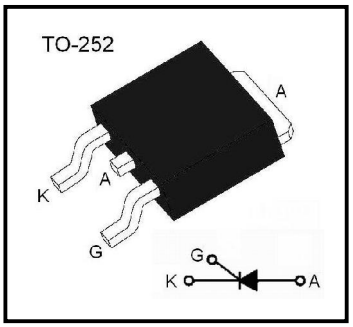
GateSilicon Controlled Rectifiers



General Description

PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers,small motor controls, gate drivers for larger thyristors, and sensing and detection circuits.

Features

- Sensitive gate allows triggering by micro controllers and other logic circuits
- Blocking voltage to 800V
- On-state current rating of 4.0A RMS
- Glass-passivated surface for reliability and uniformity

Absolute Maximum Rating (Tj = 25°C unless otherwise Specified)

Parameter	Symbol	Conditions		Value	Unit
Repetitive peak off-state voltages	$V_{DRM,}$ V_{DRM}			600 800	V
Average On-State Current	$I_{T(AV)}$	Half SineWave : T_C = 74 °C		2.5	A
RMS on-statecurrent	$I_{T(RMS)}$	All Conduction Angle		4	A
Non repetitive surge peak on-state current	I_{TSM}		tp=8.3ms	33	A
			tp=10ms	30	
I^2t value for fusing	I^2t	t = 10 ms		4.5	A^2s
Critical rate of rise of on-state current	dI/dt	I_G=2$I_{GT,}$ tr ≤ 100ns	T_j = 125C	50	A/μs
Peak Gate Current	I_{GM}		tp=20μs	1.2	A
Peak Gate Power Dissipation	P_{GM}			1.0	W
Average Gate Power Dissipation	$P_{G(AV)}$	over any 20 ms period		0.2	W
Operating junction temperature	T_j			-40-125	°C
Storage Temperature	T_{stg}			-40-150	°C

Electrical Characteristics (T_j = 25°C unless otherwise stated)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Repetitive Peak Off-State Current	I_{DRM},I_{RRM}	V_D= V_{DRM} or V_{RRM}	T_j = 25 °C			5	μA
			T_j = 125 °C			1	mA
Gate trigger current	I_{GT}	V_D = 12 V,R_L=140Ω				200	μA
Gate trigger voltage	V_{GT}	V_D = 12 V,R_L=140Ω				0.8	V
Non-Trigger Gate Voltage	V_{GD}	V_D=V_{DRM},R_{GK}=1KΩ, R_L=3.3KΩ,	T_j = 125 °C	0.1			V
Latching current	I_L	I_G = 1mA, R_{GK}=1KΩ				6	mA
Holding current	I_H	I_T = 50mA , R_{GK}=1KΩ				5	mA
On-state voltage	V_{TM}	I_T = 8A, tp=380uS				1.8	V
Threshold voltag	V_{th}		T_j = 125 °C			0.95	V
Dynamic resistance	R_d		T_j = 125 °C			100	mΩ

Thermal Resistances

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Junction to case	Rth j-sp				15	°C /W
Junction to ambient	Rth j-a				100	°C /W

Typical Characteristics

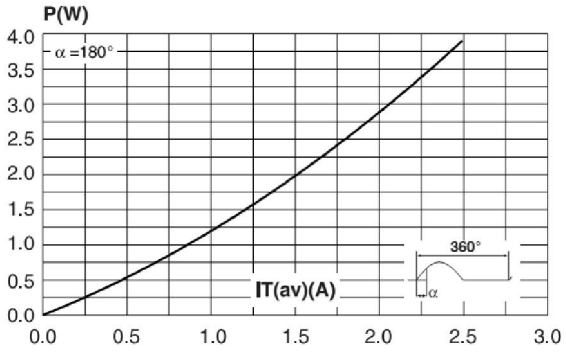


Fig.1:Maximum average power dissipation Versus average on-statecurrent.

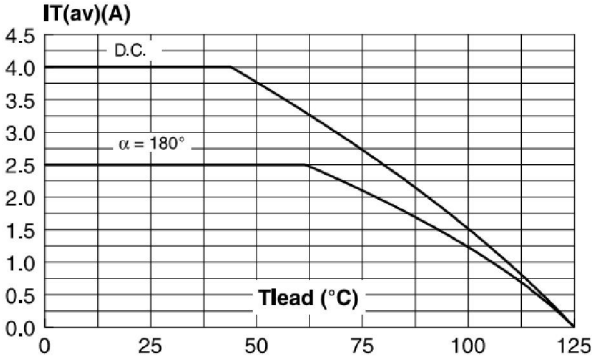


Fig.2-1: Average and D.C.on-statecurrent Versus lead temperature.

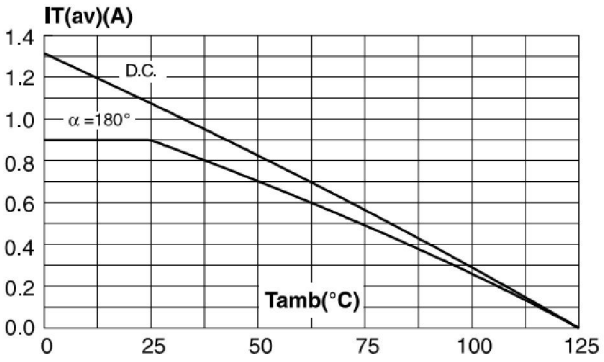


Fig.2-2: Average and D.C.on-statecurrent Versus ambient temperature(device mounted on FR4 with recommended pad layout).

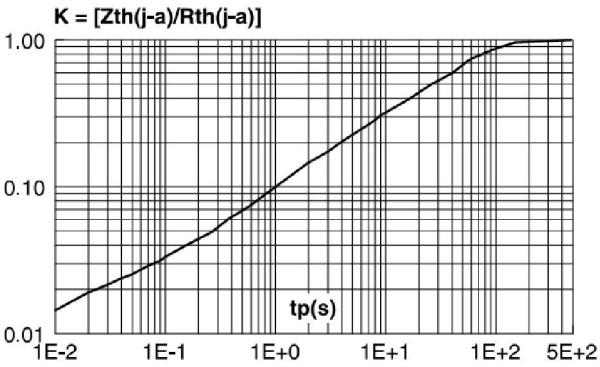


Fig.3: Relative variation of thermal impedance Junction to ambient versus pulse duration.

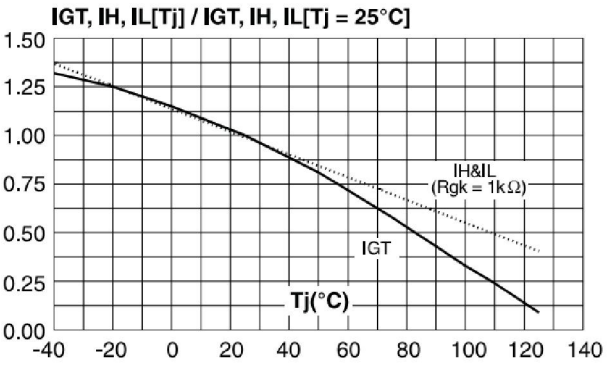


Fig.4: Relative variation of gate trigge rcurrent,holding current and latching current versus junction temperature(typicalvalues).

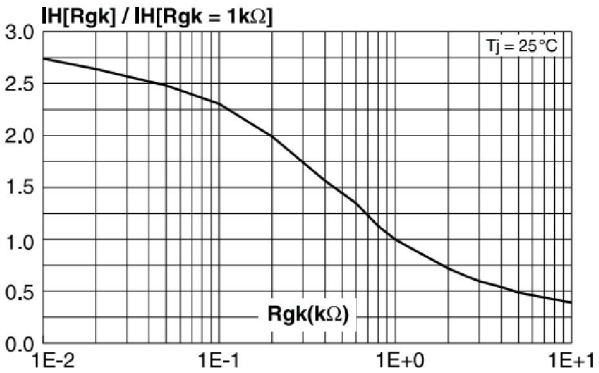


Fig.5: Relative variation of holding current versus gate-cathode resistance (typicalvalues).

Typical Characteristics

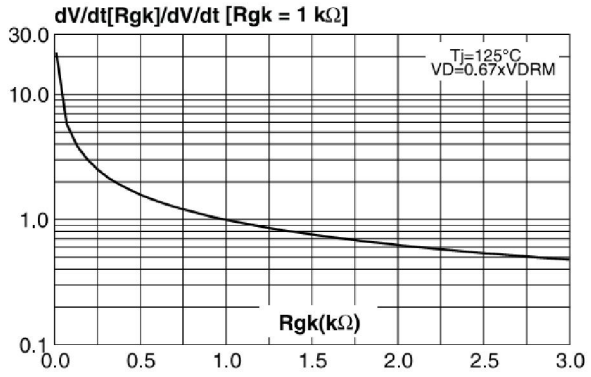


Fig.6: Relative variation of dV/dt immunity versus gate-cathode resistance (typicalvalues).

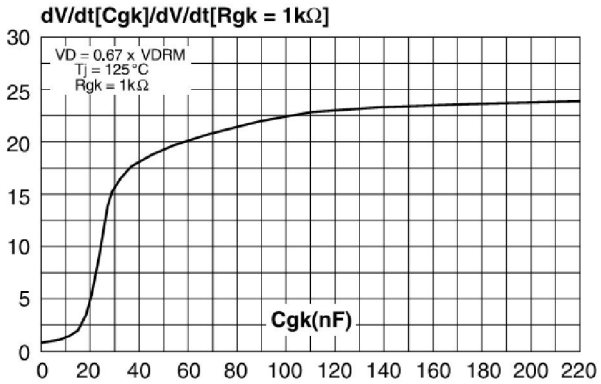


Fig.7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typicalvalues).

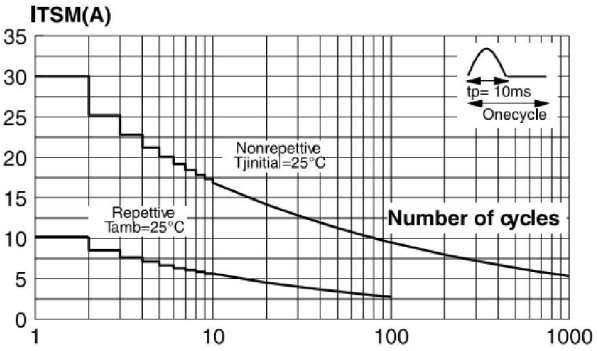


Fig.8: Surge peak on-state current versus number of cycles.

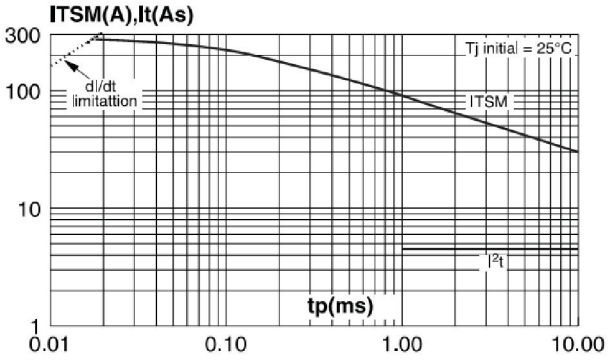


Fig.9: Non-repetitive surge peakon-state current for asinusoidal pulse with width tp<10ms,and corresponding value of I²t.

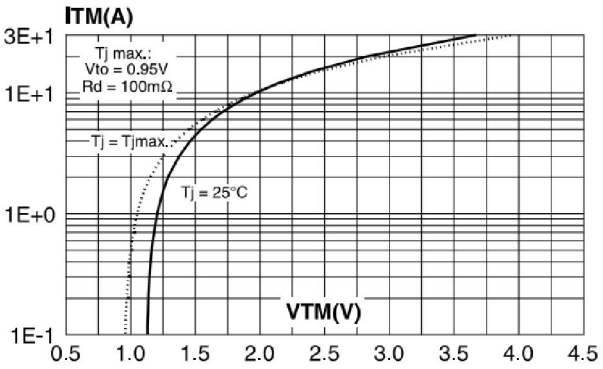
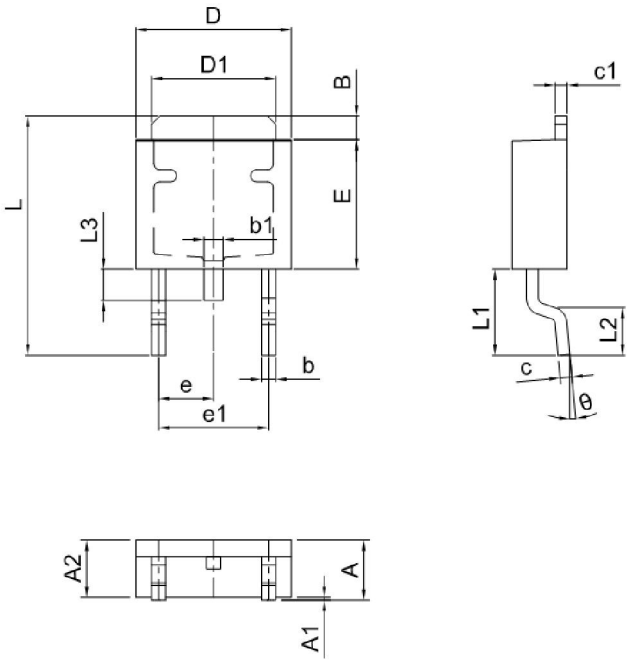


Fig.10: On-state characteristics (maximum values).

Package Dimensions



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.60	10.20	0.378	0.402
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059