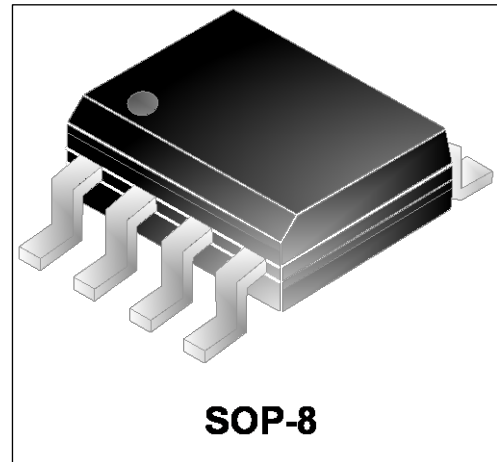


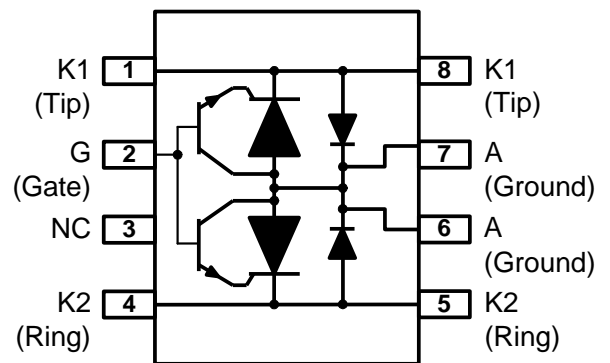
Features

- 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 (I_{GT}) 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	2/10 μs	120
4.5.7 first-Level 3	10/1000 μs	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		
	10/1000 μ s	30	A
	5/310 μ s	40	
2/10 μ s	120		
I_{TSM}	Non repetitive surge peak on-state current (sinusoidal) 60Hz		A
	0.5s	6.5	
	1s	4.5	
	5s	2.3	
	30s	1.3	
	900s	0.72	
V_{DRM}	Maximum voltage LINE/GROUND	-170	V
V_{GKRM}	Maximum voltage GATE/LINE	-167	
T_A	Operating free-air temperature range	-40~85	$^{\circ}$ C
T_{STG}	Storage temperature range	-40~150	
T_J	Junction temperature	-40~150	
T_L	Maximum lead temperature for soldering during 10S	260	
$R_{TH(j-a)}$	Junction to ambient	120	$^{\circ}$ C/W

Electrical Characteristics ($T_{amb}=25^{\circ}$ C)

Symbol	Parameter
I_b	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

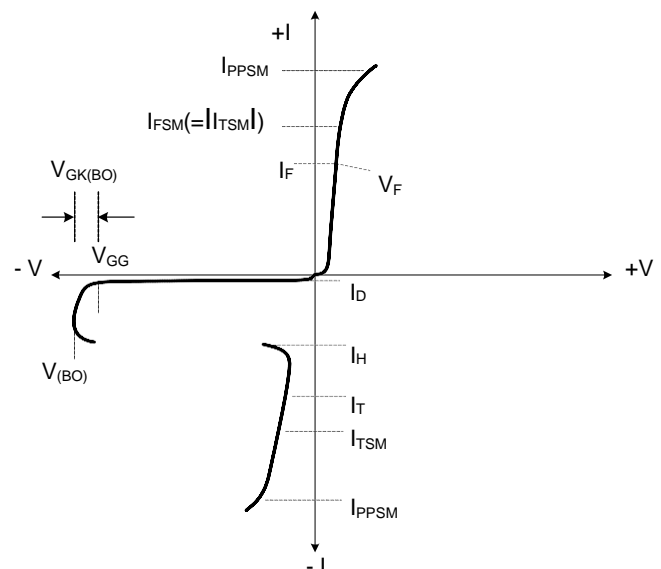


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted, All Voltages are Referenced to the Anode

Parameters Related to The Diode ($T_{amb}=25^{\circ}\text{C}$)

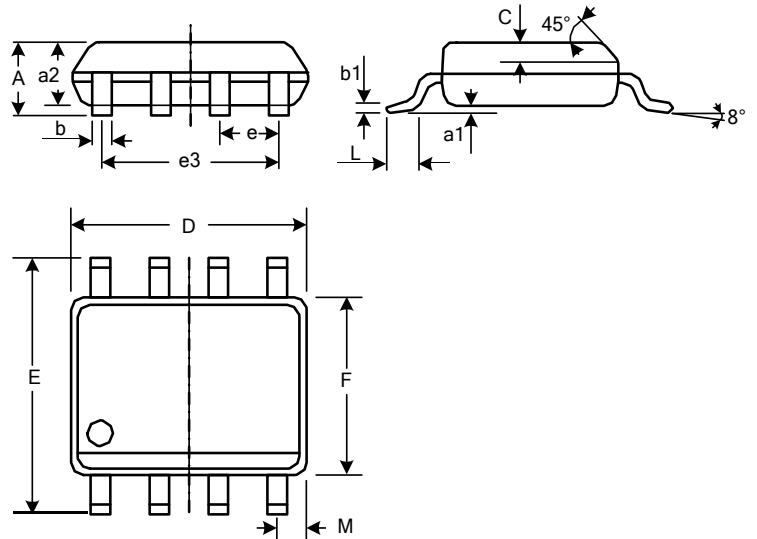
Parameter	Test conditions	Min.	Typ.	Max.	Unit.
V_F forward voltage	$I_F=5\text{A}$, $t_w=200\mu\text{s}$			3	V
V_{FRM} peak forward recovery voltage	$2/10\mu\text{s}$, $I_F=100\text{A}$, $R_s=50\Omega$, $V_{GG}=-100\text{V}$, $C_G=220\text{nF}$			10	V

Parameters Related to The Protection Thyristor ($T_{amb}=25^{\circ}\text{C}$)

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



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