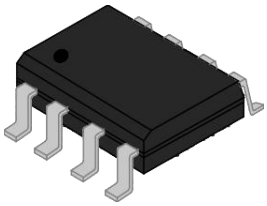
Description

LM61089B is is especially designed to protect monolithic SLIC (subscriber line interfaces circuits) against transient overvoltages. Positive overloads are clipped with 2 diodes. Negative surges are suppressed by 2 thyristors, their breakdown voltage being referenced to -VBAT through the gate. This component presents a very low gate triggering current (IGT) in order to reduce the current consumption on printedcircuit board during the firing phase. A particular attention has been given to the internal wire bonding. The “4-point” configuration ensures reliable protection, eliminating the overvoltage introduced by the parasitic inductances of the wiring (Ldi/dt), especially for very fast transients.



SOP-8

Features

- Dual programmable transient suppressor. .
- Wide negative firing voltage range: VGKRM=-167V max.
- Low dynamic switching voltage: VFRM and VGK(BD).
- Low gate triggering current: IGT=5mA max.
- Peak pulse current: IPP=30A for 10/1000μs surge.
- Holding current: IH=150mA min.

APPLICATION:

LMOS61089B-17 is designed to protect communication equipment such as SPC exchanger from being damaged by transient overvoltages at the second level.

TESTING STANDARD

Type	Wave Sharp		V_{PP}/I_{PP}
ITU-T K.20/21and K.45	Voltage	10/700μs	2000V
	Current	5/310μs	40A

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ABSOLUTE MAXIMUM RATINGS (TA=25℃, RH=45%-75%, unless otherwise noted)

Parameter		Symbol	Value	Unit
Storage temperature range		T_{STG}	-40 to +150	℃
Operating junction temperature		T_J	-40 to +150	℃
Non-repetitive peak on-state pulse current				
10/1000μs	(Telcordia (Bellcore) GR-1089-CORE,Issue 2, February)	I_{TSP}	30	A
5/310μs	(ITU-T K.20/21& K.45/44 open-circuit voltage 10/700μs)		40	
1.2/50μs	(Telcordia (Bellcore) GR-1089-CORE, Issue 2, February)		100	
Non-repetitive peak pulse voltage（10/700μs）		V_{PP}	2000	V
Non repetitive surge peak on-state current (sinusoidal) 60Hz (Note 2)900s		I_{TSM}	0.5	A
Maximum voltage LINE/GROUND		V_{DRM}	-170	V
Maximum voltage GATE/LINE		V_{GKRM}	-167	V

Note1：5/310μs means current wave, and its rise time is 5μs, fall time is 310μs.
10/700μs means voltage wave, and its rise time is 10μs, fall time is 700μs.
Note2：Initially the protector must be in thermal equilibrium with TJ = 25 ° C.
EIA/JESD51-2 environment and EIA/JESD51-7 high effective thermal conductivity test board (multi-layer) connected with 0.6 mm printed wiring track widths

ELECTRICAL CHARACTERISTICS (TA=25℃)

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Parameters related to the diode						
V_F	Forward voltage	I_F=5A, t_w=200μs	-	-	3	V
V_{FRM}	Peak forward recovery voltage	2/10us,I_F=100A,Rs=55Ω Di/dt=80A/us	-	-	10	V
Parameters related to the protection thyristor						
I_{DRM}	Off-state current	V_{DRM}=-170V, V_{GK}=0V	-	-	-5	μA
V_{BO}	Breakover voltage	10/700us,I_{TM}=-100A, Rs=50Ω,V_{GG}=100V, di/dt=-80A/μs	-	-	-112	V
I_H	Holding current	I_T=-1A, di/dt=1A/ms, V_{GG}=-100V	-150	-	-	mA

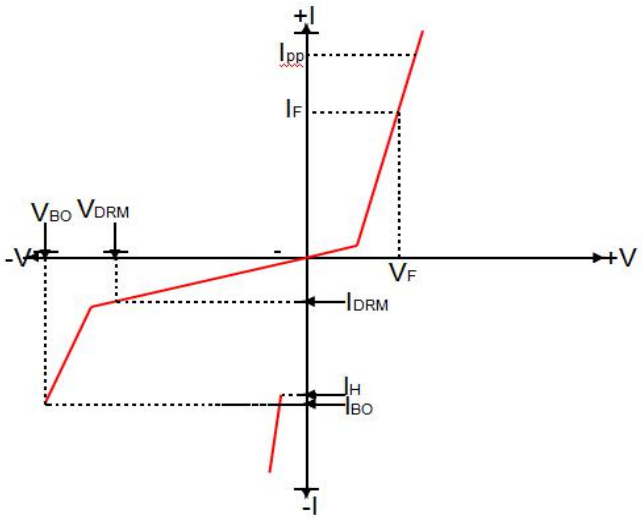
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ELECTRICAL CHARACTERISTICS (TA=25℃, contuined)

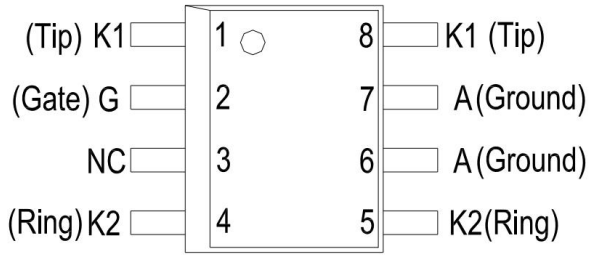
I_{GKS}	Gate reverse current	V_{GG}=V_{GK}=-167V, V_{KA}=0,T_J=25℃	-	-	-5	μA
I_{GT}	Gate trigger current	I_T=3A, tp(g)≥20μs, V_{GG}=-100V	-	-	5	mA
V_{GT}	Gate trigger voltage	I_T=3A, tp(g)≥20μs, V_{GG}=-100V	-	-	2.5	V
C_{AK}	Anode-cathode off-state capacitance	f=1MHz,Vd=1V,I_G=0A, V_D=-3V	-	-	70	pF

ELECTERICAL CAHRACTERISTIC

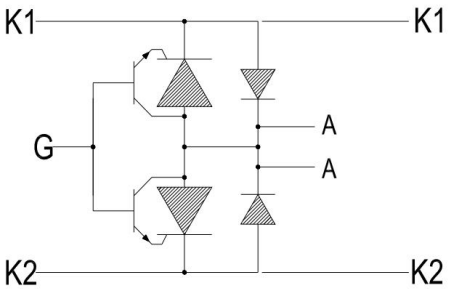
Symbol	Parameters
I_{DRM}	Off-state current
I_H	Holding current
V_{BO}	Break-over voltage
V_F	Forward voltage
V_{FRM}	Peak forward recovery voltage
$V_{GK(BD)}$	Gate-cathode impulse break-over voltage
I_{GKS}	Gate reverse current
I_{GT}	Gate trigger current
V_{GT}	Gate-cathode trigger voltage
C_{KA}	Cathode-anode off-state capacitance



SOP PACKAGE TOP VIEW AND DEVICE SYMBOL



Package (Top view)

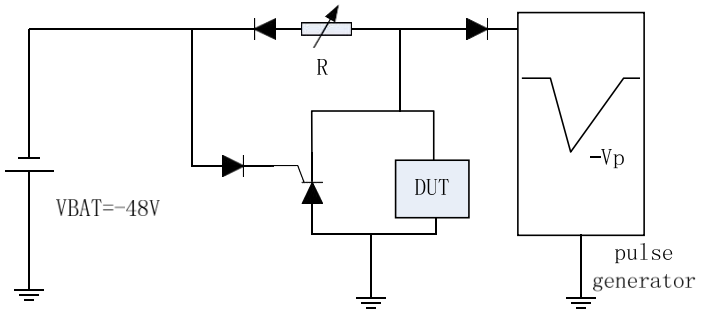


Device symbol

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TEST METHOD AND CIRCUIT

Holding current test circuit(test circuit 1)



This is a conduction-cutoff test. The test circuit can ascertain the size of holding current. Test method：

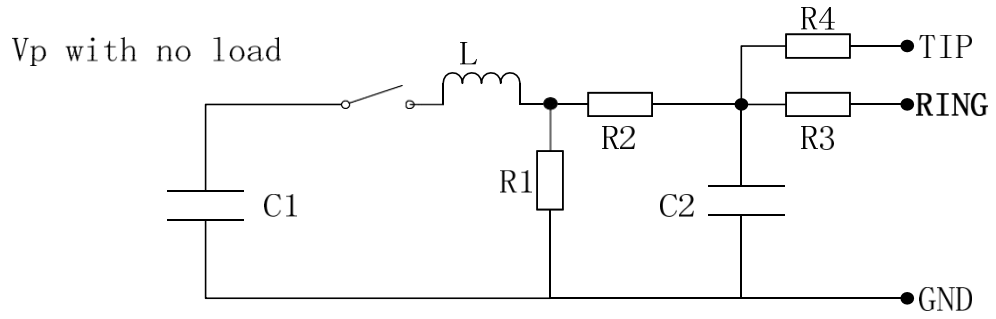
1.Short out DUT, regulating current in IH range；

2.Triggering DUT with IPP=10A, 10/1000μs surge current；

DUT needs to return to the off-state in the maximum 50ms

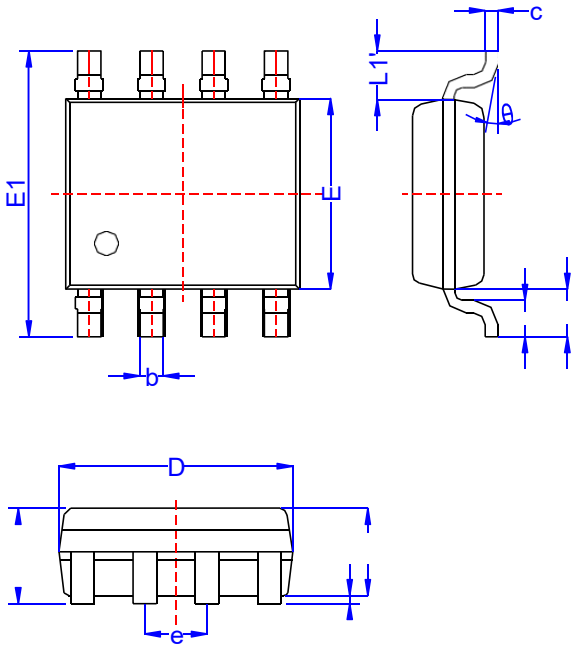
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Typical Characteristics



Pulse(μs)		V_P	C1	C2	L	R1	R2	R3	R4	I_{PP}	R_P
T_{rise}	T_{fall}	(V)	(μF)	(nF)	(μH)	(Ω)	(Ω)	(Ω)	(Ω)	(A)	(Ω)
10	700	1500	20	200	0	50	15	25	25	30	10
1.2	50	1500	1	33	0	76	13	25	25	30	10
2	10	2500	10	0	1.1	1.3	0	3	3	38	62

PACKAGE MECHANICAL DATA



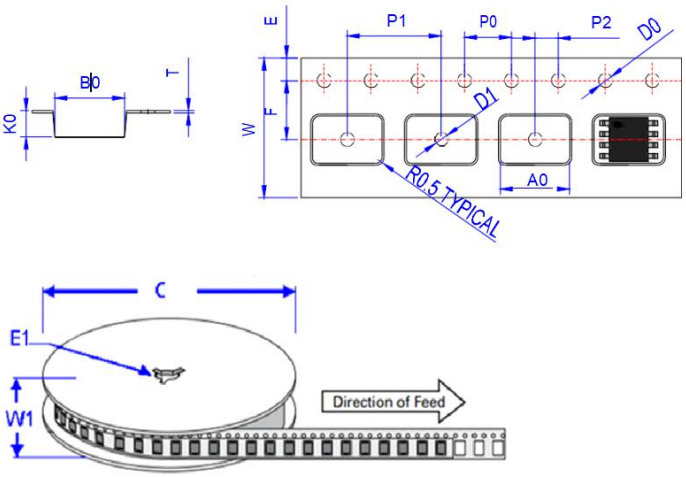
SOP-8

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.40		1.70	0.055		0.067
A1	0.05		0.15	0.002		0.006
A2	1.35		1.55	0.053		0.061
b	0.31		0.51	0.015		0.017
c	0.17		0.25	0.007		0.010
D	4.70		5.10	0.185		0.200
E	3.88		3.93	0.153		0.155
E1	5.80		6.20	0.228		0.244
e	1.14	1.27	1.40	0.045	0.050	0.055
L	0.62		0.77	0.024		0.030
L1	1.00	1.02	1.04	0.039	0.04	0.048
L1-L1'			0.12			0.005
θ	0°		8°	0°		8°

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TAPE AND REEL SPECIFICATION - SOP - 8

Ref.	Dimensions	
	Millimeters	Inches
A0	6.6±0.10	0.260 ± 0.004
B0	5.3±0.10	0.209 ± 0.004
C	330	13.0
D0	1.50±0.10	0.059 + 0.004
D1	1.50±0.10	0.059 + 0.004
E	13.3±0.3	0.524± 0.012
E1	1.75±0.1	0.069± 0.004
F	5.5±0.05	0.217 ± 0.002
K0	2.1±0.1	0.083 ± 0.004
P0	4.0±0.1	0.157± 0.004
P1	8.0±0.1	0.315± 0.004
P2	2.0±0.05	0.079 ± 0.002
T	0.24±0.1	0.009 ± 0.002
W	12.0±0.3	0.472 ± 0.012
W1	15.7±2.0	0.618 ± 0.079



OUTLINE	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)
TAPING	0.077	2,500	40,000	330

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