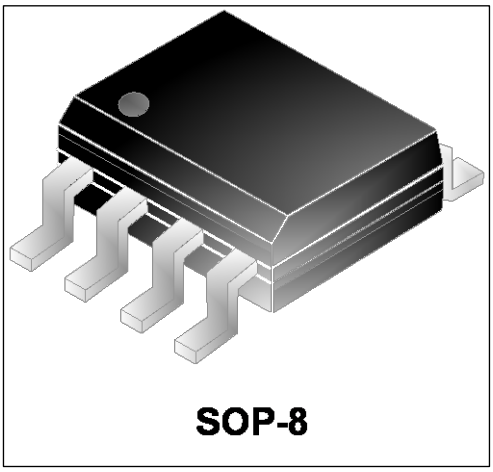
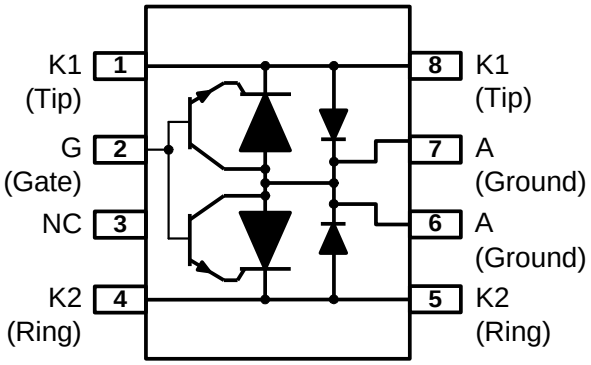
Features

- Dual programmable transient suppressor.
- Wide negative firing voltage range:
  V_{GKRM}=-167V max.
- Low dynamic switching voltage:
  V_{FRM} and $V_{GK(BD)}$
- Low gate triggering current:
  I_{GT}=5mA max
- Peak pulse current:
  I_{PP}=30A for 10/1000us surge
- Holding current:
  I_H=150mA min.



Description

This device has been especially designed to protect subscriber line card interfaces (SLIC) against transient over-voltages. Positive overloads are clipped with 2 diodes. Negative surges are suppressed by 2 thyristors, their breakdown voltage being referenced to-V_{BAT} through the gate. This component presents a very low gate triggering current (IGT) in order to reduce the current consumption on printed circuit board during the firing phase. A particular attention has been given to the internal wire bonding. The configuration ensures reliable protection, eliminating the overvoltage introduced by the parasitic inductances of the wiring (Ldi/dt), especially for very fast transients.



Complies with The Following Standards

YD/T 950-1998
ITU-T K.20
FCC part 68
GR-1089-CORE

'1089 TEST CLAUSE AND TEST #	Voltage waveform (μs)	Required peak current (A)
4.5.8 Second-Level 1	2/10μs	120
4.5.7 first-Level 3	10/1000μs	30

'1089 TEST CLAUSE AND TEST #	60 Hz power fault time	Required peak current (A)
4.5.13 Second-Level 2	500ms	6.5
4.5.13 Second-Level 2	1s	4.6
4.5.13 Second-Level 2	5s	2.3
4.5.13 Second-Level 1	30s	1.3
4.5.13 Second-Level 1	900s	0.73

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
I_{PP}	Non-repetitive peak on-state pulse current 10/1000μs 5/310μs 2/10μs	 30 40 120	A
I_{TSM}	Non repetitive surge peak on-state current (sinusoidal) 60Hz 0.5s 1s 5s 30s 900s	 6.5 4.5 2.3 1.3 0.72	A
V_{DRM} V_{GKRM}	Maximum voltage LINE/GROUND Maximum voltage GATE/LINE	-170 -167	V
T_A T_{STG} T_J T_L	Operating free-air temperature range Storage temperature range Junction temperature Maximum lead temperature for soldering during 10S	-40~85 -40~150 -40~150 260	℃
RTH(j-a)	Junction to ambient	120	℃/W

Electrical Characteristics (T_{amb}=25℃)

Symbol	Parameter
I_D	Off-state current
I_H	Holding current
$V_{(BO)}$	Breakover voltage
V_F	Forward voltage
V_{FRM}	Peak forward recovery voltage
$V_{GK(BO)}$	Gate-cathode impulse breakover voltage
I_{GKS}	Gate reverse current
I_{GT}	Gate trigger current
V_{GT}	Gate-cathode trigger voltage
C_{KA}	Cathode-anode off-state capacitance

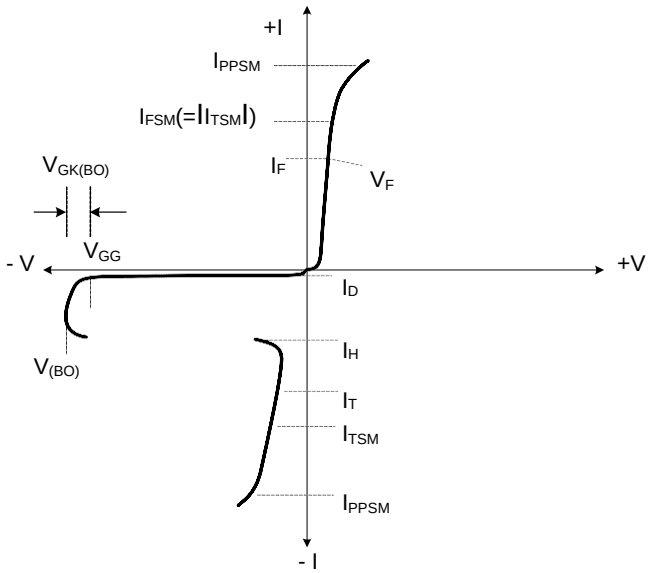


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted, All Voltages are Referenced to the Anode

Parameters Related to The Diode (T_{amb}=25℃)

Parameter	Test conditions	Min.	Typ.	Max.	Unit.
V_F forward voltage	I_F=5A, t_W=200μs			3	V
V_{FRM} peak forward recovery voltage	2/10μs, I_F=100A, Rs=50Ω, V_{GG}=-100V, C_G=220nF			10	V

Parameters Related to The Protection Thyristor (T_{amb}=25℃)

Parameter	Test conditions		Min.	Typ.	Max.	Unit.
I_D off-state current	V_D=-170V, V_{GK}=0	T_J=25℃			-5	μA
		T_J=85℃			-50	μA
V_{BO} breakover voltage	2/10μs, I_T=-100A, Rs=50Ω, V_{GG}=-100V, C_G=220nF				-112	V
I_H holding current	I_T=-1A, di/dt=1A/ms, V_{GG}=-100V		-150			mA
I_{GKS} gate reverse current	V_{GG}=V_{GK}=-100V, V_{KA}=0	T_J=25℃			-5	μA
		T_J=85℃			-50	μA
I_{GT} gate trigger current	I_T=3A, tp(g)≥20μs,V_{GG}=-100V				5	mA
V_{GT} gate trigger voltage	I_T=3A, tp(g)≥20μs,V_{GG}=-100V				2.5	V
Q_{GS} gate switching charge	1.2/50μs, I_T=-53A, Rs=47Ω,V_{GG}=-100V,C_G=220nF			0.1		μC
C_{KA} cathode-anode off-state capacitance	f=1MHz,Vd=1V,I_G=0	V_D=-3V			100	pF
		V_D=-48V			50	pF

Product Dimensions

Ref.（mm）	Min.	Typ.	Max.
A			1.75
a1	0.10		0.25
a2			1.65
b	0.35		0.48
b1	0.19		0.25
C		0.50	
D	4.80		5.00
E	5.80		6.20
e		1.27	
e3		3.81	
F	3.80		4.00
L	0.40	0.85	1.27
M			0.6