



# 19TQ015 19TQ015S

SCHOTTKY RECTIFIER

19 Amp

$I_{F(AV)} = 19\text{Amp}$   
 $V_R = 15\text{V}$

### Major Ratings and Characteristics


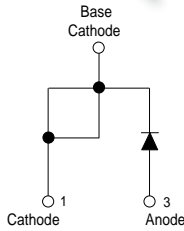

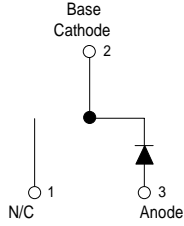
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	19	A
$V_{RRM}$	15	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	700	A
$V_F$ @ 19 Apk, $T_J = 75^\circ\text{C}$	0.32	V
$T_J$ range	-55 to 125	$^\circ\text{C}$

### Description/ Features

The 19TQ015 Schottky rectifier has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 $^\circ\text{C}$  junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ\text{C}$   $T_J$  operation ( $V_R < 5\text{V}$ )
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

### Case Styles

<p><b>19TQ015</b></p>  <div style="text-align: center;">  <p>Base Cathode</p> <p>1 Cathode      3 Anode</p> <p><b>TO-220</b></p> </div>	<p><b>19TQ015S</b></p>  <div style="text-align: center;">  <p>Base Cathode</p> <p>1 N/C      3 Anode</p> <p><b>D<sup>2</sup>PAK</b></p> </div>
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## Voltage Ratings

Part number	19TQ015
$V_R$ Max. DC Reverse Voltage (V)	15
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

Parameters	19TQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	19	A	50% duty cycle @ $T_C = 80^\circ\text{C}$ , rectangular waveform
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	700	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse
	330		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non-Repetitive Avalanche Energy	6.75	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 1.50$ Amps, $L = 6$ mH
$I_{AR}$ Repetitive Avalanche Current	1.50	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 3 \times V_R$ typical

## Electrical Specifications

Parameters	19TQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1) * See Fig. 1	0.36	V	@ 19A
	0.46	V	@ 38A
	0.32	V	@ 19A
	0.43	V	@ 38A
$I_{RM}$ Max. Reverse Leakage Current (1) * See Fig. 2	10.5	mA	$T_J = 25^\circ\text{C}$
	522	mA	$T_J = 100^\circ\text{C}$
	465	mA	$T_J = 100^\circ\text{C}$ , $V_R = 12\text{V}$
	285	mA	$T_J = 100^\circ\text{C}$ , $V_R = 5\text{V}$
$C_T$ Max. Junction Capacitance	2000	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	8.0	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change	10000	V/ $\mu\text{s}$	(Rated $V_R$ )

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

## Thermal-Mechanical Specifications

Parameters	19TQ	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 125	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case	1.50	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.50	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased
wt Approximate Weight	2 (0.07)		g (oz.)
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	
	Max. 12 (10)		
Marking Device	10TQ045	Case Style TO-220	
	10TQ045S	Case Style D <sup>2</sup> Pak	

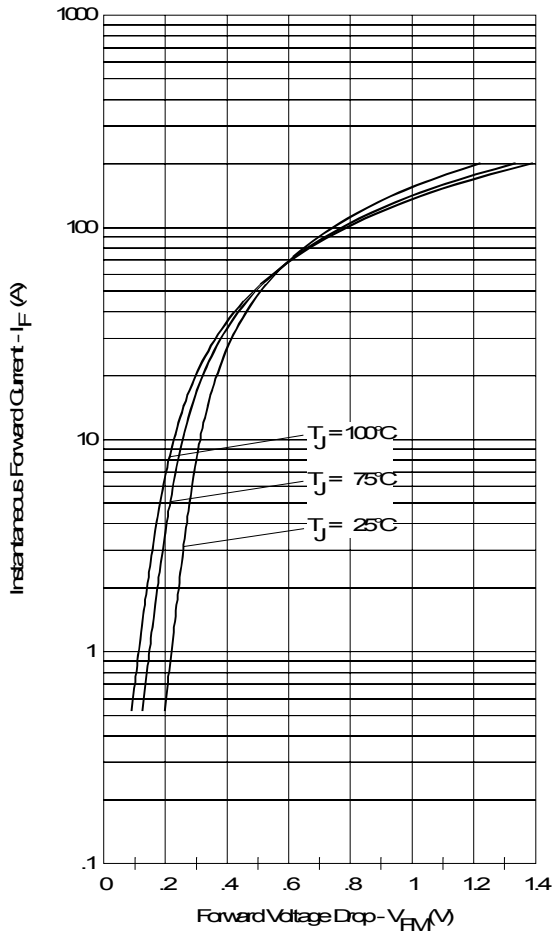


Fig. 1 - Maximum Forward Voltage Drop Characteristics

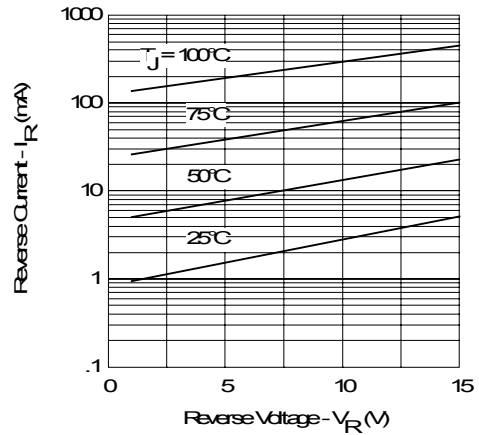


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

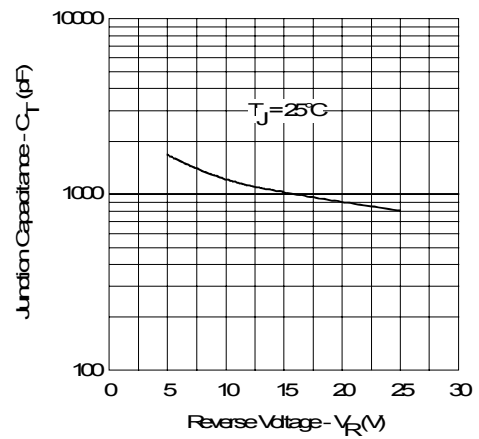


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

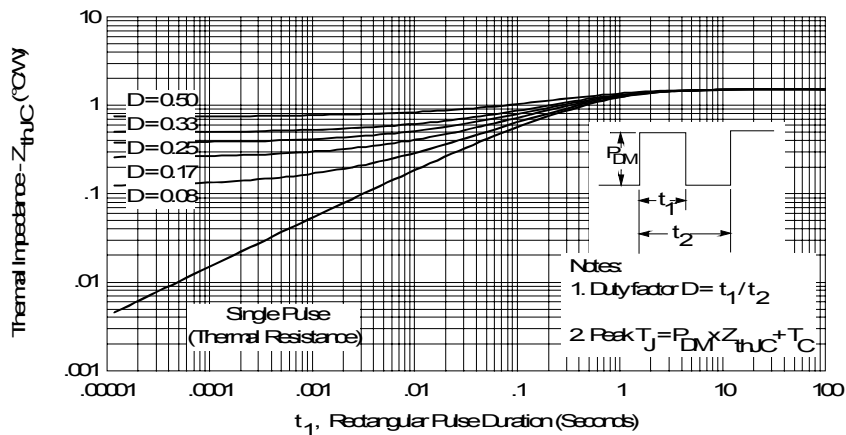


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

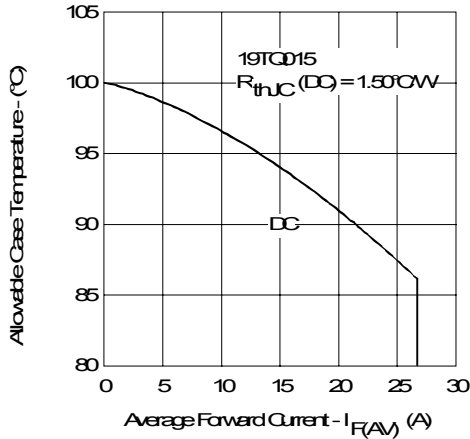


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

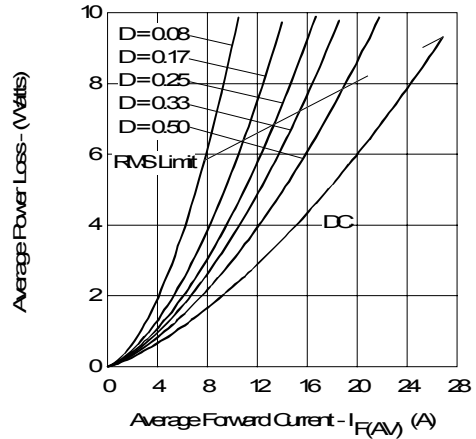


Fig. 6 - Forward Power Loss Characteristics

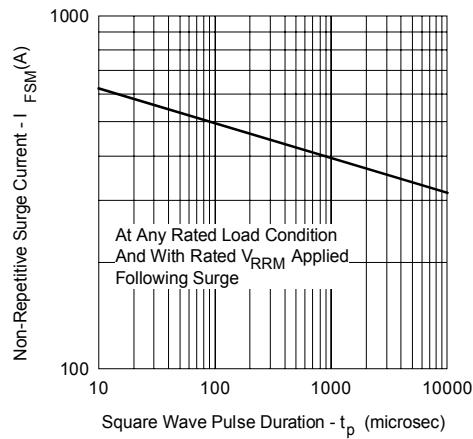


Fig. 7 - Maximum Non-Repetitive Surge Current

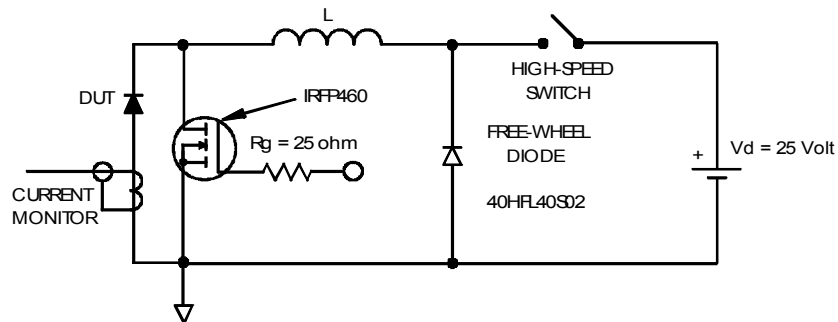
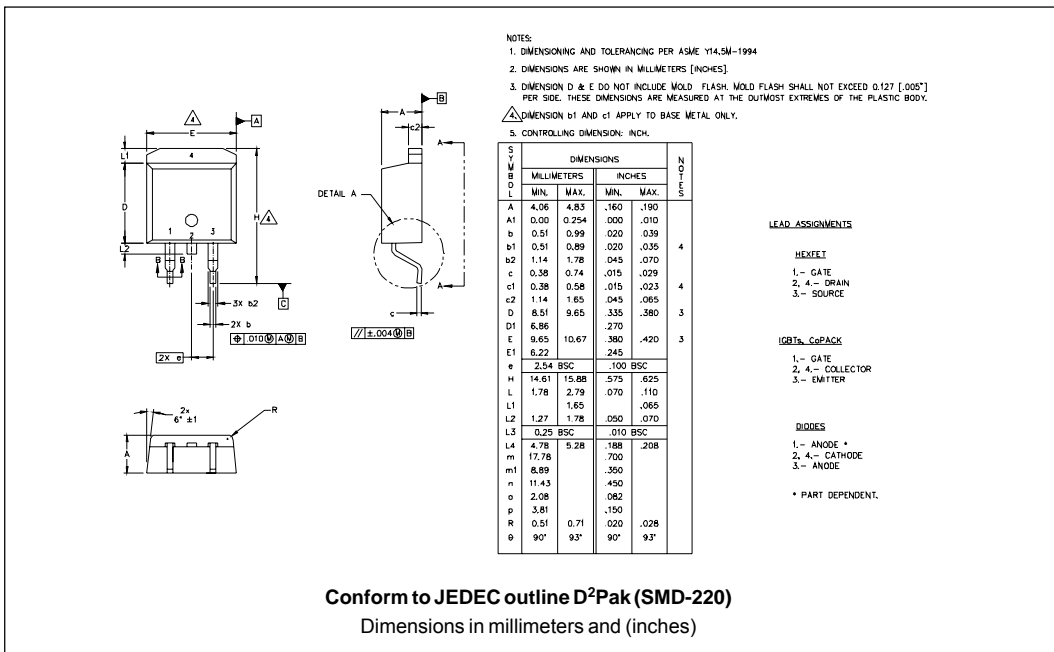
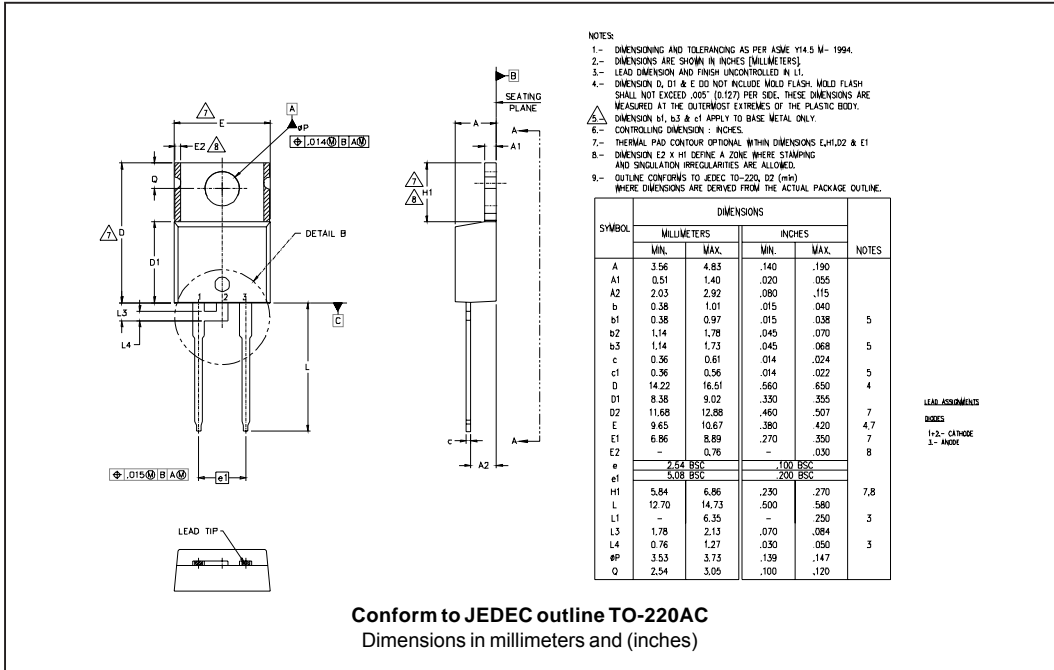


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Part Marking Information

**TO-220AC**

EXAMPLE: THIS IS A 19TQ015  
LOT CODE 1789  
ASSEMBLED ON WW 19, 2001  
IN THE ASSEMBLY LINE "C"

INTERNATIONAL RECTIFIER LOGO  
ASSEMBLY LOT CODE  
PART NUMBER  
DATE CODE  
YEAR 1 = 2001  
WEEK 19  
LINE C

**D<sup>2</sup>Pak**

EXAMPLE: THIS IS A 19TQ015S  
LOT CODE 8024  
ASSEMBLED ON WW 02, 2000

INTERNATIONAL RECTIFIER LOGO  
ASSEMBLY LOT CODE  
PART NUMBER  
DATE CODE  
YEAR 0 = 2000  
WEEK 02  
LINE C

Tape & Reel Information

SECTION Y-Y

NOTES:

- 1.0 10 SPROCKET HOLE PITH CUMULATIVE TOLERANCE ±.02
- 2.0 CAMBER NOT TO EXCEED 1mm in 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 K<sub>o</sub> MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 5.0 MEASURED FROM CENTRELINE OF SPROCKET HOLE TO CENTRELINE OF POCKET
- 6.0 VENDOR: (OPTIONAL)
- 7.0 MUST ALSO MEET REQUIREMENTS OF EIA STANDAR #EIA-481A TAPING OF SURFACE MOUNT COMPONENTS FOR AUTOMATIC PLACEMENT
- 8.0 SURFACE RESISTIVITY OF MOLDED MATL. MUST MEASURE LESS OR EQUAL TO 10<sup>6</sup> OHMS PER SQUARE. MEASURED IN ACCORDANCE TO PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

A <sub>o</sub>	10.50 +/- 0.1
B <sub>o</sub>	15.80 +/- 0.1
B <sub>2</sub>	10.25 +/- 0.1
K <sub>o</sub>	4.90 +/- 0.1
F	11.50 +/- 0.1
P <sub>1</sub>	16.00 +/- 0.1
W	24.00 +/- 0.3

Dimensions in millimeters and (inches)

Ordering Information Table

Device Code													
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">19</td> <td style="padding: 5px;">T</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">015</td> <td style="padding: 5px;">S</td> <td style="padding: 5px;">-</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table>	19	T	Q	015	S	-	①	②	③	④	⑤	⑥
19	T	Q	015	S	-								
①	②	③	④	⑤	⑥								
<b>1</b>	- Current Rating (19 = 19A)												
<b>2</b>	- Package T = TO-220												
<b>3</b>	- Schottky "Q" Series												
<b>4</b>	- Voltage Rating (015 = 15V)												
<b>5</b>	- <ul style="list-style-type: none"> <li>• none = TO-220</li> <li>• S = D<sup>2</sup>Pak</li> </ul>												
<b>6</b>	- <ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free</li> </ul>												
Tube Standard Pack Quantity : 50 pieces													

Data and specifications subject to change without notice.  
 This product has been designed and qualified for Industrial Level.  
 Qualification Standards can be found on IR's Web site.