG} = 10µA,		MIN	8			V
I_H	Holding Current	I_T = 500 mA,		MAX	5			mA
I_L	Latching Current	I_G = 1.2 I_{GT}		MAX	6			mA
dV / dt	Critical Rate of Voltage Rise	V_D = 0.67 x V_{DRM}, R_{GK} =1 kΩ, T_j = 125 °C		MIN	10	5	15	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 = 8 Amp, tp = 380 µs, T_j = 25 °C		MAX	1.6			V
$V_{t(0)}$	Threshold Voltage	T_j = 125 °C		MAX	0.85			V
r_d	Dynamic resistance	T_j = 125 °C		MAX	46			mΩ
I_{DRM} / I_{RRM}	Off-State Leakage Current	V_D = V_{DRM}, R_{GK} = 1kΩ	T_j = 125 °C	MAX	1			mA
		V_R = V_{RRM},	T_j = 25 °C	MAX	5			µA
$R_{th(j-c)}$	Thermal Resistance Junction-Amb for DC	for AC 360° conduction angle			2.0			°C/W
$R_{th(j-a)}$	Thermal Resistance Junction-Amb for DC	S = 1cm^2			60			°C/W

PART NUMBER INFORMATION



SENSITIVE GATE SCR

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

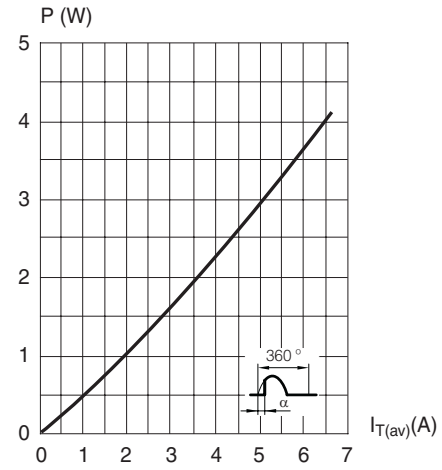


Fig. 2: Average and D.C. on-state current versus case temperature.

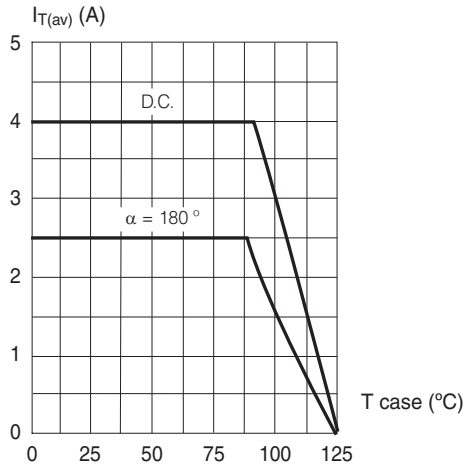


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

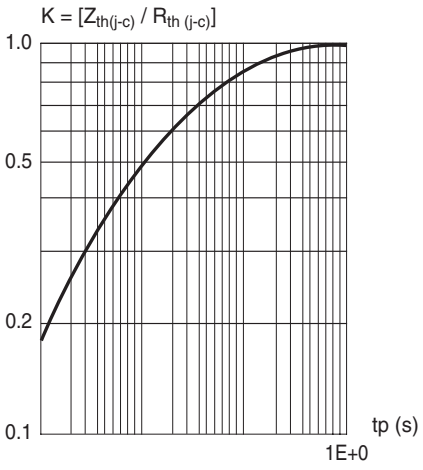


Fig. 4: Relative variation of gate trigger current, holding and latching current versus junction temperature.

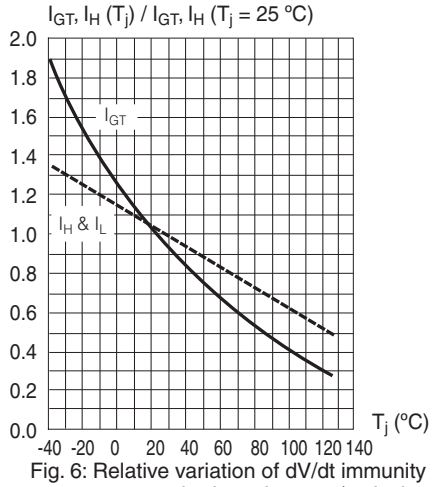


Fig. 5: Relative variation of holding current versus gate-cathode resistance (typical values).

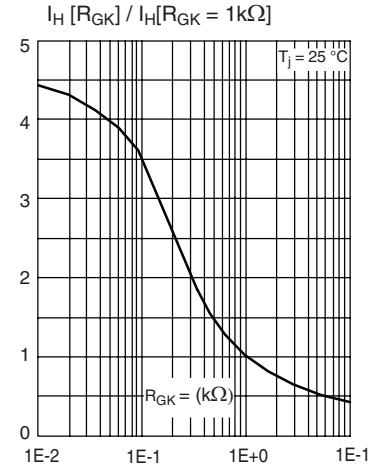


Fig. 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

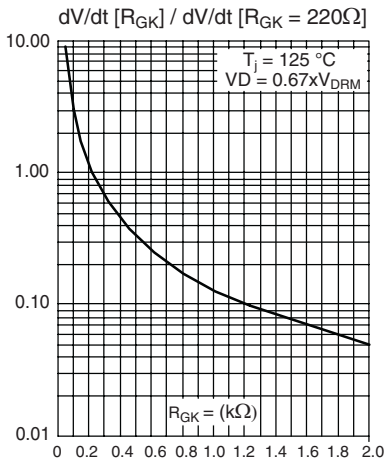


Fig. 7: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

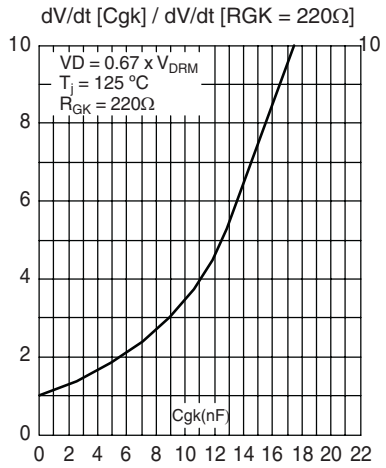


Fig. 8: Non repetitive surge peak on-state current versus number of cycles.

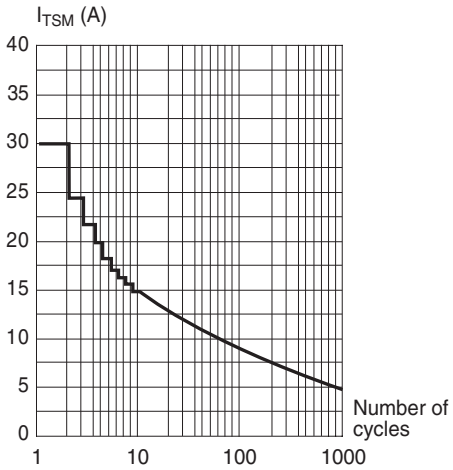


Fig. 9: Non repetitive surge peak on-state current for a sinusoidal pulse with width: tp < 10 ms, and corresponding value of I^2t.

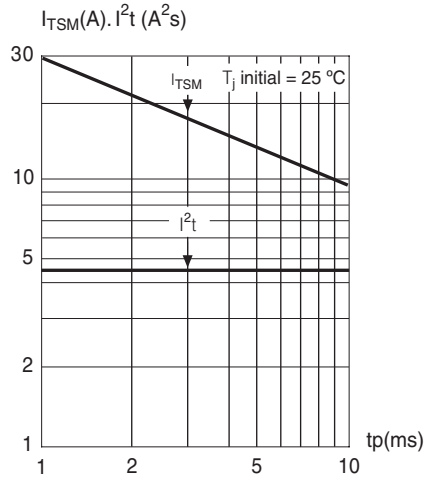
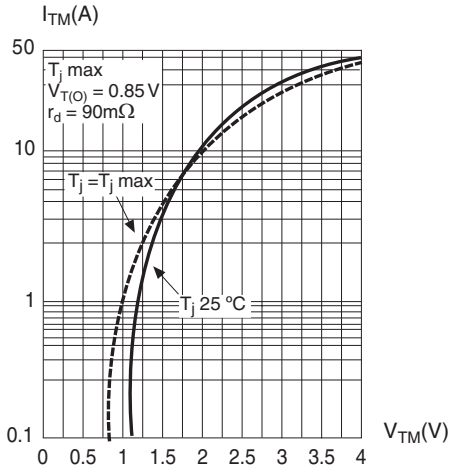


Fig. 10: On-state characteristics (maximum values).



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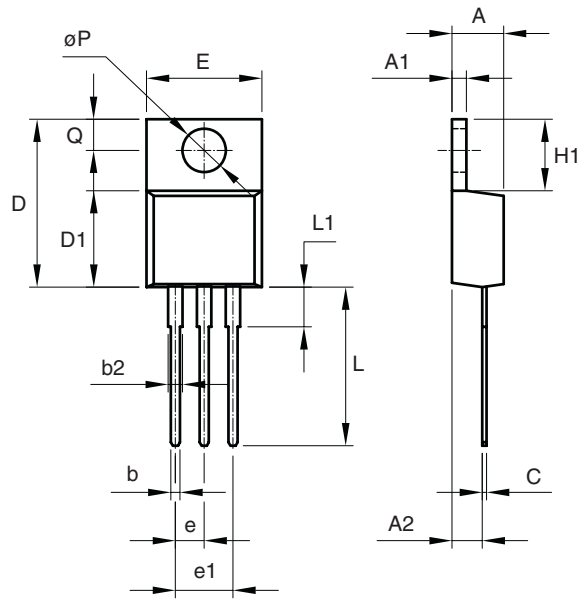
PACKAGE MECHANICAL DATA TO-220AB



REF.	DIMENSIONS Milimeters	
	Min.	Max.
A	4.47	4.67
A1	1.17	1.37
A2	2.52	2.82
b	0.71	0.91
b2	1.17	1.37
c	0.31	0.53
D	14.65	15.35
D1	8.50	8.90
E	10.01	10.36
e	2.51	2.57
e1	4.98	5.18
H1	6.15	6.45
L	13.40	13.96
L1	3.56	3.96
P	3.735	3.935
Q	2.59	2.89

Mounting Torque	**1 N.m**

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