



WEOS9110D

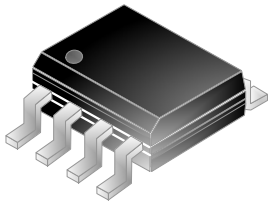
Thyristor Programmable Overvoltage Protector

Description

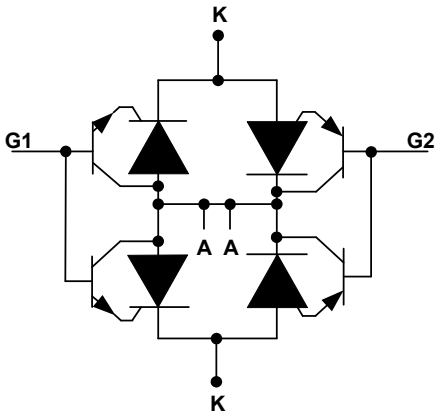
This device is especially designed to protect modern dual polarity supply rail ringing SLICs against overvoltages on the telephone line. Overvoltages can be caused by lightning, a.c. power contact and induction. Four separate protection structures are used; two positive and two negative to provide optimum protection during Metallic (Differential) and Longitudinal (Common Mode) protection conditions in both polarities. Dynamic protection performance is specified under typical international surge waveforms from Telcordia

GR-1089-CORE, ITU-T K.44 and YD/T 950.

SLIC Battery supplies respectively. This creates a protector operating at typically +1.4 V above $+V_{(BAT)}$ and -1.4 V below $-V_{(BAT)}$ under a.c. power induction and power contact conditions. The protector gate circuitry incorporates 4 separate buffer transistors designed to provide independent control for each protection element. The gate buffer transistors minimize supply regulation issues by reducing the gate current drawn to around 5 mA, while the high voltage base emitter structures eliminate the need for expensive reverse bias protection gate diodes.



SOP-8EIAJ



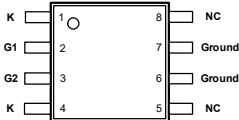
Features

- High performance protection for SLICs with +ve and -ve battery supplies
- Wide -110V to +110V programming range
- Low gate triggering current
- ESD Immunity(HBM): JESD22 Class 3B, $\geq 8\text{KV}$

Applications

- Regenerated POTS
- Access equipment
- Wireless local loop
- VOIP applications

SOP-8EIAJ (210 mil) Package (Top View)



SOP-8EIAJ (210 mil) Package (Top View)		
Pin #	Pin Name	Description
1, 4	K	Connect to subscriber lines (Tip or Ring)
2	G1	Connect to battery ($-V_{(BAT)}$)
3	G2	Connect to battery ($+V_{(BAT)}$)
6, 7	Ground	Connect ground
5, 8	NC	Not connected

Rated for International Surge Wave Shapes

Wave Shape (μs)	Standard	IPPSM (A)
2/10 μs	GR-1089-CORE	100
10/700 μs	ITU-T K.20/21/45	45
10/1000 μs	GR-1089-CORE	30

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage $V_{G1(\text{Line})} = 0, V_{G2} \geq +5 \text{ V}$ $V_{G2(\text{Line})} = 0, V_{G1} \geq -5 \text{ V}$	V_{DRM}	-120 +120	V
Non-repetitive peak impulse current (see Notes 1, 2, 3 and 4) 2/10 μs (Telcordia GR-1089-CORE) 5/310 μs (ITU-T K.20, K.21 & K.45, K.44 open-circuit voltage wave shape 10/700 μs) 10/1000 μs (Telcordia GR-1089-CORE)	I_{PPSM}	± 100 ± 45 ± 30	A
Non repetitive peak on-state current, 50Hz / 60Hz (see Notes 1, 2, 3 and 5) 0.2s 1s 900s	I_{TSM}	9.0 5.0 1.7	A
Maximum negative battery supply voltage	V_{G1M}	-110	V
Maximum positive battery supply voltage	V_{G2M}	+110	V
Maximum differential battery supply voltage	$\Delta V_{(\text{BAT})M}$	220	V
Junction temperature	T_J	-40 to +150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

NOTES:

- Initially the device must be in thermal equilibrium with $T_J = 25^\circ\text{C}$. The surge may be repeated after the device returns to its initial conditions.
- The rated current values may be applied to either of the Line to Ground terminal pairs. Additionally, both terminal pairs may have their rated current values applied simultaneously (in this case the Ground terminal current will be twice the rated current value of a single terminal pair).
- Rated currents only apply if pins 6 & 7 (Ground) are connected together.
- Applies for the following bias conditions: $V_{G1} = -20 \text{ V}$ to -110 V , $V_{G2} = 0 \text{ V}$ to $+110 \text{ V}$.
- 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.

Parameter Measurement Information

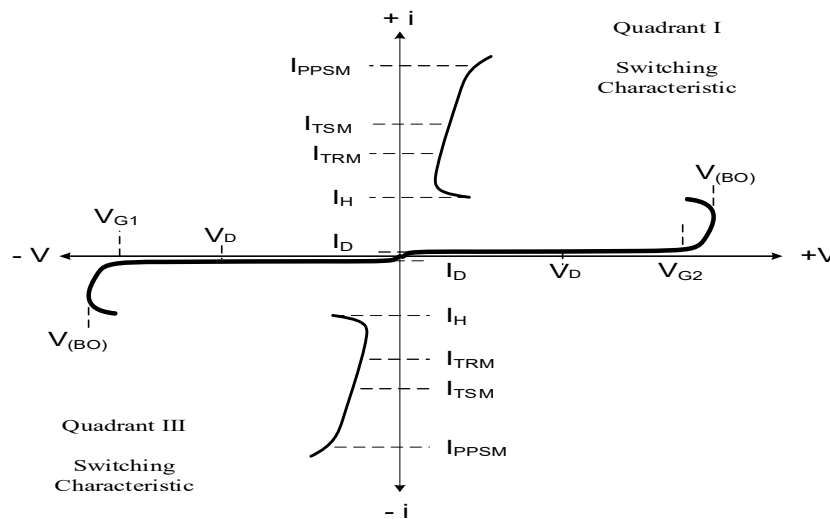


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted All Voltages are Referenced to Ground Terminal

Electrical Characteristics for any Section , $T_A=25^{\circ}\text{C}$ (Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_D	Off-state current	$V_D=V_{DRM}$, $V_{G1(\text{Line})}=0$, $V_{G2} \geq +5\text{ V}$ $T_A=25^{\circ}\text{C}$ $T_A=85^{\circ}\text{C}$ $V_D=V_{DRM}$, $V_{G2(\text{Line})}=0$, $V_{G1} \geq -5\text{ V}$ $T_A=25^{\circ}\text{C}$ $T_A=85^{\circ}\text{C}$			-5 -50 +5 +50	μA
$I_{G1(\text{Line})}$	Negative-gate Leakage current	$V_{G1(\text{Line})} = -220\text{V}$			-5	μA
$I_{G2(\text{Line})}$	Positive-gate Leakage current	$V_{G2(\text{Line})} = +220\text{V}$			+5	μA
$V_{G1L(\text{BO})}$	Gate-Line impulse breakover voltage	$V_{G1}=-100\text{V}$, $I_T=-100\text{A}$ (see Note 6) 2/10 μs $V_{G1}=-100\text{V}$, $I_T=-30\text{A}$ 10/100 μs			-15 -11	V
$V_{G2L(\text{BO})}$	Gate-Line impulse breakover voltage	$V_{G2}=+100\text{V}$, $I_T=+100\text{A}$ (see Note 6) 2/10 μs $V_{G2}=+100\text{V}$, $I_T=+30\text{A}$ 10/100 μs			+15 +11	V
I_{H-}	Negative holding current	$V_{G1}=-60\text{V}$, $I_T=-1\text{A}$, $di/dt=1\text{A/ms}$	-150			mA
I_{G1T}	Negative-gate trigger current	$I_T=-5\text{A}$, $tp(g) \geq 20\mu\text{s}$, $V_{G1}=-60\text{V}$			+5	mA
I_{G2T}	Positive-gate trigger current	$I_T=+5\text{A}$, $tp(g) \geq 20\mu\text{s}$, $V_{G2}=+60\text{V}$			-5	mA
C_O	Line-ground off-state capacitance	$f=1\text{MHz}$, $V_D=-3\text{V}$, G1 & G2 open circuit		41		pF
$R_{\theta JA}$	Junction to ambient thermal resistance	EIA/JESD51-7 PCB, EIA/JESD51-2 Environment, $PTOT = 4\text{ W}$ (See Note 7)		55		$^{\circ}\text{C/W}$

NOTES:

- Voltage measurements should be made with an oscilloscope with limited bandwidth (20 MHz) to avoid high frequency noise.
- EIA/JESD51-7 high effective thermal conductivity test board (multi-layer) connected with 0.6 mm printed wiring track widths.

Typical Characteristics

OFF-STATE CAPACITANCE

Vs

OFF-STATE VOLTAGE

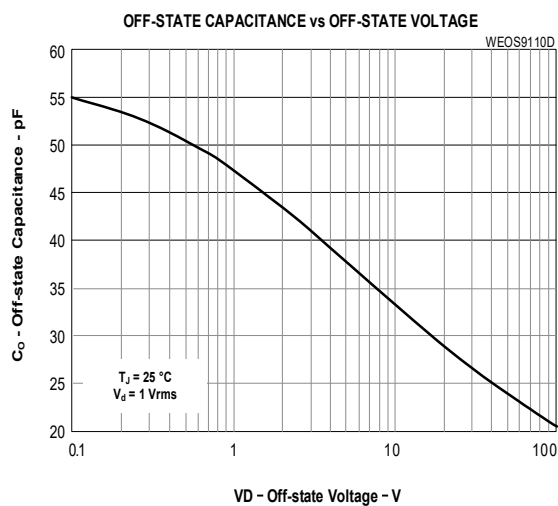


Figure 2.

Thermal Information

NON-REPETITIVE PEAK ON-STATE CURRENT

VS

CURRENT DURATION

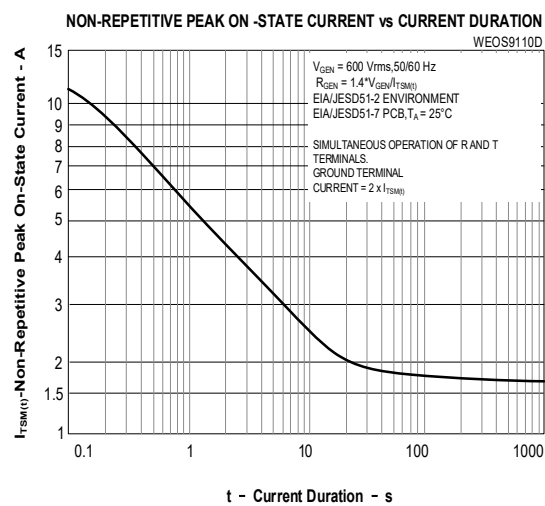
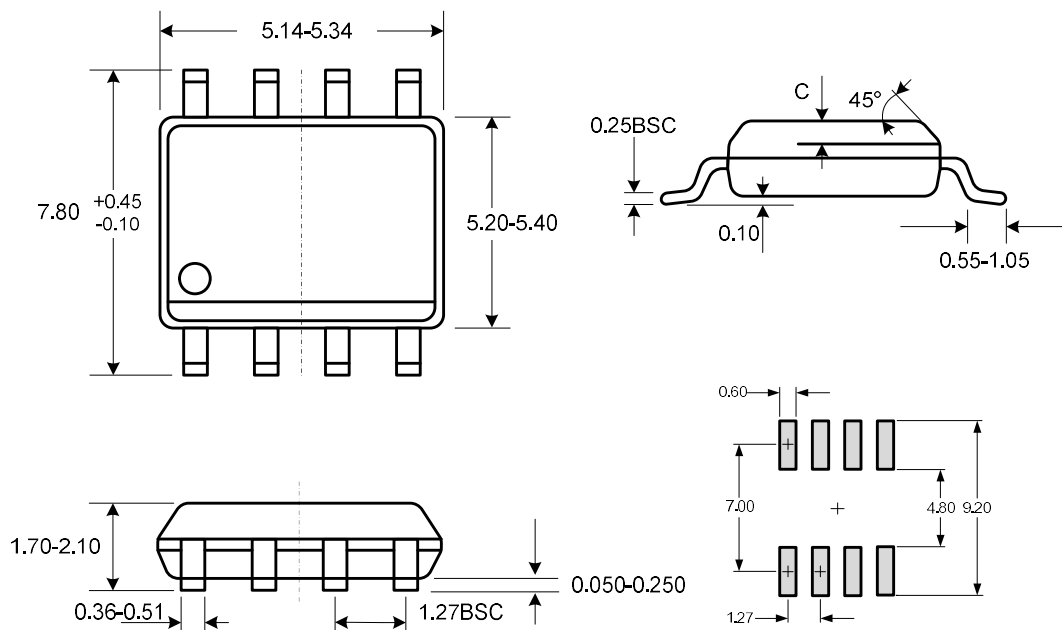


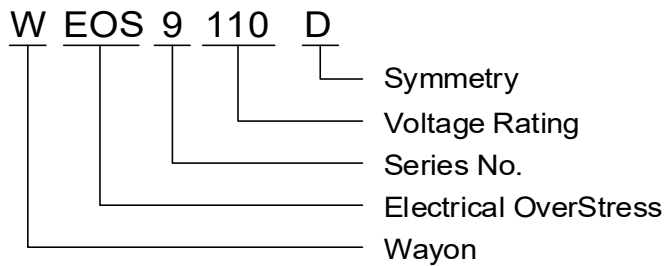
Figure 3.

Product Dimensions

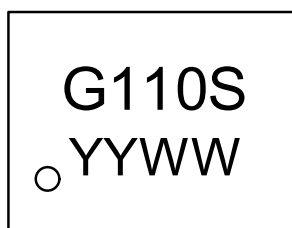


DIMENSIONS ARE: MILLIMETERS

Part Numbering System and Marking



Marking:



Package Information

Device	Package	Carrier	Quantity
WEOS9110D	SOP-8EIAJ	Tape & Reel	2,000pcs/reel

Contact Information

No.1001, Shiwan(7) Road, Pudong District, Shanghai, P.R.China.201207

Tel: 021-68969993 Fax: 86-21-50757680 Email: market@way-on.com

WAYON website: <http://www.way-on.com>

For additional information, please contact your local Sales Representative.

WAYON® is registered trademarks of Wayon Corporation.

Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.