PD-2.244 rev. A 12/97

International
IOR Rectifier

40CDQ... SERIES

SCHOTTKY RECTIFIER 40 Amp

Major Ratings and Characteristics

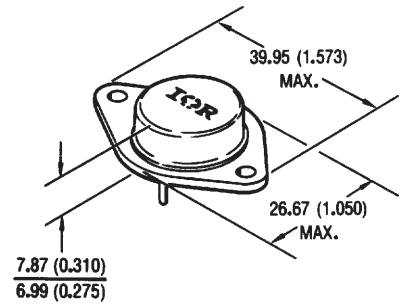
Characteristics		40CDQ...	Units
$I_{F(AV)}$	Rectangular waveform	40	A
V_{RRM}		35 to 45	V
I_{FSM}	@ tp = 5 µs sine	2000	A
V_F	@20 Apk, T_J = 125°C (per leg)	0.55	V
T_J		-65 to 175	°C

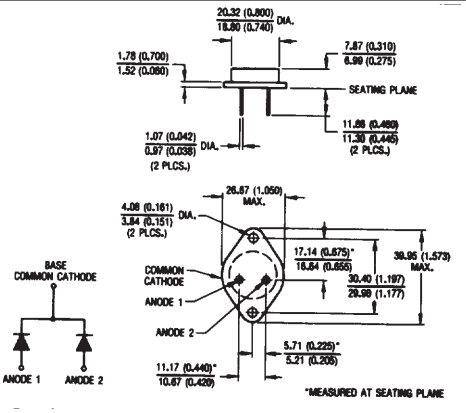
Description/Features

The 40CDQ 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 TO-3 package
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Hermetic packaging

CASE STYLE AND DIMENSIONS





Conforms to JEDEC Outline TO-204AA (TO-3)

Dimensions in millimeters and inches

Voltage Ratings

	Part number	40CDQ035	40CDQ040	40CDQ045
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

	Parameters	40CDQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current *See Fig. 5	40	A	50% duty cycle @ T_C = 135 °C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	2000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg) *See Fig. 7	400		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	27	mJ	T_J = 25 °C, I_{AS} = 4 Amps, L = 3.4 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	4	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	40CDQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.62	V	@ 20A	T_J = 25 °C
		0.79	V	@ 40A	
		0.55	V	@ 20A	T_J = 125 °C
		0.71	V	@ 40A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	2.5	mA	T_J = 25 °C	V_R = rated V_R
		25	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	1400	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance (Per Leg)	10.0	nH	Measured mounting plane 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		40CDQ	Units	Conditions
T_J	Max. Junction Temperature Range		-65 to 175	°C	
T_{stg}	Max. Storage Temperature Range		-65 to 175	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)		2.20	°C/W	DC operation *See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		1.10	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.20	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		11.4(0.40)	g(oz.)	
T	Mounting Torque	Min.	12(10)	Kg-cm (lbf-in)	
		Max.	17(15)		
	Case Style		TO-204AA(TO-3)		JEDEC

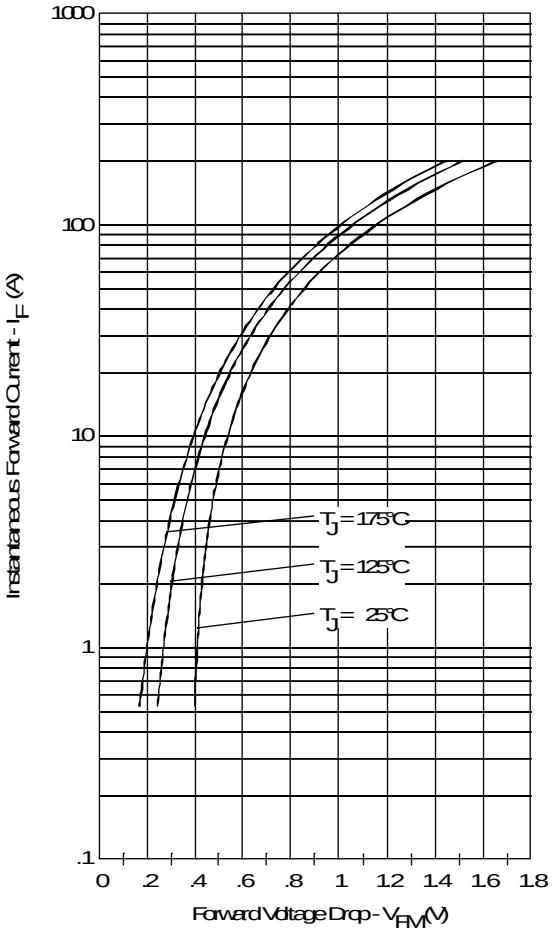


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

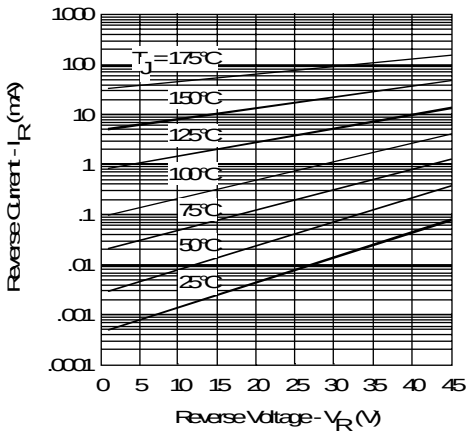


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

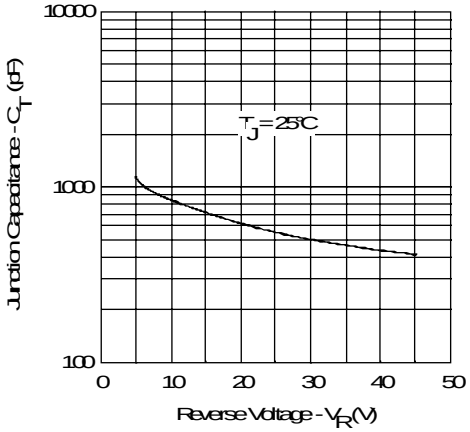


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

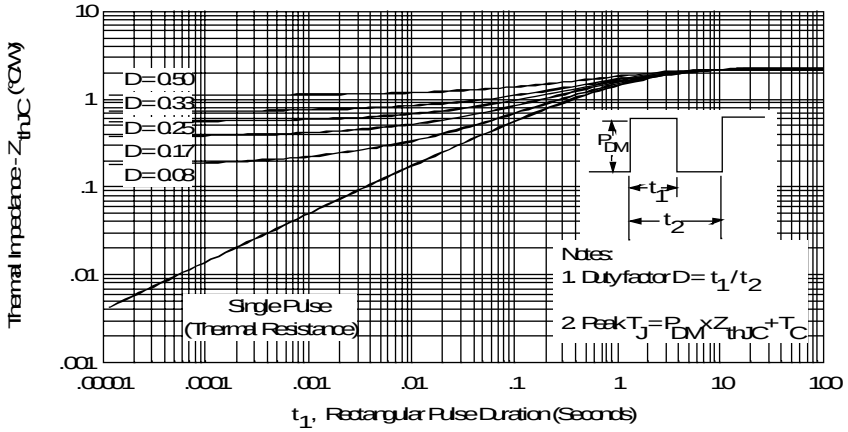


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

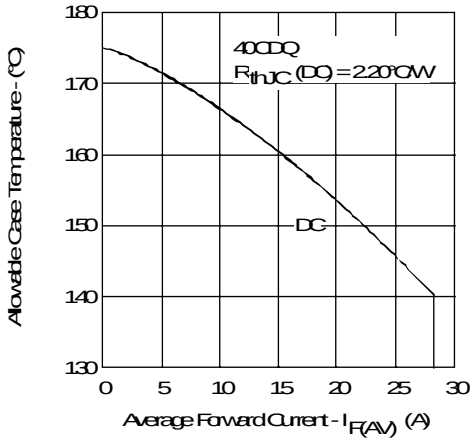


Fig. 5 - Max. Allowable Case Temperature
Vs. Average Forward Current (Per Leg)

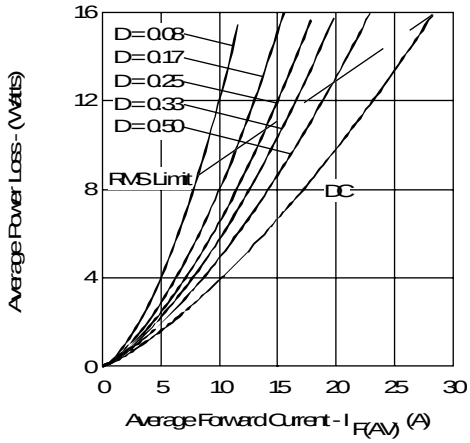


Fig. 6 - Forward Power Loss Characteristics
(Per Leg)

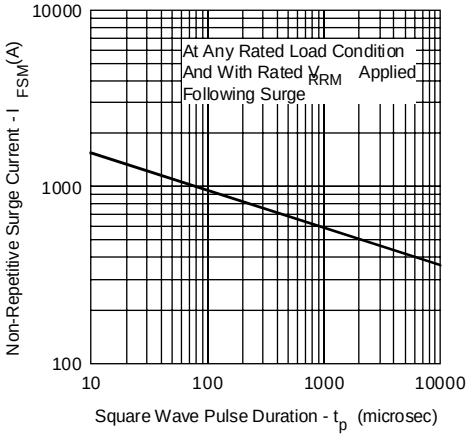


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

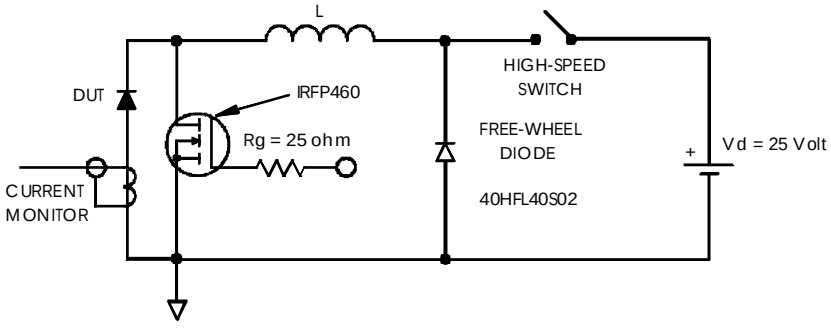


Fig. 8 - Unclamped Inductive Test Circuit