

**1N6638,
1N6642, 1N6643**
COMPUTER SWITCHING
DIODES

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, JANTXV, JANS PER MIL-S-19500/578
- REPLACEMENTS FOR 1N4148, 1N4148-1, 1N4150, 1N4150-1, AND 1N914

Maximum Ratings @ 25°C

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

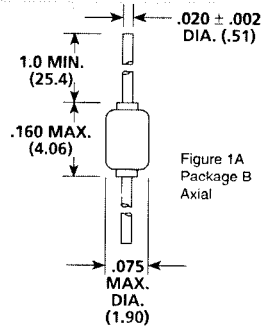
Note 1: At maximum end cap temperature = 110°C for US suffix types. Derate at 4.6 mA/°C above end cap temperature = 110°C. Derate axial types at 3.0 mA/°C above ambient temperature = 25°C.
Note 2: Test pulse = 8.3ms, half sine wave.

Electrical Characteristics @ 25°C

| TYPE NUMBER | MAXIMUM FORWARD VOLTAGE V _F @ I _F | MAXIMUM D.C. REVERSE CURRENT I _R | | | | |
|-------------|--|--|----|--|---|-----|
| | | V _R =20V | | V _R =20V T _A =150°C | V _R =V _{RWM} T _A =150°C | |
| | | nA | µA | µA | µA | |
| | V @ mA | | | | | |
| 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 _{rr} Note 1 | MAXIMUM FORWARD VOLTAGE AND TIME I _F = 50mA, t _r = 1ns | | MAXIMUM JUNCTION CAPACITANCE f = 1MHz V _{sig} = 50mV (p-p) | |
|-------------|--|---|-----------------|---|----------------------|
| | | V _{fr} | t _{fr} | V _R =0V | |
| | | | | pf | V _R =1.5V |
| | 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_F = I_R = 10mA, I_{R(REC)} = 1.0mA, C = 3pF, R_L = 100 ohms



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

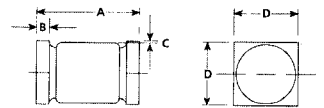


Figure 1B
Package B
Surface
Mount

| | 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 |

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.

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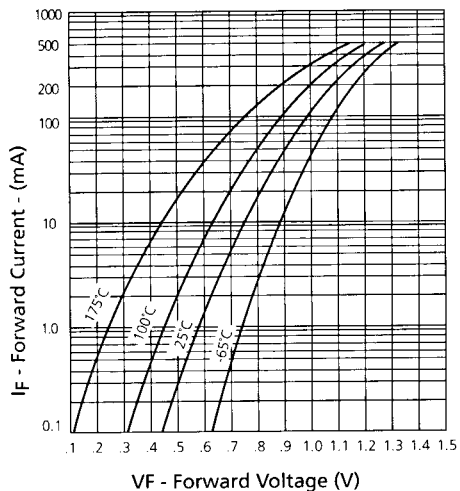


FIGURE 2
1N6638 & US
Typical Forward Current
vs Forward Voltage

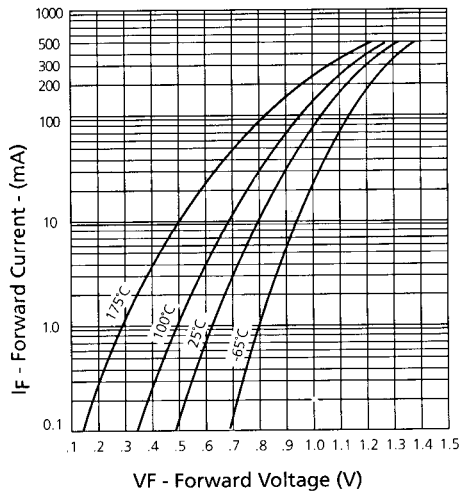


FIGURE 3
1N6642, 1N6643, & US
Typical Forward Current
vs Forward Voltage

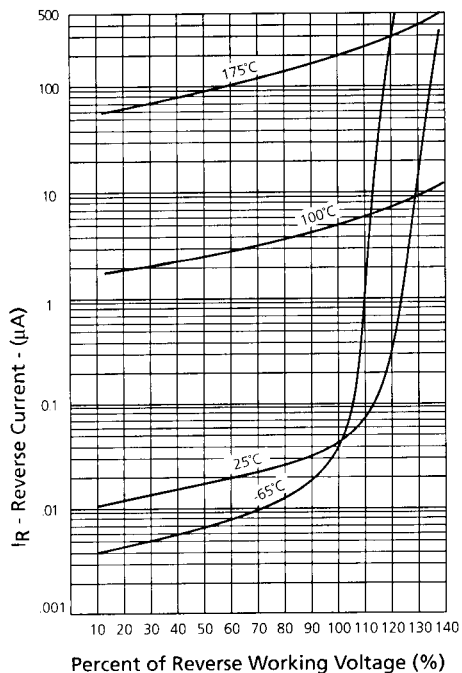


FIGURE 4
1N6638, 1N6642, & US
Typical Reverse Current
vs Reverse Voltage

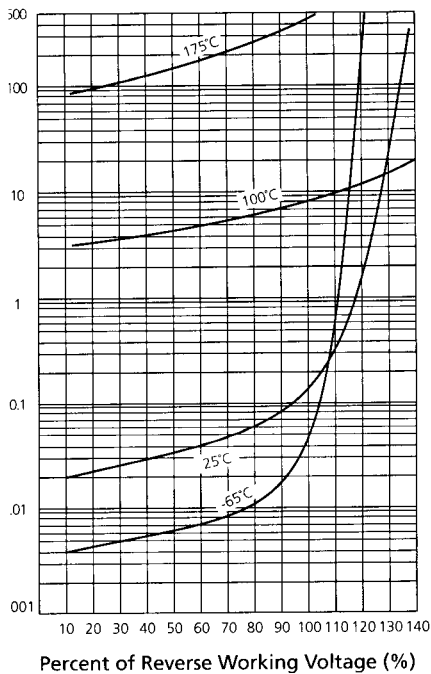


FIGURE 5
1N6643 & US
Typical Reverse Current
vs Reverse Voltage