

International
IR Rectifier

43CTQ...
 43CTQ...S
 43CTQ...-1

SCHOTTKY RECTIFIER

40 Amp

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	80/100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	850	A
V_F @ 20 Apk, $T_J = 125^\circ C$ (per leg)	0.67	V
T_J range	-55 to 175	$^\circ C$

Description/Features

This center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to $175^\circ C$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- $175^\circ C$ T_J operation
- Center tap configuration
- 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

43CTQ...	43CTQ...S	43CTQ...-1
		
TO-220	D ² PAK	TO-262

Voltage Ratings

Parameters	43CTQ080 43CTQ080S 43CTQ080-1	43CTQ100 43CTQ100S 43CTQ100-1
V _R Max. DC Reverse Voltage (V)	80	100
V _{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
I _{F(AV)} Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device)	20 40	A	50% duty cycle @ T _C = 135°C, rectangular wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	850 275	A	5µs Sine or 3µs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V _{RWM} applied
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	7.50	mJ	T _J = 25 °C, I _{AS} = 0.50 Amps, L = 60 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	0.50	A	Current decaying linearly to zero in 1µsec Frequency limited by T _J max. V _A = 1.5 x V _R typical

Electrical Specifications

Parameters	Values	Units	Conditions
V _{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.81	V	@ 20A T _J = 25 °C
	0.98	V	@ 40A
	0.67	V	@ 20A T _J = 125 °C
	0.81	V	@ 40A
I _{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1	mA	T _J = 25 °C
	11	mA	T _J = 125 °C V _R = rated V _R
V _{F(TO)} Threshold Voltage	0.71	V	T _J = T _J max.
r _f Forward Slope Resistance	0.43	mΩ	
C _T Max. Junction Capacitance (Per Leg)	1480	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	Values	Units	Conditions
T _J Max. Junction Temperature Range	-55 to 175	°C	
T _{stg} Max. Storage Temperature Range	-55 to 175	°C	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	2.0	°C/W	DC operation
R _{thJC} Max. Thermal Resistance Junction to Case (Per Package)	1.0	°C/W	DC operation
R _{thCS} Typical Thermal Resistance, Case to Heatsink	0.50	°C/W	Mounting surface, smooth and greased (only for TO-220)
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Kg-cm (lbf-in)
	Max.	12(10)	

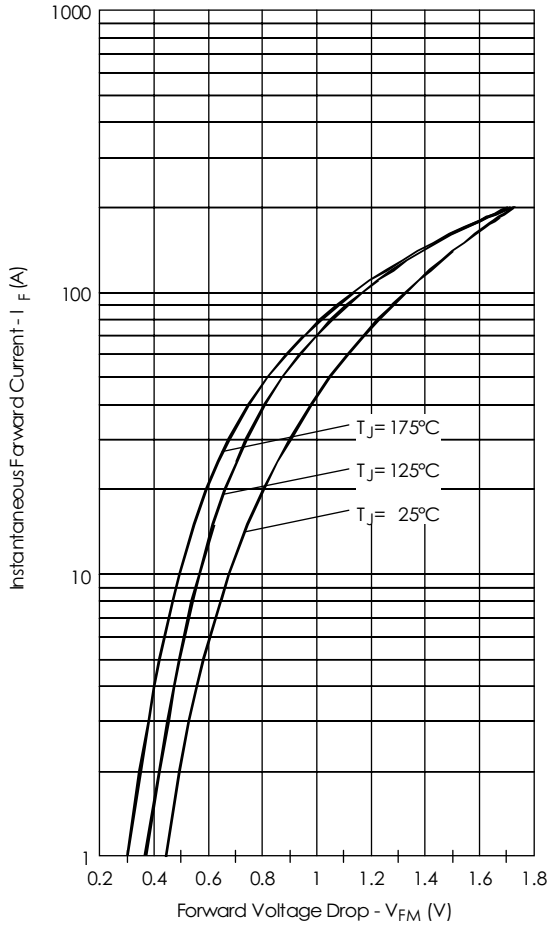


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

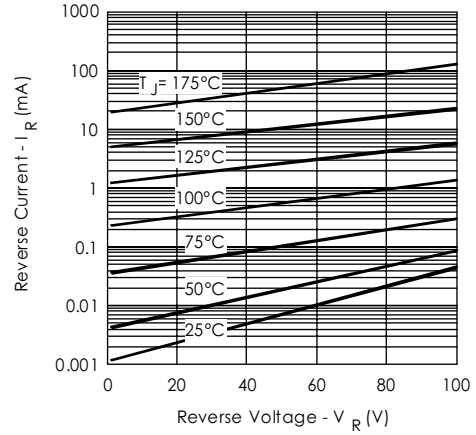


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

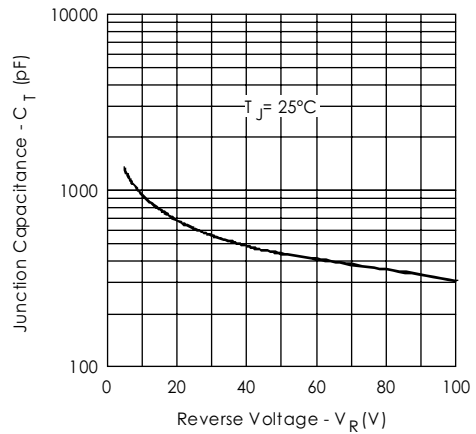


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

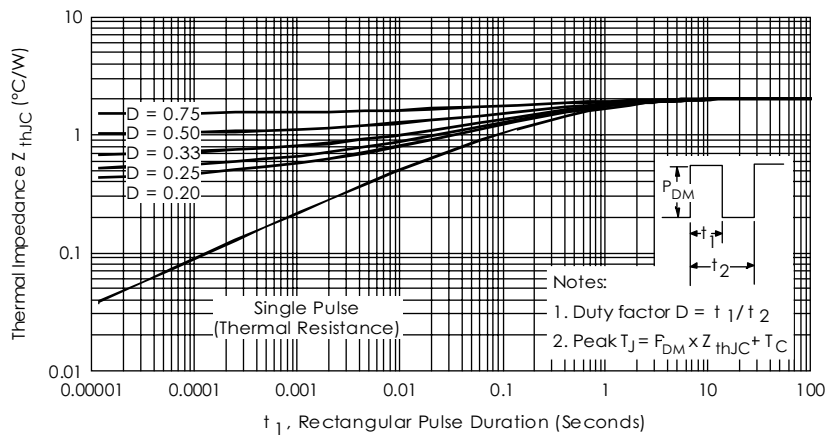


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

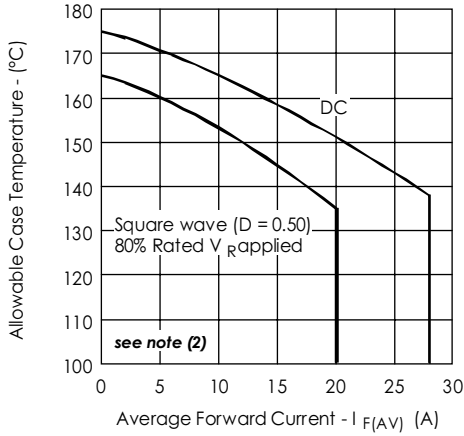


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (PerLeg)

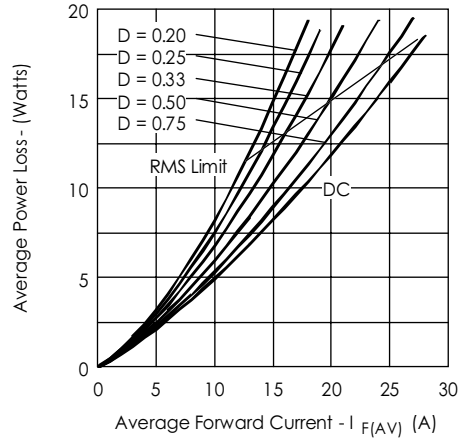


Fig. 6 - Forward Power Loss Characteristics (PerLeg)

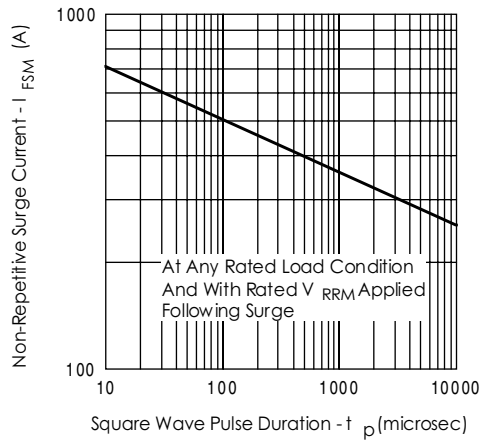


Fig. 7 - Max. Non-Repetitive Surge Current (PerLeg)

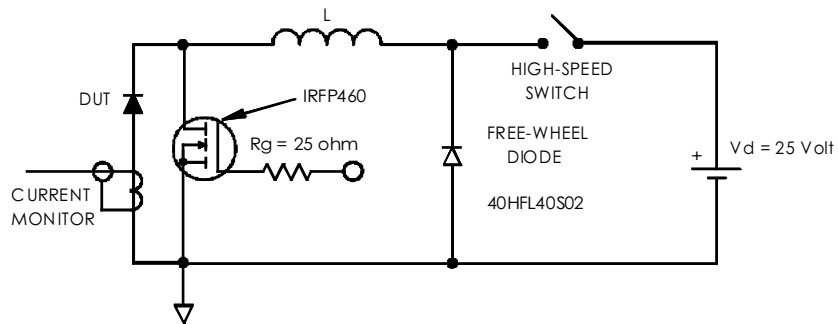


Fig. 8 - Unclamped Inductive Test Circuit

- (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);
 $P_{d_{REV}} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D); I_R @ V_{R1} = 10 \text{ V}$

Ordering Information Table

Device Code

43	C	T	Q	100	-1
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①
②
③
④
⑤
⑥

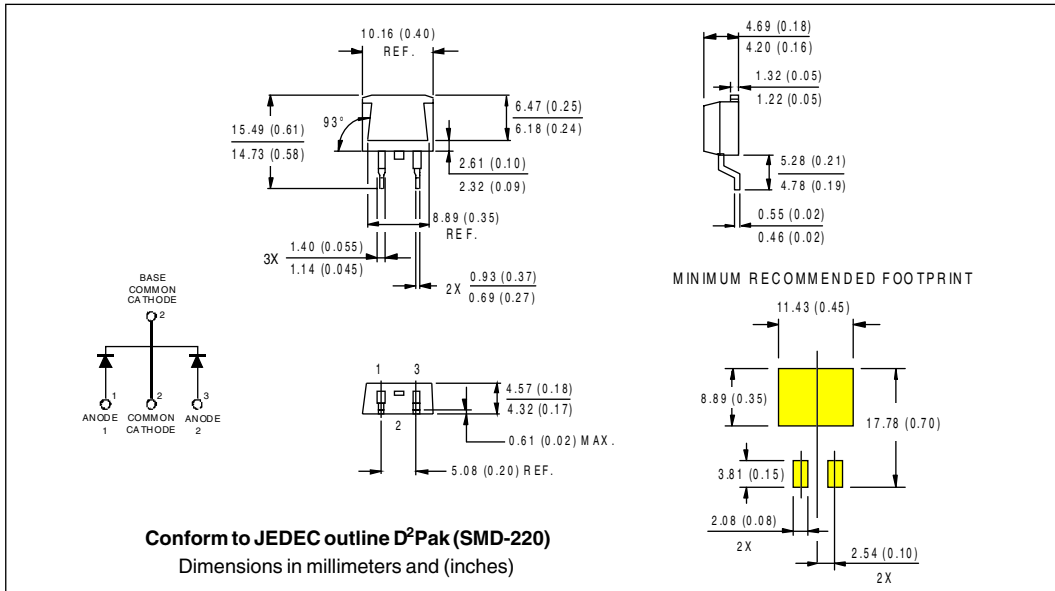
- 1** - Essential Part Number
- 2** - C = Common Cathode
- 3** - T = TO-220
- 4** - Q = Schottky Q Series
- 5** - Voltage Rating

080 = 80V
100 = 100V
- 6** - 1 = TO-262
S = D²Pak

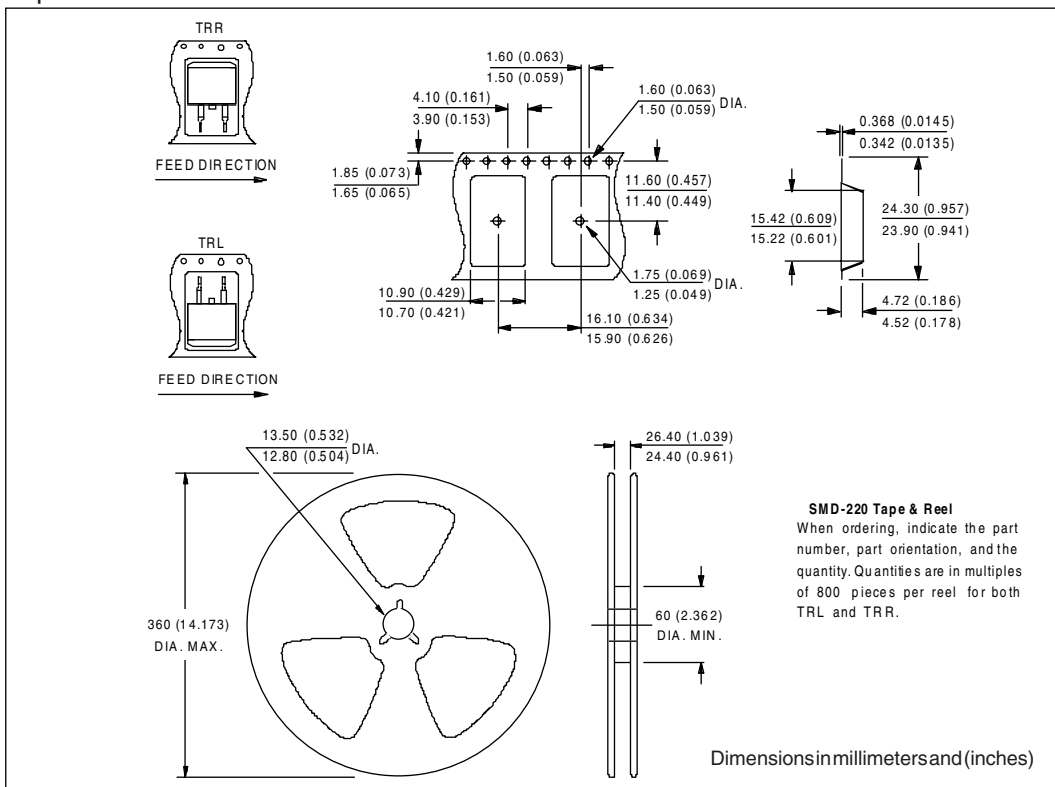
Outline Table

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

Outline Table



Tape & Reel Information



Outline Table

