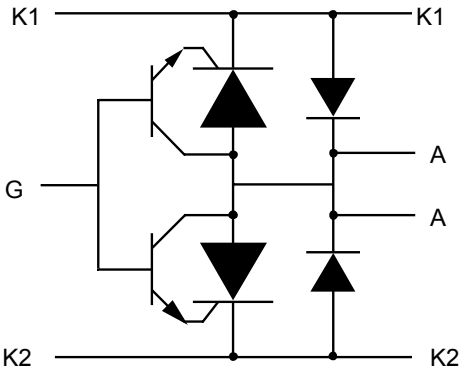
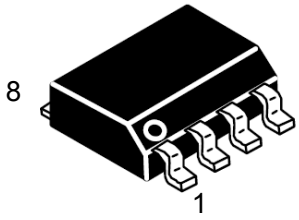
Programmable Overvoltage Protector

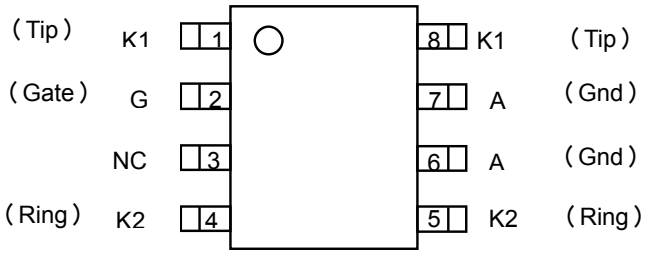
Description

This device is especially designed to protect Subscriber Line Interface Circuit (SLIC) against transient overvoltage. 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 and minimizes overvoltage stress on the SLIC.



SOP Package Top View and Device Symbol



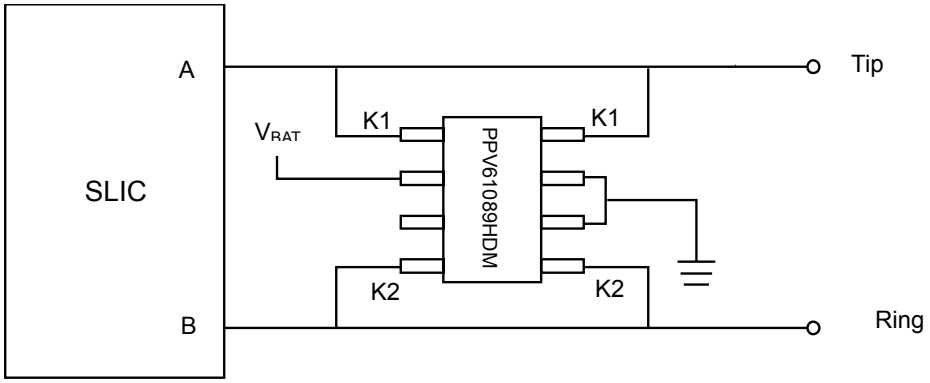


Feature

- Dual programmable transient suppressor
- Wide battery voltage supports
- Low gate triggering current
- High holding current
- ESD Immunity(HBM): JESD22 Class 3B, ⩾8KV
- MLS: Lever 1 – unlimited

Applications

- Switch Line Card
- Access Network Card
- PBX's and other switches
- Set-top box
- VoIP.



Telecom standards

- ITU-T K.20/21/45

Rated for LSSGR '1089 Conditions 2/10 Overshoot Voltage Specified

'1089 TEST		Voltage waveform (μs)	Required peak current(A)
Section	Test #		
4.5.7 4.5.8	4 1	2/10μs	350
4.5.7	1,3	10/1000μs	70

'1089 TEST		60 Hz power fault time	Required peak current(A)
Section	Test #		
4.5.12	9	500ms	6.5
4.5.12	3,4,8	1s	4.6
4.5.12 4.5.13	5 2,3	5s	2.3
4.5.12	6	30s	1.3
4.5.12 4.5.13 4.5.15/16	1,2 1,4,5	900s	0.73

Absolute Maximum Ratings

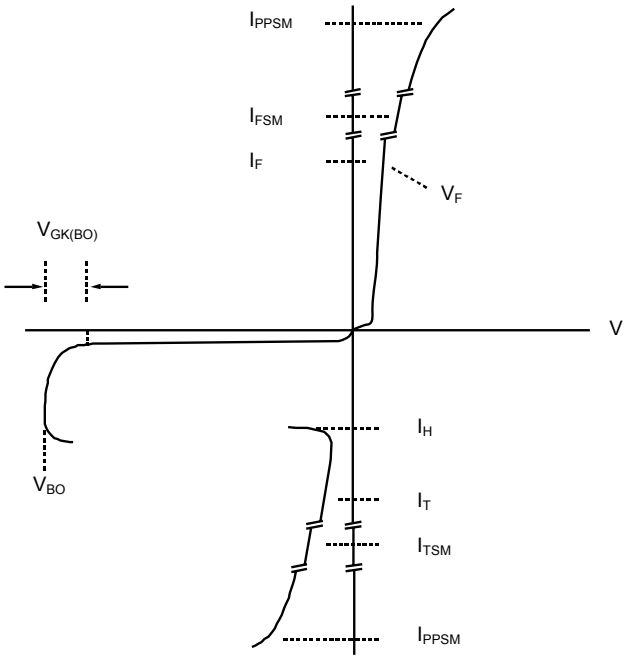
Symbol	Parameter	Value	Unit
I_{pp}	Non-repetitive peak on-state pulse current 10/1000μs 5/310μs 2/10μs	70 100 350	A
I_{TSM}	Non repetitive surge peak on-state current (sinusoidal) 60Hz 0.5s 1s 5s 30s 900s	7.2 5.3 3.0 2.1 1.65	A
V_{DRM}	Maximum voltage LINE/GROUND	-170	V
V_{GKRM}	Maximum voltage GATE/LINE	-167	V
T_A	Operating free-air temperature range	-40-85	℃
T_{STG}	Storage temperature range	-40-150	℃
T_J	Junction temperature	-40-150	℃
T_L	Maximum lead temperature for soldering during 10S	260	℃

Thermal Resistance

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Junction to free air thermal resistance	120	℃/W

Electrical Characteristics (Tamb=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
$V_{GK(BD)}$	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



Parameters Related to The Diode (Tamb=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, di/dt=80A/μs			10	V

Parameters Related to The Protection Thyristor (Tamb=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℃			-5	μA
V_{BO} breakover voltage	2/10μs, I_{TM}=100A,Rs=50Ω, di/dt=-80A/μs, V_{GG}=-100V				-112	V
I_H holding current	I_T=-1A, di/dt=1A/ms,V_{GG}=-100V		-150			mA
I_{GAS} gate reverse current	V_{GG}=V_{GK}=-167V, VKA=0	T_J=25℃			-5	μA
		T_J=85℃			-5	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
C_{KA} anode-cathode offstate capacitance	f=1MHz,Vd=1V,I_G=0	V_D=-3V			110	pF
		V_D=-48V			55	pF

Thermal information (Tamb=25℃)

Non-Repetitive Peak On-state Current against Duration

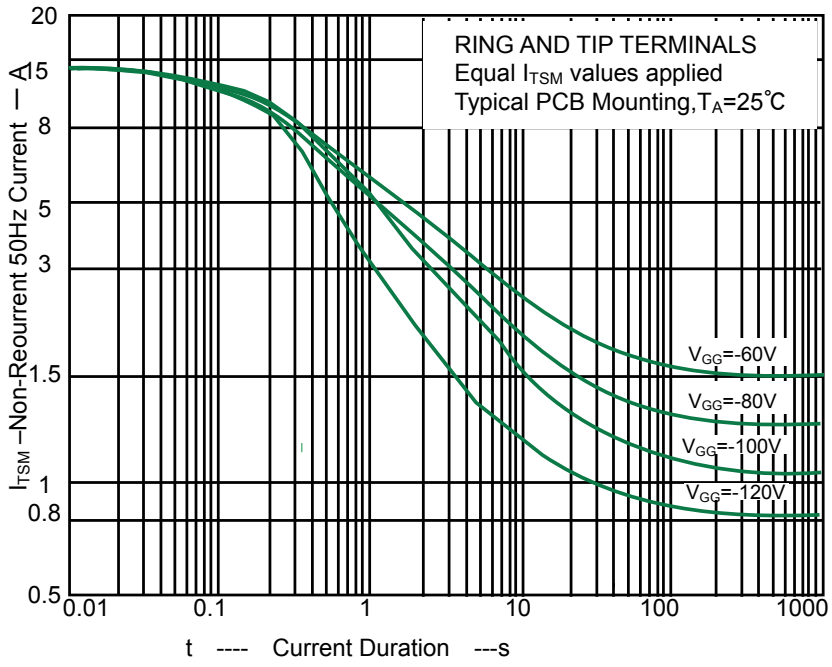
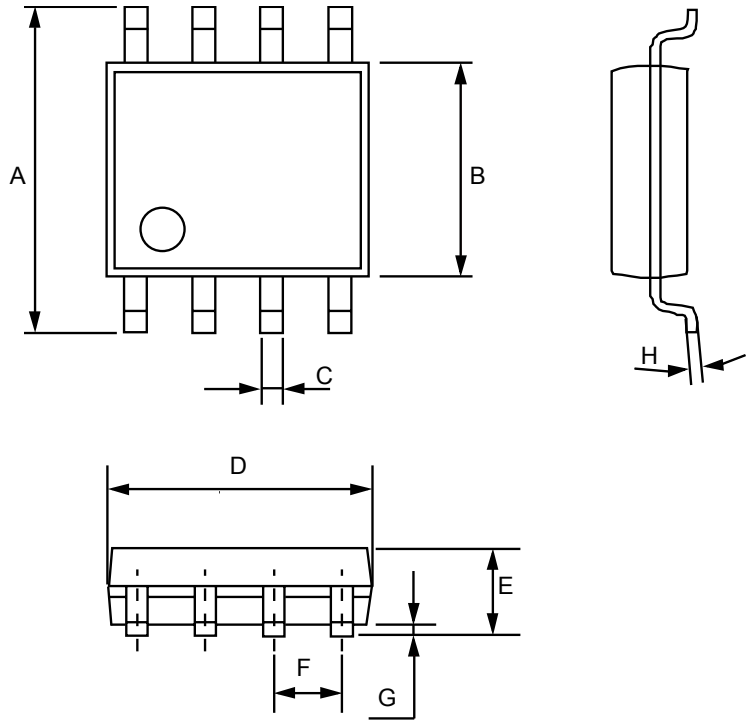


Fig 1 Non-Repetitive Peak On-State Current against Duration

Product dimension （SOP-8）



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	5.800	6.200	0.228	0.244
B	3.800	4.000	0.150	0.157
C	0.330	0.510	0.013	0.020
D	4.700	5.100	0.185	0.200
E	1.350	1.750	0.053	0.069
F	1.270（BSC）		0.050（BSC）	
G	0.100	0.250	0.004	0.010
H	0.170	0.250	0.006	0.010

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