

International IOR Rectifier

43CTQ...GS 43CTQ...G-1

SCHOTTKY RECTIFIER

40 Amp

$I_{F(AV)} = 40 \text{ Amp}$
 $V_R = 80 - 100V$

Major Ratings and Characteristics


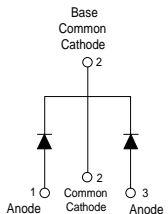

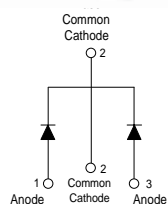
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	80-100	V
I_{FSM} @ $t_p = 5 \mu s$ sine	850	A
V_F @ 20 Apk, $T_J = 125^\circ C$ (per leg)	0.67	V
T_J range	-55 to 175	$^\circ C$

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°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 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

<p>43CTQ...GS</p>  <div style="text-align: center;"> <p>Base Common Cathode</p>  <p>1 Anode 2 Common Cathode 3 Anode</p> <p>D²PAK</p> </div>	<p>43CTQ...G-1</p>  <div style="text-align: center;"> <p>Common Cathode</p>  <p>1 Anode 2 Common Cathode 3 Anode</p> <p>TO-262</p> </div>
---	---

Voltage Ratings

Parameters	43CTQ080GS 43CTQ080G-1	43CTQ100GS 43CTQ100G-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	A	50% duty cycle @ $T_C = 135^\circ\text{C}$, rectangular wave form
	40		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	850	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse
	275		
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	7.50	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.50$ Amps, $L = 60$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	0.50	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.81	V	@ 20A
	0.98	V	@ 40A
	0.67	V	@ 20A
	0.81	V	@ 40A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.36	mA	$T_J = 25^\circ\text{C}$
	13	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.71	V	$T_J = T_J$ max.
r_t Forward Slope Resistance	0.43	m Ω	
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	10000	V/ μs	(Rated V_R)

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

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 175	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	2.0	$^\circ\text{C}/\text{W}$	DC operation
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	1.0	$^\circ\text{C}/\text{W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.50	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased (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)	
Device Marking	43CTQ...GS	Case style D ² -Pak	
	43CTQ...G-1	Case style TO-262	

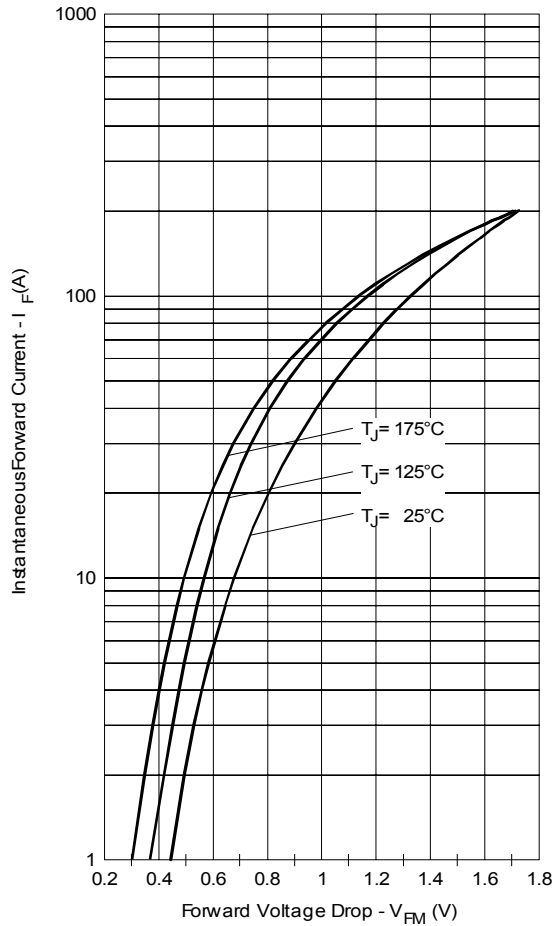


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

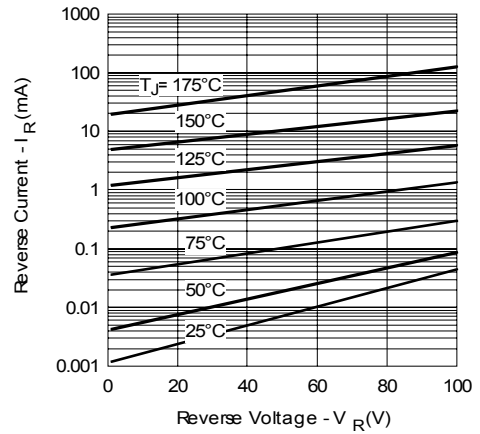


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

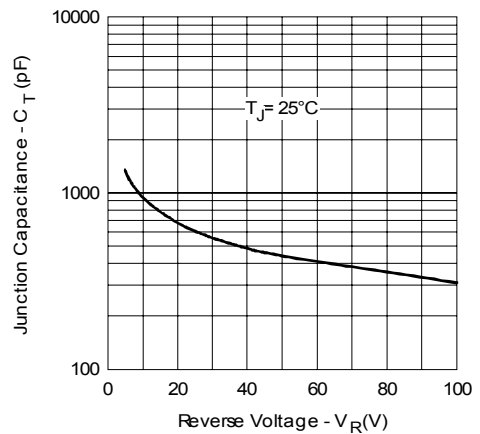


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

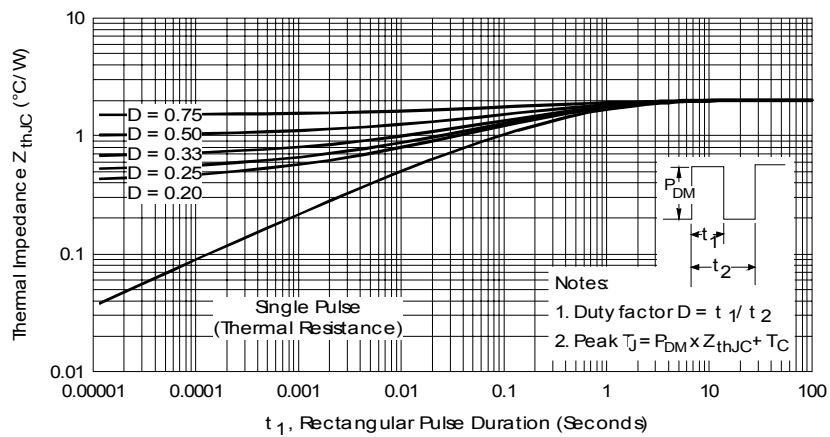


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

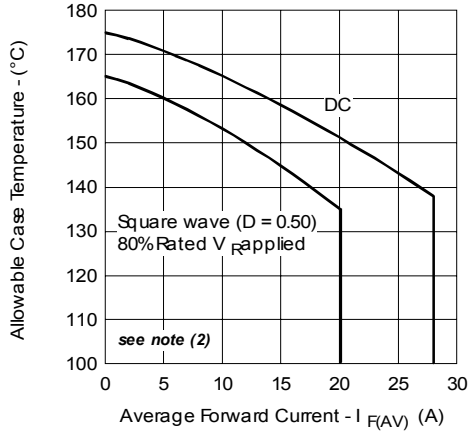


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

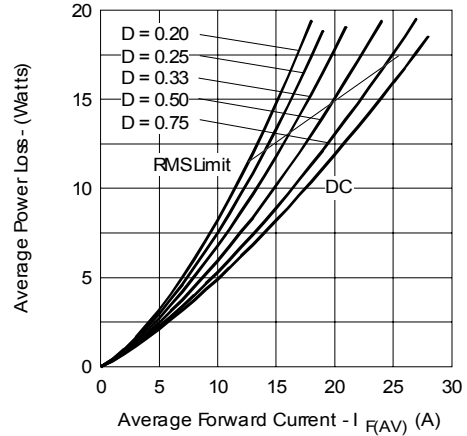


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

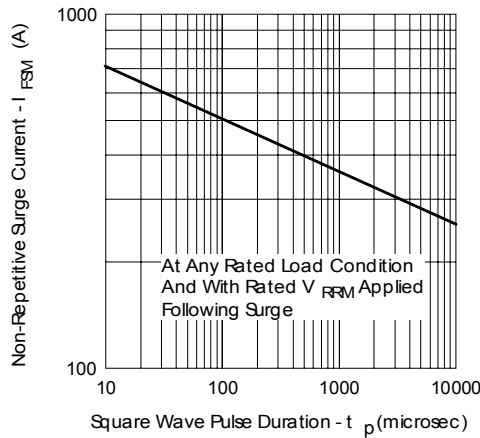


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

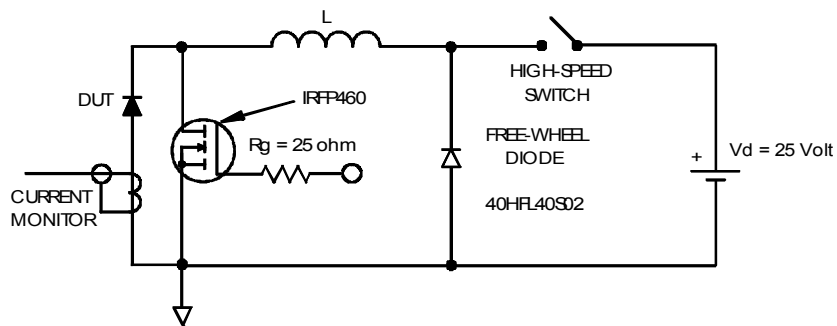


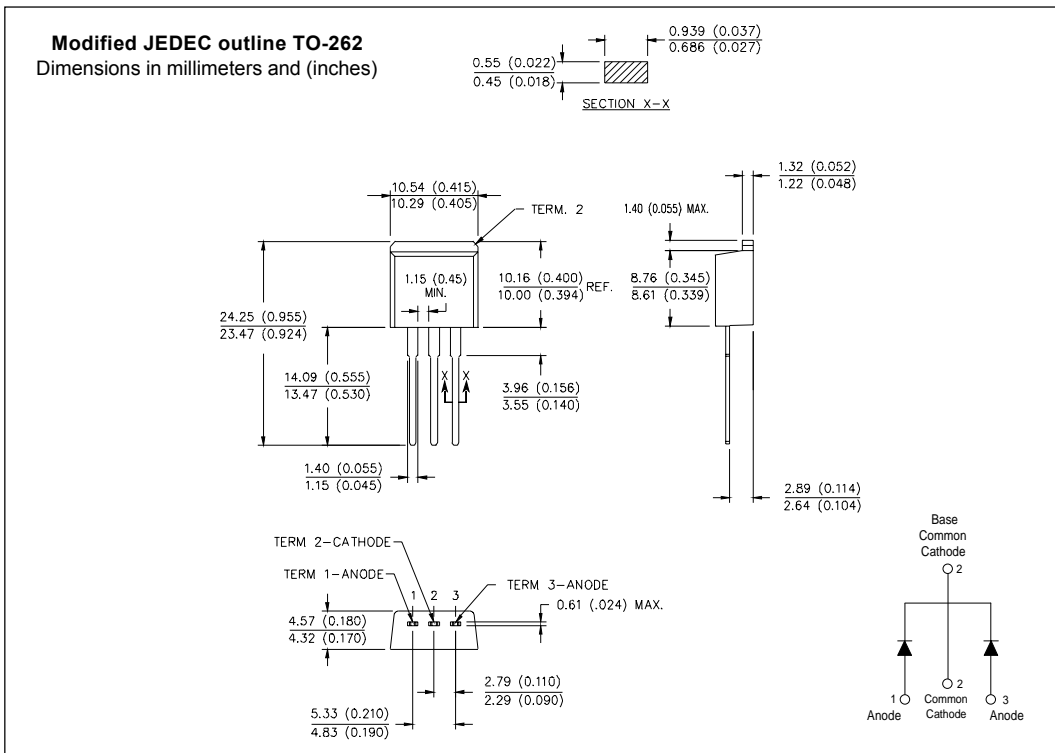
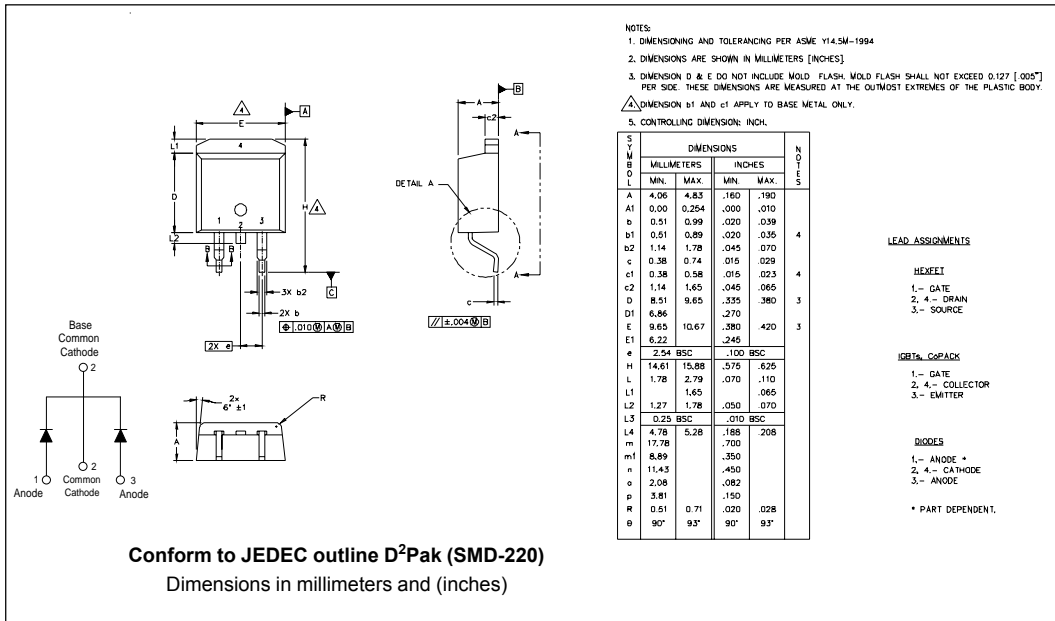
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$

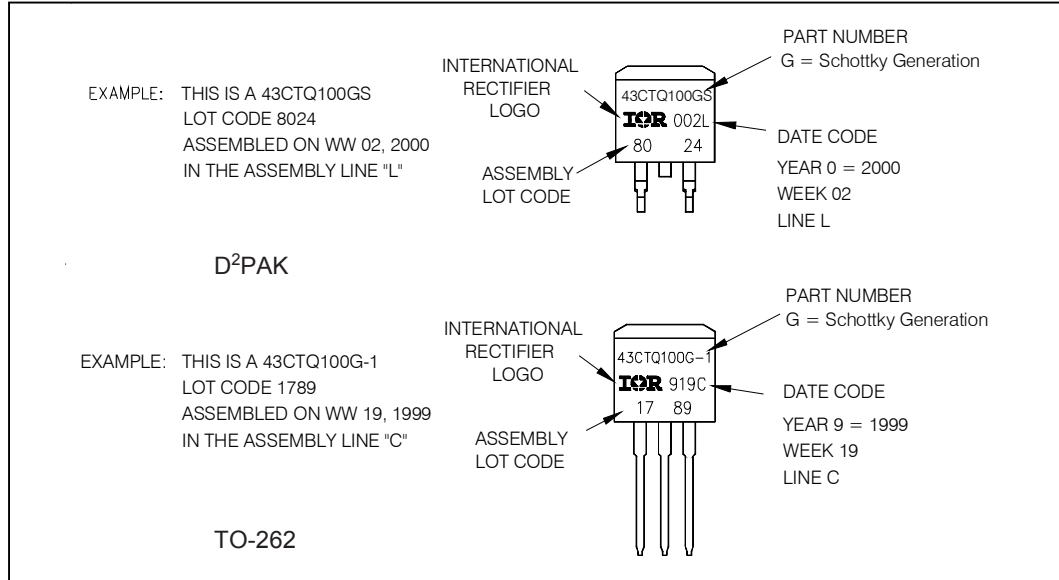
$Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

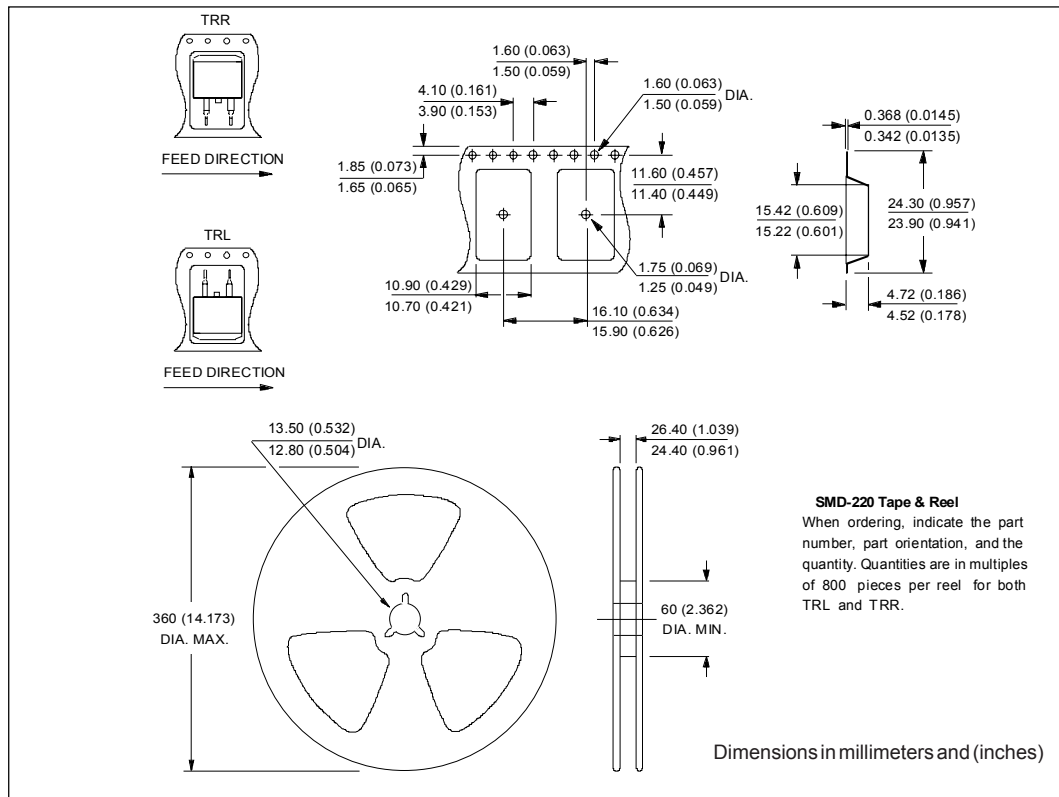
Outline Table



Part Marking Information



Tape & Reel Information



Ordering Information Table

Device Code							
43	C	T	Q	100	G	S	TRL
①	②	③	④	⑤	⑥	⑦	⑧
1	- Current Rating (40A)						
2	- C = Common Cathode						
3	- T = TO-220						
4	- Q = Schottky Q Series						
5	- Voltage Rating						080 = 80V 100 = 100V
6	- G = Schottky Generation						
7	- • -1 = TO-262 • S = D ² Pak						
8	- • none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D ² Pak only) • TRR = Tape & Reel (Right Oriented - for D ² Pak only)						

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.