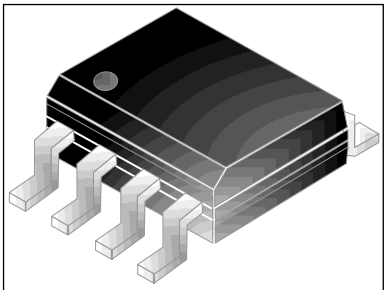
WEOS61089-17F

Thyristor Programmable Overvoltage Protector

Features

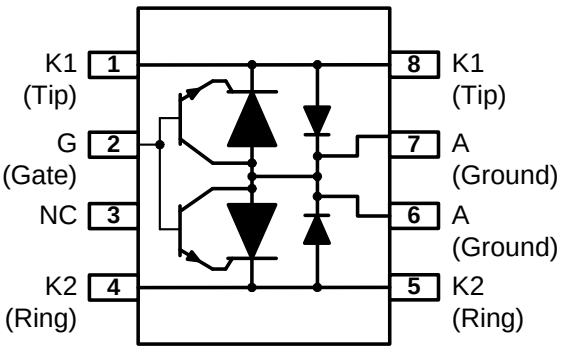
- Dual programmable transient suppressor.
- Wide negative firing voltage range:
  V_{GKRM}=-167V max.
- Low dynamic switching voltage:
  V_{FRM} and $V_{GK(BO)}$
- Low gate triggering current:
  I_{GT}=5mA max
- Peak pulse current:
  I_{PP}=30A for 10/1000μs surge
- Holding current:
  I_H=150mA min.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



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

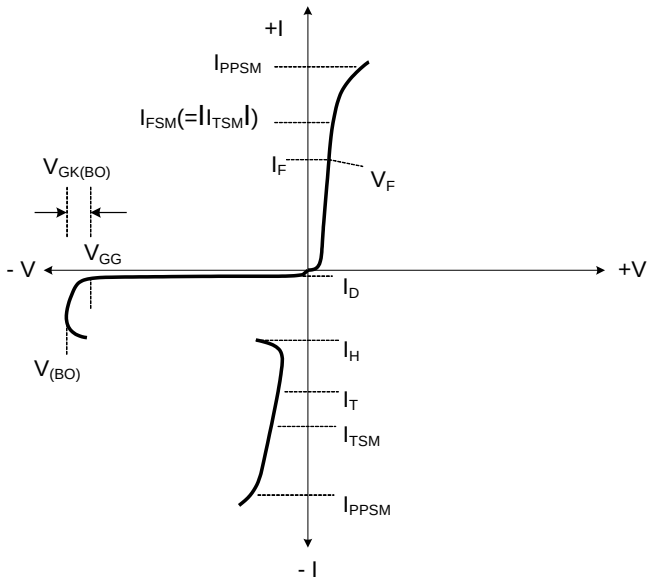


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted, All Voltages are Referenced to the Anode

Parameters Related to The Diode (T_A=25℃)

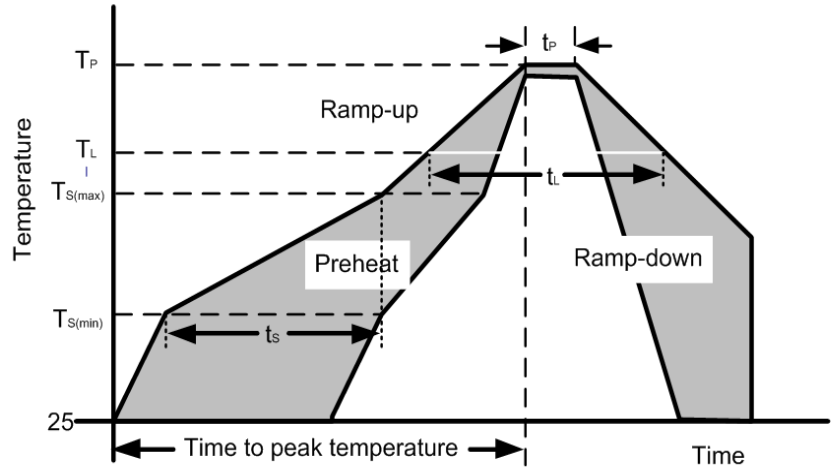
Parameter	Test conditions	Min.	Typ.	Max.	Unit.
V_F forward voltage	I_F=5A, t_w=200μs			3	V
V_{FRM} peak forward recovery voltage	2/10μs, I_F=100A, Rs=50Ω, V_{GG}=-100V, C_G=220nF			10	V

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

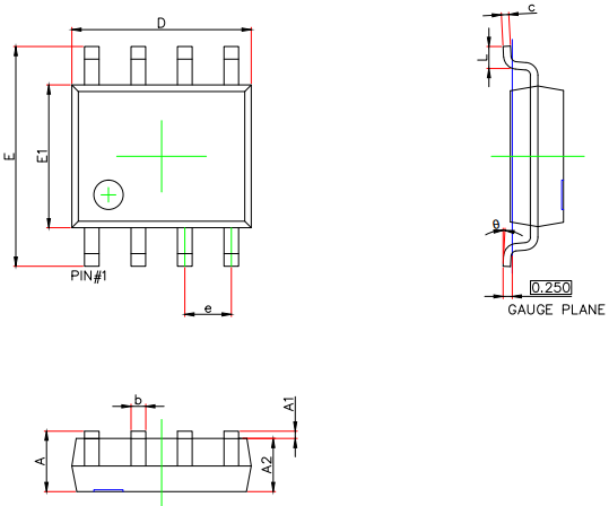
Soldering Parameters

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



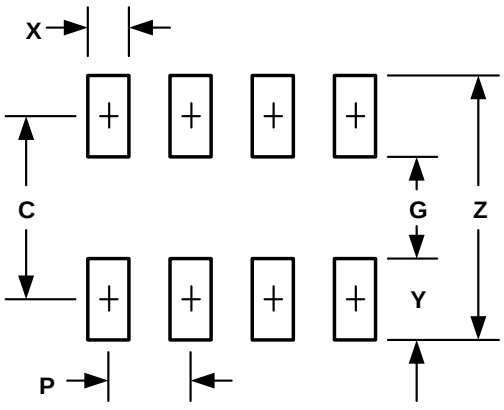
Product Dimensions

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°

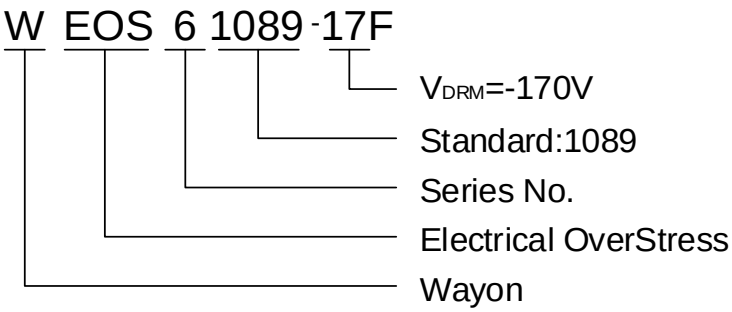


Solder pad layout

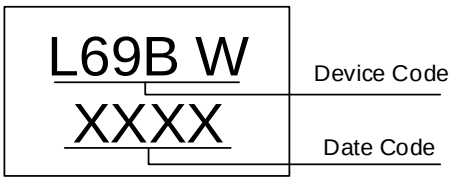
DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.205	5.21
G	0.118	3.00
P	0.050	1.27
X	0.024	0.61
Y	0.087	2.21
Z	0.291	7.39



Part Numbering System and Marking



MARKING:



Package Information

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

Contact Information

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Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.

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