

International
IOR Rectifier

15CTQ...SPbF
15CTQ...-1PbF

SCHOTTKY RECTIFIER

15 Amp

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

$$V_R = 35/45\text{V}$$

Major Ratings and Characteristics

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

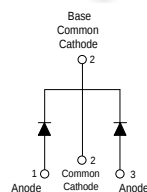
Description/ Features

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°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175°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
- Lead-Free ("PbF" suffix)

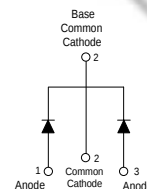
Case Styles

15CTQ...SPbF



D²PAK

15CTQ...-1PbF



TO-262

Voltage Ratings

Part number	15CTQ035SPbF 15CTQ035-1PbF	15CTQ040SPbF 15CTQ040-1PbF	15CTQ045SPbF 15CTQ045-1PbF
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 μs Sine or 3 μs Rect. pulse
	145		10ms Sine or 6ms Rect. pulse
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	1.5	A	Current decaying linearly to zero in 1 μsec

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°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	10000	V/ μs	(Rated V_R)

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

Thermal-Mechanical Specifications

Parameters		15CTQ	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)	3.50	°C/W	DC operation	* See Fig. 4	
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Package)	1.75	°C/W	DC operation		
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)			
	Marking Device	15CTQ...S		Case style D ² Pak		
		15CTQ...-1		Case style TO-262		

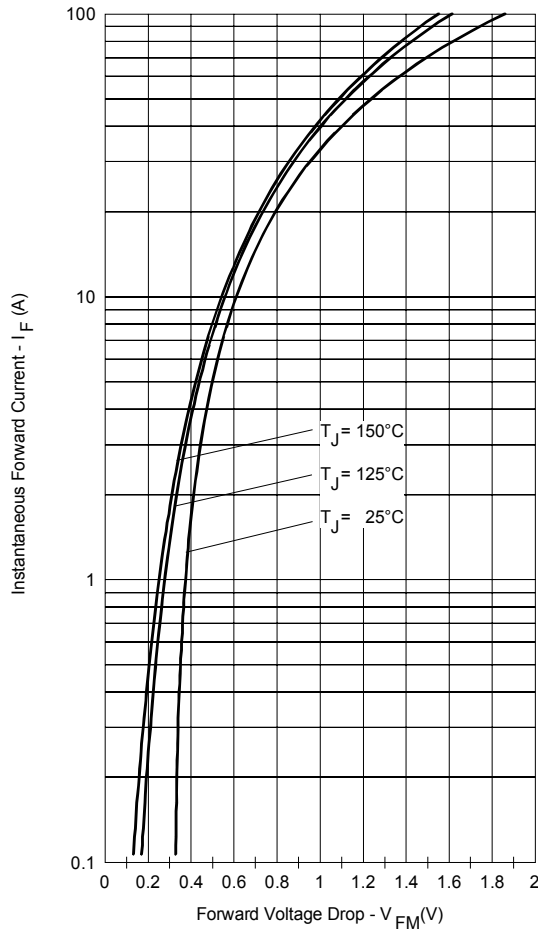


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

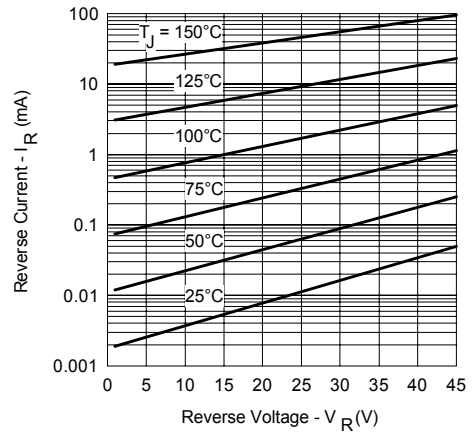


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

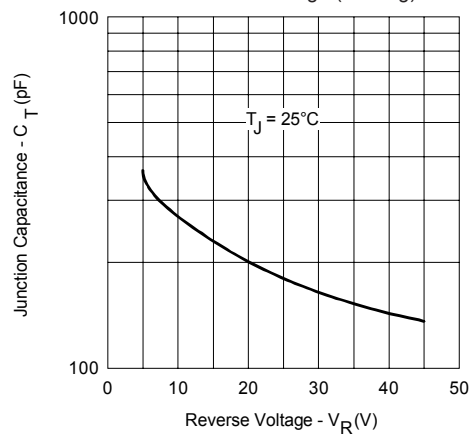


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

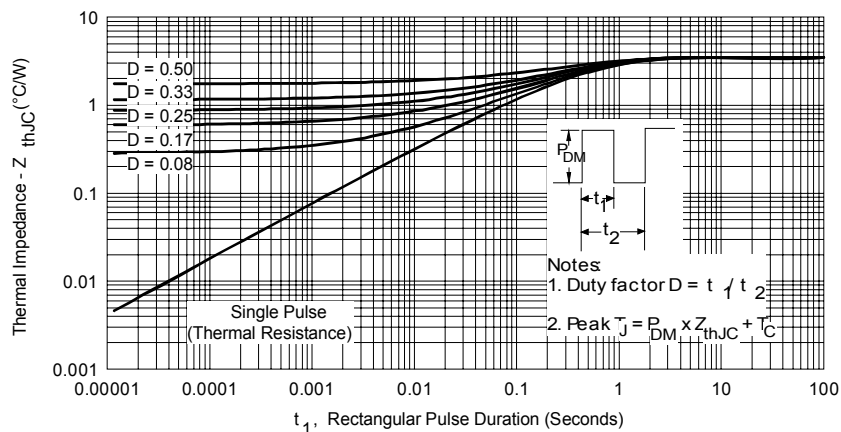


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

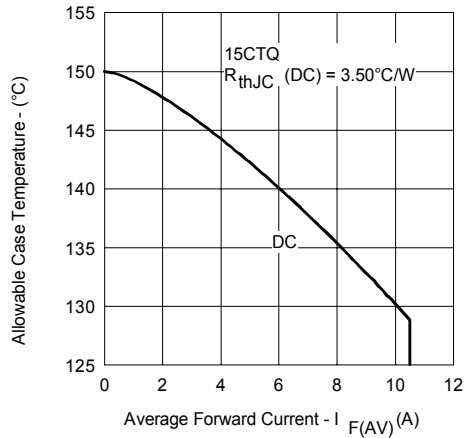


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

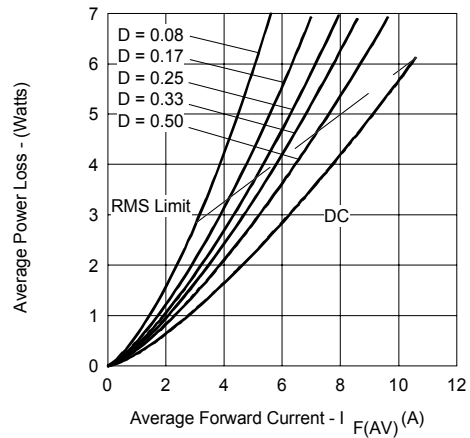


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

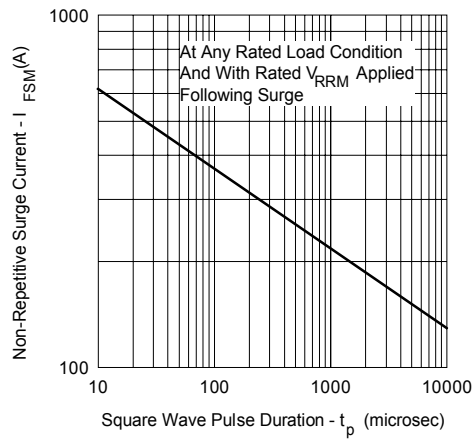


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

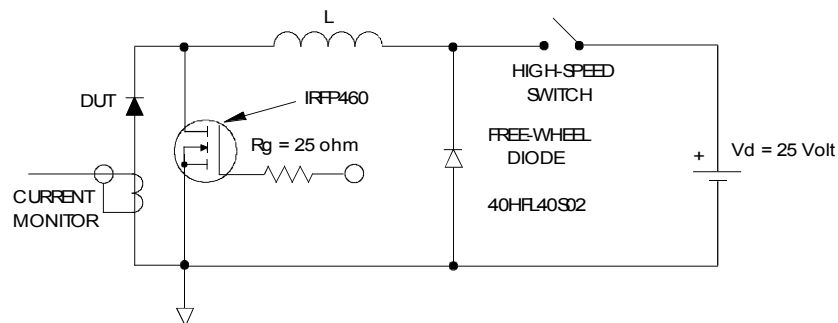
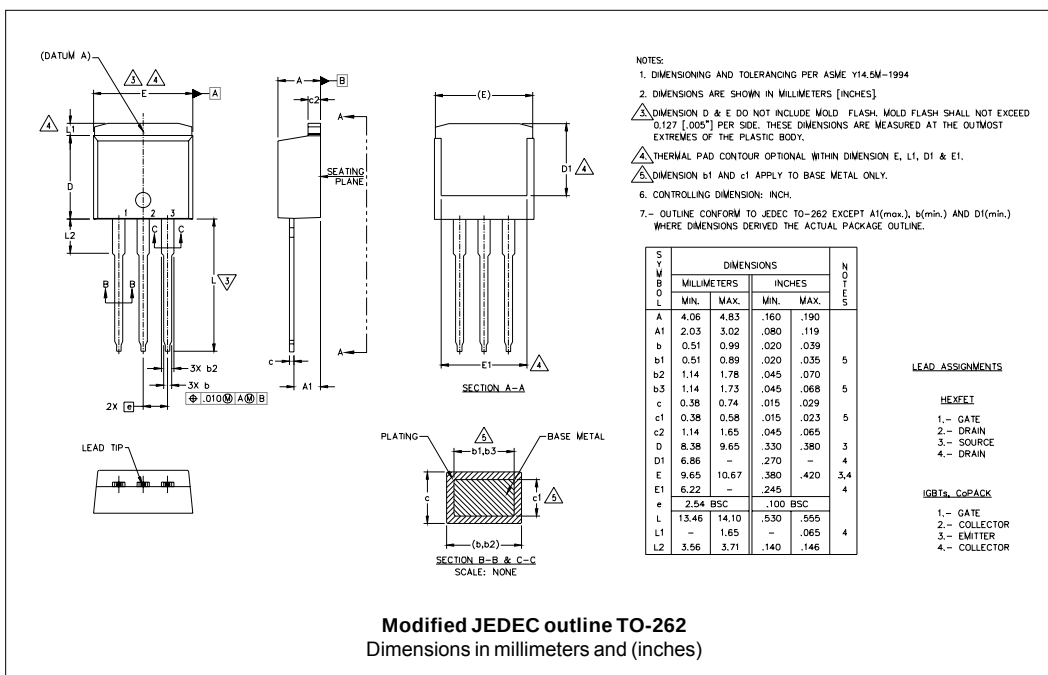
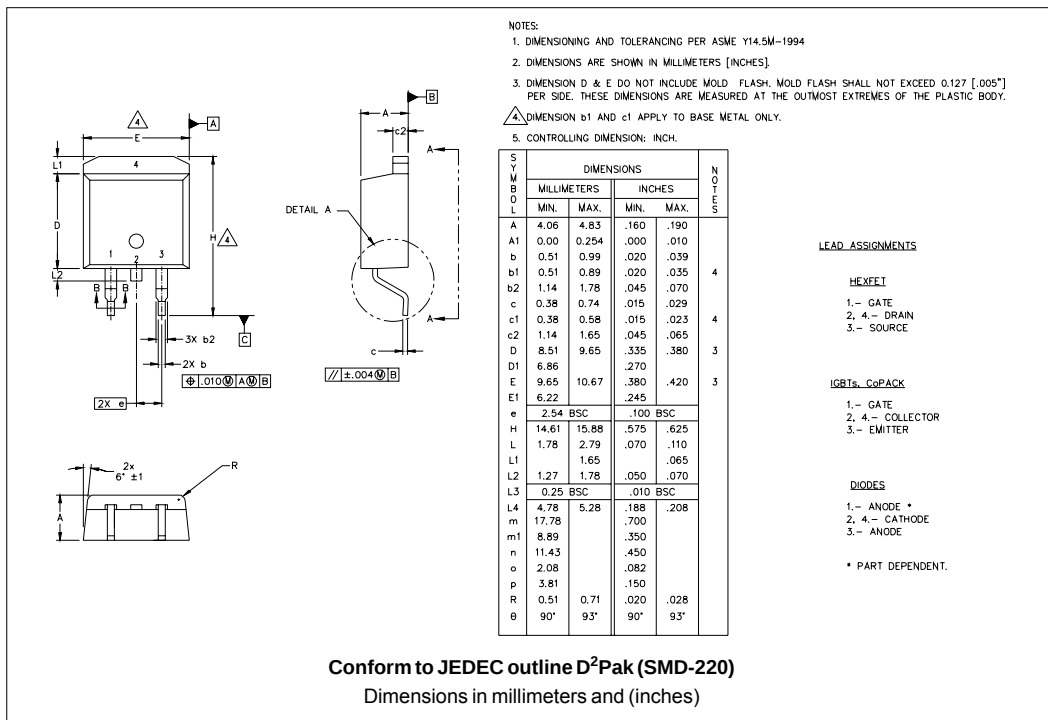


Fig. 8 - Unclamped Inductive Test Circuit

Outlines Table



D²PAK

EXAMPLE: THIS IS A 15CTQ045S
 LOT CODE 8024
 ASSEMBLED ON WW 02, 2000

Note: "P" in assembly line position indicates "Lead-Free"

TO-262

EXAMPLE: THIS IS A 15CTQ045-1
 LOT CODE 1789
 ASSEMBLED ON WW 19, 2002

Note: "P" in assembly line position indicates "Lead-Free"

SECTION Y-Y

NOTES:

- 1.0 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE $\pm .02$
- 2.0 CAMBER NOT TO EXCEED 1mm in 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 Ko 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 10^6 OHMS PER SQUARE, MEASURED IN ACCORDANCE PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

Dimensions in millimeters and (inches)

Ordering Information Table

Device Code							
15	C	T	Q	045	S	TRL	PbF
1	2	3	4	5	6	7	8
1	-	Current Rating (15A)					
2	-	Circuit Configuration					
		C = Common Cathode					
3	-	T = TO-220					
4	-	Schottky "Q" Series					
5	-	Voltage Ratings					
6	-	- S = D²Pak -1= TO-262					
7	-	- none = Tube (50 pieces) - TRL = Tape & Reel (Left Oriented - for D²Pak only) - TRR = Tape & Reel (Right Oriented - for D²Pak only)					
8	-	- none = Standard Production - PbF = Lead-Free					

035 = 35V
040 = 40V
045 = 45V

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.