

**Microsemi Corp.**  
Santa Ana



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**1N6638US,  
1N6642US,  
1N6643US**

### Features

- AVAILABLE IN AXIAL LEADED AND SURFACE MOUNT CONFIGURATIONS
- ULTRA FAST RECOVERY TIME
- VERY LOW CAPACITANCE
- METALLURGICALLY BONDED
- NON-CAVITY GLASS PACKAGE
- AVAILABLE AS JANTX AND JANTXV PER MIL-S-19500/578
- AVAILABLE AS JANS
- REPLACEMENTS FOR 1N4148, 1N4148-1, 1N4150, 1N4150-1, AND 1N914

### Maximum Ratings @ 25°C

TYPE NUMBER	REVERSE VOLTAGE V <sub>R</sub>	WORKING PEAK REVERSE VOLTAGE V <sub>RWM</sub>	OPERATING CURRENT I <sub>O</sub> (Note 1) (mA)	PEAK FORWARD SURGE CURRENT I <sub>FSM</sub> (Note 2) (A)	R-θ <sub>JL</sub> L = .375" (°C/W)	R-θ <sub>JEC</sub> (°C/W)	T <sub>OP</sub> T <sub>stg</sub> (°C)
1N6638	150	125	300	2.5	160	50	-65 to +175
1N6638US	150	125	300	2.5	160	50	-65 to +175
1N6642	100	75	300	2.5	160	50	-65 to +175
1N6642US	100	75	300	2.5	160	50	-65 to +175
1N6643	75	50	300	2.5	160	50	-65 to +175
1N6643US	75	50	300	2.5	160	50	-65 to +175

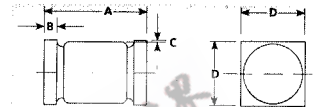
Note 1: At maximum end cap temperature = 110°C for US suffix types. Derate at 4.6 mA/°C above end cap temperature = 110°C. Derate axial types at 3.0 mA/°C above ambient temperature = 25°C.  
Note 2: Test pulse = 8.3ms, half sine wave.

### Electrical Characteristics @ 25°C

TYPE NUMBER	MAXIMUM FORWARD VOLTAGE V <sub>F</sub> @ I <sub>F</sub>		MAXIMUM D.C. REVERSE CURRENT I <sub>R</sub>			
			V <sub>R</sub> = 20V		V <sub>R</sub> = V <sub>RWM</sub>	
			nA	μA	μA	μA
	V @ mA				T <sub>A</sub> = 150°C	T <sub>A</sub> = 150°C
1N6638	0.8V @ 10mA	1.1V @ 200mA	25	0.5	40	100
1N6638US	0.8V @ 10mA	1.1V @ 200mA	25	0.5	40	100
1N6642	1.0V @ 10mA	1.2V @ 100mA	25	0.5	50	100
1N6642US	1.0V @ 10mA	1.2V @ 100mA	25	0.5	50	100
1N6643	1.0V @ 10mA	1.2V @ 100mA	50	0.5	75	160
1N6643US	1.0V @ 10mA	1.2V @ 100mA	50	0.5	75	160

TYPE NUMBER	REVERSE RECOVERY TIME t <sub>rr</sub> Note 1	MAXIMUM FORWARD RECOVERY VOLTAGE AND TIME I <sub>F</sub> = 50mA, t <sub>r</sub> = 1ns		MAXIMUM JUNCTION CAPACITANCE f = 1MHz V <sub>sig</sub> = 50mV (p-p)	
		V <sub>fr</sub>	t <sub>fr</sub>	V <sub>R</sub> = 1.5V	
				pf	pf
	ns	V	ns	pf	pf
1N6638	4.5	5.0	20	2.0	1.4
1N6638US	4.5	5.0	20	2.0	1.4
1N6642	5.0	5.0	20	5.0	2.8
1N6642US	5.0	5.0	20	5.0	2.8
1N6643	6.0	5.0	20	5.0	2.8
1N6643US	6.0	5.0	20	5.0	2.8

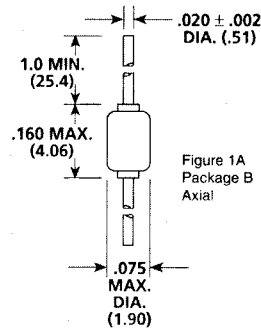
NOTE 1: Reverse Recovery Time Test Conditions:  
I<sub>F</sub> = I<sub>R</sub> = 10mA, I<sub>R(REC)</sub> = 1.0mA, C = 3pF, R<sub>L</sub> = 100 ohms



	Inch		mm	
	MIN.	MAX.	MIN.	MAX.
A	.165	.185	4.191	4.699
B	.019	.028	0.483	0.711
C	.003	—	0.076	—
D	.070	.075	1.778	1.905

**1N6638,  
1N6642,  
1N6643**

COMPUTER SWITCHING  
DIODES



### Mechanical Characteristics

#### AXIAL LEADED DEVICES

**CASE:** Voidless Hermetically Sealed Hard Glass.

**LEAD MATERIAL:** Solder Dipped Copper Clad Steel.

**MARKING:** Body Painted, Alpha Numeric.

**POLARITY:** Cathode Band.

#### SURFACE MOUNT DEVICES

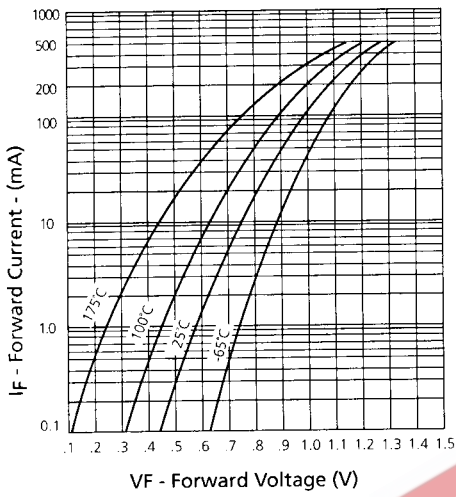
**CASE:** Voidless Hermetically Sealed Hard Glass.

**END CAP MATERIAL:** Solid Silver.

**END CAP CONFIGURATION:** Square.

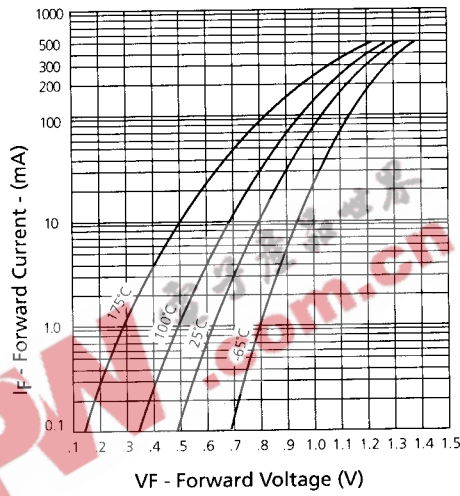
**POLARITY:** Cathode Dot on End Cap. 3-17

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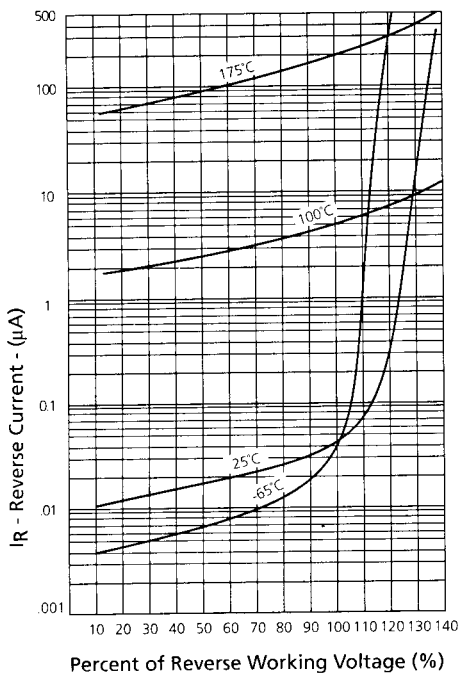
VF - Forward Voltage (V)

**FIGURE 2**  
**1N6638 & US**  
 Typical Forward Current  
 vs Forward Voltage



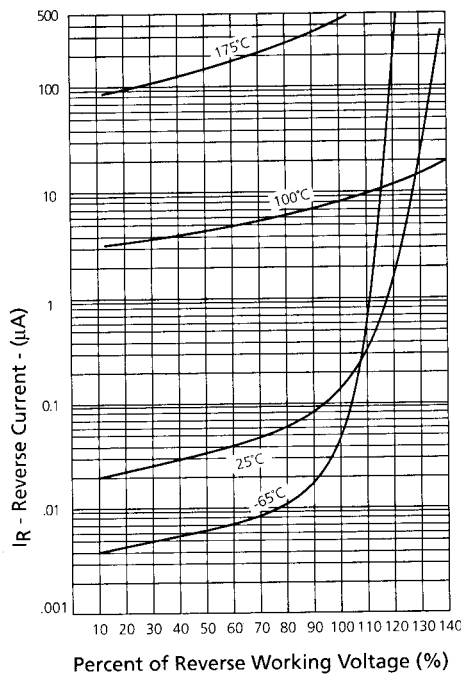
VF - Forward Voltage (V)

**FIGURE 3**  
**1N6642, 1N6643, & US**  
 Typical Forward Current  
 vs Forward Voltage



Percent of Reverse Working Voltage (%)

**FIGURE 4**  
**1N6638, 1N6642, & US**  
 Typical Reverse Current  
 vs Reverse Voltage



Percent of Reverse Working Voltage (%)

**FIGURE 5**  
**1N6643 & US**  
 Typical Reverse Current  
 vs Reverse Voltage