Bulletin PD-20577 rev. D 08/01

International
IOR Rectifier

20L15T
20L15TS

SCHOTTKY RECTIFIER

20 Amps

Major Ratings and Characteristics

Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	20	A
V_{RRM}		15	V
I_{FSM}	@tp = 5 µs sine	700	A
V_F	@19Apk, T_J=125°C (Typical)	0.25	V
T_J	range	-55 to 125	°C

Description/Features

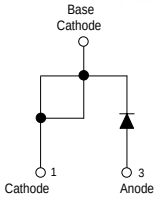
The Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125°C T_J operation (V_R < 5V)
- Single diode configuration
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

Case Styles

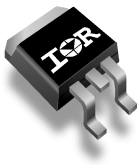
20L15T

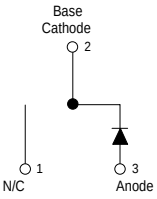




TO-220AC

20L15TS





D^2PAK

Voltage Ratings

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

Absolute Maximum Ratings

	Parameters	Values	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	20	A	50% duty cycle @ T_C = 85°C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	700	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current * See Fig. 7	330		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	10	mJ	T_J = 25 °C, I_{AS} = 2 Amps, L = 6 mH	
I_{AR}	Repetitive Avalanche Current	2	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	Values		Units	Conditions	
		Typ.	Max.			
V_{FM}	Forward Voltage Drop	-	0.41	V	@ 19A	T_J = 25 °C
	* See Fig. 1 (1)	-	0.52	V	@ 40A	
		0.25	0.33	V	@ 19A	T_J = 125 °C
		0.37	0.50	V	@ 40A	
I_{RM}	Reverse Leakage Current	-	10	mA	T_J = 25 °C	V_R = rated V_R
	* See Fig. 2 (1)	-	600	mA	T_J = 100 °C	
$V_{F(TO)}$	Threshold Voltage	0.182		V	T_J = T_J max.	
r_t	Forward Slope Resistance	7.6		mΩ		
C_T	Max. Junction Capacitance	-	2000	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance	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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

	Parameters		Values	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 125	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		1.5	°C/W	DC operation * See Fig. 4
R_{thCS}	Typical Thermal Resistance Case to Heatsink		0.50	°C/W	Mounting surface, smooth and greased For TO-220
R_{thJA}	Max. Thermal Resistance Junction to Ambient		40	°C/W	DC operation For D^2Pak
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	Non-lubricated threads
		Max.	12 (10)		

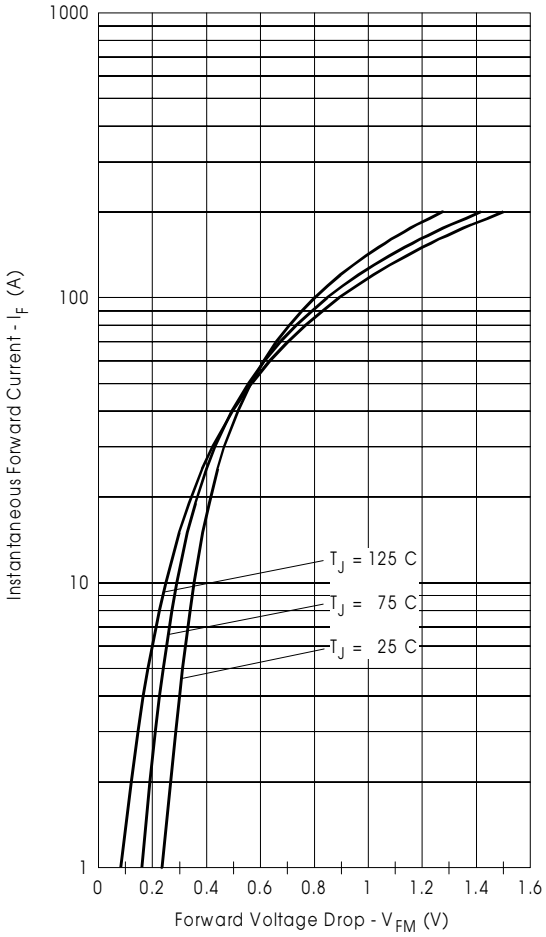


Fig. 1 - Maximum Forward Voltage Drop Characteristics

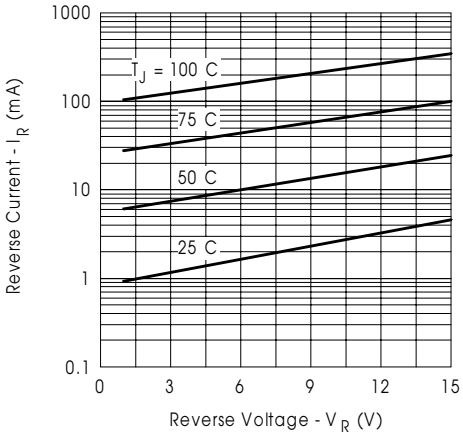


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

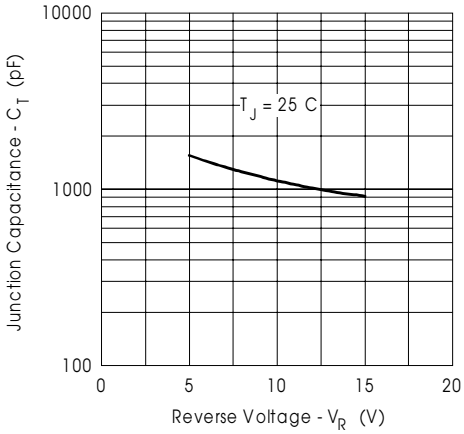


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

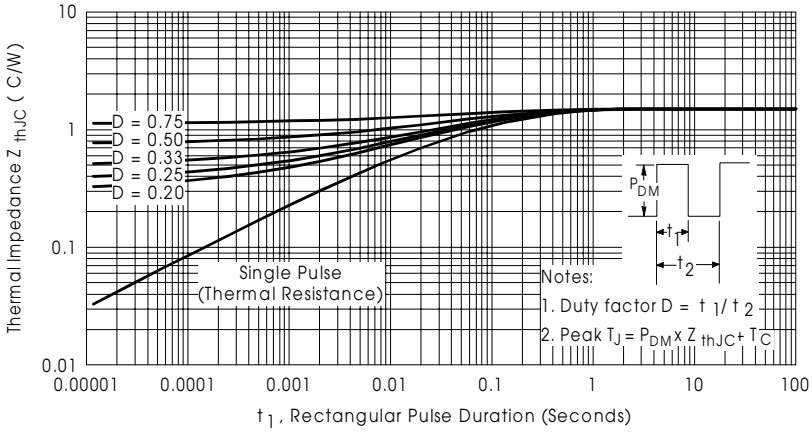


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

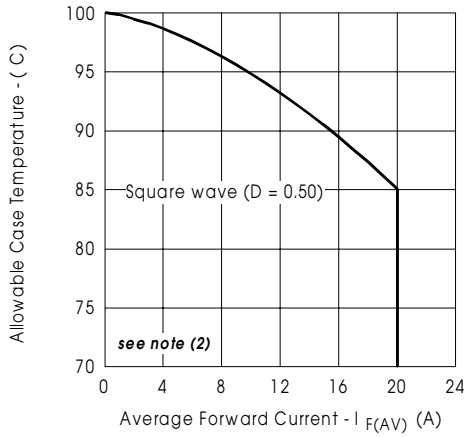


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

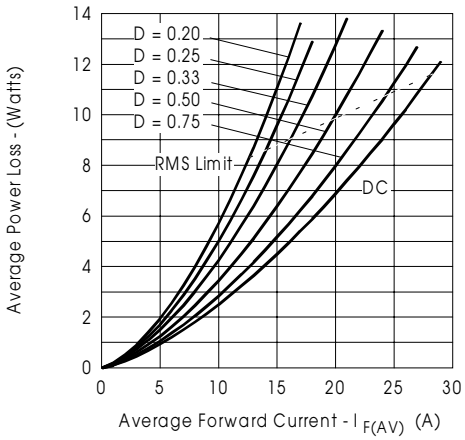


Fig. 6 - Forward Power Loss Characteristics

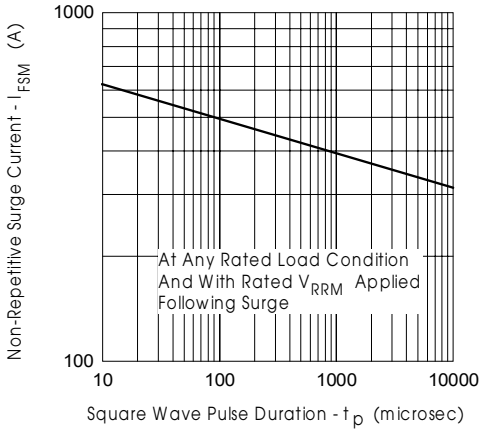


Fig. 7 - Maximum Non-Repetitive Surge Current

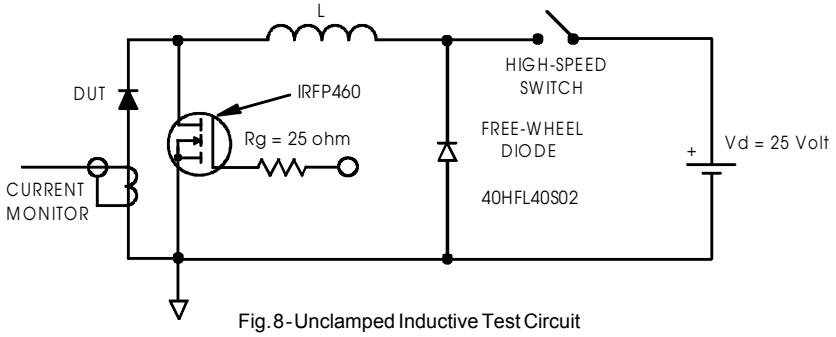
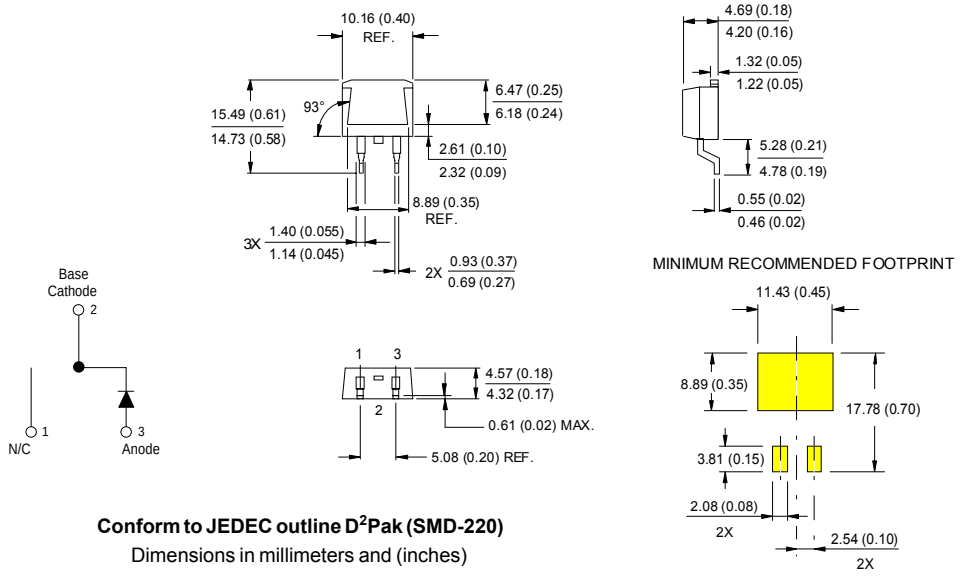


Fig. 8 - Unclamped Inductive Test Circuit

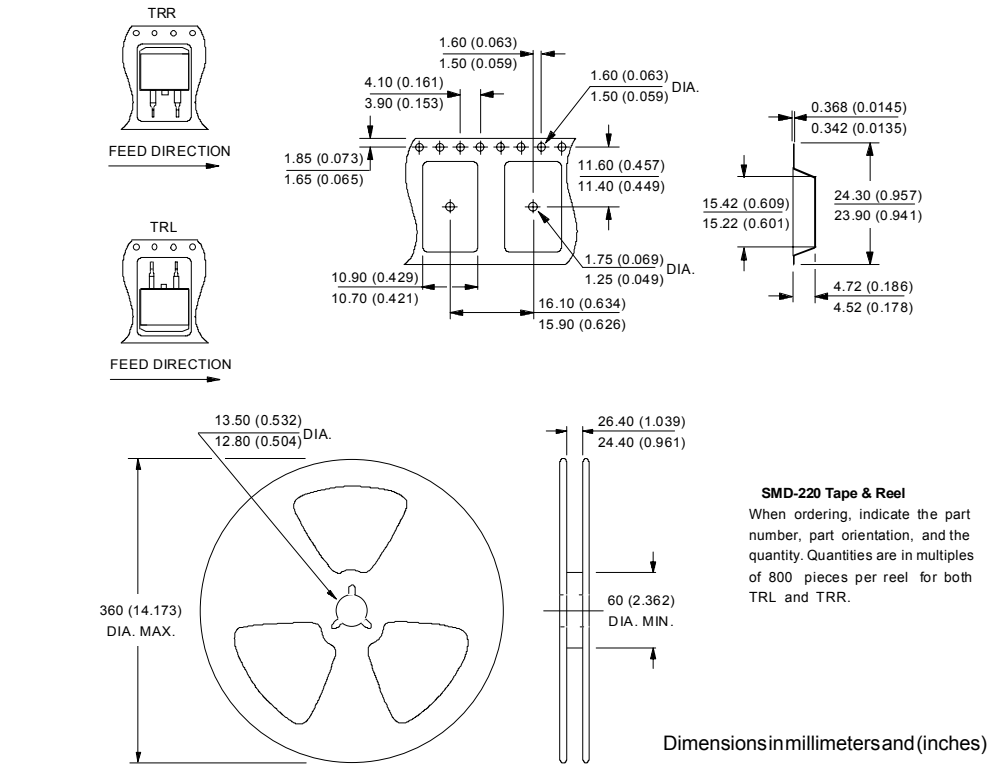
(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table



Conform to JEDEC outline D^2Pak (SMD-220)
Dimensions in millimeters and (inches)

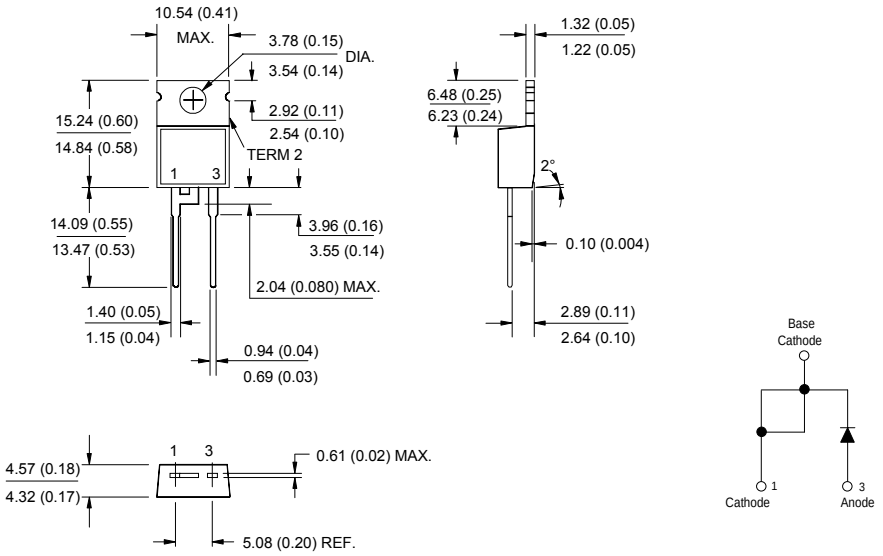
Tape & Reel Information



SMD-220 Tape & Reel
When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 800 pieces per reel for both TRL and TRR.

Dimensions in millimeters and (inches)

Outline Table



Conform to JEDEC outline TO-220AC
Dimensions in millimeters and (inches)

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

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