



## SILICON SWITCHING DIODES

Screening in  
reference to  
MIL-PRF-19500  
available

### DESCRIPTION

This 1N643, 1N662 and 1N663 series of JEDEC registered switching/signal diodes are metallurgically bonded and hermetically sealed. These low capacitance diodes feature double-plug construction in a DO-35 package. They are particularly suited to applications where medium speed switching is required. Microsemi also offers a variety of other switching/signal diodes.

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

### FEATURES

- JEDEC registered 1N643, 1N662 and 1N663.
- Metallurgically bonded.
- Hermetically sealed.
- Double-plug construction.
- Up-screening available in reference to MIL-PRF-19500.  
(See [part nomenclature](#) for all available options.)
- RoHS compliant versions available.

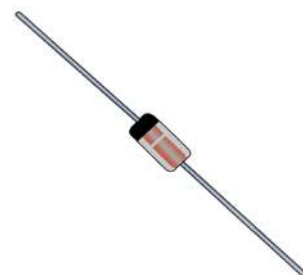
### APPLICATIONS / BENEFITS

- Flexible axial-lead mounting terminals.
- High frequency data lines:
  - RS-232 & RS-422 interface networks
  - Ethernet 10 Base T links
  - Switching core drivers
  - Local area networks
  - Computers

### MAXIMUM RATINGS

Parameters/Test Conditions	Symbol	Value	Unit
Junction Temperature	$T_J$	-65 to +150	°C
Storage Temperature	$T_{STG}$	-65 to +175	°C
Thermal Impedance	$Z_{\theta JX}$	70	°C/W
Reverse Voltage, RMS Value	$V_r$	1N643 200	V(pk)
1N662 & 1N663		100	
Reverse Voltage, Working Peak	$V_{RWM}$	1N643 175	V(pk)
		80	
Forward Current, Surge Peak @ 8.3 ms	$I_{FSM}$	1N662 & 1N663 500	mA
Average Forward Current	$I_O$	1N643 & 1N662 <sup>(1)</sup> 40	mA
1N663 <sup>(2)</sup>		100	
Solder Pad Temperature @ 10 s max.	$T_{SP}$	260	°C

**Notes:** 1. Derate 1N643 and 1N662 at 0.32 mA/°C above  $T_A = 25^\circ\text{C}$ .  
2. Derate 1N663 at 0.48 mA/°C above  $T_A = 25^\circ\text{C}$ .



### DO-35 Package

#### MSC – Lawrence

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Lawrence, MA 01841  
Tel: 1-800-446-1158 or  
(978) 620-2600  
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#### MSC – Ireland

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#### Website:

[www.microsemi.com](http://www.microsemi.com)

### MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass case.
- TERMINALS: Tin/lead finished copper clad steel or RoHS compliant matte-tin finish available.
- MARKING: Alphanumeric.
- POLARITY: Cathode end is banded.
- TAPE & REEL option: Standard per EIA-296 (add "TR" suffix to part number). Consult factory for quantities.
- WEIGHT: 0.2 grams.
- See [Package Dimensions](#) on last page.

### PART NOMENCLATURE



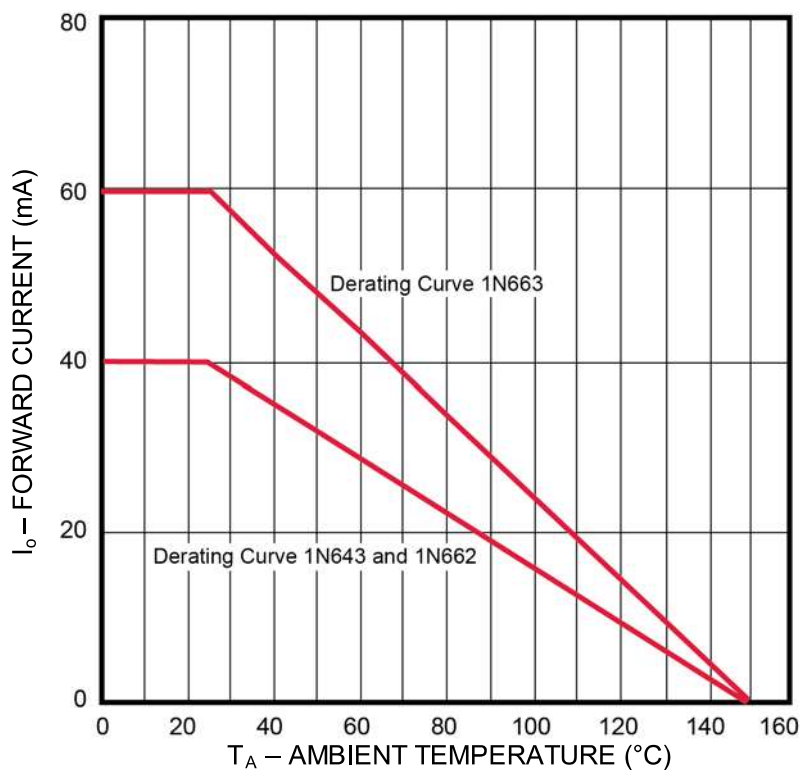
### SYMBOLS & DEFINITIONS

Symbol	Definition
$I_F$	Forward Current.
$I_O$	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.
$I_R$	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.
$T_{SP}$	Temperature Solder Pad: The maximum solder temperature that can be safely applied to the terminal.
$V_F$	Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.
$V_{RWM}$	Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV.
$V_{WM}$	Working Peak Voltage: The maximum peak voltage that can be applied over the operating temperature range. This is also referred to as Standoff Voltage.
$Z_{\theta JX}$	Thermal Impedance: The thermal impedance junction to reference point.

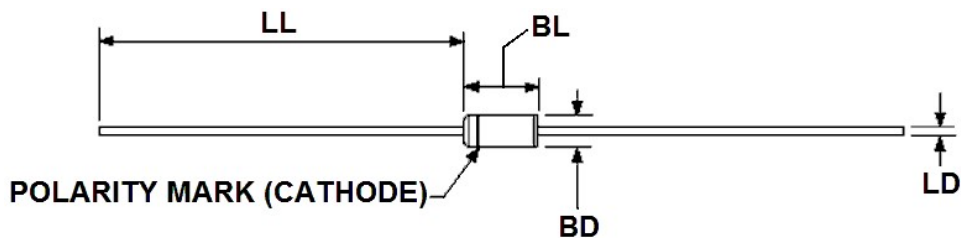
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

TYPE NUMBER	Forward Voltage $V_F$ (See Note 1)	Reverse Current $I_R$ @ $V_R = 10\text{ V}$		Capacitance $C$	Reverse Recovery Time $T_{rr}$ (See Note 2)
		$T_A @ 25\text{ }^{\circ}\text{C}$ ( $I_R @ 25\text{ }^{\circ}\text{C}$ )	$T_A @ 100\text{ }^{\circ}\text{C}$		
	V (max)	nA (max)	$\mu\text{A}$ (max)	pF (max)	ns (max)
1N643	1.0	25 (100 $\mu\text{A}$ @ 200 V)	15 @ 100 V	3 @ 175 V	300
1N662	1.0	25 (100 $\mu\text{A}$ @ 100 V)	100 @ 50 V	3 @ 80 V	500
1N663	1.0	25 (100 $\mu\text{A}$ @ 100 V)	50 @ 75 V	3 @ 80 V	500

**NOTES:** 1.  $I_F = 10\text{ mA}$  for 1N643 and 1N662;  $I_F = 100\text{ mA}$  for 1N663.  
 2. Test condition B:  $I_F = 5\text{ mA}$ ;  $I_R = 17.5\text{ mA}$ ;  $R_L = 2300\text{ ohms} \pm 10\%$ ;  $C = 40\text{ pF}$ , max.

**GRAPHS**


**FIGURE 1**  
Average Rectified Current vs Ambient Temperature

**PACKAGE DIMENSIONS**


Symbol	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
BD	.056	.075	1.42	1.90
BL	.140	.180	3.56	4.57
LD	.018	.022	.046	.056
LL	1.000	1.500	25.40	38.10

**NOTES:**

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The minimum body diameter shall be maintained over .15 inch (3.81 mm) inch of body length.
4. The specified lead diameter applies in the zone between .050 inch (1.27 mm) and the end of the lead.  
Outside of this zone the lead diameter shall not exceed LD.
5. Both leads shall be within the specified dimension.
6. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.