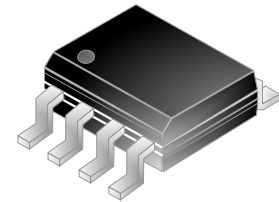# WAYON

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.
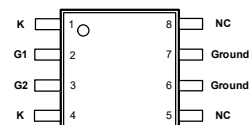
SLIC Battery supplies respectively. This creates a protector operating at typically +1.4 V above $+V_{(BAT)}$ and -1.4 V below $-V_{(BAT)}$ under a.c. power induction and power contact conditions. The protector gate circuitry incorporates 4 separate buffer transistors designed to provide independent 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.
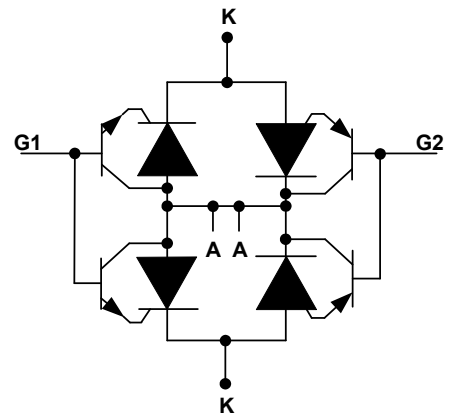
Features

- 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, ≥8KV

Applications

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

SOP-8EIAJ

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

K	1		8	NC
G1	2		7	Ground
G2	3		6	Ground
K	4		5	NC

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	I_{PPSM} (A)
2/10µs	GR-1089-CORE	100
10/700µs	ITU-T K.20/21/45	45
10/1000µs	GR-1089-CORE	30

Absolute Maximum Ratings (T_A =25°C)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage $V_{G1(Line)}$ = 0, V_{G2} ≥ +5 V $V_{G2(Line)}$ = 0, V_{G1} ≥ -5 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	$\Delta V_{(BAT)M}$	220	V
Junction temperature	T_J	-40 to +150	°C
Storage temperature range	T_{stg}	-55 to +150	°C

NOTES:

1. Initially the device must be in thermal equilibrium with T_J = 25 °C. The surge may be repeated after the device returns to its initial conditions.

2. 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).

3. Rated currents only apply if pins 6 & 7 (Ground) are connected together.

4. Applies for the following bias conditions: V_{G1} = -20 V to -110 V, V_{G2} = 0 V to +110 V.

5. 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.
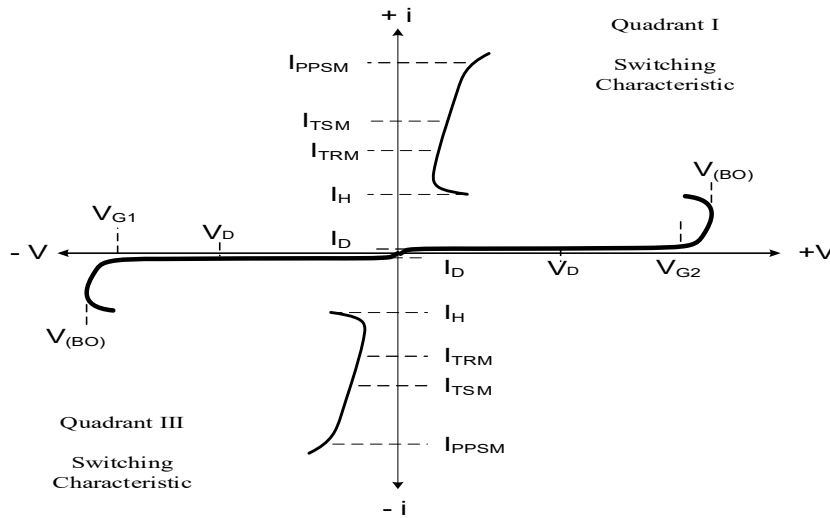
Parameter Measurement Information

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

Electrical Characteristics for any Section ,T_A =25°C (Unless Otherwise Noted)

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

NOTES:

6. Voltage measurements should be made with an oscilloscope with limited bandwidth (20 MHz) to avoid high frequency noise.

7. EIA/JESD51-7 high effective thermal conductivity test board (multi-layer) connected with 0.6 mm printed wiring track widths.

Typical Characteristics

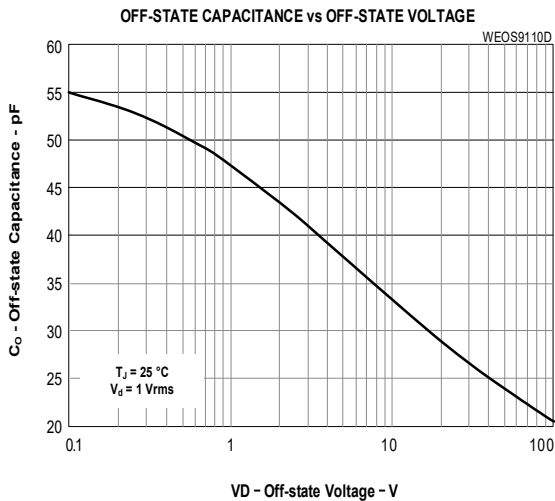### OFF-STATE CAPACITANCE
Vs
OFF-STATE VOLTAGE

Figure 2.

Thermal Information

NON-REPETITIVE PEAK ON-STATE CURRENT
VS
CURRENT DURATION
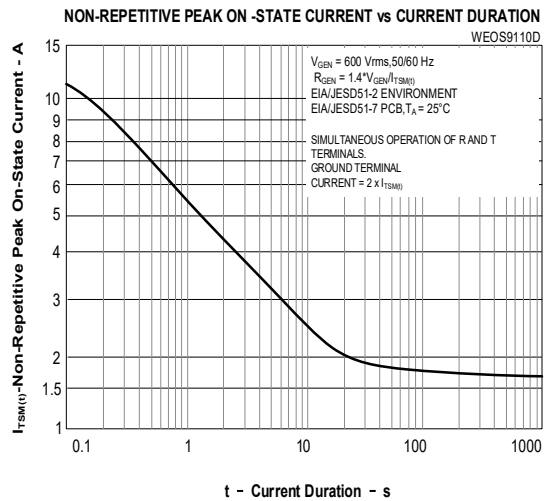
Figure 3.

Product Dimensions
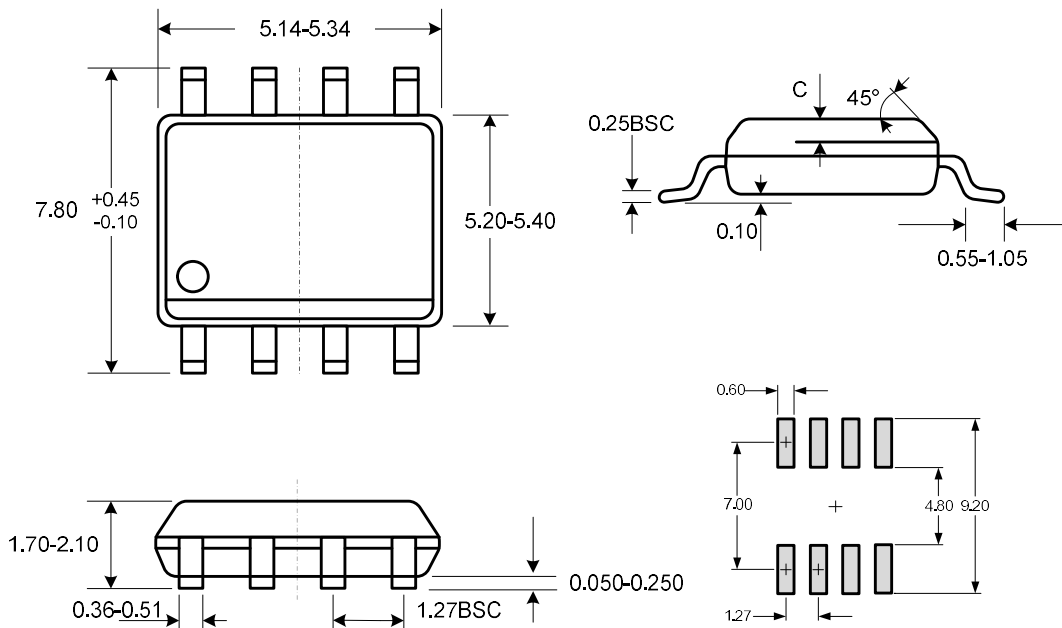
DEMENSIONS ARE: MILLIMETERS

Part Numbering System and Marking

W EOS 9 110 D

Symmetry

Voltage Rating

Series No.

Electrical OverStress

Wayon

Marking:

G110S
○YYWW
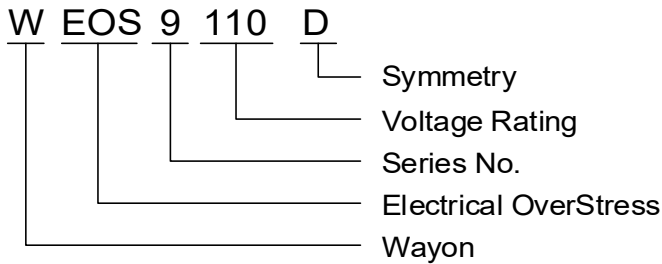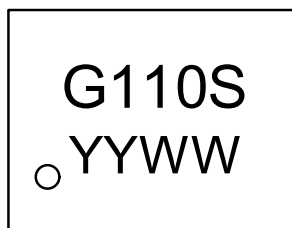
Package Information

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

Contact Information

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For additional information, please contact your local Sales Representative.

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单击下面可查看定价，库存，交付和生命周期等信息

>>WAY-ON(维安)