



## Silicon Dual Schottky Power Rectifier

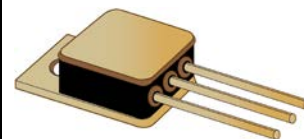
### 30 Amp, 45 Volt

Qualified per MIL-PRF-19500/608

Qualified Levels:  
JAN, JANTX, and  
JANTXV

#### DESCRIPTION

This Dual Schottky rectifier device is military qualified up to a JANTXV level for high-reliability applications. This TO-254 packaged product is available in three polarity options.



**TO-254AA Package**

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

#### FEATURES

- JEDEC registered 1N6660.
- Hermetically isolated TO-254AA package.
- Available in standard, reverse, common cathode, common anode and doubler configurations.
- JAN, JANTX, and JANTXV qualifications are available per MIL-PRF-19500/608.
- RoHS compliant versions available (commercial grade only).

#### APPLICATIONS / BENEFITS

- High frequency operation.
- Low forward voltage drop.

#### MAXIMUM RATINGS @ $T_A = +25^\circ\text{C}$ unless otherwise noted.

| Parameters/Test Conditions                                 | Symbol              | Value per diode |              | Unit               |
|------------------------------------------------------------|---------------------|-----------------|--------------|--------------------|
| Junction and Storage Temperature                           | $T_J$ and $T_{STG}$ | -65 to +150     |              | $^\circ\text{C}$   |
| Thermal Resistance Junction-to-Case                        | $R_{\theta JC}$     | <b>Die 1</b>    | <b>Die 2</b> | $^\circ\text{C/W}$ |
| 1N6660CCT1                                                 |                     | 1.65            | 1.65         |                    |
| 1N6660CAT1                                                 |                     | 2.8             | 2.8          |                    |
| 1N6660DT1                                                  |                     | 2.8             | 1.65         |                    |
| Thermal Resistance Junction-to-Ambient                     | $R_{\theta JA}$     | 50              |              | $^\circ\text{C/W}$ |
| Working Peak Reverse Voltage                               | $V_{RWM}$           | 45              |              | V                  |
| DC Blocking Voltage                                        | $V_R$               | 45              |              | V                  |
| Surge Peak Forward Current @ $t_p = 8.3$ ms half-sine wave | $I_{FSM}$           | 300             |              | A                  |
| Average Rectified Output Current <sup>(1)</sup>            | $I_O$               | 15              |              | A                  |

**Note:** 1. See [Figures 1 and 2](#) for derating of entire package (30 Amps).

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**MECHANICAL and PACKAGING**

- CASE: Nickel plated CRS steel.
- TERMINALS: Ceramic feed-through, hot solder dip, Ni plated Alloy 52, copper core. "e3" available for commercial only (pure tin dip).
- MARKING: Part number, date code, and polarity symbol.
- POLARITY: See [Schematic](#) on last page.
- WEIGHT: Approximately 6.5 grams.
- See [Package Dimensions](#) on last page.

**PART NOMENCLATURE**

**JAN 1N6660 R T1 (e3)**

**Reliability Level**

JAN = JAN Level  
JANTX = JANTX Level  
JANTXV = JANTXV Level  
Blank = Commercial

**JEDEC type number**
**RoHS Compliance**

e3 = RoHS Compliant ([available on commercial grade only](#))  
Blank = non-RoHS Compliant

**TO-254 Package Type**
**Polarity**

Blank = standard  
R = reverse  
CA = Common Anode  
CC = Common Cathode  
D = Doubler

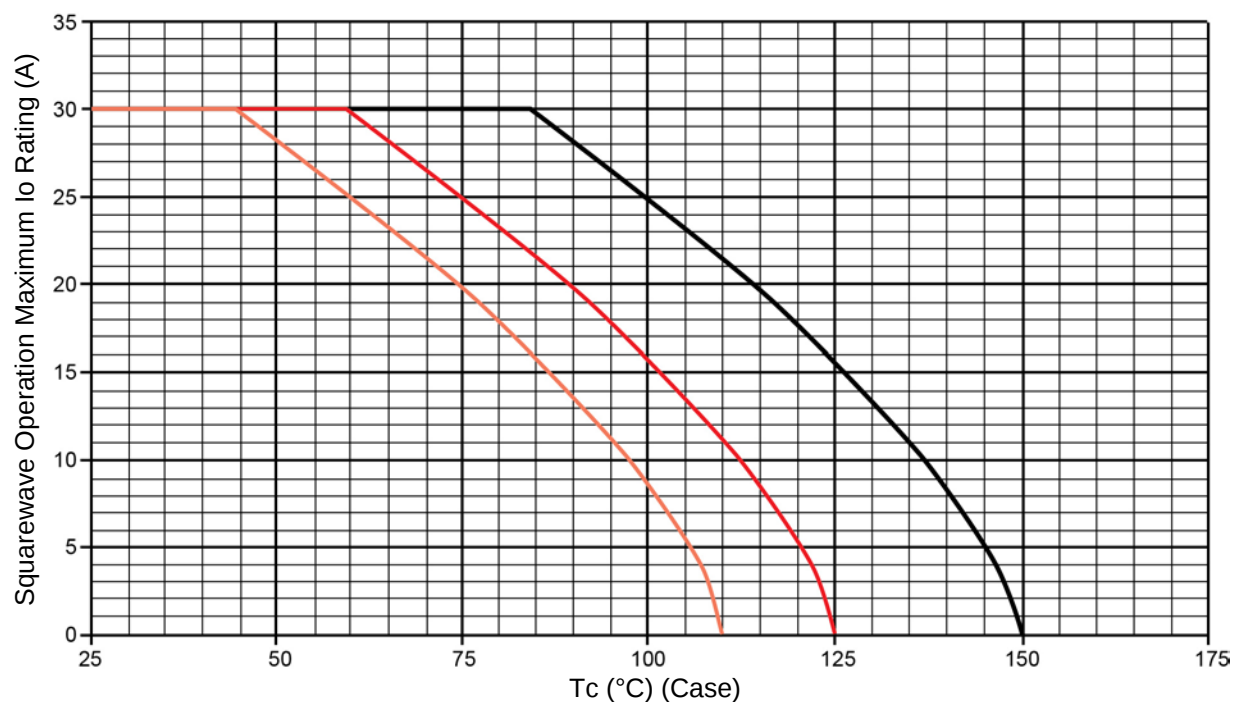
**SYMBOLS & DEFINITIONS**

| Symbol           | Definition                                                                                                                                               |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| C                | Capacitance: The capacitance in pF at a frequency of 1 MHz and specified voltage.                                                                        |
| f                | frequency                                                                                                                                                |
| I <sub>F</sub>   | Forward Current: The dc current flowing from the external circuit into the anode terminal.                                                               |
| I <sub>FSM</sub> | Surge Peak Forward Current: The forward current including all nonrepetitive transient currents but excluding all repetitive transients (ref JESD282-B)   |
| I <sub>O</sub>   | 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 <sub>R</sub>   | Reverse Current: The dc current flowing from the external circuit into the cathode terminal at the specified voltage V <sub>R</sub> .                    |
| V <sub>RWM</sub> | Working Peak Reverse Voltage: The peak voltage excluding all transient voltages (ref JESD282-B). Also sometimes known historically as PIV.               |
| V <sub>F</sub>   | Forward Voltage: A positive dc anode-cathode voltage the device will exhibit at a specified forward current.                                             |
| V <sub>R</sub>   | Reverse Voltage: A positive dc cathode-anode voltage below the breakdown region.                                                                         |

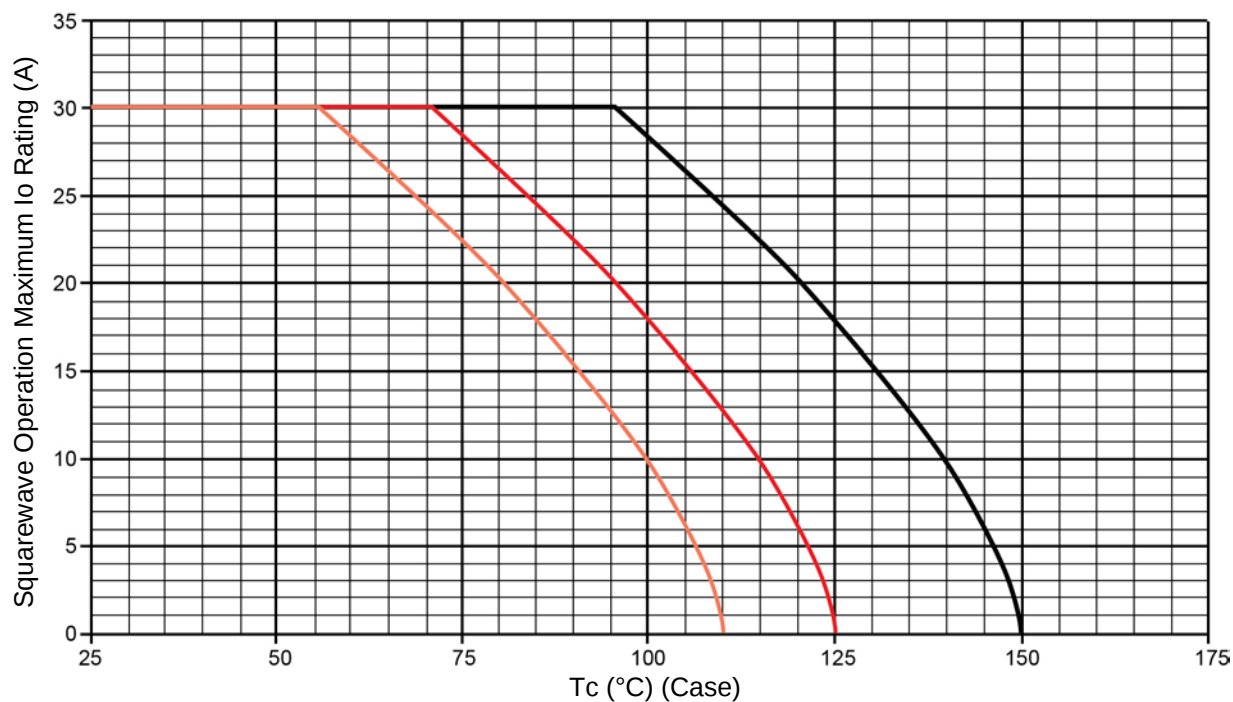
**ELECTRICAL CHARACTERISTICS @  $T_A = +25\text{ }^{\circ}\text{C}$  unless otherwise noted**

| Parameters / Test Conditions                                                                                                                   | Symbol | Min. | Max.                         | Unit |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------------------------------|------|
| <b>CHARACTERISTICS per Leg</b>                                                                                                                 |        |      |                              |      |
| Forward Voltage*<br>$I_F = 5\text{ A}$<br>$I_F = 15\text{ A}$<br>$I_F = 30\text{ A}$<br>$I_F = 15\text{ A}, T_A = -55\text{ }^{\circ}\text{C}$ | $V_F$  |      | 0.55<br>0.75<br>1.00<br>0.80 | V    |
| Reverse Current<br>$V_R = 45\text{ V}$<br>$V_R = 45\text{ V}, T_J = +125\text{ }^{\circ}\text{C}$                                              | $I_R$  |      | 1.0<br>40                    | mA   |
| Junction Capacitance<br>$V_R = 5\text{ V}$<br>$f = 1\text{ MHz}, V_{SIG} = 50\text{ mV (p-p) (max)}$                                           | C      |      | 2000                         | pF   |

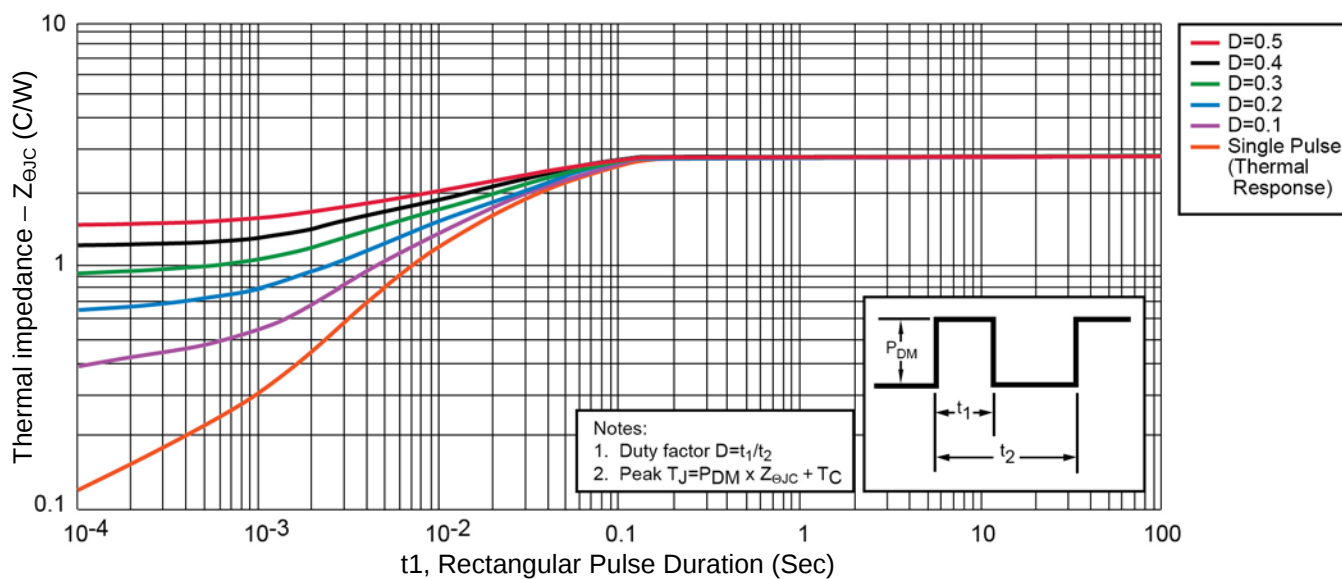
\* Pulse test: Pulse width 300  $\mu\text{sec}$ , duty cycle 2%.

**GRAPHS**

**FIGURE 1**

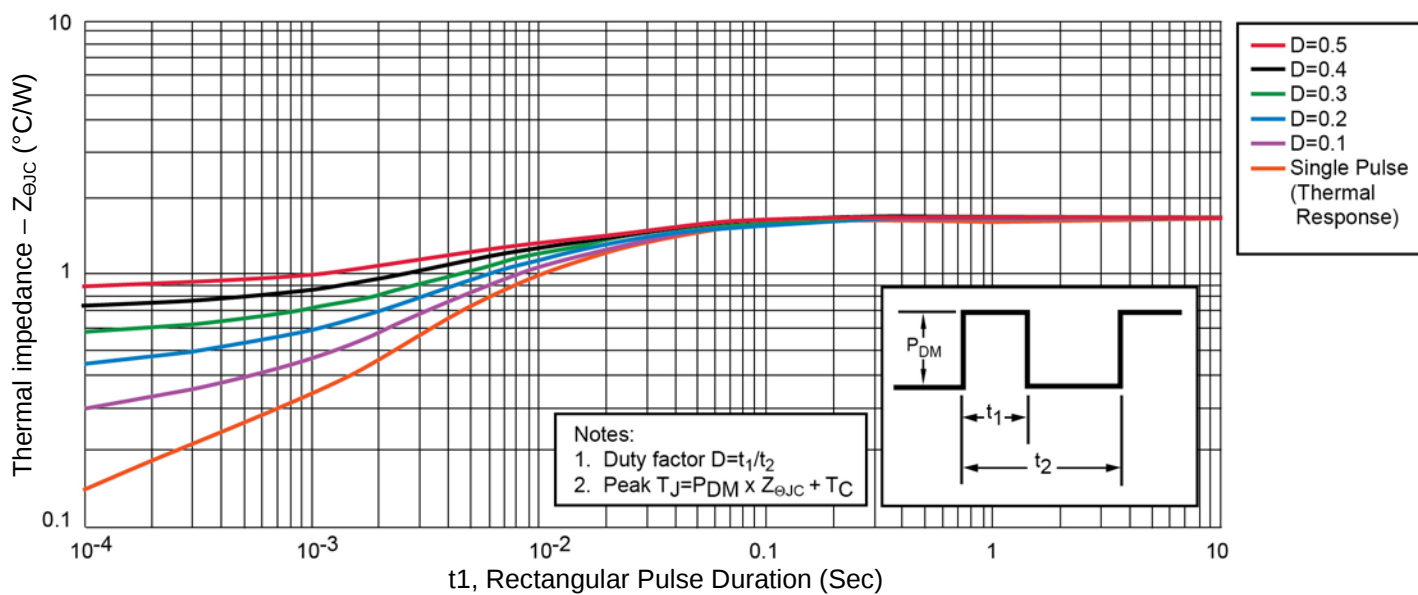
Temperature-current derating curve (1N6660, 1N6660CCT1, entire package)


**FIGURE 2**

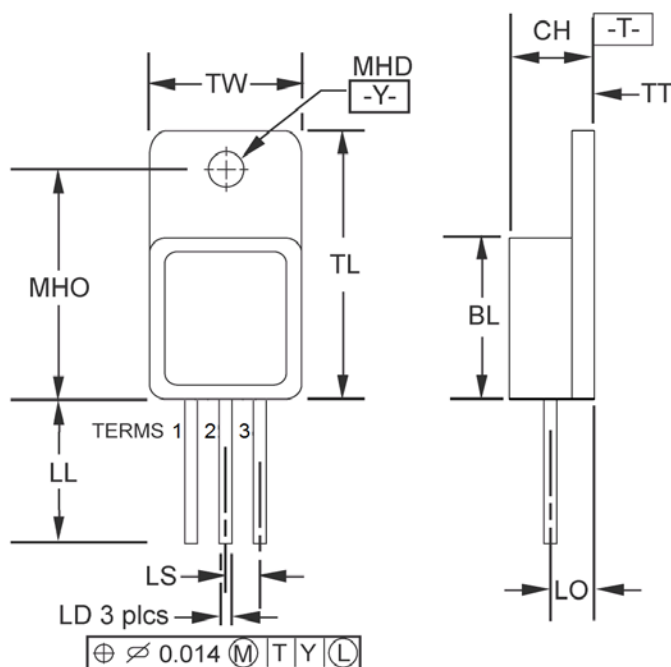
Temperature-current derating curve (1N6660R, 1N6660CAT1, 1N6660DT1, entire package)

**GRAPHS**

**FIGURE 3**

Thermal impedance for each leg 1N6660CAT1, 1N6660DT1, die 1, and 1N6660R


**FIGURE 4**

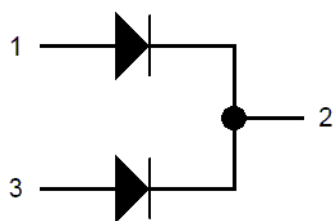
Thermal impedance for each leg 1N6660CCT1, 1N6660DT1, die 2, and 1N6660

**PACKAGE DIMENSIONS**


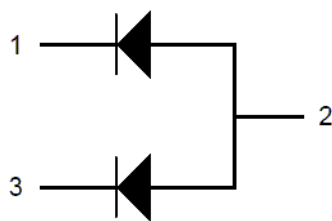
| Ltr | Dimensions |       |             |       |
|-----|------------|-------|-------------|-------|
|     | Inch       |       | Millimeters |       |
|     | Min        | Max   | Min         | Max   |
| BL  | 0.535      | 0.545 | 13.59       | 13.84 |
| CH  | 0.249      | 0.260 | 6.32        | 6.60  |
| LD  | 0.035      | 0.045 | 0.89        | 1.14  |
| LL  | 0.510      | 0.570 | 12.95       | 14.48 |
| LO  | 0.150 BSC  |       | 3.81 BSC    |       |
| LS  | 0.150 BSC  |       | 3.81 BSC    |       |
| MHD | 0.139      | 0.149 | 3.53        | 3.78  |
| MHO | 0.665      | 0.685 | 16.89       | 17.40 |
| TL  | 0.790      | 0.800 | 20.07       | 20.32 |
| TT  | 0.040      | 0.050 | 1.02        | 1.27  |
| TW  | 0.535      | 0.545 | 13.59       | 13.84 |

**NOTES:**

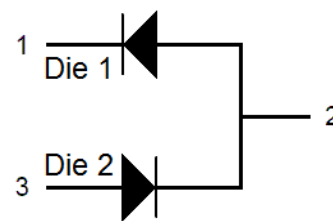
1. Dimensions are in inches.
2. Millimeters are given for information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.

**SCHEMATICS**

**1N6660 & 1N6660CCT1**

TERM 1 = ANODE  
TERM 2 = CATHODE  
TERM 3 = ANODE


**1N6660R & 1N6660CAT1**

TERM 1 = CATHODE  
TERM 2 = ANODE  
TERM 3 = CATHODE


**1N6660DT1**

TERM 1 = ?  
TERM 2 = ?  
TERM 3 = ?