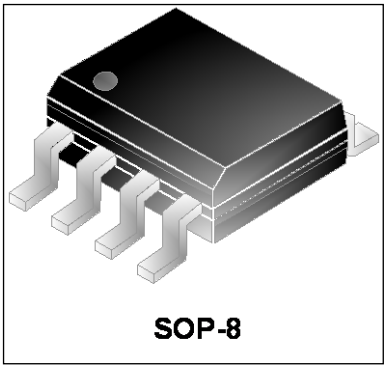
WEOS61089-17HN

Thyristor Programmable Overvoltage Protector

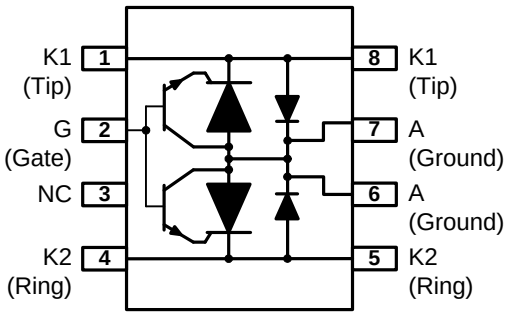
Features

- 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}=100A for 10/1000μs surge
- Holding current:
  I_H=150mA min.
- RoHS & HF Compliant
- MSL: Level 3



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	500
10/700μs	5/310μs	150
10/1000μs	10/1000μs	100

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
I_{PP}	Non-repetitive peak on-state pulse current 10/1000μs 5/310μs 2/10μs	 100 150 500	A
I_{TSM}	Non repetitive surge peak on-state current (sinusoidal), 60Hz 900s	2.6	A
V_{DRM} V_{GKRM}	Maximum voltage LINE/GROUND Maximum voltage GATE/LINE	-170 -167	V
T_{STG} T_J T_A	Storage temperature range Junction temperature Operating free-air temperature range	-40~125 -40~125 -40~85	℃
$R_{\Theta JA}$	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

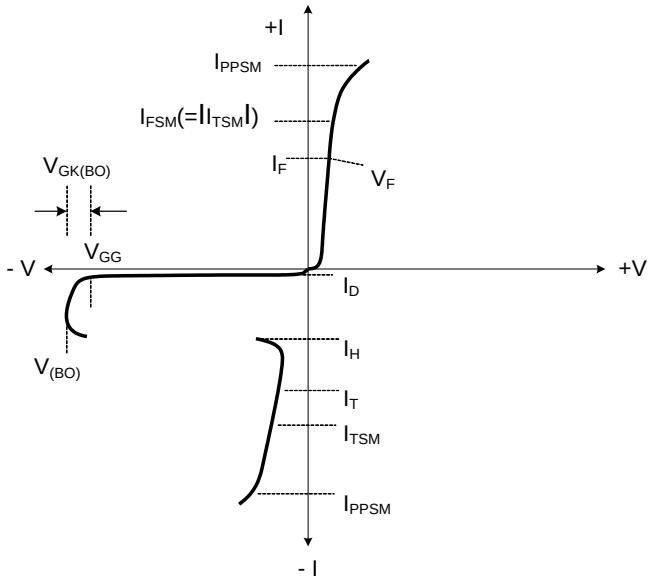


Figure 1. Voltage-Current Characteristic
Unless Otherwise Noted, All Voltages are Referenced to the Anode

Parameters Related to The Diode (T_A=25℃)

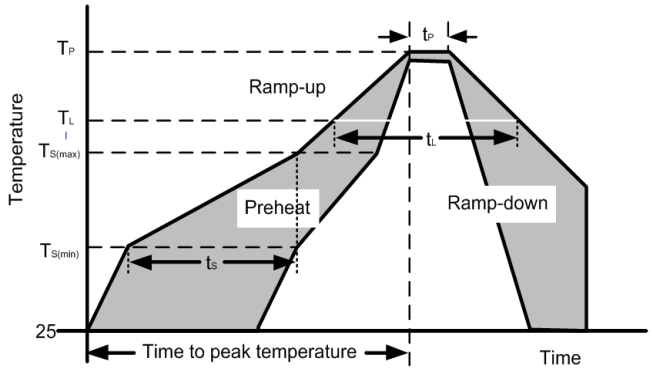
Parameter	Test conditions	Min.	Typ.	Max.	Unit.
V_F forward voltage	I_F=5A, t_w=200μs			3	V
V_{FRM} peak forward recovery voltage	2/10μs, I_F=200A, V_{GG}=-100V			10	V

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=-200A, V_{GG}=-100V,				-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			100	pF
		V_D=-48V			50	pF

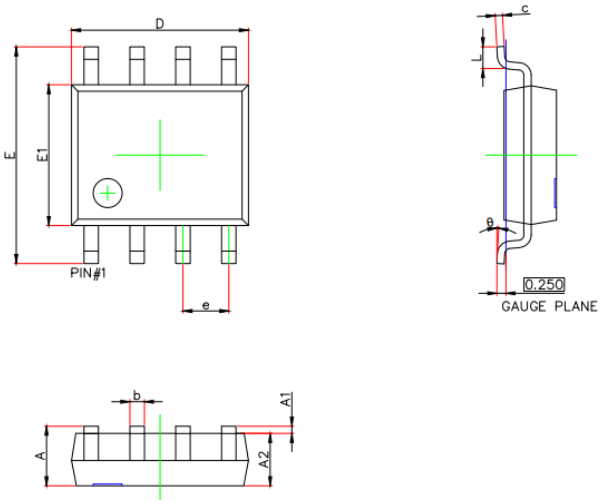
Soldering Parameters

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



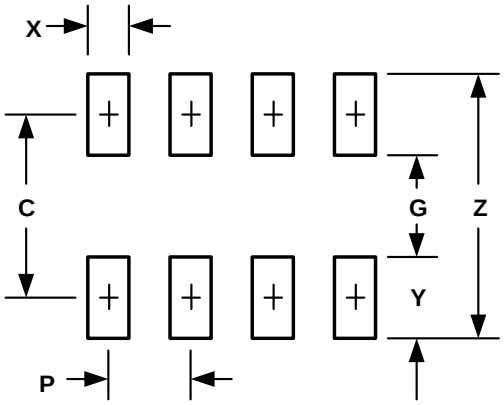
Product Dimensions

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°

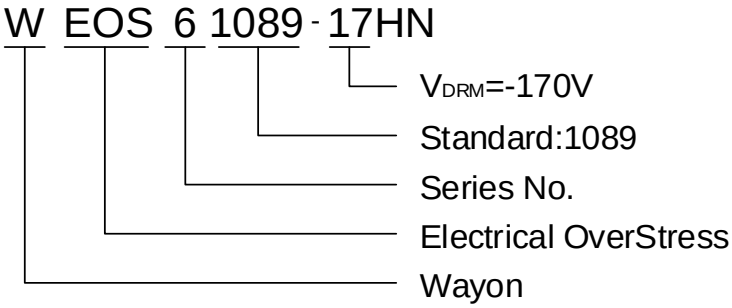


Solder pad layout

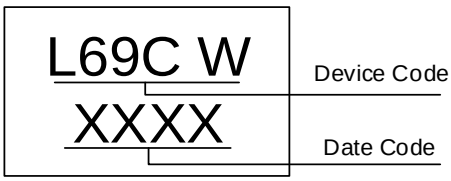
DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	0.205	5.21
G	0.118	3.00
P	0.050	1.27
X	0.024	0.61
Y	0.087	2.21
Z	0.291	7.39



Part Numbering System and Marking



MARKING:

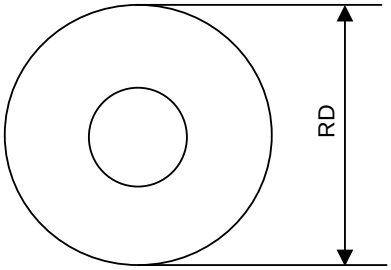


Package Information

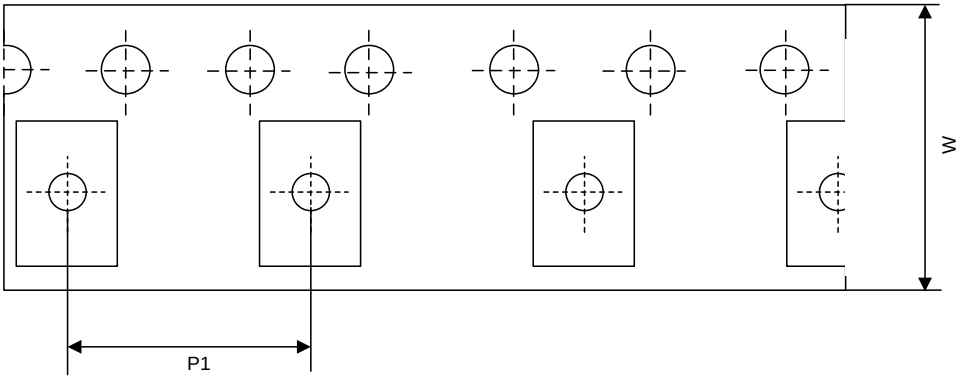
Package Type	Description	Quantity（pcs）
SOP8	Tape & Reel	4000

Tape and Reel Information

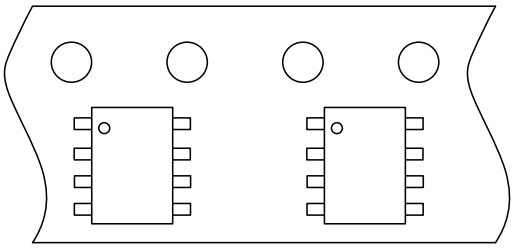
Reel Dimensions



Tape Dimensions



Quadrant Assignments for PIN1 Orientation in tape





User Direction of Feed

Top View

RD	Reel Dimensions	13 inch
W	Overall width of the carrier tape	12 mm
P1	Pitch between successive cavity centers	8 mm

Contact Information

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WAYON website: **http://www.way-on.com**
For additional information, please contact your local Sales Representative.

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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.

WAYON strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, WAYON cannot guarantee that the information provided in the product specification is entirely accurate and error-free. WAYON shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications. WAYON reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with WAYON to ensure that the product specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult WAYON in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. WAYON shall assume no responsibility for any consequences resulting from such usage.

Users should also comply with relevant laws, regulations, policies, and standards when using the product specification. Users are responsible for the risks and liabilities arising from the use of the product specification and must ensure that it is not used for illegal purposes. Additionally, users should respect the intellectual property rights related to the product specification and refrain from infringing upon any third-party legal rights. WAYON shall assume no responsibility for any disputes or controversies arising from the above-mentioned issues in any form.