

International  
**IR** Rectifier

15CTQ...  
 15CTQ...S  
 15CTQ... -1

SCHOTTKY RECTIFIER

15 Amp

$I_{F(AV)} = 15\text{Amp}$   
 $V_R = 35 \text{ to } 45\text{V}$

#### Major Ratings and Characteristics




Characteristics	15CTQ	Units
$I_{F(AV)}$ Rectangular waveform	15	A
$V_{RRM}$ range	35 to 45	V
$I_{FSM}$ @ tp = 5 $\mu$ s sine	810	A
$V_F$ @ 7.5A pk, $T_J = 125^\circ\text{C}$ (per leg)	0.51	V
$T_J$ range	-55 to 150	$^\circ\text{C}$

#### Description/Features

The 15CTQ center tap Schottky rectifier series has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 $^\circ\text{C}$  junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175 $^\circ\text{C}$   $T_J$  operation
- Center tap TO-220 package
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

#### Case Styles

15CTQ...	15CTQ...S	15CTQ... -1
		
TO-220	D <sup>2</sup> PAK	TO-262

## Voltage Ratings

Part number	15CTQ035	15CTQ040	15CTQ045
$V_R$ Max. DC Reverse Voltage (V)	35	40	45
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)			

## Absolute Maximum Ratings

Parameters	15CTQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 5	15	A	50% duty cycle @ $T_C = 123^\circ\text{C}$ , rectangular wave form
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	810	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse 10ms Sine or 6ms Rect. pulse
	145		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 1.20$ Amps, $L = 11.10$ mH
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	1.5	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	15CTQ	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.55	V	@ 7.5A
	0.70	V	@ 15A
	0.51	V	@ 7.5A
	0.65	V	@ 15A
$I_{RM}$ Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.8	mA	$T_J = 25^\circ\text{C}$
	32	mA	$T_J = 125^\circ\text{C}$
$C_T$ Max. Junction Capacitance (Per Leg)	400	pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ 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/ $\mu\text{s}$	

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

## Thermal-Mechanical Specifications

Parameters	15CTQ	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	3.50	$^\circ\text{C}/\text{W}$	DC operation * See Fig. 4
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package)	1.75	$^\circ\text{C}/\text{W}$	DC operation
$R_{thCS}$ 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)	

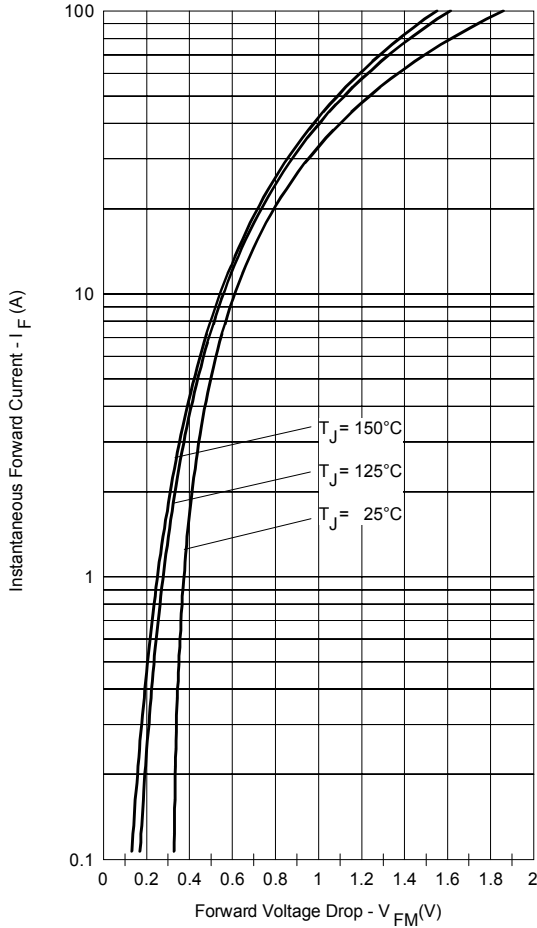


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

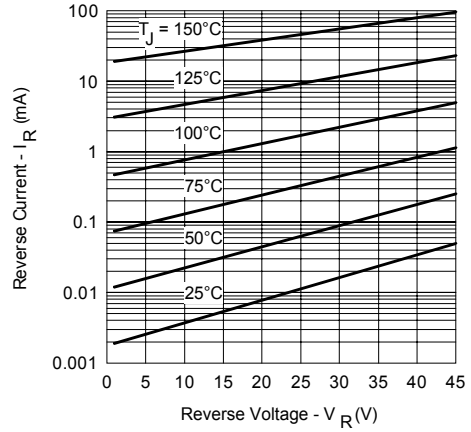


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

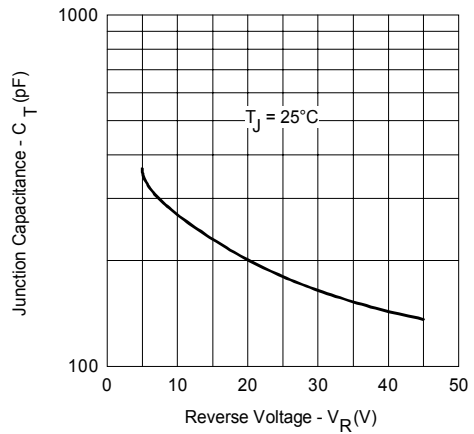


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

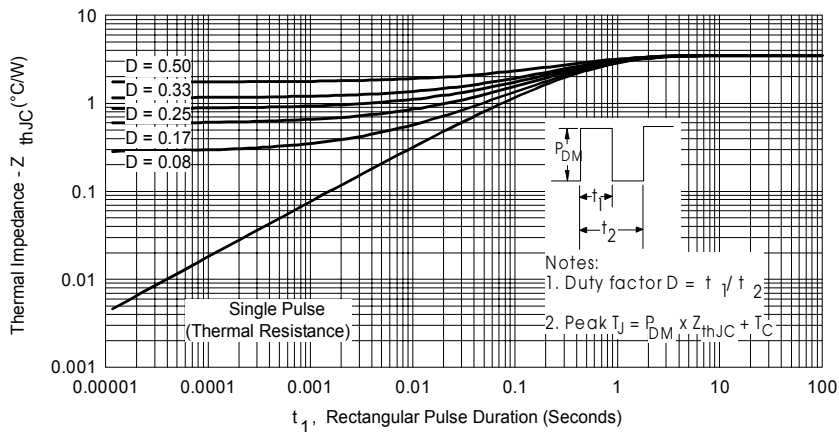


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

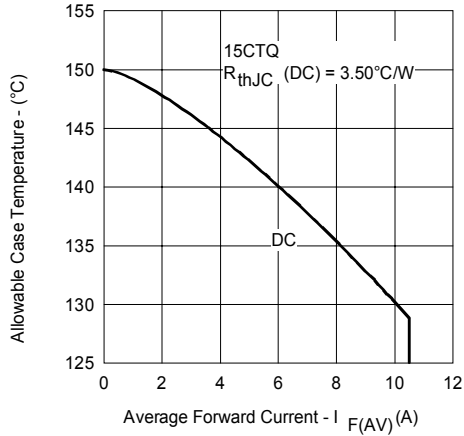


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

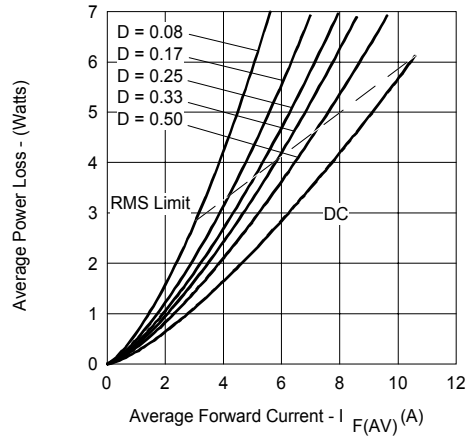


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

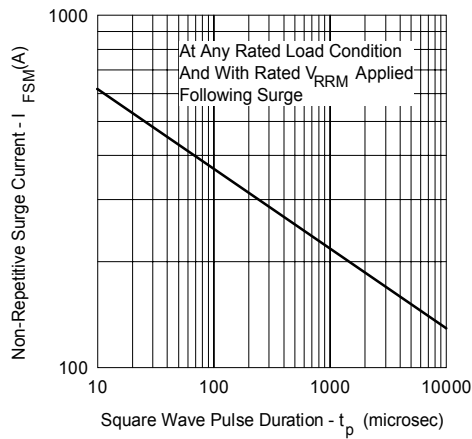


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

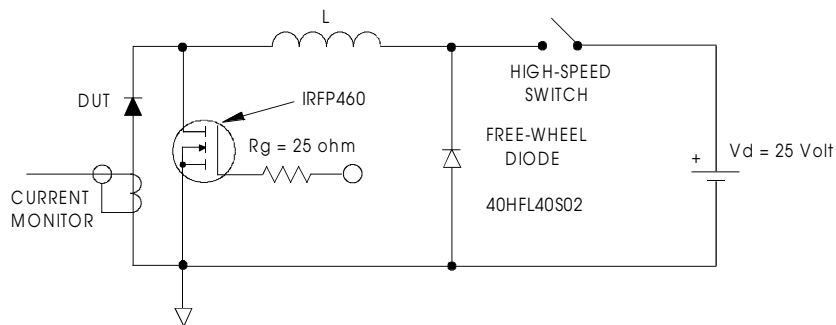
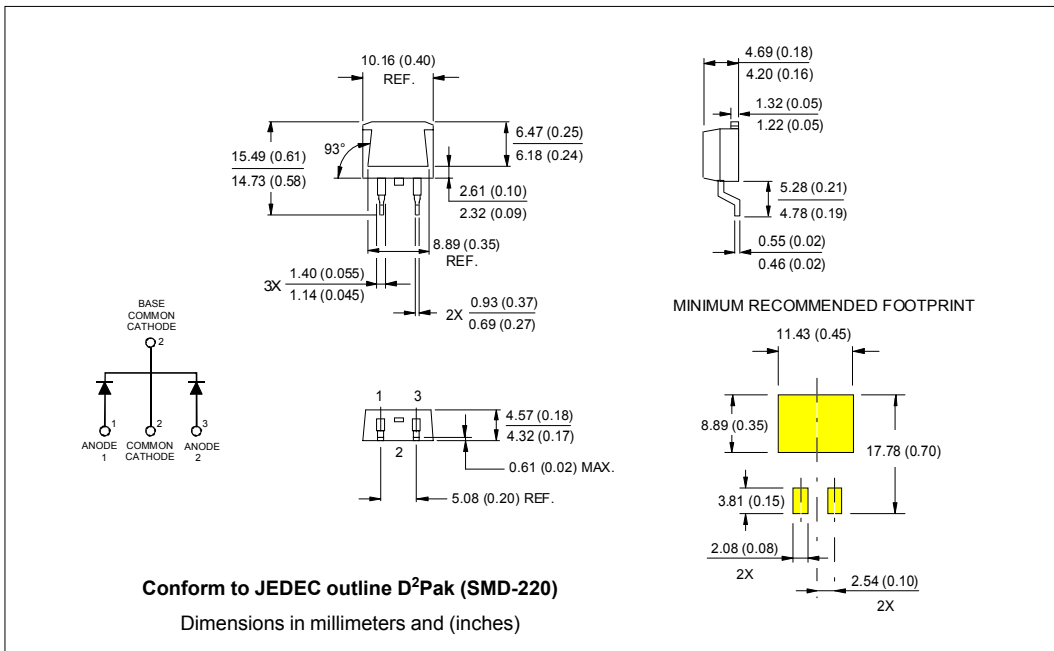
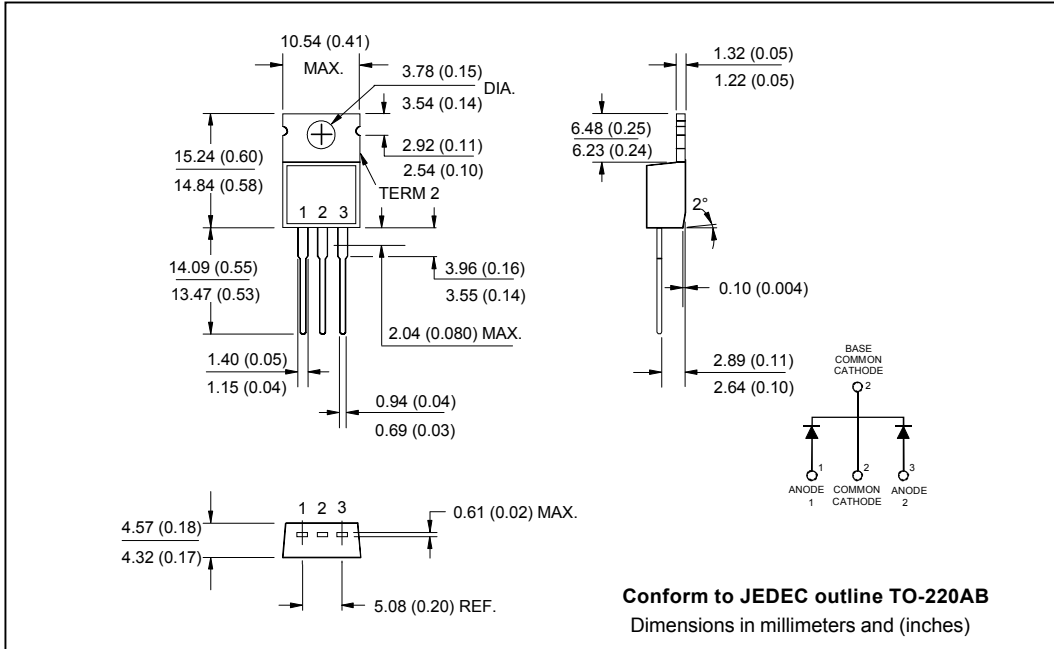
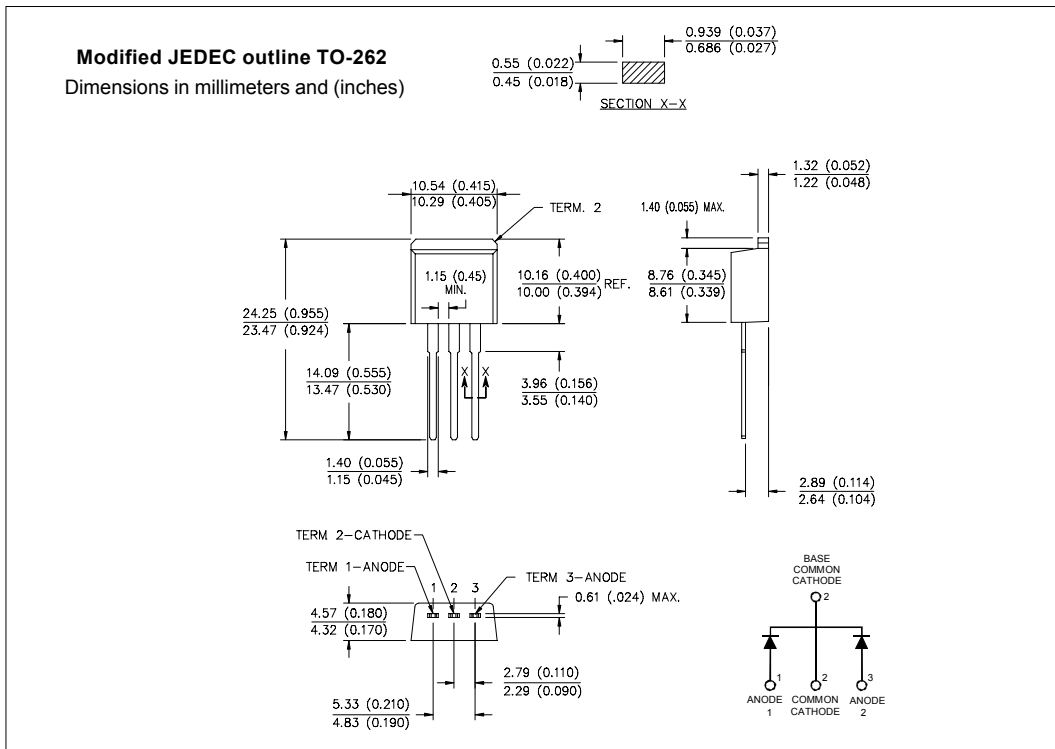


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



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Ordering Information Table

