

International
IR Rectifier

40L15CT
 40L15CTS
 40L15CT1

SCHOTTKY RECTIFIER

2 x 20 Amps

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	15	V
I_{FSM} @ tp = 5 μ s sine	700	A
V_F @ 19Apk, $T_J = 125^\circ\text{C}$ (per leg, Typical)	0.25	V
T_J	-55 to 125	$^\circ\text{C}$

Description/Features

This center tap Schottky rectifier has been optimized for Ultra low forward voltage drop. This device has been specifically designed to be the best solution as OR-ing diode in fault tolerant power supplies equipment.

- Center tap TO-220, D²Pak and TO-262 packages
- High efficiency
- Ultra low forward voltage drop
- Optimized for OR-ing application

Case Styles

40L15CT	40L15CTS	40L15CT1
		
TO-220AB	D ² PAK	TO-262

Voltage Ratings

Part number	Values
V_R Max. DC Reverse Voltage (V) @ $T_J = 100^\circ\text{C}$	15
V_{RWM} Max. Working Peak Reverse Voltage (V) @ $T_J = 100^\circ\text{C}$	

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device)	20	A	50% duty cycle @ $T_C = 85^\circ\text{C}$, rectangular waveform
	40		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	700	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RRM} applied
	330		
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2$ Amps, $L = 6$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Values		Units	Conditions	
	Typ.	Max.			
V_{FM} Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	-	0.41	V	@ 19A	$T_J = 25^\circ\text{C}$
	-	0.52	V	@ 40A	
	0.25	0.33	V	@ 19A	$T_J = 125^\circ\text{C}$
	0.37	0.50	V	@ 40A	
I_{RM} Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	-	10	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	-	600	mA	$T_J = 100^\circ\text{C}$	
$V_{F(TO)}$ Threshold Voltage	0.182		V	$T_J = T_J \text{ max.}$	
r_t Forward Slope Resistance	7.6		m Ω		
C_T Max. Junction Capacitance (Per Leg)	-	2000	pF	$V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C	
L_S Typical Series Inductance (Per Leg)	8	-	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 < 300 μs , Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	Values	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 (Per Leg)	1.5	$^\circ\text{C/W}$	DC operation * See Fig. 4
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C/W}$	Mounting surface, smooth and greased Only for TO-220
R_{thJA} Max. Thermal Resistance Junction to Ambient	40	$^\circ\text{C/W}$	DC operation For D ² Pak and TO-262
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Non-lubricated threads
	Max.	12(10)	

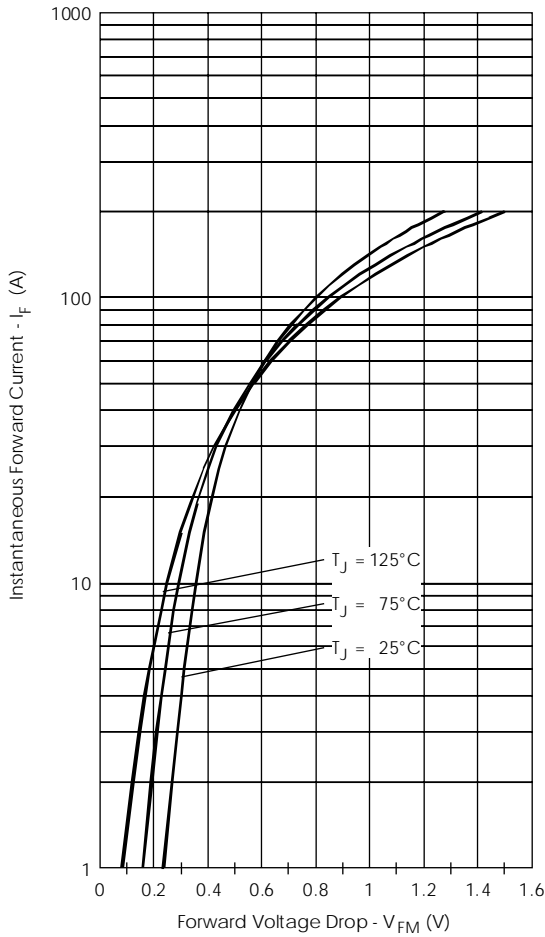


Fig. 1 - Maximum Forward Voltage Drop Characteristics

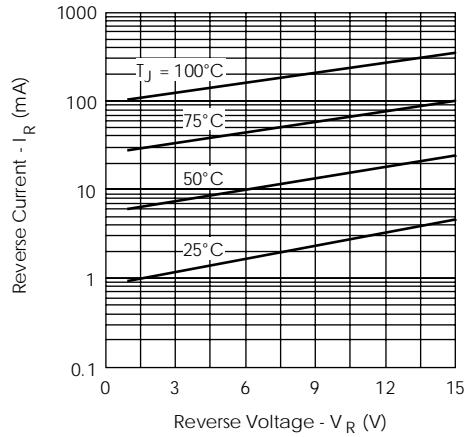


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

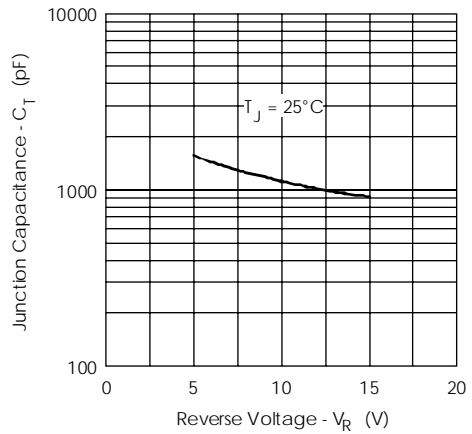


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

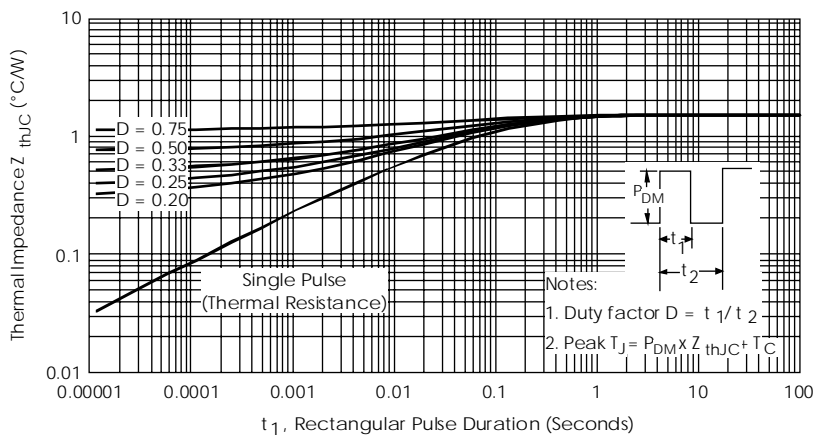


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

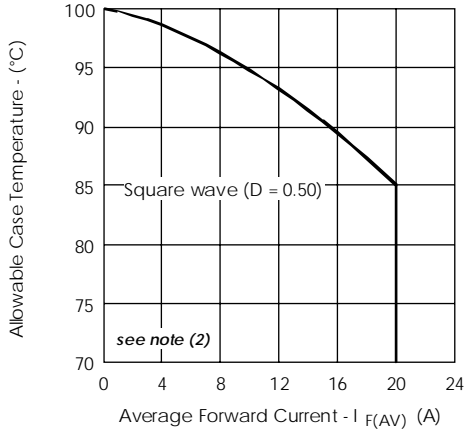


Fig.5- Maximum Allowable Case Temperature Vs. Average Forward Current

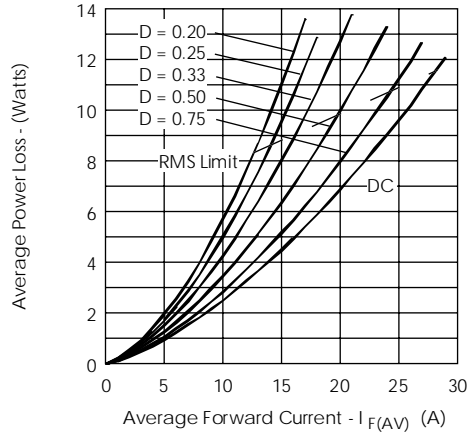


Fig.6- Forward Power Loss Characteristics

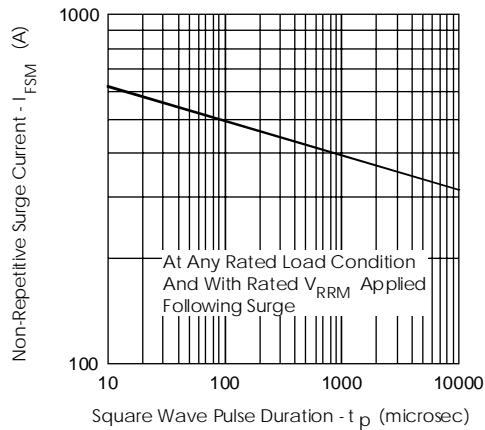


Fig.7- Maximum Non-Repetitive Surge Current

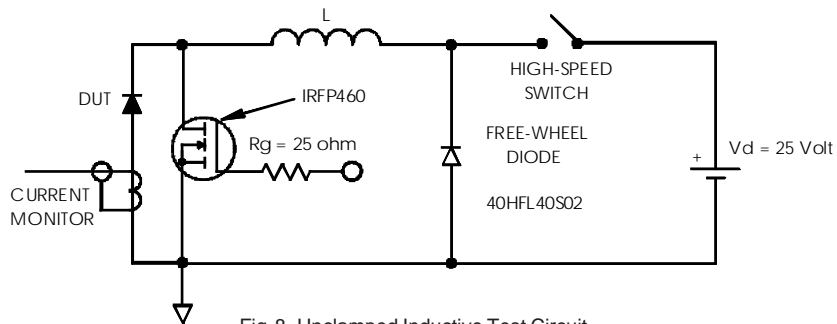
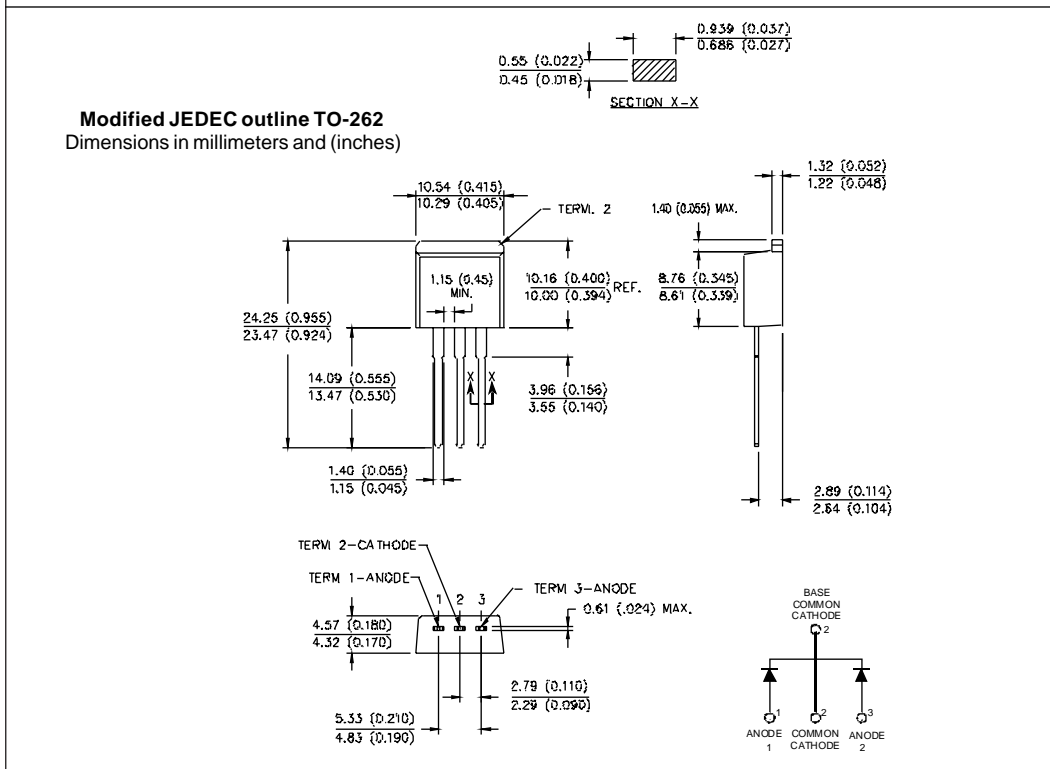
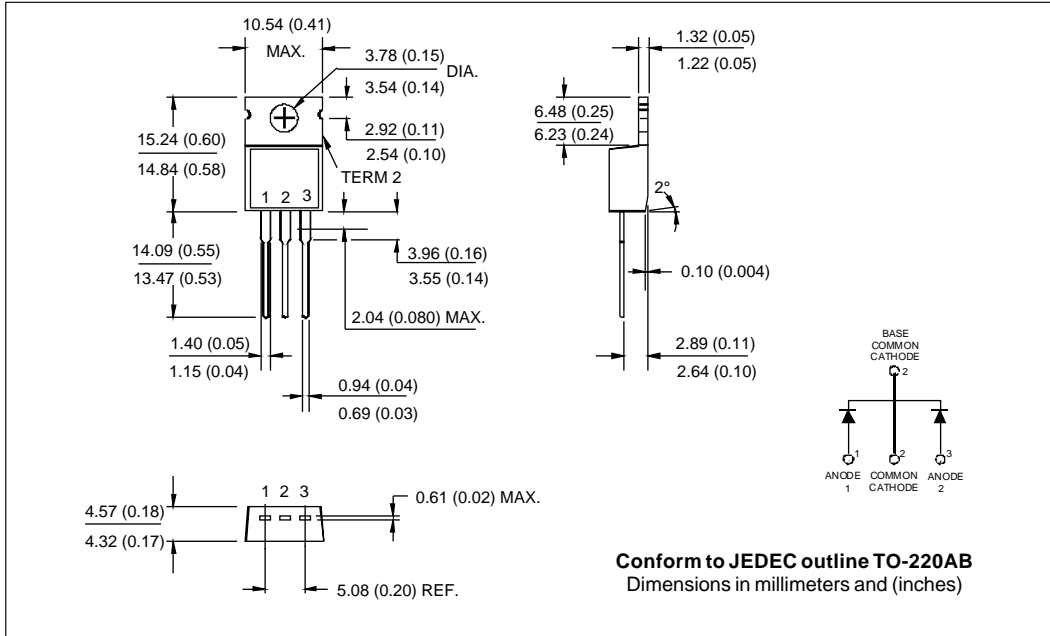


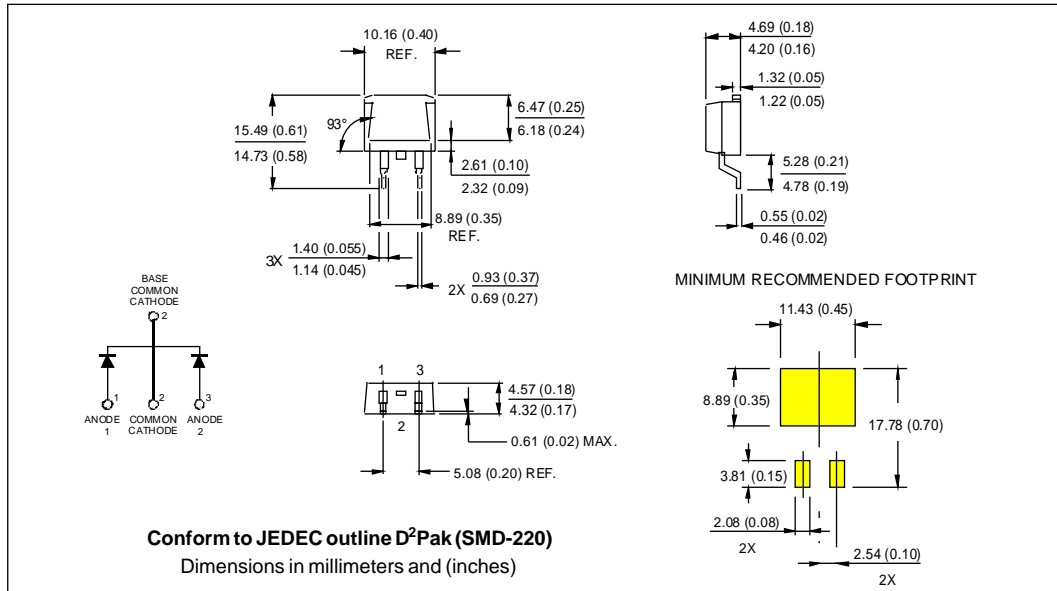
Fig.8- Unclamped Inductive Test Circuit

- (2) Formula used: $T_c = T_j - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 $P_d = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $P_{d_{REV}} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

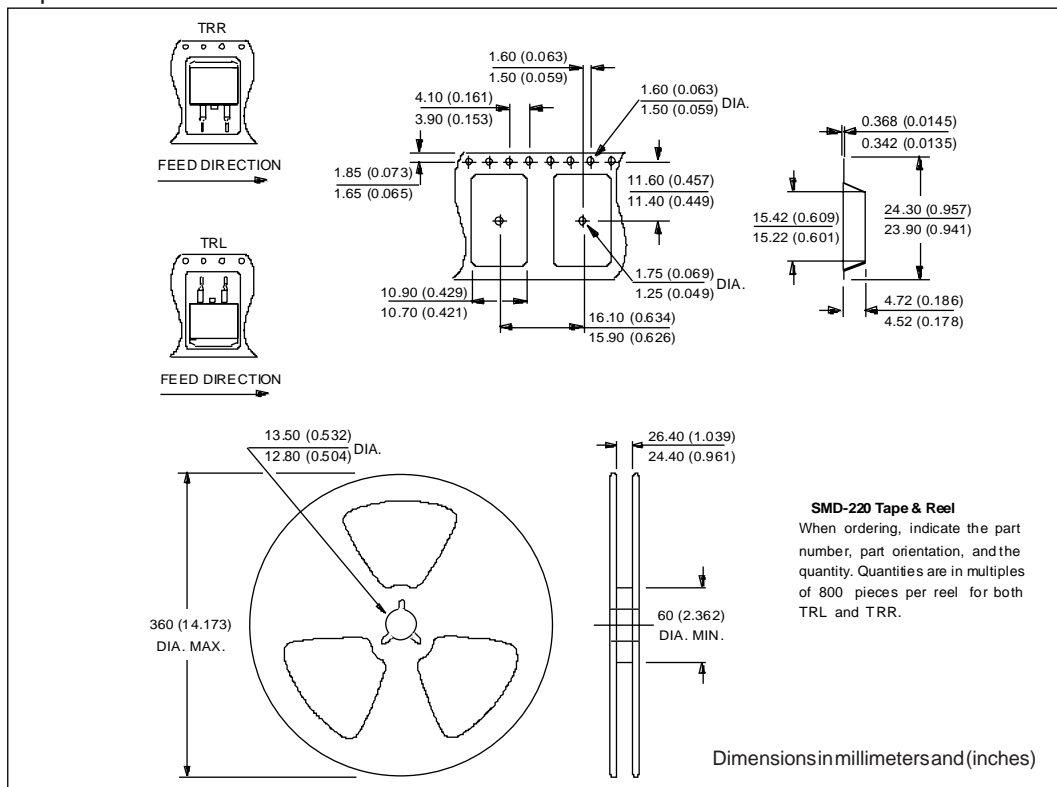
Outline Table



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Data and specifications subject to change without notice.