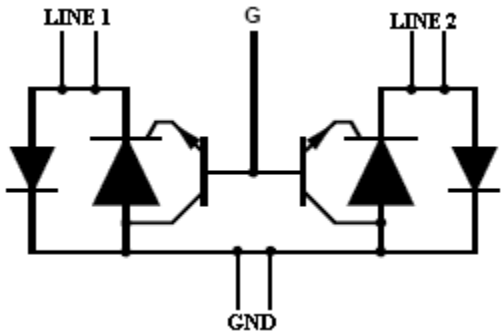
P61089 Series

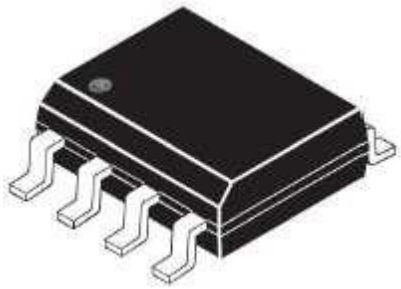
Description

P61089 Series has been especially designed to protect 2 new high voltage,as well as classical SLICs,against transient overvoltages.Positive overvoltages are clamped by 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 in order to reduce the current consumption on printed circuit board the firing phase.This devices are not subject to aging and provide a fail safe mode in short circuit for a better protection.Pic 1 and pic 2 are the device symbol and the package.

Functional Diagram



Pic 1



Pic 2 SOP8

Features and Benefits

- Dual Voltage-Tracking Protectors
- wide negative pressure range
- low dynamic switching voltage： V_{FP} and V_{DGL}
- low gate triggering current： IGT=5mA_{Max}
- high Holding current： I_H≥150mA

Application field

- P61089 Series are designed to protect communication equipment such as SPC exchanger from damaging overvoltage transients in the second level.

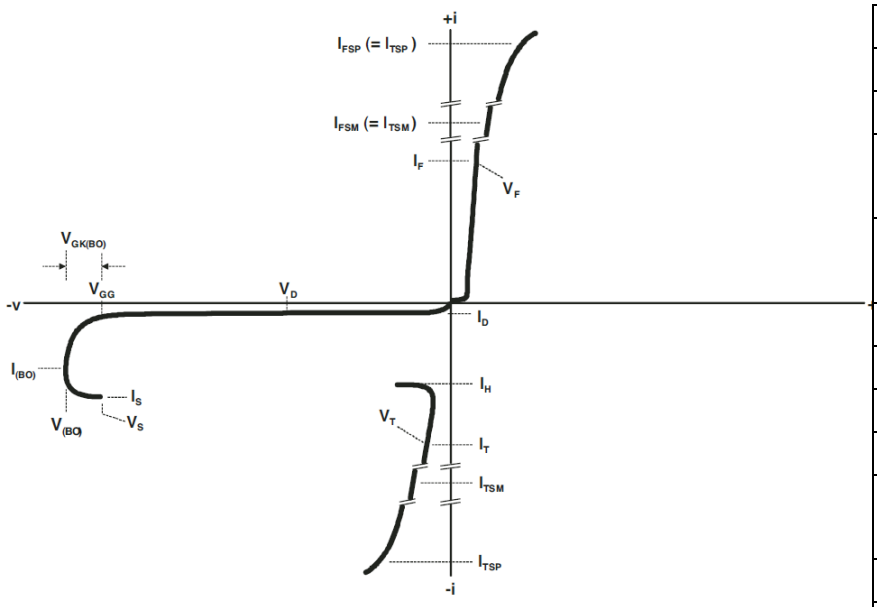
Characteristic parameters

Part number	VMGL	IPP（10/1000μ s）	IH
P61089A	-170V	30A	150mA
P61089B	-167V	40A	
P61089C	-167V	100A	

Electrical Characteristics (TA = 25 ℃ unless otherwise noted)

symbol	parameters		value			unit
			P61089A	P61089B	P61089C	
I_{TSM}	Non repetitive peak pulse Current (F=60Hz)	t_p=500ms	8	6.5	8	A
		T=1s	3.5	4.6	3.5	A
I_{GSM}	Maximum gate current（half sinusoidtp=10ms)		2	2	2	A
V_{MLG}	Line-ground maximum voltage		-170	-170	-170	V
V_{MGL}	Gate-line maximum voltage		-170	-167	-167	V
Tstg	Storage Temperature Range		-55~150	-55~150	-55~150	℃
Tj	maximum temperature		150	150	150	℃
T_L	maximum sustainable temperature of solder in 10 seconds		260	260	260	℃

V-I characteristic curve(Ta= 25℃)



symbol	parameters
I_{GT}	Gate trigger current
I_H	Holding current
I_{RM}	Line-ground reverse leakage current
I_{RG}	Gate-line reverse leakage current
V_{RM}	Line-ground reverse voltage
V_F	Line-ground voltage
V_{GT}	gate trigger voltage
V_{FP}	Line-ground peak voltage
V_{DGL}	Gate-line dynamic switching voltage
V_{GATE}	Gate-ground voltage
V_{LG}	Line-ground voltage
C	Line-ground off state capacitance

Electrical Parameters

Absolute maximum ratings Ta= 25℃ unless otherwise noted

Line-ground diode parameters

symbol	Test conditions	Max.	unit
V_F	I_F=5A， t_P=500μs	3	V
V_{FP}	10/700μs 1.5kV R_P=10Ω (tip. 1)	5	V

tip.1 ▪ VFP refers to test circuit 2， RP is the protective resistance mounted on the card

thyristor parameters（Ta=25℃）

symbol	Test conditions	Min.	Max.	unit
I_{GT}	V_{GND}/L_{INE}=-100V	0.1	5	mA
I_H	V_{GATE}=-100V	150		mA
V_{GT}	Same to I_{GT}		2.5	V
I_{RG}	T_C=25℃ V_{RG}=-75V		5	μA
	T_C=70℃ V_{RG}=-75V		50	
V_{DGL}	V_{GATE}=-100V（TIP.3）10/700μs 1.5kV R_P=10Ω		10	V

Tip.2:see holding current (IH)at test circuit 2;

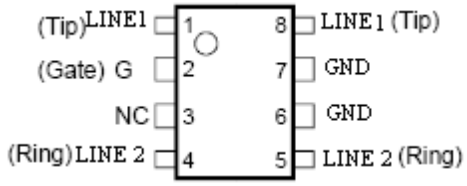
Tip.3:see VDGL at test circuit 1， Don't make records if fluctuation time is less than 50ns.

thyristor and diode parameters

Symbol	Test conditions	Max.	unit
I_{RM}	T_C=25℃ V_{GATE}/L_{INE}=-1V V_{RM}=-75	5	μA
	T_C=70℃ V_{GATE}/L_{INE}=-1V V_{RM}= -75	50	μA
C	V_R=-3V F=150KHZ	100	pF
	V_R=-48V F=150KHZ	50	pF

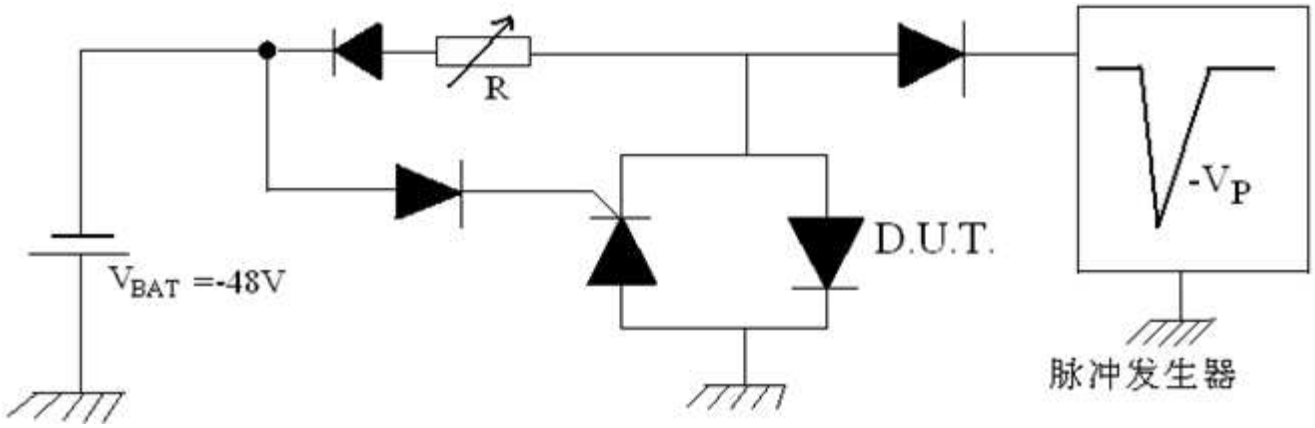
Attention

For eliminate the overvoltage from the line Parasitic induction,especially at the high speed and short moment signal, we make
TIP and RING across the device.



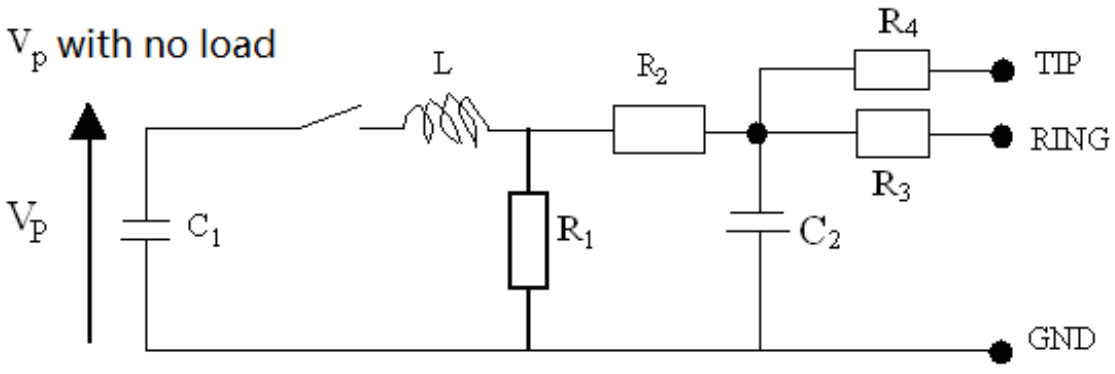
Test method and circuit

Holding current test circuit（test circuit1）



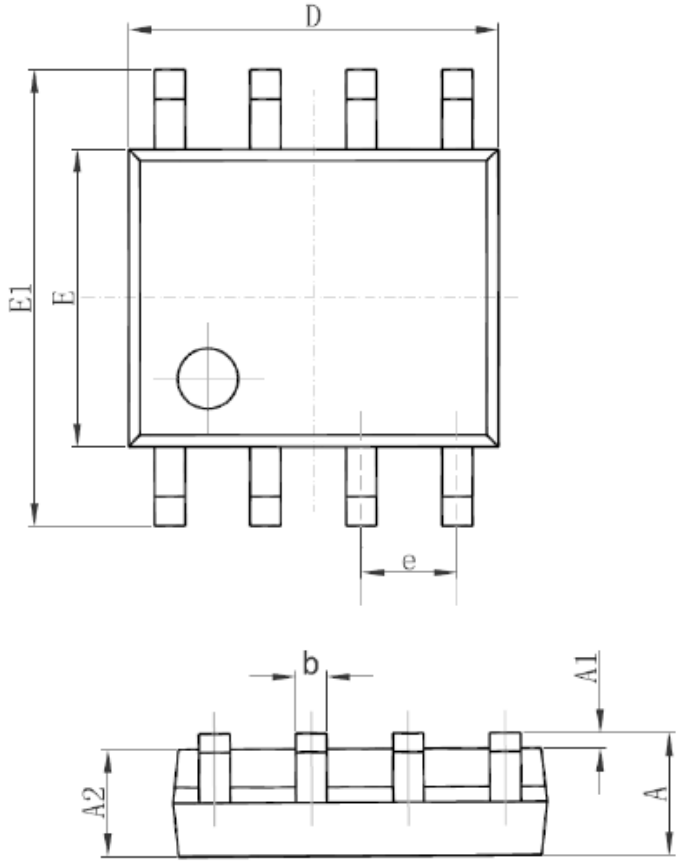
This is a “Conducting-cutoff” test.The test circuit can ascertain the size of holding current.
Test method :
①short out DUT，regulating current in IH range;
②let IPP=10A，10/1000μs surge current triggers DUT;
③DUT must return to the off-state in 50ms

VFP and VDGL test circuit2



Pluse(μs)		VP	C1	C2	L	R1	R2	R3	R4	IPP	RP
t_r	t_p	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 size(SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°