

UP61089Q

Dual Programmable Thyristor Transient Voltage Suppressor

Description

This device 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 $-V_{BAT}$ 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.

Features and Benefits

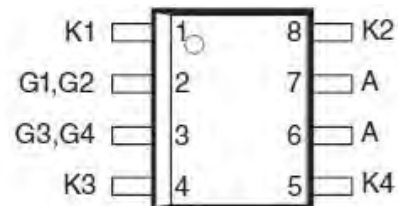
- Dual Voltage-Tracking Protectors ;
- wide negative pressure range: $V_{MGL} = -170V_{MAX}$
- low dynamic switching voltage: V_{FP} and V_{DGL}
- low gate triggering current : $I_{GT} = 5mA_{Max}$
- Peak Pulse Current: $I_{PP} = 40A$ (10/700 μ s)
- high Holding current : $I_H \geq 150mA$

Application field

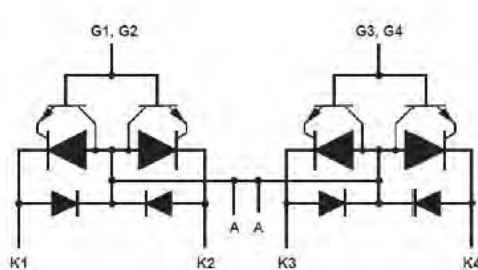
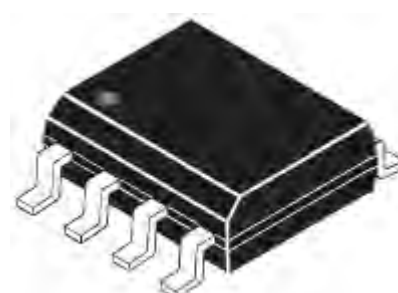
UP61089Q are designed to protect communication equipment such as SPC exchanger from damaging overvoltage transients in the second level.

Characteristic parameters

symbol	Rated value	unit
V_{MGL}	-170	V
$I_{PP}(10/700\mu s)$	40	A
I_H	150	mA



Package : SOP-8

 <p>Pic.1 Device equivalent structure</p>	 <p>Pic.2 Device type SOP-8</p>
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Electrical Parameters

Absolute maximum ratings $T_a = 25^\circ\text{C}$ unless otherwise noted

● Line-ground diode parameters

symbol	Test conditions	Max.	unit
V_F	$I_F=5\text{A}$, $t_p=500\mu\text{s}$	3	V
V_{FP}	$10/700\mu\text{s}$ 1.5kV $R_p=10\Omega$ (tip. 1)	5	V

tip.1: V_{FP} refers to test circuit 2, R_p is the protective resistance mounted on the card

● thyristor parameters ($T_a=25^\circ\text{C}$)

symbol	Test conditions	Min.	Max.	unit
I_{GT}	$V_{GND}/L_{INE}=-100\text{V}$	0.1	5	mA
I_H	$V_{GATE}=-100\text{V}$	150		mA
V_{GT}	Same to I_{GT}		2.5	V
I_{RG}	$T_C=25^\circ\text{C}$ $V_{RG}=-75\text{V}$		5	μA
	$T_C=70^\circ\text{C}$ $V_{RG}=-75\text{V}$		50	
V_{DGL}	$V_{GATE}=-100\text{V}$ (TIP.3) $10/700\mu\text{s}$ 1.5kV $R_p=10\Omega$		10	V

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

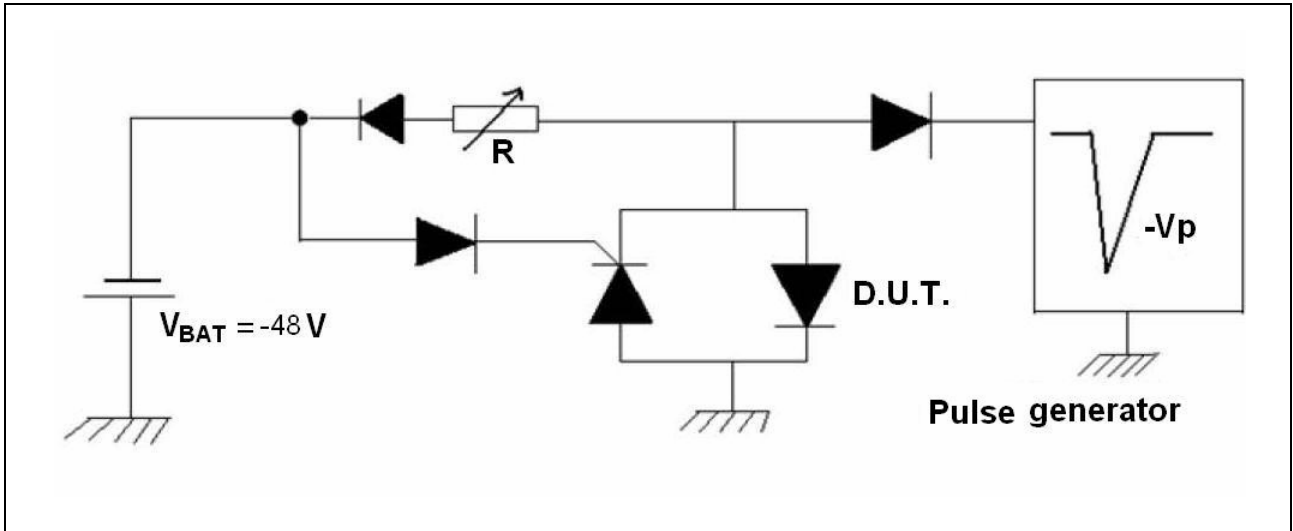
Tip.3: see V_{DGL} at test circuit 1, Don't make records if fluctuation time is less than 50ns.

● thyristor and diode parameters

Symbol	Test conditions	Max.	unit
I_{RM}	$T_C=25^\circ\text{C}$ $V_{GATE}/L_{INE}=-1\text{V}$ $V_{RM}=-75$	5	μA
	$T_C=70^\circ\text{C}$ $V_{GATE}/L_{INE}=-1\text{V}$ $V_{RM}=-75$	50	μA
C	$V_R=-3\text{V}$ $F=150\text{KHz}$	100	p^F
	$V_R=-48\text{V}$ $F=150\text{KHz}$	50	p^F

Test method and circuit

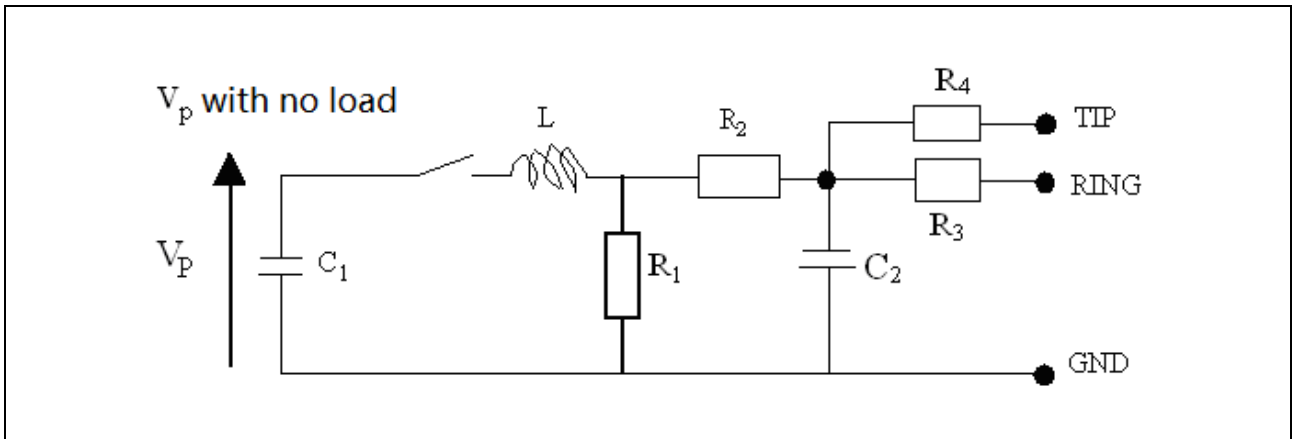
- Holding current test circuit (test circuit1)



This is a “Conducting-cutoff” test. The test circuit can ascertain the size of holding current.

Test method :

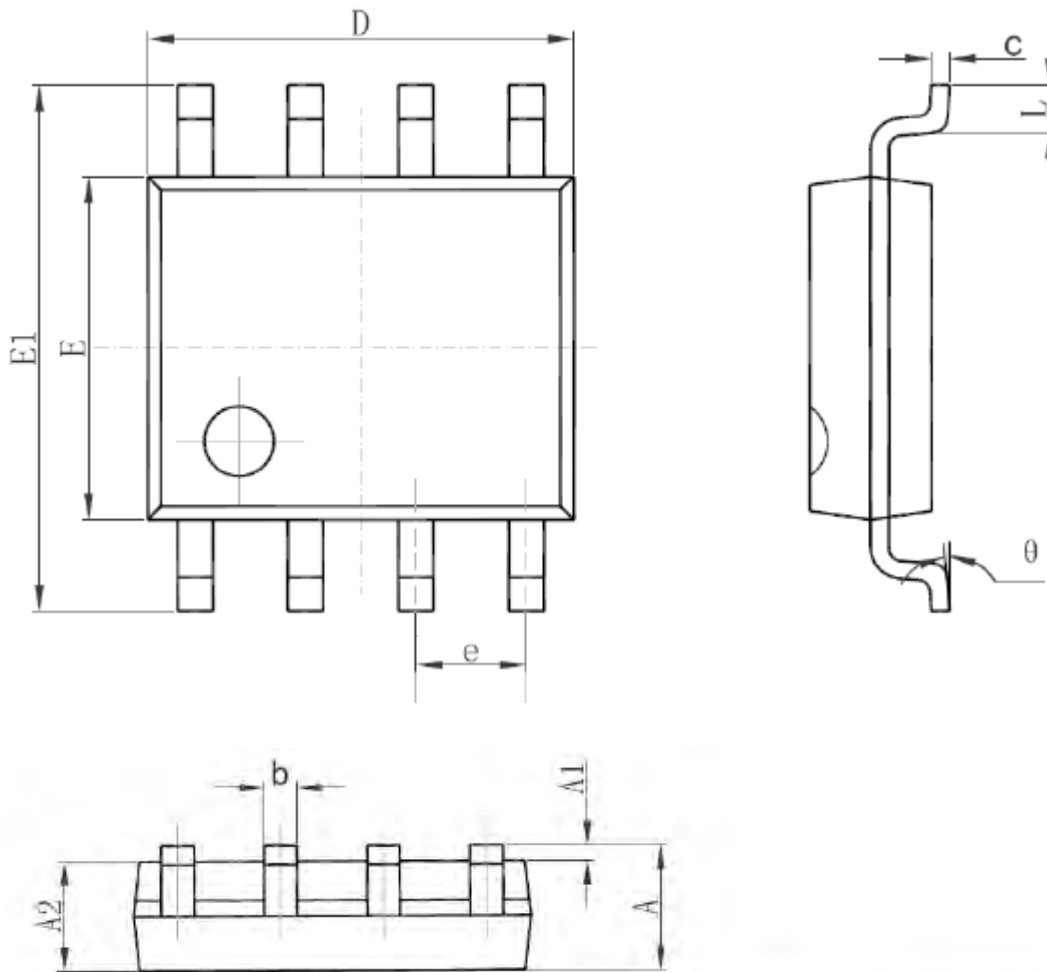
- ① short out DUT, regulating current in I_H range;
 - ② let $I_{PP}=10A$, $10/1000\mu s$ surge current triggers DUT;
 - ③ DUT must return to the off-state in 50ms. and
- V_{FP} and V_{DGL} test circuit2



Pluse(μs)		V_p (V)	C_1 (μF)	C_2 (nF)	L (μH)	R_1 (Ω)	R_2 (Ω)	R_3 (Ω)	R_4 (Ω)	I_{PP} (A)	R_p (Ω)
t_r	t_p										
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

■ Appearance 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°

■ Marking Code Information

L69E W
1* ; 4

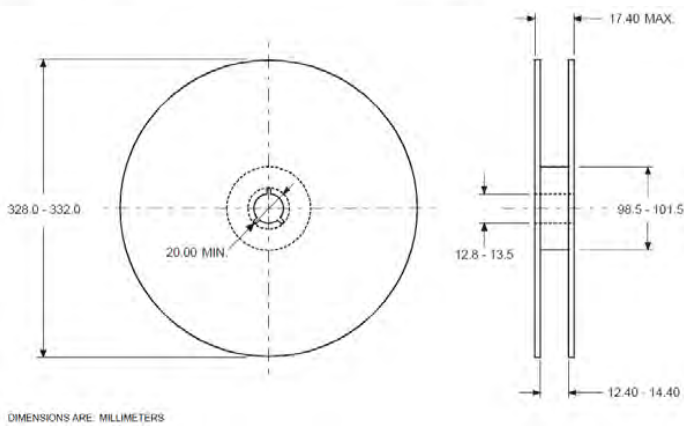
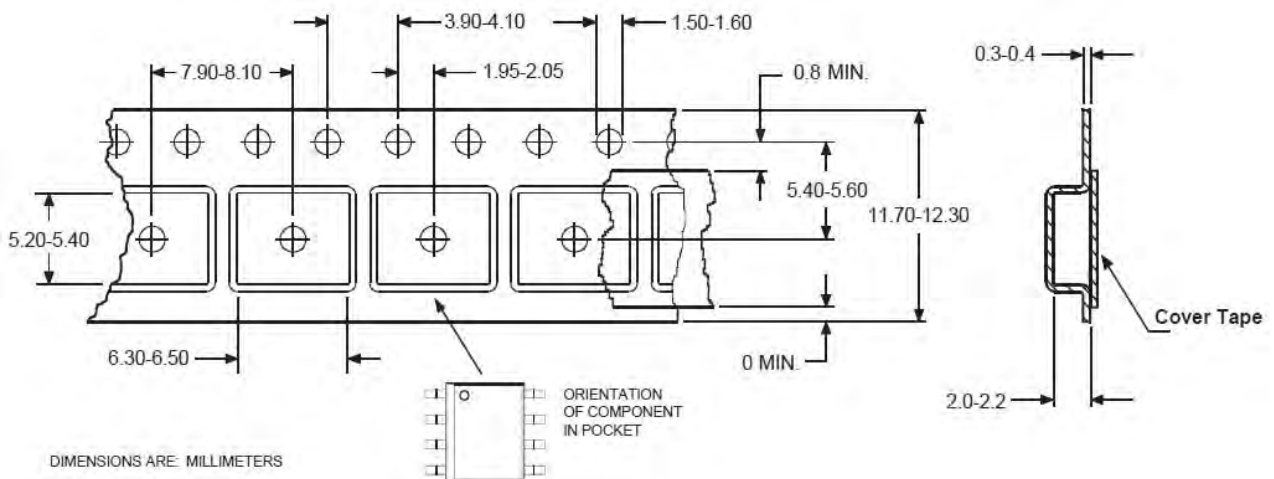
L69Q W : Marking Code
16G4 : Data Code

Data Code Explanation :

16 G 4
 └──┬──┬──┘
 └──┬──┘
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 Produce WeeK(1-5)
 Produce Month
 Produce Year

Represent letters	A	B	C	D	E	F	G	H	J	K	L	M
Month	1	2	3	4	5	6	7	8	9	10	11	12

■ Package Information



Tape & Real: 2500 pcs.