



Center Tap and Doubler, Standard and Fast Recovery Rectifiers

DESCRIPTION

Standard and fast recovery rectifier assemblies available in center tap or doubler configurations in electrically isolated aluminum casing.

Important: For the latest information, visit our website <http://www.microsemi.com>.

FEATURES

- Current ratings to 15 amps
- V_{RWM} from 100 to 600 volts (see [part nomenclature](#) for all options)
- 150 °C junction temperature
- Surge ratings to 150 amps
- Recovery times to 500 ns
- RoHS compliant versions available

APPLICATIONS / BENEFITS

- Electrically isolated aluminum case
- Controlled avalanche characteristics

MAXIMUM RATINGS

Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J and T_{STG}	-65 to +150	°C
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	6.0	°C/W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	20	°C/W
Forward Surge Current (Peak): @ $T_C = 100$ °C	I_{FSM}	150	A
Maximum Average DC Output Current: @ $T_C = 55$ °C	I_O	15	A
@ $T_C = 100$ °C		10.5	
Solder Temperature @ 10 s		260	°C



(Actual appearance may vary)

ND Package

MSC – Lawrence

6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

MSC – Ireland

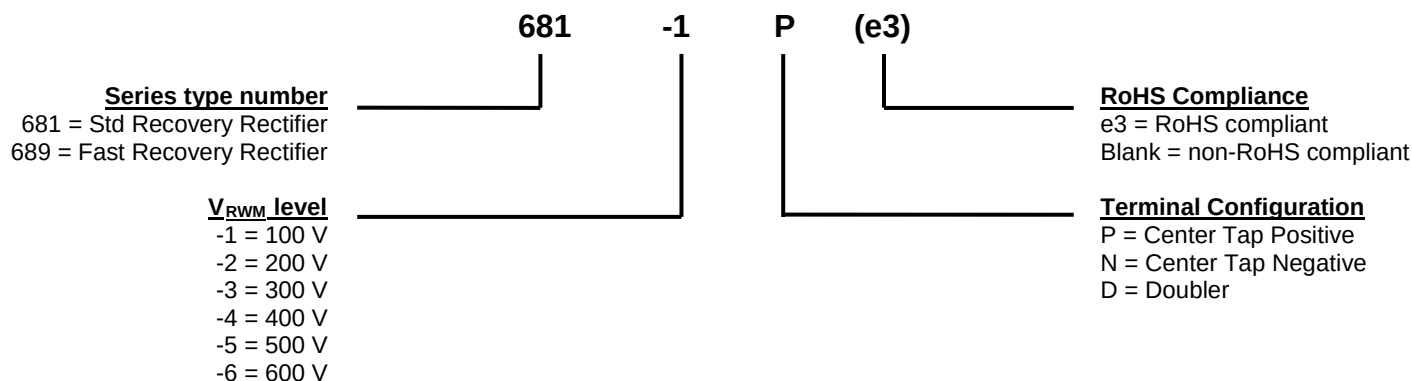
Gort Road Business Park,
Ennis, Co. Clare, Ireland
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Website:

www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Aluminum
- TERMINALS: Tin/lead or RoHS compliant matte tin
- MARKING: Alternating current input: AC
Cathode positive output: +
Anode negative: -
Part number is printed on the body
- WEIGHT: Approximately 30 grams
- See [Package Dimensions](#) on last page.

PART NOMENCLATURE

SYMBOLS & DEFINITIONS

Symbol	Definition
I_{FSM}	Surge Peak Forward Current: The forward current including all nonrepetitive transient currents but excluding all repetitive transients (ref JESD282-B)
I_O	Average Rectified Output Current: The Output Current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.
V_F	Forward Voltage: A positive dc anode-cathode voltage the device will exhibit at a specified forward current.
I_R	Reverse Current: The dc current flowing from the external circuit into the cathode terminal at the specified voltage V_R .
V_{RWM}	Working Peak Reverse Voltage: The peak voltage excluding all transient voltages (ref JESD282-B). Also sometimes known historically as PIV.
t_{rr}	Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified decay point after a peak reverse current occurs.

ELECTRICAL CHARACTERISTICS

PART NUMBER	MAX FORWARD VOLTAGE PER LEG V_F (Note 1)	MAX REVERSE PEAK CURRENT I_R @ V_{RRM}		MAX REVERSE RECOVERY TIME t_{rr} ($I_F = 1.0$ A, $I_{RM} = 1.0$ A, $I_{R(REC)} = 0.5$ A)
	@ 25 °C	@ 25 °C	@ 100 °C	
	Volts	μA	μA	ns
681	1.2 @ 10 A	10	200	-
689	1.2 @ 10 A	10	200	500

NOTES: 1. MAX WORKING PEAK REVERSE VOLTAGE (V_{RWM}) numbering:

PART NUMBER		WORKING PEAK REVERSE VOLTAGE V_{RWM}	MINIMUM BREAKDOWN VOLTAGE $V_{(BR)}$
		Volts	Volts
681-1	689-1	100	110
681-2	689-2	200	220
681-3	689-3	300	330
681-4	689-4	400	440
681-5	689-5	500	550
681-6	689-6	600	660

2. Pulse test: Pulse width 300 μ sec, duty cycle 2%.

GRAPHS

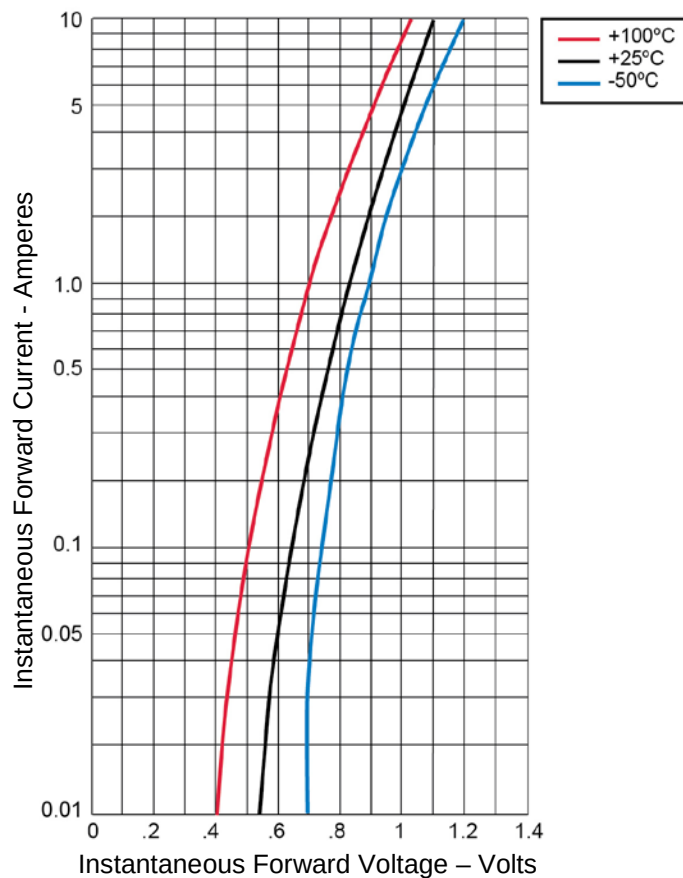


FIGURE 1
Typical Forward Characteristics – Per Leg

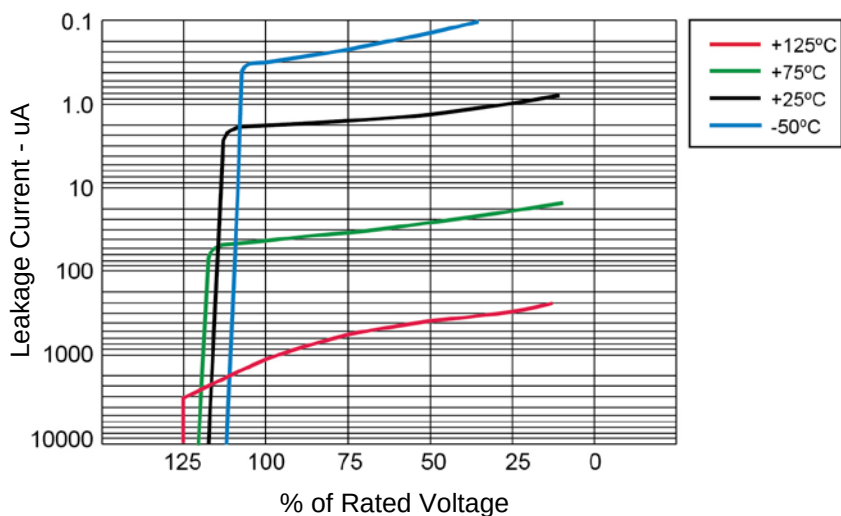


FIGURE 2
Typical Reverse Leakage Current – Per Leg

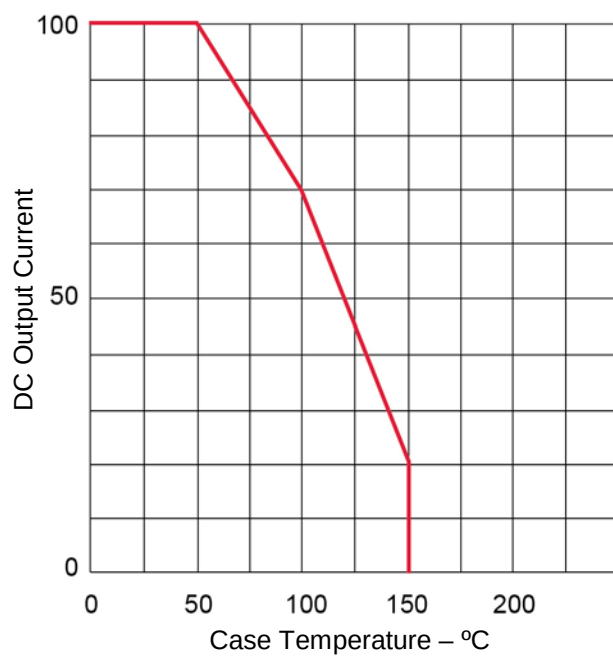
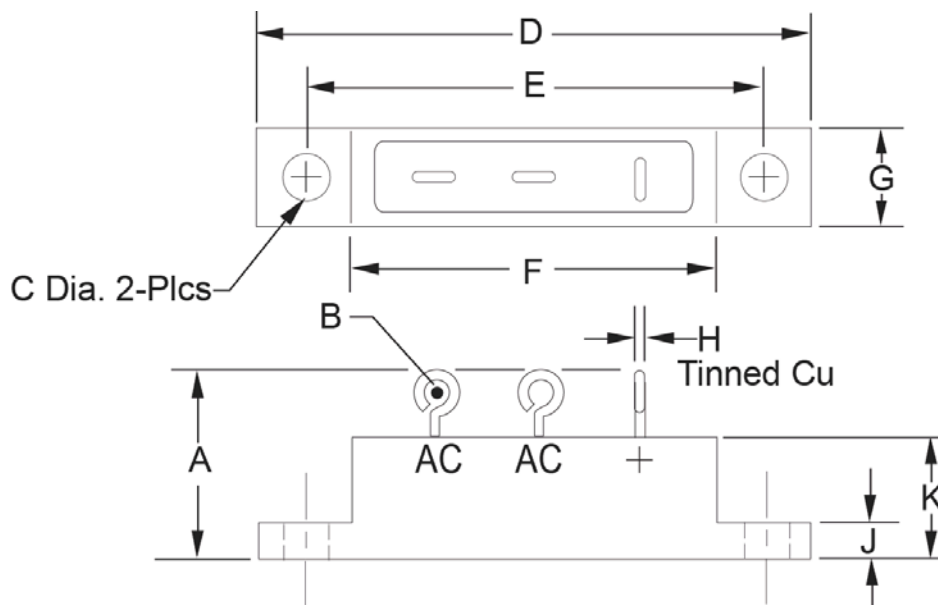
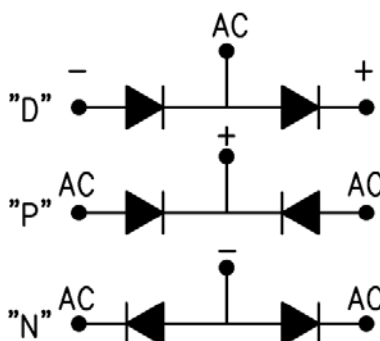
GRAPHS (continued)

FIGURE 3
Current Derating

PACKAGE DIMENSIONS


Notes: Orientation of terminals shown for "D". For "P" or "N" center terminal is 90° from the AC terminals.

Ltr	Dimensions		Dimensions	
	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	-	0.660		16.76
B	0.09 TYP		2.29 TYP	
C (dia)	0.165	0.175	4.19	4.45
D	2.240	2.260	56.90	57.40
E	1.870	1.880	47.50	47.75
F	1.480	1.490	37.59	37.85
G	0.334	0.354	8.48	8.99
H	0.40 TYP		1.02 TYP	
J	0.115	0.135	2.92	3.43
K	0.302	0.322	7.67	8.18

PACKAGE DIMENSIONS


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[689-3N](#) [689-4](#) [689-4D](#) [689-5](#) [689-6](#)