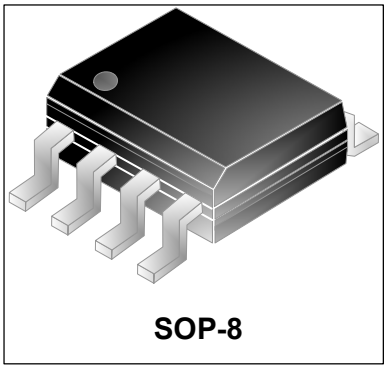
WEOS61089-17F

Thyristor Programmable Overvoltage Protector

Features

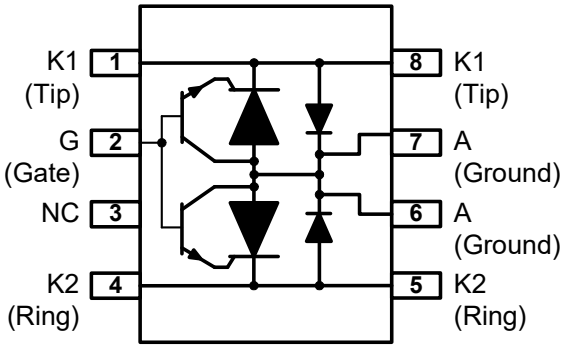
- Dual programmable transient suppressor.
- Wide negative firing voltage range:
  V_{GKRM}=-167V max.
- Low dynamic switching voltage:
  V_{FRM} and $V_{GK(BO)}$
- Low gate triggering current:
  I_{GT}=5mA max
- Peak pulse current:
  I_{PP}=30A for 10/1000μs surge
- Holding current:
  I_H=150mA min.



SOP-8

Description

This device has been especially designed to protect subscriber line card interfaces (SLIC) against transient over-voltages. Positive overloads are clipped with two diodes. Negative surges are suppressed by two thyristors, their breakdown voltage being referenced to-V_{BAT} through the gate. This component presents a very low gate triggering current (I_{GT}) in order to reduce the current consumption on printed circuit board during the firing phase. A particular attention has been given to the internal wire bonding. The configuration ensures reliable protection, eliminating the overvoltage introduced by the parasitic inductances of the wiring (Ldi/dt), especially for very fast transients.



Complies with The Following Standards

YD/T 950-1998
ITU-T K.20, K21
FCC part 68
GR-1089-CORE

Voltage waveform (μs)	Current waveform (μs)	Required peak current (A)
2/10μs	2/10μs	120
1.2/50μs	8/20μs	100
10/700μs	5/310μs	40
10/1000μs	10/1000μs	30

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
I_{PP}	Non-repetitive peak on-state pulse current 10/1000μs 5/310μs 8/20μs 2/10μs	 30 40 100 120	A
I_{TSM}	Non repetitive surge peak on-state current (sinusoidal) 60Hz 0.5s 1s 5s 30s 900s	 6.5 4.6 2.3 1.3 0.73	A
V_{DRM} V_{GKRM}	Maximum voltage LINE/GROUND Maximum voltage GATE/LINE	-170 -167	V
T_{STG} T_J T_L	Storage temperature range Junction temperature Maximum lead temperature for soldering during 10S	-40~150 -40~150 260	℃
$R_{\Theta JA}$	Junction to ambient	120	℃/W

Electrical Characteristics (T_A=25℃)

Symbol	Parameter
I_D	Off-state current
I_H	Holding current
$V_{(BO)}$	Breakdown voltage
V_F	Forward voltage
V_{FRM}	Peak forward recovery voltage
$V_{GK(BO)}$	Gate-cathode impulse breakdown voltage
I_{GKS}	Gate reverse current
I_{GT}	Gate trigger current
V_{GT}	Gate-cathode trigger voltage
C_{KA}	Cathode-anode off-state capacitance

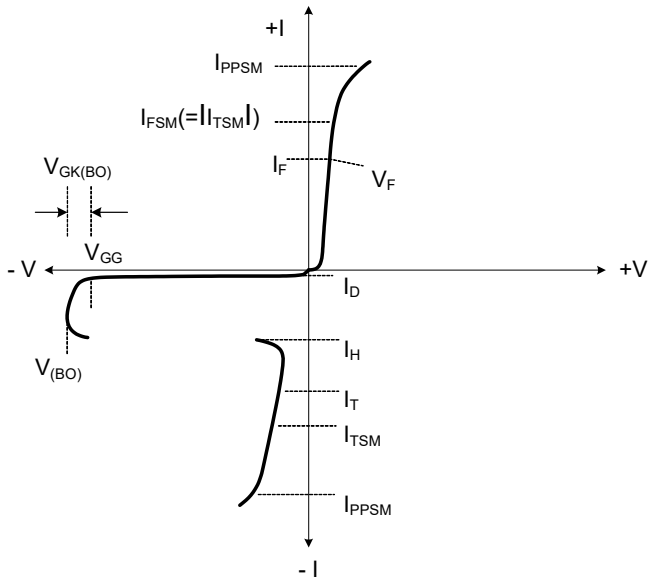


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted, All Voltages are Referenced to the Anode

Parameters Related to The Diode (T_A=25℃)

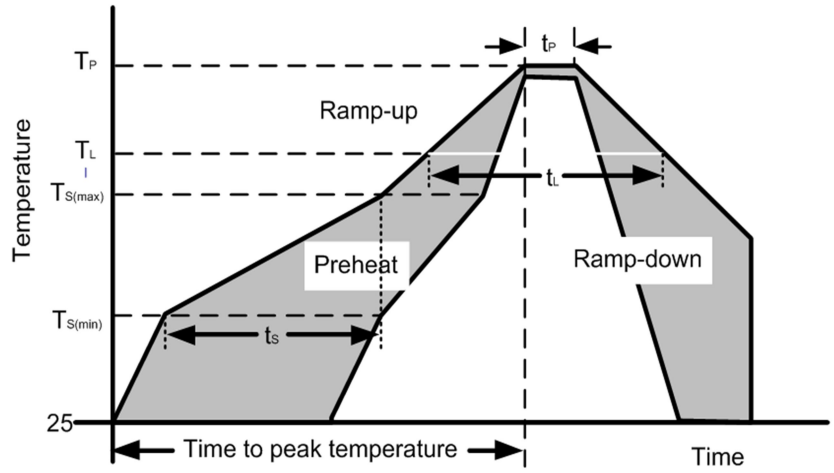
Parameter	Test conditions	Min.	Typ.	Max.	Unit.
V_F forward voltage	I_F=5A, t_w=200μs			3	V
V_{FRM} peak forward recovery voltage	2/10μs, I_F=100A, Rs=50Ω, V_{GG}=-100V, C_G=220nF			10	V

Parameters Related to The Protection Thyristor (T_A=25℃)

Parameter	Test conditions		Min.	Typ.	Max.	Unit.
I_D off-state current	V_D=-170V, V_{GK}=0	T_J=25℃			-5	μA
		T_J=85℃			-50	μA
V_{BO} breakover voltage	2/10μs, I_T=-100A, Rs=50Ω, V_{GG}=-100V, C_G=220nF				-112	V
I_H holding current	I_T=-1A, di/dt=1A/ms, V_{GG}=-100V		-150			mA
I_{GKS} gate reverse current	V_{GG}=V_{GK}=-167V, V_{KA}=0	T_J=25℃			-5	μA
		T_J=85℃			-50	μA
I_{GT} gate trigger current	I_T=-3A, tp(g)≥20μs,V_{GG}=-100V				5	mA
V_{GT} gate trigger voltage	I_T=-3A, tp(g)≥20μs,V_{GG}=-100V				2.5	V
C_{KA} cathode-anode off-state capacitance	f=1MHz,Vd=1V,I_G=0	V_D=-3V			95	pF
		V_D=-48V			45	pF

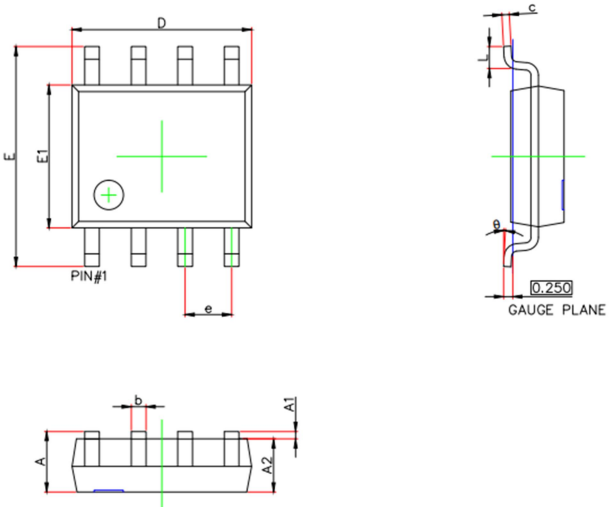
Soldering Parameters

Reflow Condition		
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (ts)	60 – 190 s
Average ramp up rate (Liquidus Temp) (T_L) to peak		3°C/s max
$T_{S(max)}$ to T_L——Ramp-up Rate		3°C/s max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 s
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_p)		20 – 40 s
Ramp-down Rate		5°C/s max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C



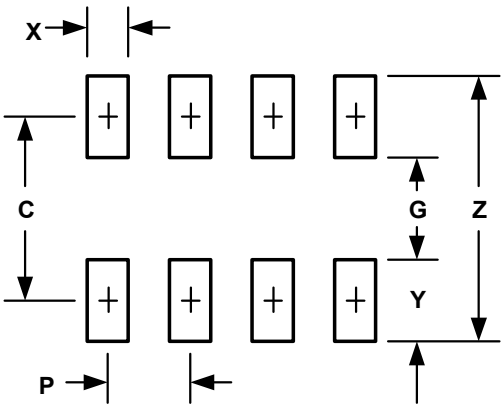
Product Dimensions

Ref.(mm)	Min.	Typ.	Max.
A	1.35		1.75
A1	0.10		0.25
A2	1.35		1.65
b	0.33		0.51
c	0.17		0.25
D	4.80		5.00
E	5.80		6.20
e		1.27	
E1	3.80		4.00
L	0.40		1.27
ϴ	0°		8°

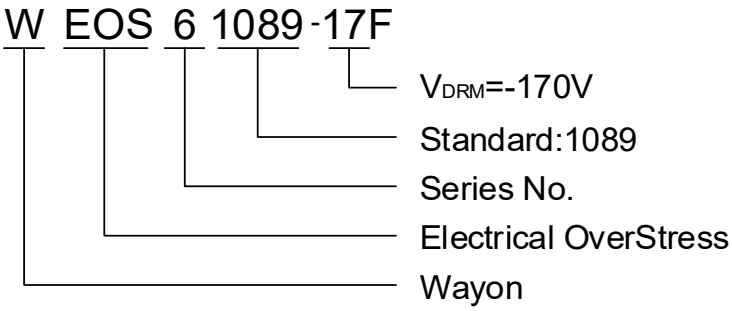


Solder pad layout

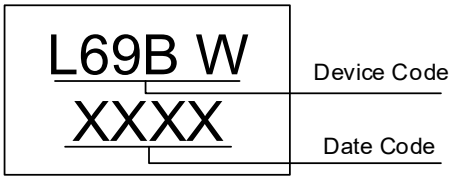
DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.205	5.21
G	0.118	3.00
P	0.050	1.27
X	0.024	0.61
Y	0.087	2.21
Z	0.291	7.39



Part Numbering System and Marking



MARKING:



Package Information

Package Type	Description	Quantity（pcs）
SOP8	Tape & Reel	4000

Contact Information

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For additional information, please contact your local Sales Representative.