

Bulletin PD-20265 07/00

International
IOR Rectifier

32CTQ030
32CTQ030S
32CTQ030-1

SCHOTTKY RECTIFIER

32 Amp

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

Major Ratings and Characteristics

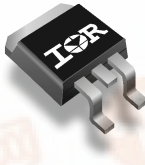
Characteristics	32CTQ	Units
$I_{F(AV)}$ Rectangular waveform	30	A
V_{RRM}	30	V
I_{FSM} @tp=5µs sine	900	A
V_F @15 Apk, $T_J = 125^\circ\text{C}$	0.40	V
T_J range	-55 to 150	$^\circ\text{C}$

Description/Features

The 32CTQ030 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

Case Styles

32CTQ030	32CTQ030S	32CTQ030-1
		
TO-220	D ² PAK	TO-262



32CTQ030, 32CTQ030S, 32CTQ030-1

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International
IRF Rectifier

Voltage Ratings

Part number	32CTQ030
V _R Max. DC Reverse Voltage (V)	30
V _{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	32CTQ	Units	Conditions
I _{F(AV)} Max. Average Forward Current * See Fig. 5	30	A	50% duty cycle @ T _C = 115 °C, rectangular wave form
I _{FSM} 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 _{AS} Non-Repetitive Avalanche Energy	13	mJ	T _J = 25 °C, I _{AS} = 1.20 Amps, L = 11.10 mH
I _{AR} Repetitive Avalanche Current	3	A	Current decaying linearly to zero in 1 µsec Frequency limited by T _J max. V _A = 1.5 x V _R typical

Electrical Specifications

Parameters	32CTQ	Units	Conditions
V _{FM} 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 _{RM} Max. Reverse Leakage Current (1) * See Fig. 2	1.75	mA	T _J = 25 °C
	97	mA	T _J = 125 °C
V _{F(TO)} Threshold Voltage	0.233	V	T _J = T _J max.
r _t Forward Slope Resistance	9.09	mΩ	
C _T Max. Junction Capacitance Per Leg	1300	pF	V _R = 5V _{DC} , (test signal range 100Khz to 1Mhz) 25 °C
L _S 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 _R)	10,000	V/ µs	

(1) Pulse Width < 300µs, Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	32CTQ	Units	Conditions
T _J Max. Junction Temperature Range	-55 to 150	°C	
T _{stg} Max. Storage Temperature Range	-55 to 150	°C	
R _{thJC} Max. Thermal Resistance Junction to Case Per Leg	3.25	°C/W	DC operation * See Fig. 4
R _{thCS} 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)	

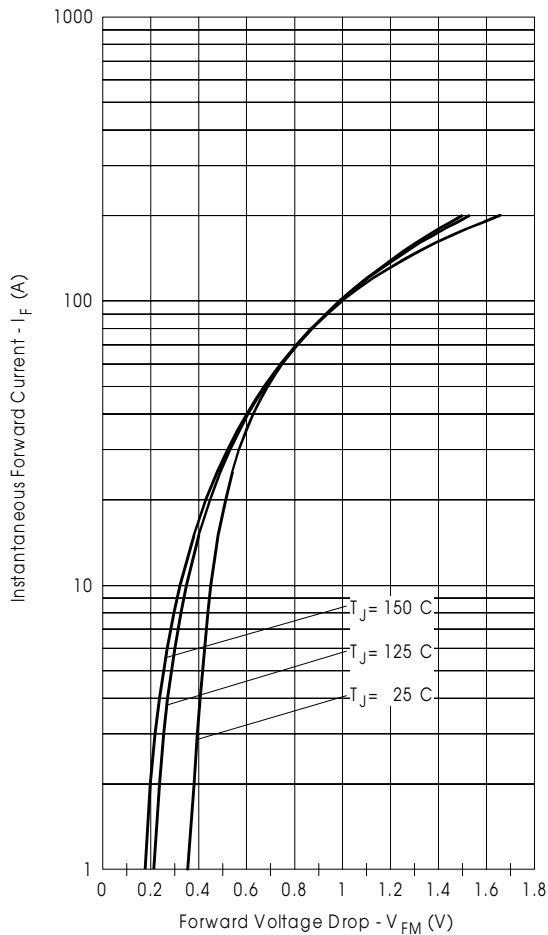


Fig. 1 - Maximum Forward Voltage Drop Characteristics

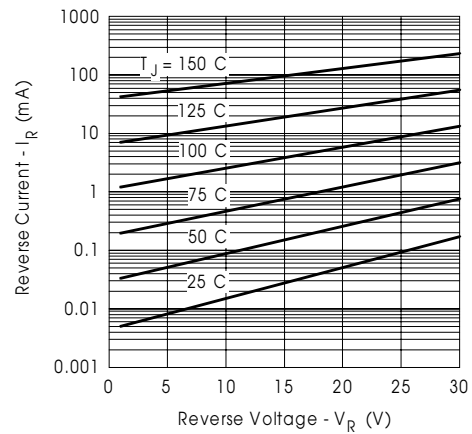


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

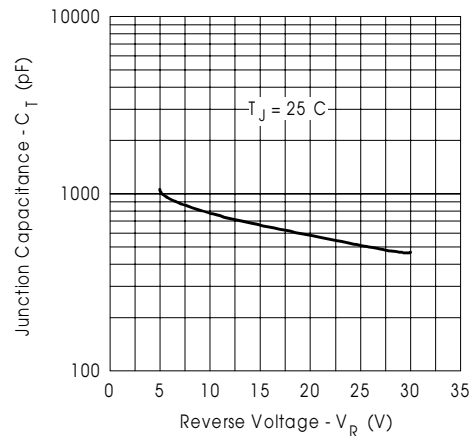


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

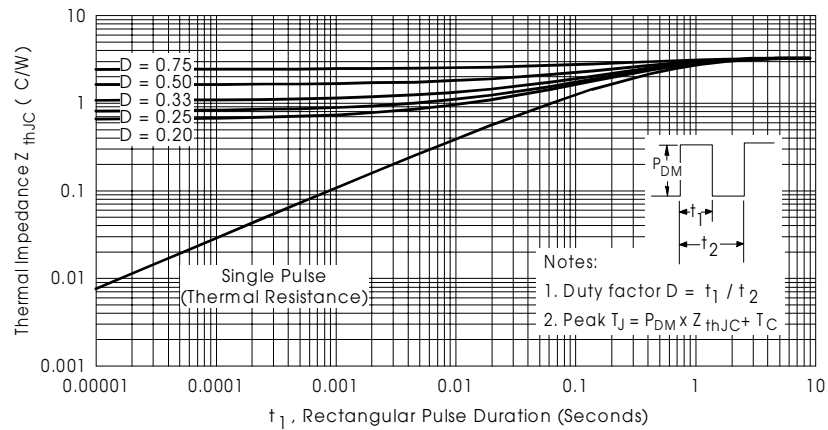


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

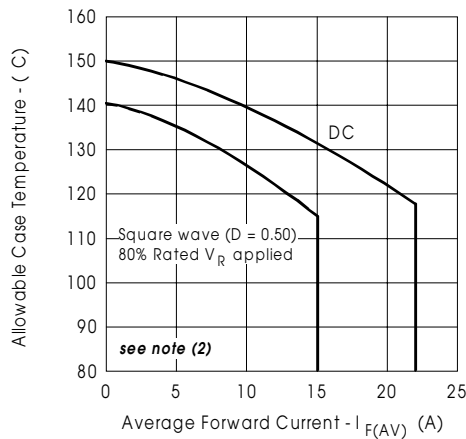


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

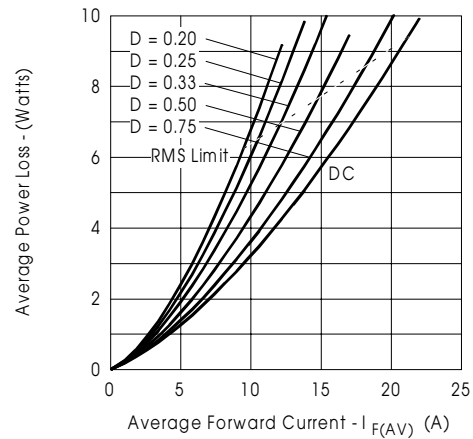


Fig. 6 - Forward Power Loss Characteristics

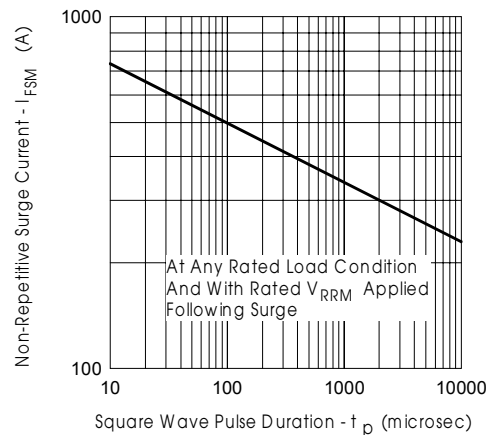


Fig. 7 - Maximum Non-Repetitive Surge Current

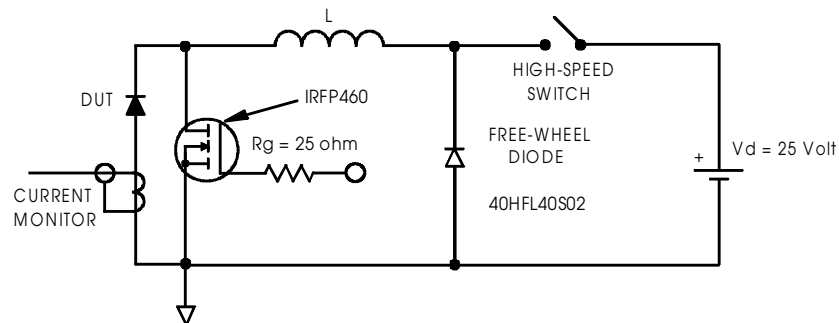


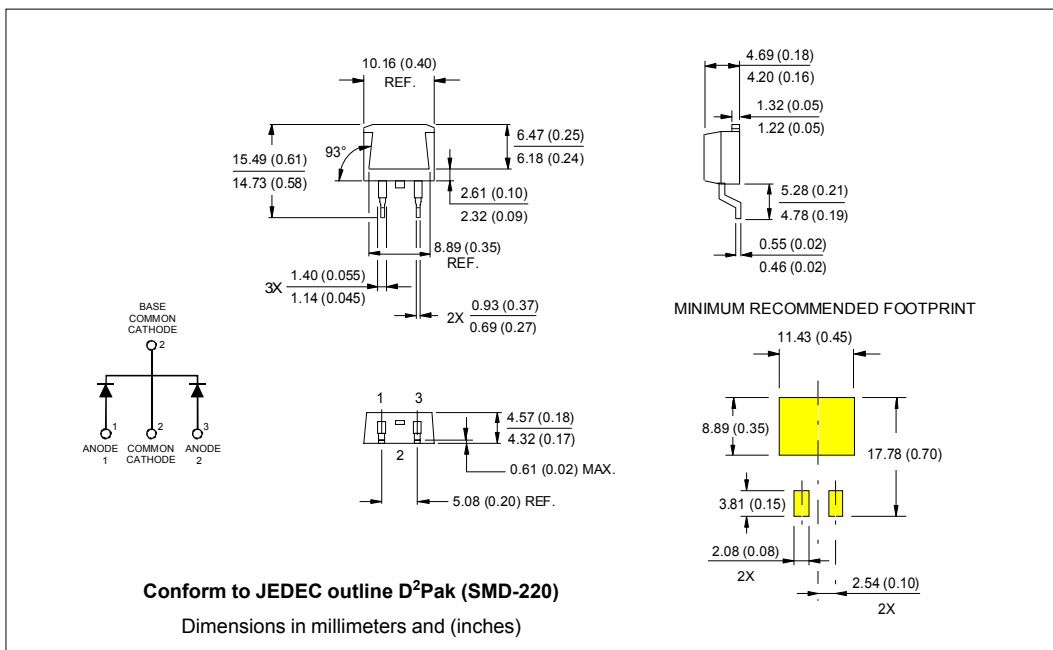
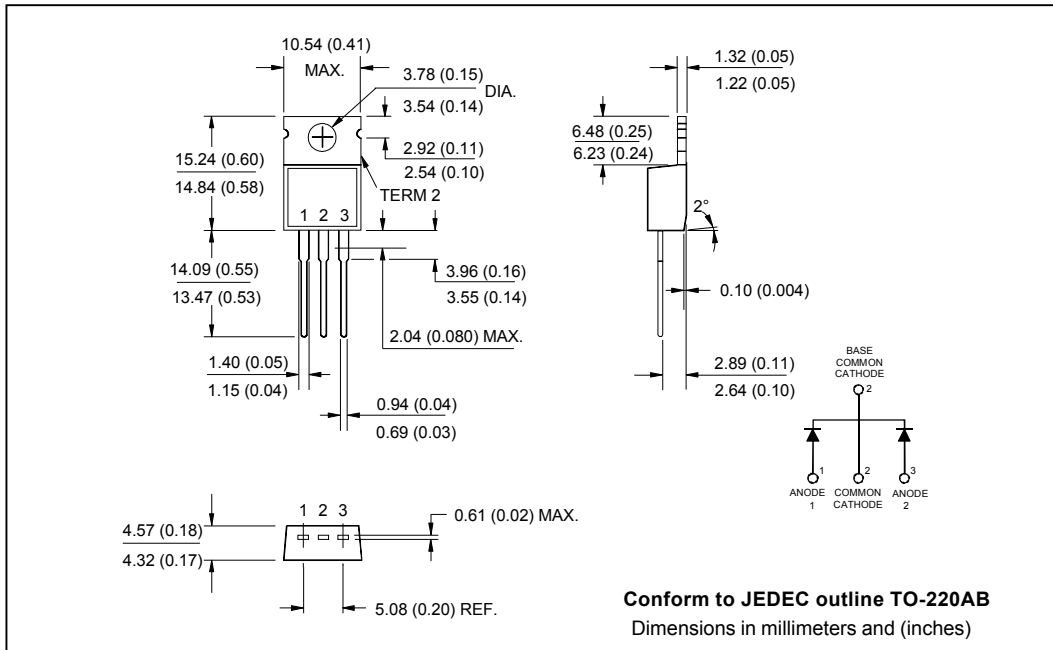
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

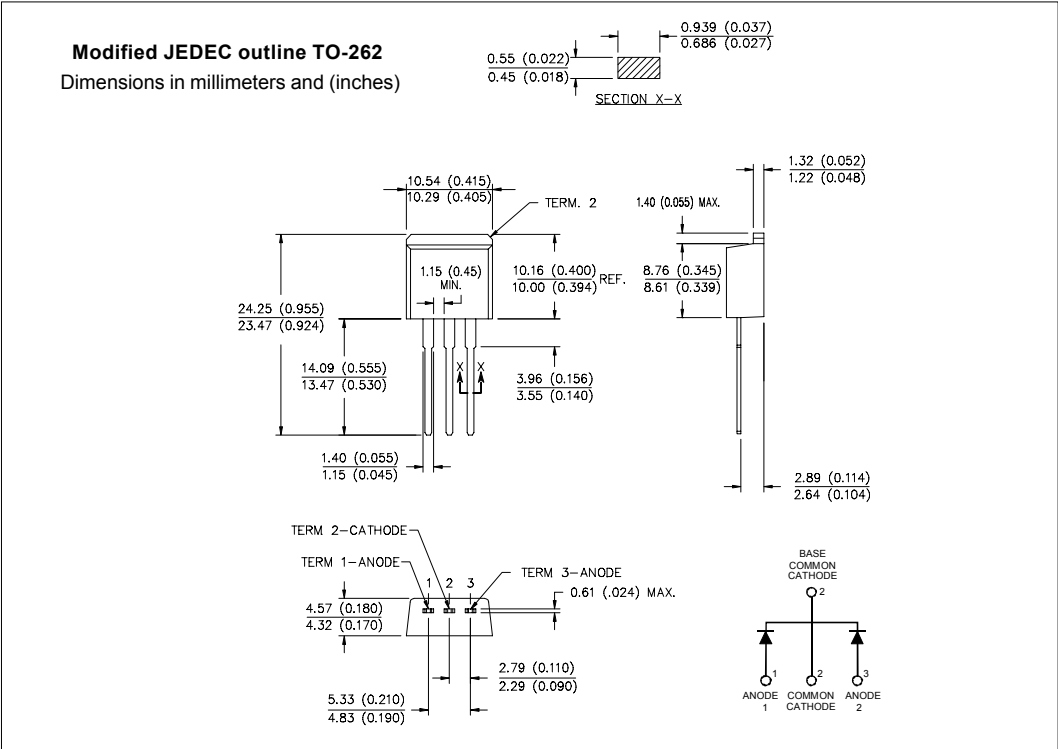
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ rated V_R

Outline Table



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Ordering Information Table

Device Code					
32	C	T	Q	030	-1
1	2	3	4	5	6
1	Essential Part Number				
2	Common Cathode				
3	T = TO-220				
4	Q = Schottky Q Series				
5	Voltage Rating 030 = 30V				
6	S = D ² Pak				
	-1 = TO-262				