

Description

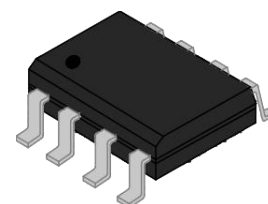
61089B is especially designed to protect monolithic SLIC (subscriber line interfaces circuits) against transient overvoltages.

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 printed circuit 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 ($L di/dt$), especially for very fast transients.



SOP-8

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 10/1000 μs surge.
- Holding current: $I_H = 150mA$ 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.20/21 and K.45	Voltage	10/700 μs	2000V
	Current	5/310 μs	40A

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

Parameter		Symbol	Value	Unit
Storage temperature range		T _{STG}	-40 to +150	°C
Operating junction temperature		T _J	-40 to +150	°C
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 T_J = 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°C)

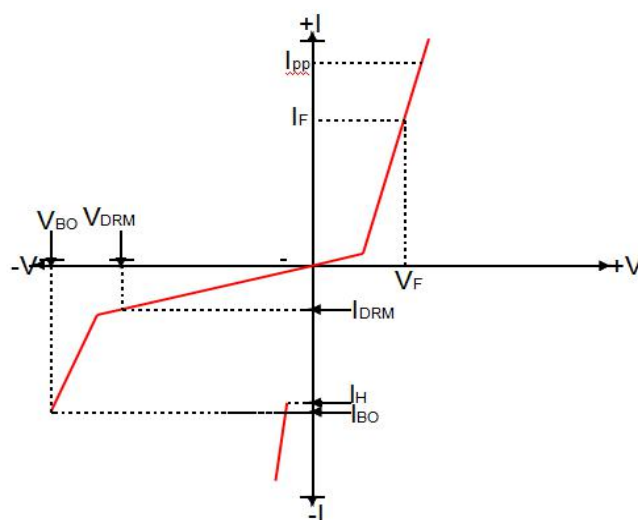
Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Parameters related to the diode						
V _F	Forward voltage	I _F =5A, t _w =200μs	-	-	3	V
V _{FRM}	Peak forward recovery voltage	2/10us,I _F =100A,Rs=55Ω Di/dt=80A/us	-	-	10	V
Parameters related to the protection thyristor						
I _{DRM}	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

ELECTRICAL CHARACTERISTICS (TA=25°C, continued)

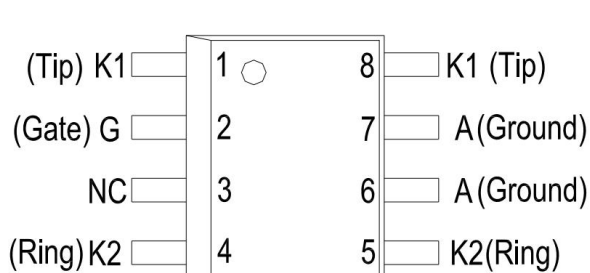
I_{GKS}	Gate reverse current	$V_{GG}=V_{GK}=-167V$, $V_{KA}=0, T_J=25^\circ C$	-	-	-5	μA
I_{GT}	Gate trigger current	$I_T=3A$, $t_p(g) \geq 20\mu s$, $V_{GG}=-100V$	-	-	5	mA
V_{GT}	Gate trigger voltage	$I_T=3A$, $t_p(g) \geq 20\mu s$, $V_{GG}=-100V$	-	-	2.5	V
C_{AK}	Anode-cathode off-state capacitance	$f=1MHz, V_d=1V, I_G=0A$, $V_D=-3V$	-	-	70	pF

ELECTERICAL CAHRACTERISTIC

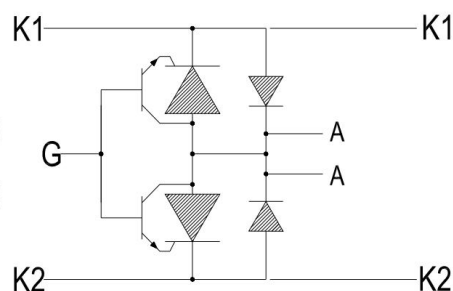
Symbol	Parameters
I_{DRM}	Off-state current
I_H	Holding current
V_{BO}	Break-over voltage
V_F	Forward voltage
V_{FRM}	Peak forward recovery voltage
$V_{GK(BD)}$	Gate-cathode impulse break-over voltage
I_{GKS}	Gate reverse current
I_{GT}	Gate trigger current
V_{GT}	Gate-cathode trigger voltage
C_{KA}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



SOP PACKAGE TOP VIEW AND DEVICE SYMBOL



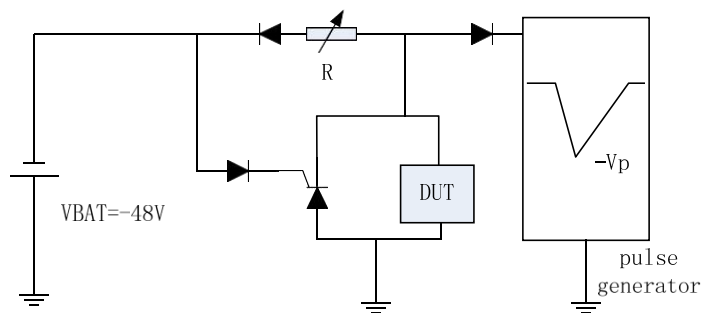
Package (Top view)



Device symbol

TEST METHOD AND CIRCUIT

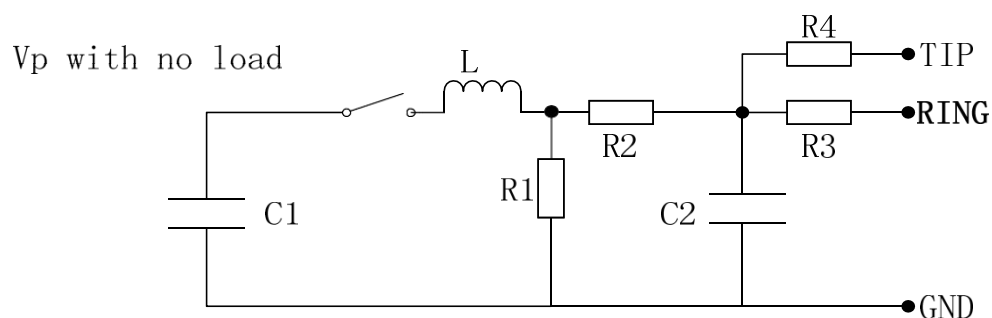
Holding current test circuit(test circuit 1)



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

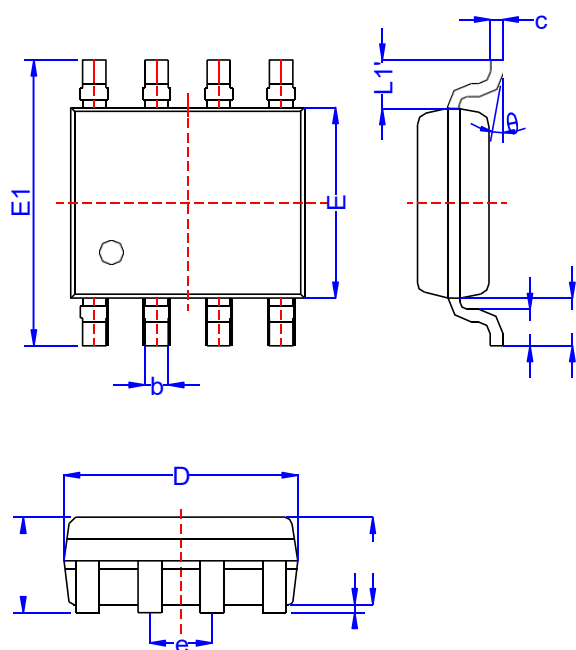
- 1.Short out DUT, regulating current in IH range;
- 2.Triggering DUT with IPP=10A, 10/1000 μ s surge current;
DUT needs to return to the off-state in the maximum 50ms

Typical Characteristics



Pulse(μs)		V _P (V)	C1 (μF)	C2 (nF)	L (μH)	R1 (Ω)	R2 (Ω)	R3 (Ω)	R4 (Ω)	I _{PP} (A)	R _P (Ω)
T _{rise}	T _{fall}										
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

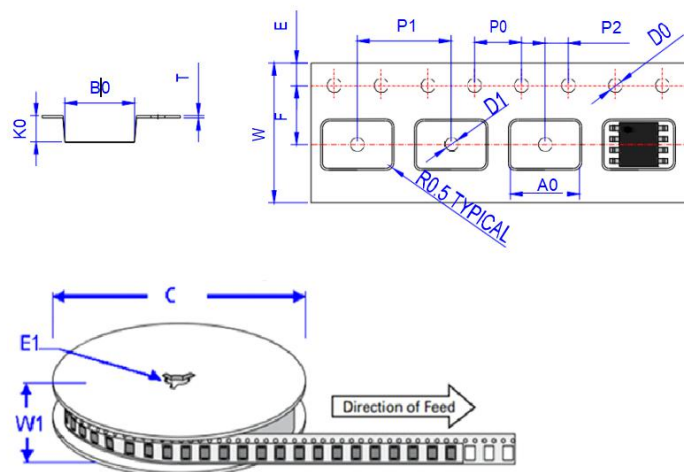


SOP-8

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°

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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