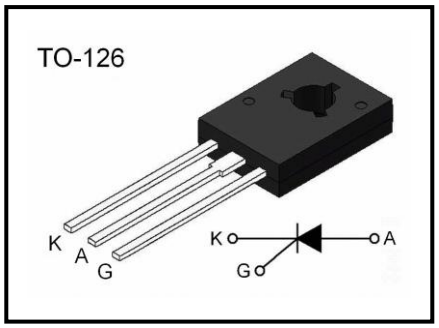
Silicon Controlled Rectifiers



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

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

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

Parameter	Symbol	Conditions	Voltage				Unit
			B	D	M	N	
Repetitive peak off-state voltages	$V_{DRM,}$ V_{DRM}	R_{GK}=1kΩ, T_C= 110℃	200	400	600	800	V

Parameter	Symbol	Conditions		Value	Unit
Average on-State current	$I_{T(AV)}$	Half SineWave : T_C = 74℃		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 = 125℃	50	A/μs
Peak gate current	I_{GM}		tp=20μs	1.2	A
Peak gate power dssipation	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	℃
Storage temperature	T_{stg}			-40-150	℃

Electrical Characteristics (T_j = 25℃ , 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 = 110 °C			1	mA
Gate trigger current	I_{GT}	VD = 12 V,R_L=140Ω				200	μA
Gate trigger voltage	V_{GT}	VD = 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 = 110 °C	0.1			V
Latching current	I_L	IG = 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 = 110 °C			0.95	V
Dynamic resistance	R_d		T_j = 110 °C			100	mΩ

Thermal Resistances

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Junction to case	$R_{th(j-c)}$	DC			15	℃ /W
Junction to ambient	$R_{th(-a)}$				100	℃ /W

Typical Characteristics

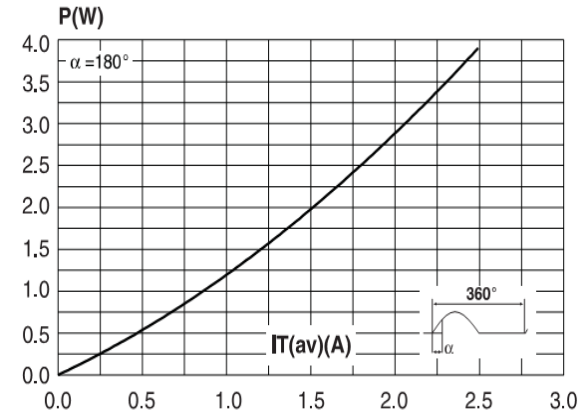


Fig.1:Maximum average power dissipation vs average on-statecurrent.

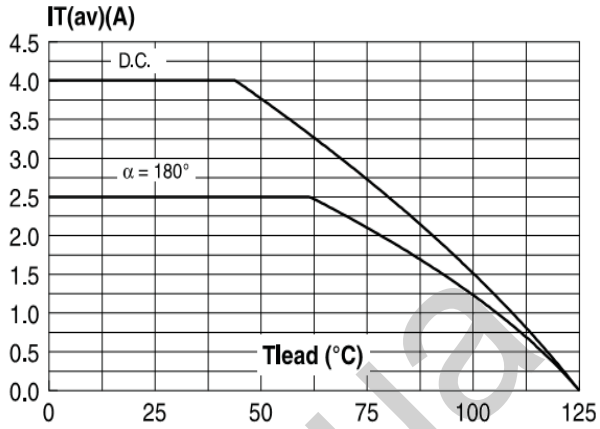


Fig.2-1: Average and D.C.on-statecurrent vs lead temperature.

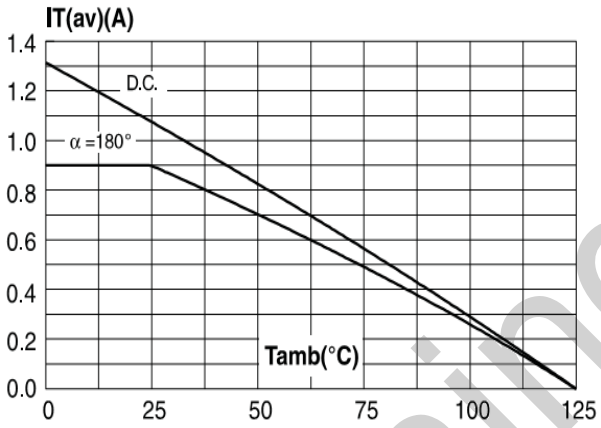


Fig.2-2: Average and D.C.on-statecurrent vs ambient temperature(device mounted on FR4 with recommended pad layout

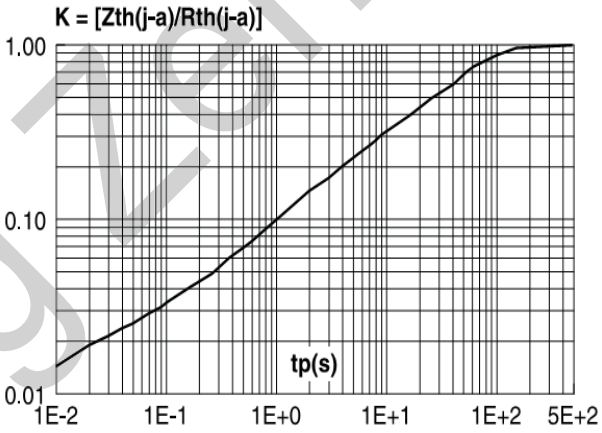


Fig.3: Relative variation of thermal impedanceJunction to ambient vs pulse duration.

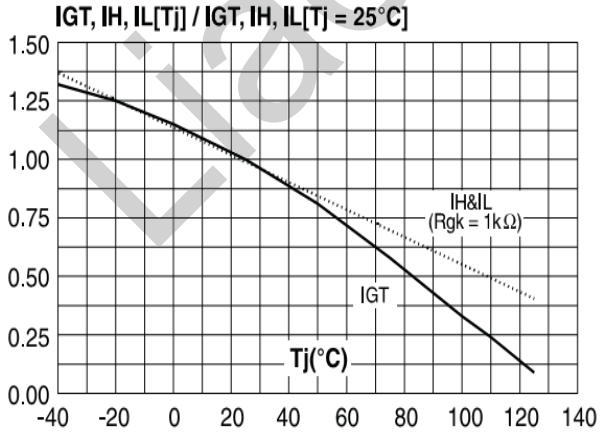


Fig.4: Relative variation of gate trigge rcurrent,holding current and latching current vs junction temperature

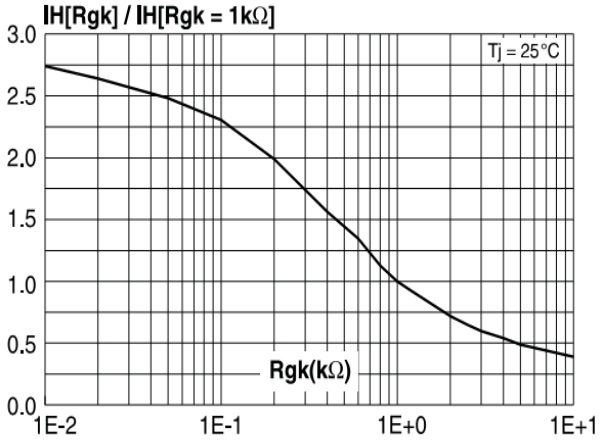


Fig.5: Relative variation of holding current vs gate-cathode resistance

Typical Characteristics

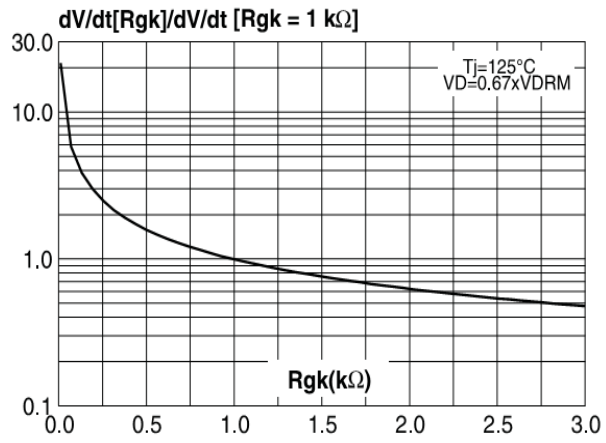


Fig.6: Relative variation of dV/dt immunity vs gate-cathode resistance

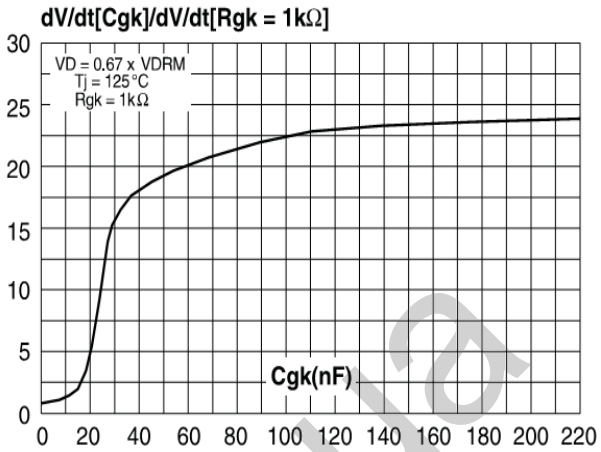


Fig.7: Relative variation of dV/dt immunity vs gate-cathode capacitance

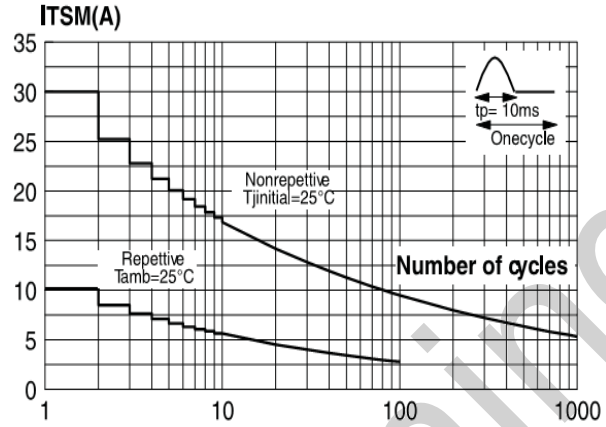


Fig.8: Surge peak on-state current vs number of cycles.

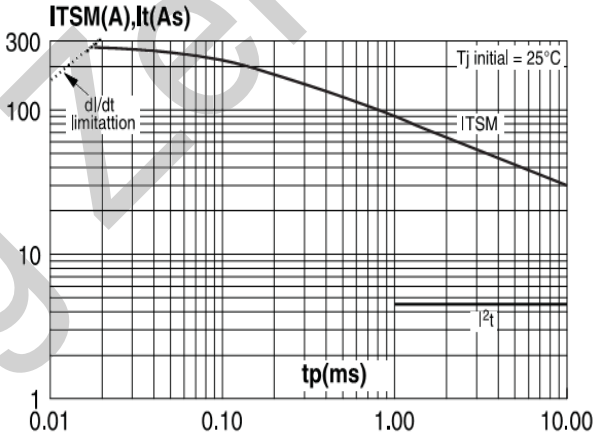


Fig.9: Non-repetitive surge peakon-state current for asinusoidal pulse with width tp<10ms,and corresponding value of I²t.

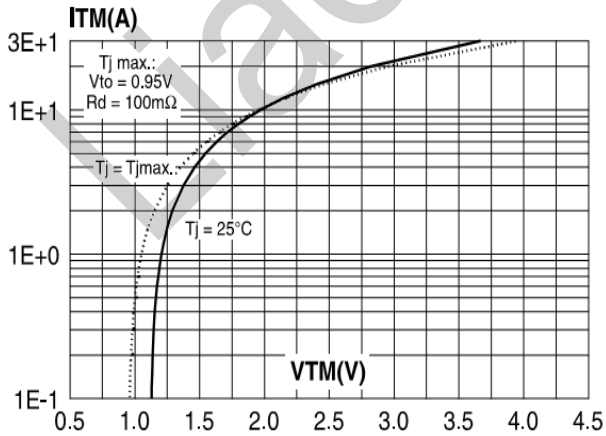
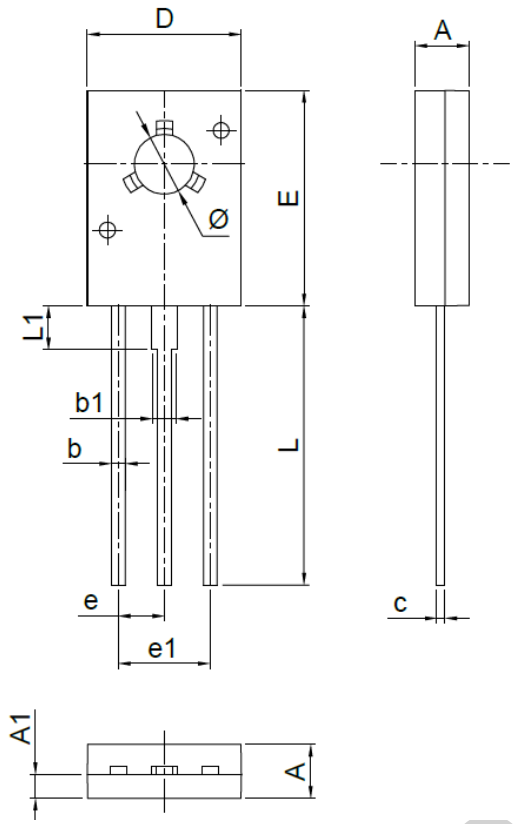


Fig.10: On-state characteristics

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.40	2.80	0.094	0.110
A1	1.00	1.40	0.039	0.055
b	0.66	0.86	0.026	0.034
b1	1.17	1.37	0.046	0.054
c	0.40	0.60	0.016	0.024
D	7.30	7.70	0.287	0.303
E	10.60	11.00	0.417	0.433
e	2.25	2.33	0.089	0.092
e1	4.50	4.66	0.177	0.183
L	14.00	15.00	0.551	0.591
L1	1.90	2.50	0.075	0.098
Φ	3.10	3.30	0.122	0.130