

### SCHOTTKY RECTIFIER

### 32 Amp

$$I_{F(AV)} = 30\text{Amp}$$

$$V_R = 30\text{V}$$

#### Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	30	A
$V_{RRM}$	30	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	900	A
$V_F$ @15 Apk, $T_J = 125^\circ\text{C}$	0.40	V
$T_J$ range	-55 to 150	$^\circ\text{C}$

#### Description/ Features

The 32CTQ030PbF Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

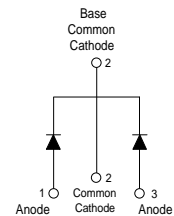
- 150° C  $T_J$  operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

#### Case Styles

32CTQ030PbF



TO-220



## Voltage Ratings

Part number	32CTQ030PbF
V <sub>R</sub> Max. DC Reverse Voltage (V)	30
V <sub>RWM</sub> Max. Working Peak Reverse Voltage (V)	

## Absolute Maximum Ratings

Parameters	32CTQ	Units	Conditions
I <sub>F(AV)</sub> Max. Average Forward Current * See Fig. 5	30	A	50% duty cycle @ T <sub>C</sub> = 115 °C, rectangular wave form
I <sub>FSM</sub> Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7	900	A	5μs Sine or 3μs Rect. pulse
	250		10ms Sine or 6ms Rect. pulse
E <sub>AS</sub> Non-Repetitive Avalanche Energy	13	mJ	T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 1.20 Amps, L = 11.10 mH
I <sub>AR</sub> Repetitive Avalanche Current	3	A	Current decaying linearly to zero in 1 μsec Frequency limited by T <sub>J</sub> max. V <sub>A</sub> = 1.5 x V <sub>R</sub> typical

## Electrical Specifications

Parameters	32CTQ	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (1) * See Fig. 1	0.49	V	@ 15A
	0.58	V	@ 30A
	0.40	V	@ 15A
	0.53	V	@ 30A
I <sub>RM</sub> Max. Reverse Leakage Current (1) * See Fig. 2	1.75	mA	T <sub>J</sub> = 25 °C
	97	mA	T <sub>J</sub> = 125 °C
V <sub>F(TO)</sub> Threshold Voltage	0.233	V	T <sub>J</sub> = T <sub>J</sub> max.
r <sub>f</sub> Forward Slope Resistance	9.09	mΩ	
C <sub>T</sub> Max. Junction Capacitance Per Leg	1300	pF	V <sub>R</sub> = 5V <sub>DC</sub> (test signal range 100Khz to 1Mhz) 25 °C
L <sub>S</sub> Typical Series Inductance Per Leg	8.0	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change (Rated V <sub>R</sub> )	10000	V/μs	

(1) Pulse Width &lt; 300μs, Duty Cycle &lt; 2%

## Thermal-Mechanical Specifications

Parameters	32CTQ	Units	Conditions
T <sub>J</sub> Max. Junction Temperature Range	-55 to 150	°C	
T <sub>stg</sub> Max. Storage Temperature Range	-55 to 150	°C	
R <sub>thJC</sub> Max. Thermal Resistance Junction to Case Per Leg	3.25	°C/W	DC operation * See Fig. 4
R <sub>thCS</sub> Typical Thermal Resistance, Case to Heatsink	0.50	°C/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	32CTQ030		

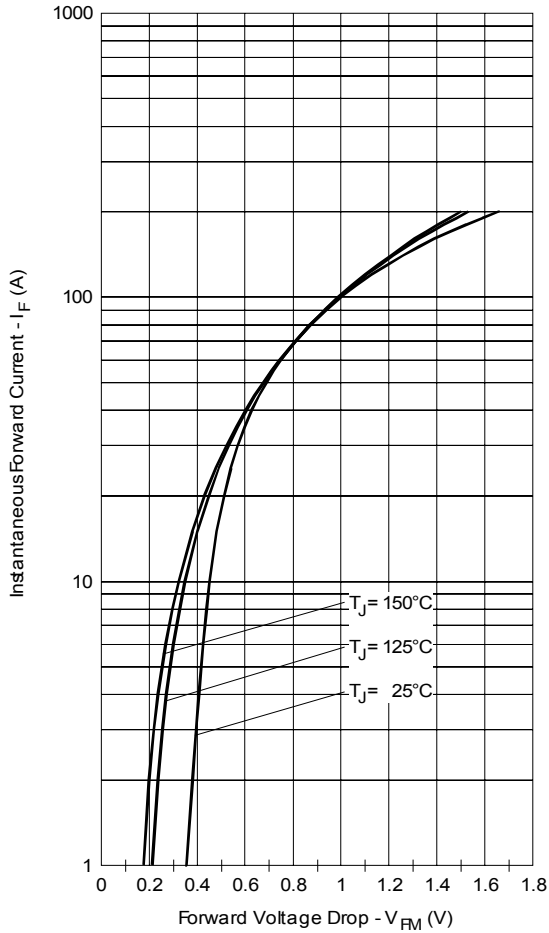


Fig. 1 - Maximum Forward Voltage Drop Characteristics

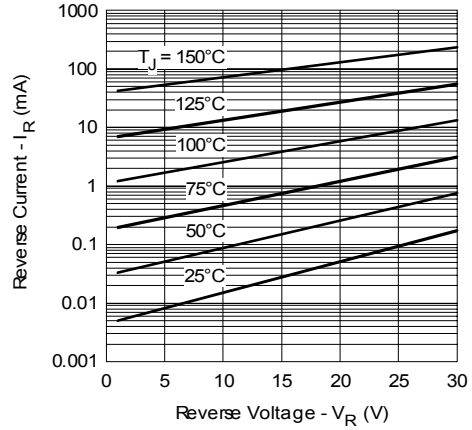


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

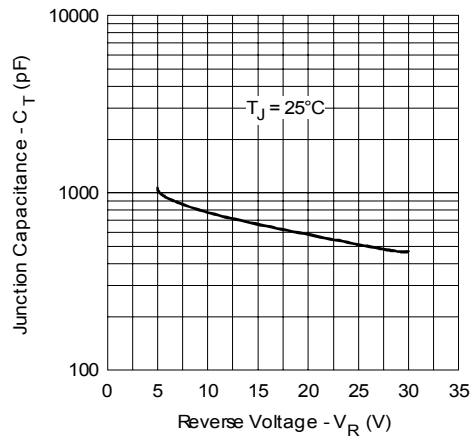


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

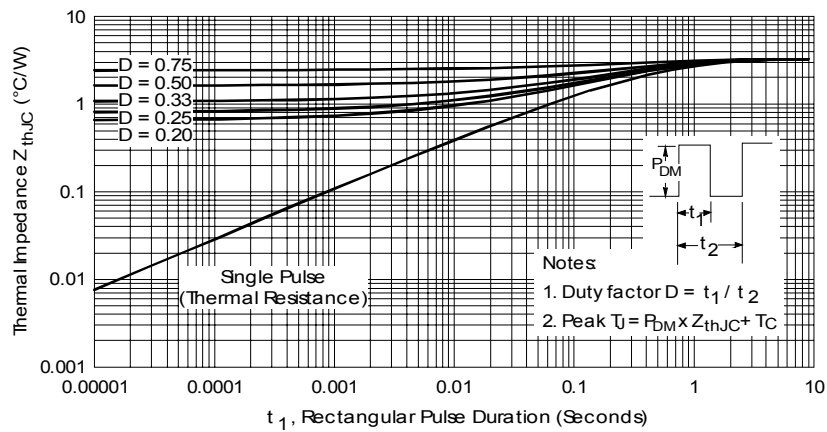


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

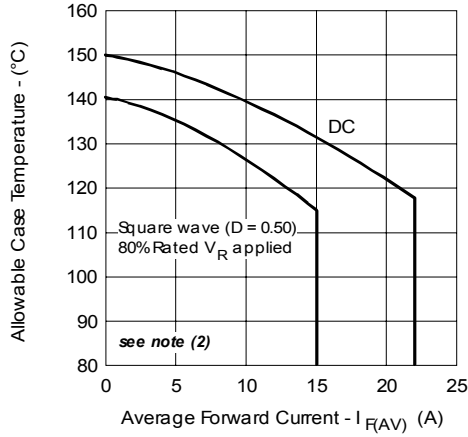


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

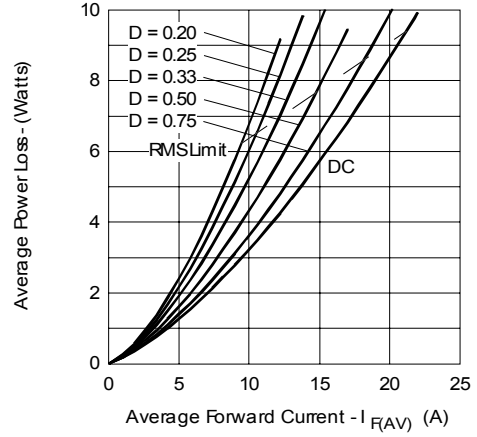


Fig. 6 - Forward Power Loss Characteristics

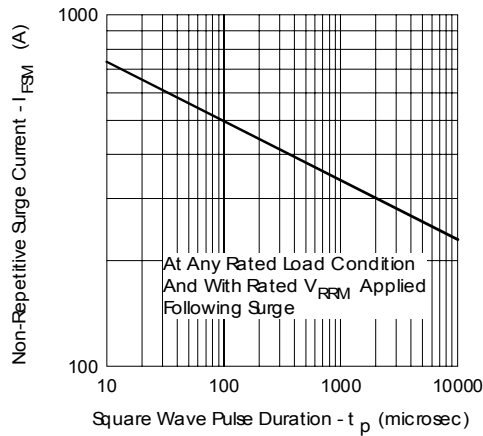


Fig. 7 - Maximum Non-Repetitive Surge Current

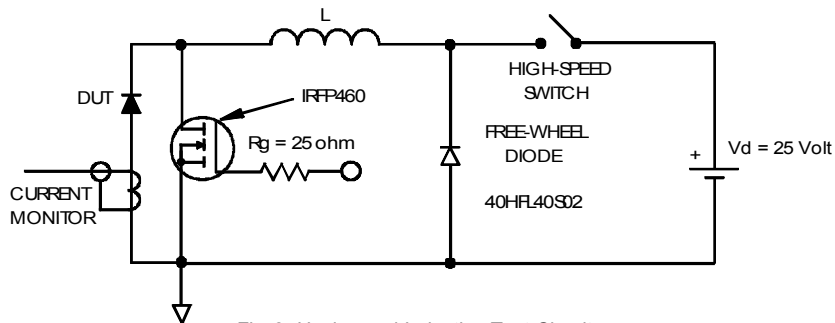


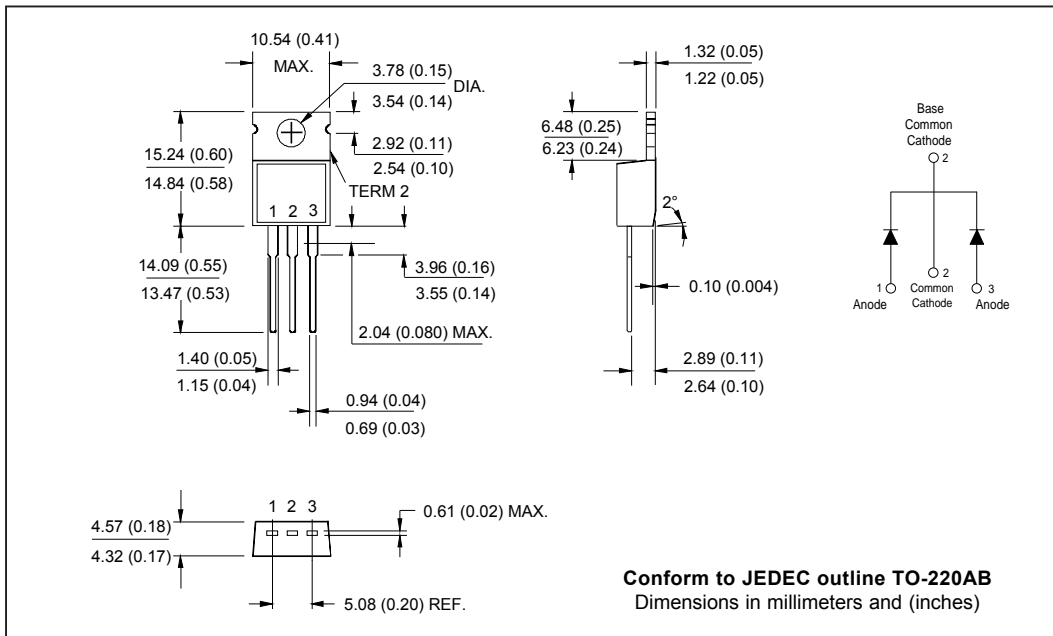
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used:  $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$

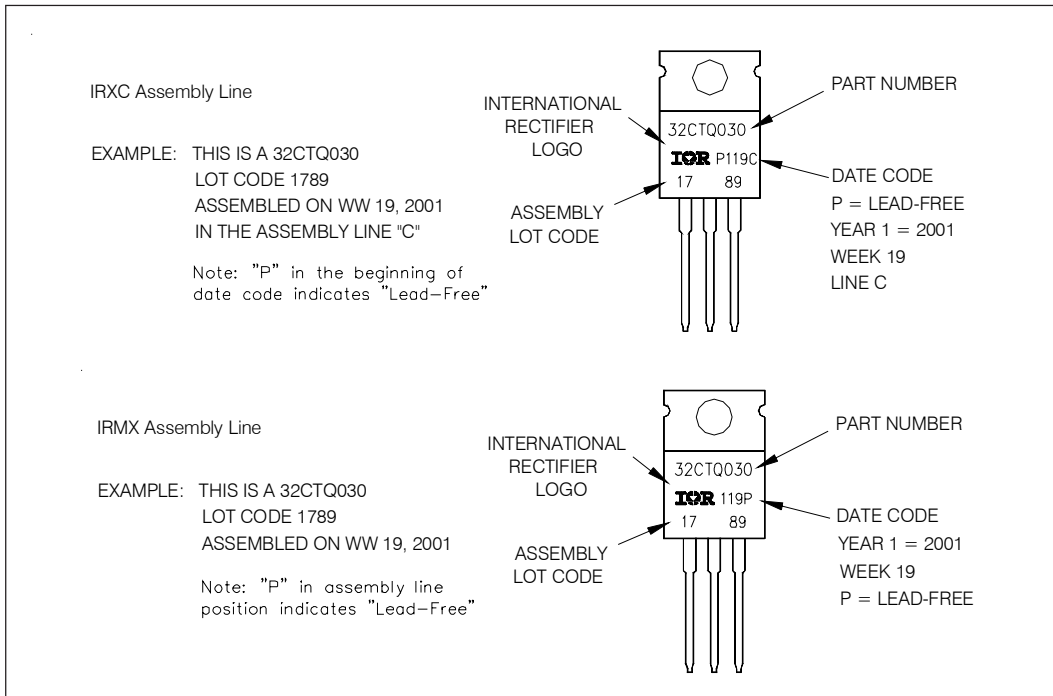
$Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

$Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_{R1} (1 - D)$ ;  $I_{R1} @ V_{R1} = 80\% \text{ rated } V_R$

Outline Table



Part Marking Information



## Ordering Information Table

Device Code													
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">32</td> <td style="padding: 5px;">C</td> <td style="padding: 5px;">T</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">030</td> <td style="padding: 5px;">PbF</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>	32	C	T	Q	030	PbF	①	②	③	④	⑤	⑥
32	C	T	Q	030	PbF								
①	②	③	④	⑤	⑥								
<b>1</b>	- Current Rating (30A)												
<b>2</b>	- Circuit Configuration C = Common Cathode												
<b>3</b>	- Package T = TO-220												
<b>4</b>	- Schottky "Q" Series												
<b>5</b>	- Voltage Rating (030 = 30V)												
<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 and Lead-Free.  
Qualification Standards can be found on IR's Web site.

International  
**IOR** Rectifier

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