

TISP61089Q SLIC Overvoltage Protector

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Absolute Maximum Ratings, $T_J = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage, $I_G = 0$	V_{DRM}	-170	V
Repetitive peak gate-cathode voltage, $V_{KA} = 0$	V_{GKRM}	-167	
Non-repetitive peak on-state pulse current (see Notes 1 and 2) 10/1000 μs (Bellcore GR-1089-CORE, Issue 1, November 1994, Section 4) 5/320 (ITU-T K.20/21/45, YD/T-950, open circuit voltage waveshape 10/700) 2/10 (Bellcore GR-1089-CORE, Issue 1, November 1994, Section 4)	I_{TSP}	30 40 120	A
Non-repetitive peak on-state current, 60 Hz (see Notes 1, 2 and 3) 900 s	I_{TSM}	0.5	A
Non-repetitive peak gate current, 2/10 μs pulse, cathodes commoned (see Notes 1 and 2)	I_{GSM}	40	A
Junction temperature	T_J	-40 to +150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 to +150	$^\circ\text{C}$

- NOTES: 1. Initially the protector must be in thermal equilibrium with $T_J = 25\text{ }^\circ\text{C}$. The surge may be repeated after the device returns to its initial conditions.
2. These non-repetitive rated currents are peak values for either polarity. The rated current values may be applied to any cathode-anode terminal pair. Additionally, all cathode-anode terminal pairs may have their rated current values applied simultaneously (in this case the anode terminal current will be four times the rated current value of an individual terminal pair).
3. 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.

Recommended Operating Conditions

	Min	Typ	Max	Unit
C_G Gate decoupling capacitor		100		nF
R_S TISP61089Q series resistor for first-level and second-level surge survival TISP61089Q series resistor for first-level surge survival	40 25			Ω

Electrical Characteristics, $T_J = 25\text{ }^\circ\text{C}$ (Unless Otherwise Noted)

Parameter	Test Conditions	Min	Typ	Max	Unit
I_D Off-state current	$V_D = V_{DRM}$, $V_{GK} = 0$			-5	μA
$V_{(BO)}$ Breakover voltage	10/700 μs , $I_T = -40\text{ A}$, $R_S = 55\ \Omega$, $V_{GG} = -48\text{ V}$, $C_G = 100\text{ nF}$			-64	V
V_F Forward voltage	$I_F = 5\text{ A}$, $t_w = 200\ \mu\text{s}$			3	V
V_{FRM} Peak forward recovery voltage	10/700 μs , $I_F = 40\text{ A}$, $R_S = 55\ \Omega$, $V_{GG} = -48\text{ V}$, $C_G = 100\text{ nF}$		12		V
I_H Holding current	$I_T = -1\text{ A}$, $di/dt = 1\text{ A/ms}$, $V_{GG} = -100\text{ V}$	-150			mA
I_{GAS} Gate reverse current	$V_{GG} = V_{GK} = V_{GKRM}$, $V_{KA} = 0$			-5	μA
I_{GT} Gate trigger current	$I_T = 3\text{ A}$, $t_{p(g)} \geq 20\ \mu\text{s}$, $V_{GG} = -100\text{ V}$			5	mA
V_{GT} Gate trigger voltage	$I_T = 3\text{ A}$, $t_{p(g)} \geq 20\ \mu\text{s}$, $V_{GG} = -100\text{ V}$			2.5	V
C_{AK} Anode-cathode off-state capacitance	$f = 1\text{ MHz}$, $V_d = 1\text{ V}$, $I_G = 0$, (see Note 4)	$V_D = -3\text{ V}$		100	pF
		$V_D = -48\text{ V}$		50	

JULY 2010

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Thermal Characteristics

Parameter	Test Conditions	Min	Typ	Max	Unit
$R_{\theta JA}$	Junction to free air thermal resistance			160	°C/W

Test Conditions: $P_{tot} = 0.8 \text{ W}$, $T_A = 25 \text{ °C}$, 5 cm^2 , FR4 PCB

Parameter Measurement Information

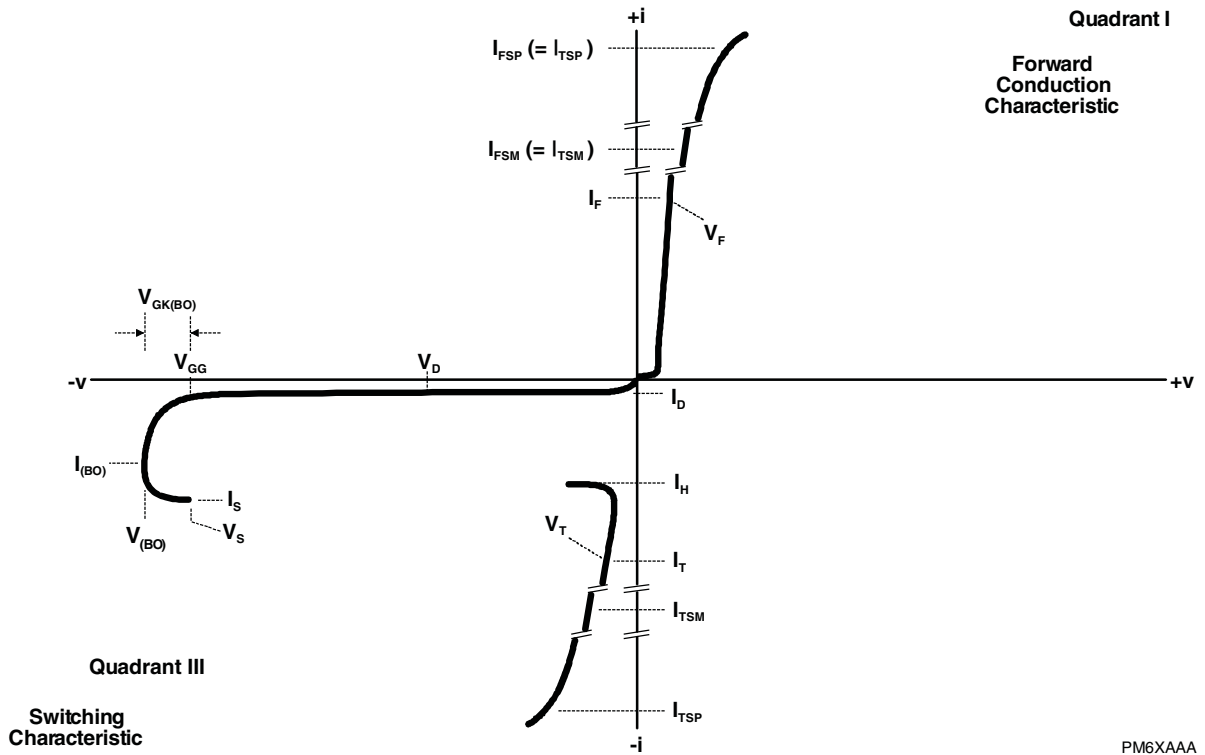


Figure 1. Voltage-Current Characteristic

PM6XAAA

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Applications Information

Typical Applications Circuit

Figure 2 shows a typical TISP61089Q SLIC card protection circuit. The incoming line conductors, Ring (R) and Tip (T), connect to the relay matrix via the series overcurrent protection. Positive temperature coefficient (PTC) resistors can be used for overcurrent protection. Resistors will reduce the prospective current from the surge generator for both the TISP61089Q and the ring/test protector.

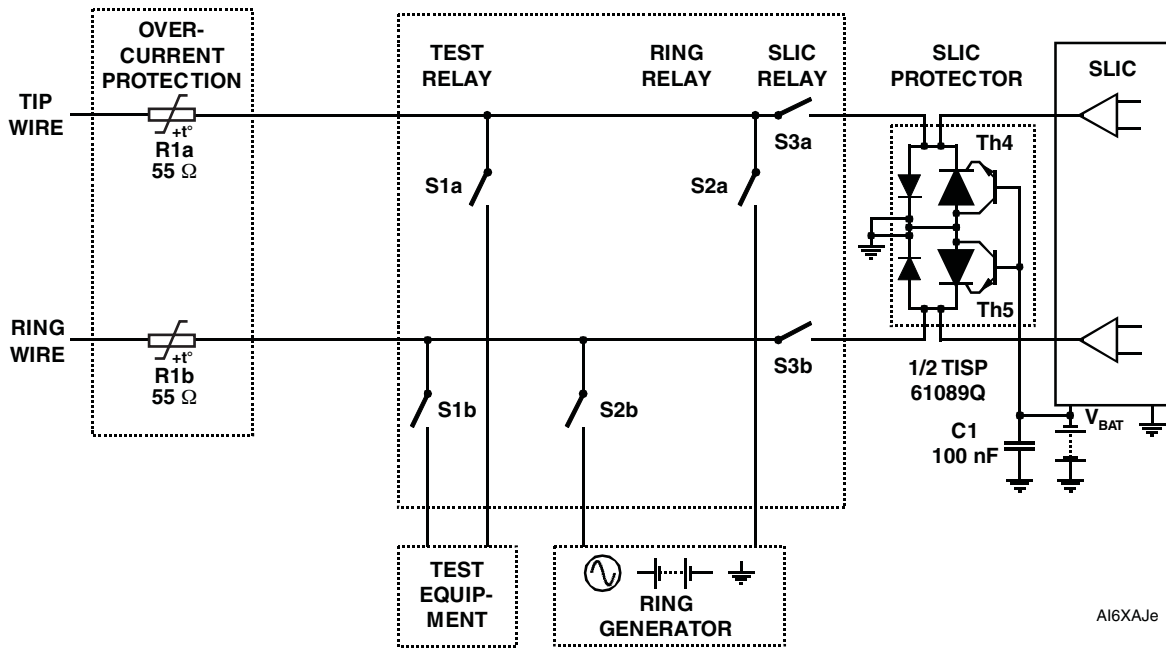


Figure 2. Typical Application Circuit

A16XAJe

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