RoHS
Available

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.

(Actual appearance may vary)

ND Package

FEATURES

- Current ratings to 15 amps
- V_{RWM} from 100 to 600 volts (see part nomenclature for all options)
- 150 ºC 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

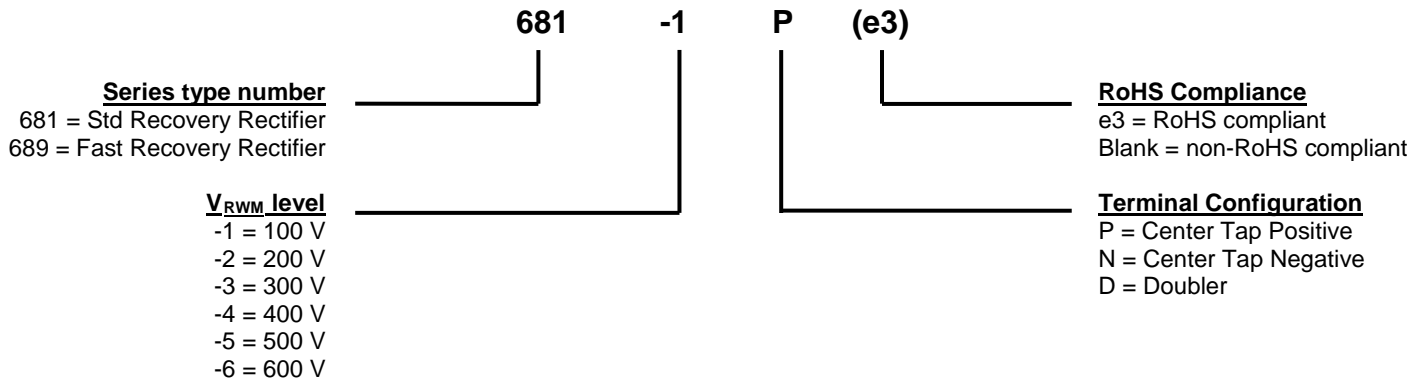| Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J and T_{STG}	-65 to +150	ºC
Thermal Resistance Junction-to-Case	$R_{\Theta JC}$	6.0	ºC/W
Thermal Resistance Junction-to-Ambient	$R_{\Theta JA}$	20	ºC/W
Forward Surge Current (Peak): @ T_C = 100 ºC	I_{FSM}	150	A
Maximum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

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
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:
www.microsemi.com

One Enterprise, Aliso Viejo, CA 92656   Ph: 949-380-6100   sales.support@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

                    681   -1   P   (e3)

Series type number
681 = Std Recovery Rectifier
689 = Fast Recovery Rectifier

V_{RWM} level
-1 = 100 V
-2 = 200 V
-3 = 300 V
-4 = 400 V
-5 = 500 V
-6 = 600 V

RoHS Compliance
e3 = RoHS compliant
Blank = non-RoHS compliant

Terminal Configuration
P = Center Tap Positive
N = Center Tap Negative
D = Doubler

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 ºC	@ 25 ºC	@ 100 ºC	
	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:

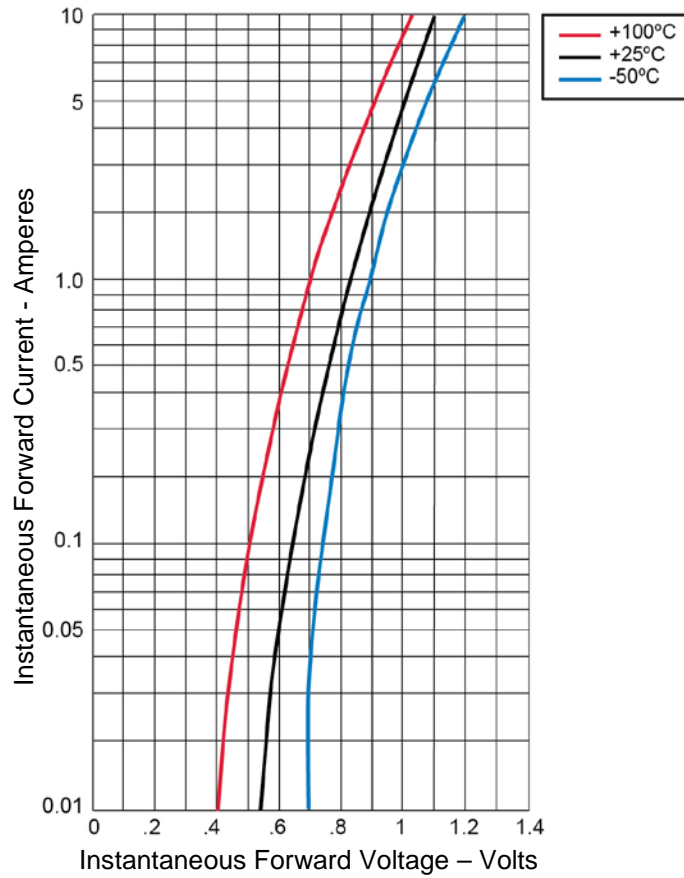| PART NUMBER		WORKING PEAK REVERSE VOLTAGE V_{RWM}	MINIMUM BREAKDOWN VOLTAGE $V_{(BR)}$
		Volts	Volts
681-1	**689-1**	100	110
681-2	**689-2**	200	220
681-3	**689-3**	300	330
681-4	**689-4**	400	440
681-5	**689-5**	500	550
681-6	**689-6**	600	660

2. Pulse test: Pulse width 300 µsec, duty cycle 2%.

GRAPHS

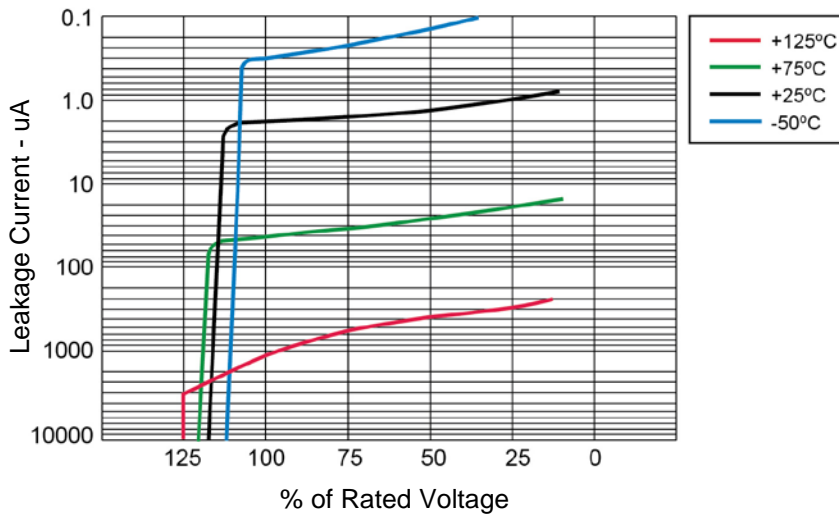**FIGURE 1**
Typical Forward Characteristics – Per Leg

FIGURE 2
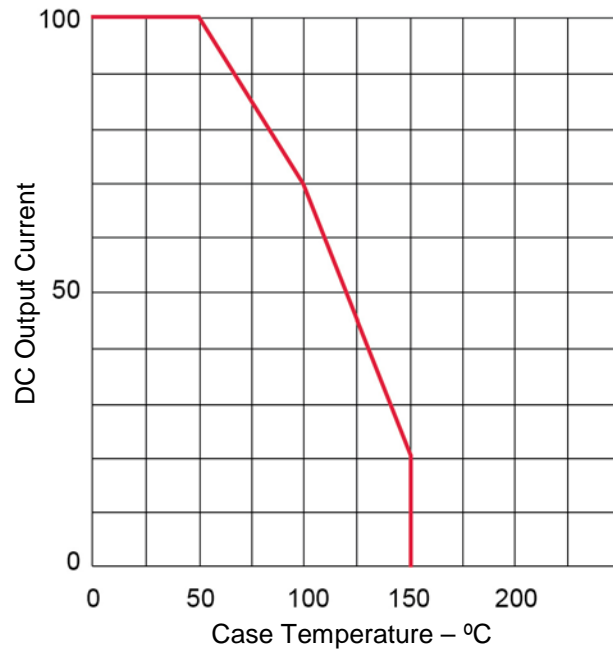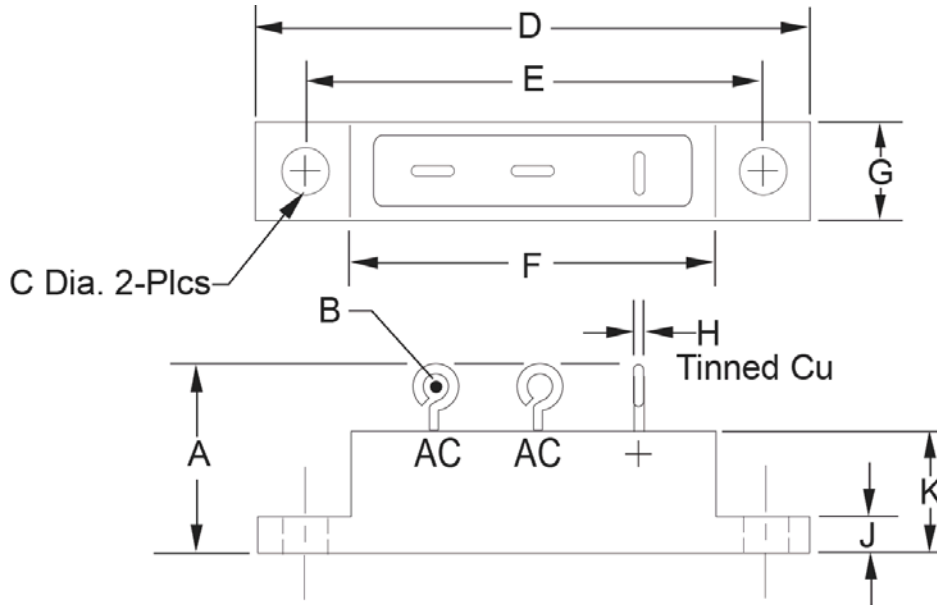Typical Reverse Leakage Current – Per Leg

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 Inches		Dimensions 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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