



## 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:	$I_O$	@ $T_C = 55$ °C	15	A
		@ $T_C = 100$ °C	10.5	
Solder Temperature @ 10 s		260	°C	



(Actual appearance may vary)

### ND Package

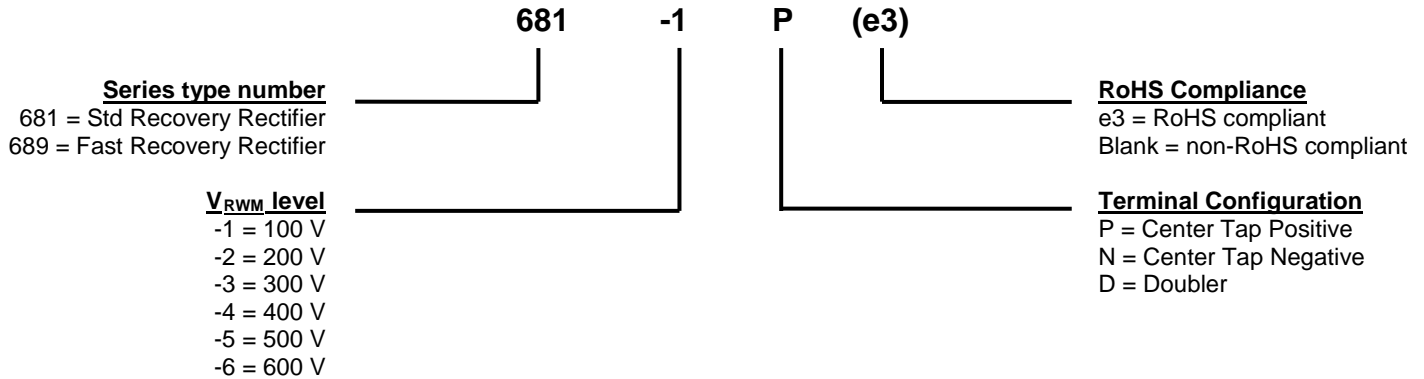
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**MECHANICAL and PACKAGING**

- 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.

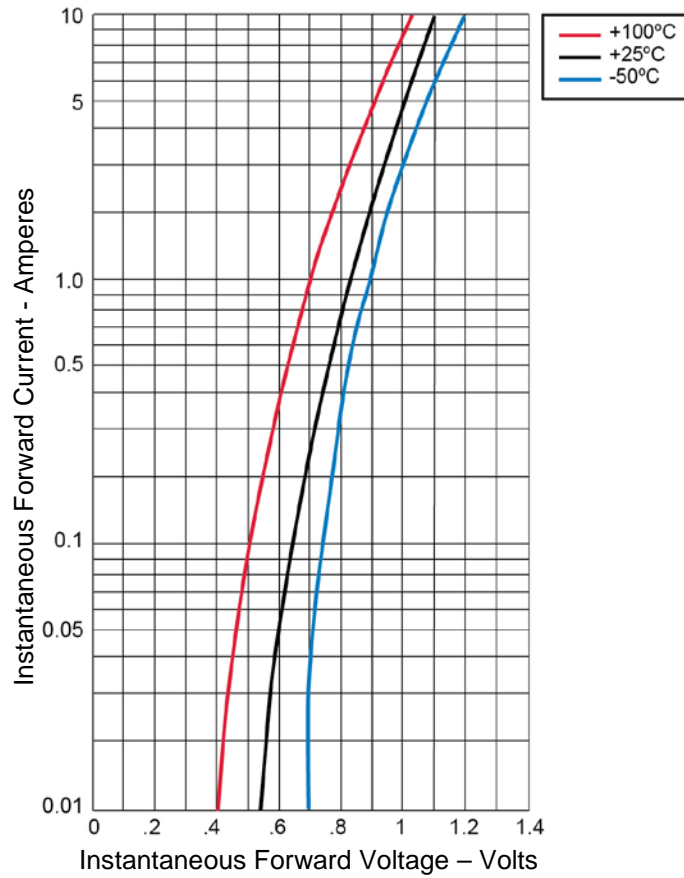
**ELECTRICAL CHARACTERISTICS**

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	$\mu A$	$\mu A$	ns
<b>681</b>	1.2 @ 10 A	10	200	-
<b>689</b>	1.2 @ 10 A	10	200	500

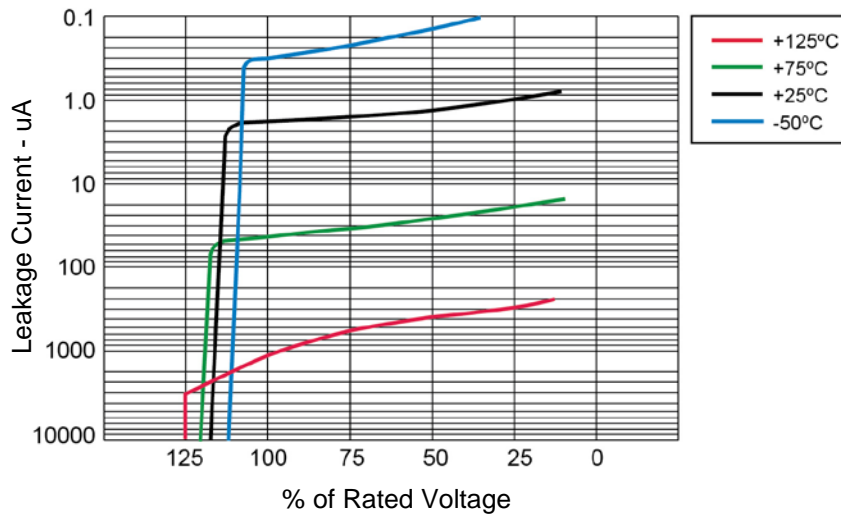
**NOTES:** 1. MAX WORKING PEAK REVERSE VOLTAGE ( $V_{RWM}$ ) numbering:

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

2. Pulse test: Pulse width 300  $\mu$ sec, duty cycle 2%.

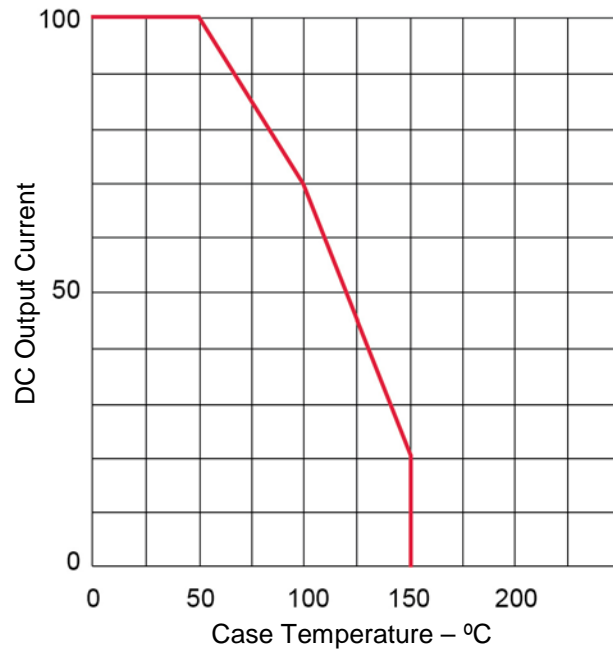
**GRAPHS**


**FIGURE 1**  
Typical Forward Characteristics – Per Leg

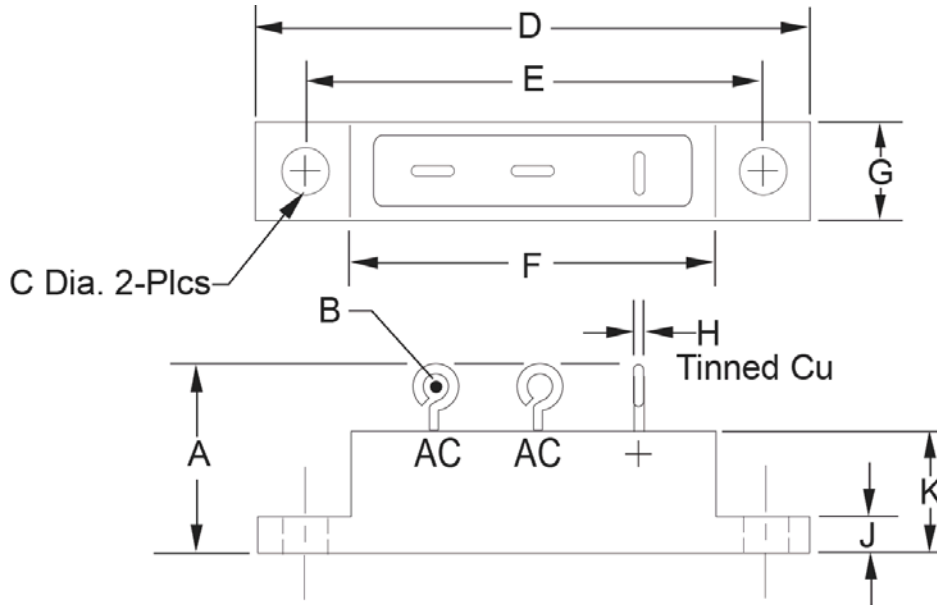


**FIGURE 2**  
Typical Reverse Leakage Current – Per Leg

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**
