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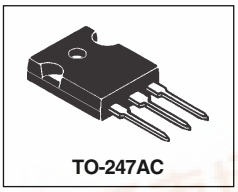
PD-20728 12/99

International
IOR Rectifier

63CPQ100

SCHOTTKY RECTIFIER

60 Amp



TO-247AC

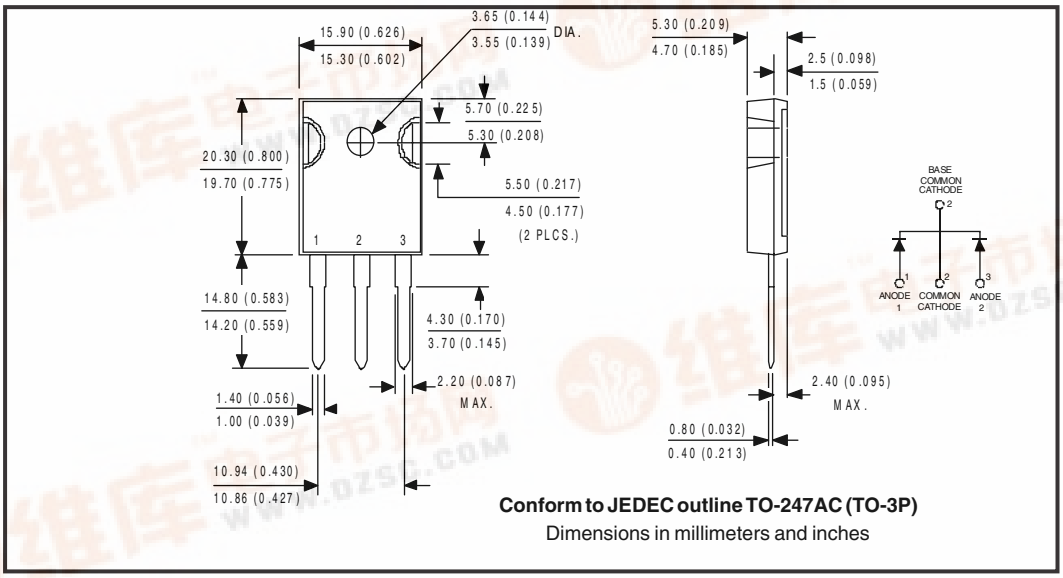
Major Ratings and Characteristics

Characteristics		63CPQ100	Units
$I_{F(AV)}$	Rectangular waveform	60	A
V_{RRM}		100	V
I_{FSM}	@ tp = 5 µs sine	2200	A
V_F	@ 30 Apk, T_J = 125°C (per leg)	0.64	V
T_J	range	-55 to 175	°C

Description/Features

The 63CPQ100 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-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



Conform to JEDEC outline TO-247AC (TO-3P)
Dimensions in millimeters and inches

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Voltage Ratings

	Part number	63CPQ100
V_R	Max. DC Reverse Voltage (V)	100
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	63CPQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	30	A	50% duty cycle @ T_C = 153°C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	60			
I_{FSM}	Max. Peak One Cycle Non-Repetitive	2200	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	410		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	15	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 30 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	1	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	63CPQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.77	V	@ 30A	T_J = 25 °C
		0.92	V	@ 60A	
		0.64	V	@ 30A	T_J = 125 °C
		0.76	V	@ 60A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.3	mA	T_J = 25 °C	V_R = rated V_R
		25	mA	T_J = 125 °C	
$V_{F(TO)}$	Threshold Voltage	0.38	V	T_J = T_J max.	
r_t	Forward Slope Resistance	5.75	mΩ		
C_T	Max. Junction Capacitance (Per Leg)	1300	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance (Per Leg)	7.5	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		63CPQ	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) * See Fig. 4		0.8	°C/W	DC operation
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.4	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.25	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		6 (0.21)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	
		Max.	12 (10)		
	Case Style		TO-247AC (TO-3P)		JEDEC

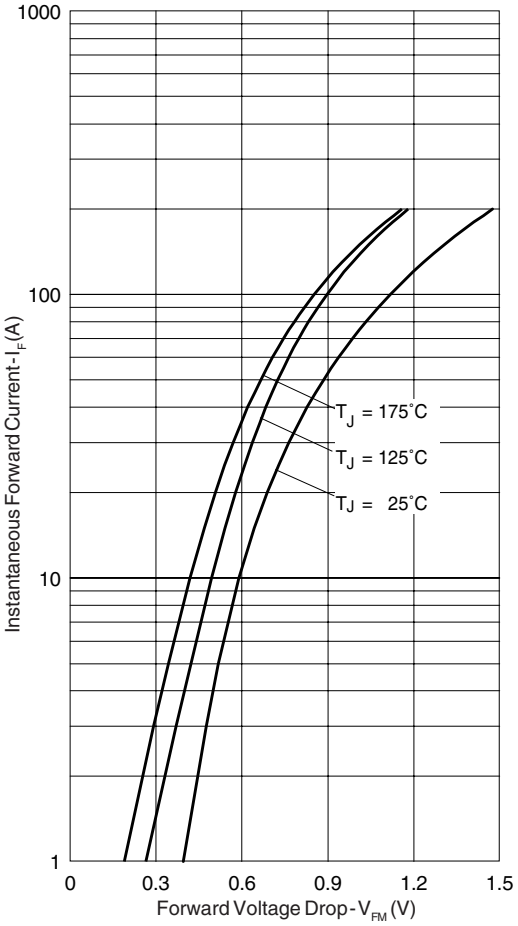

Fig. 1 - Max. Forward Voltage Drop Characteristics

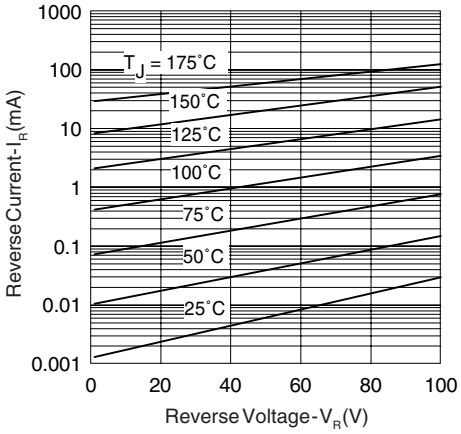

Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

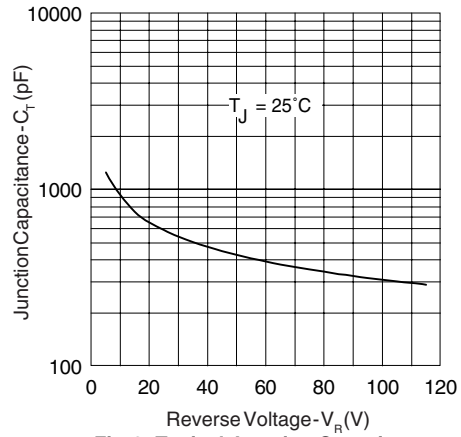

Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

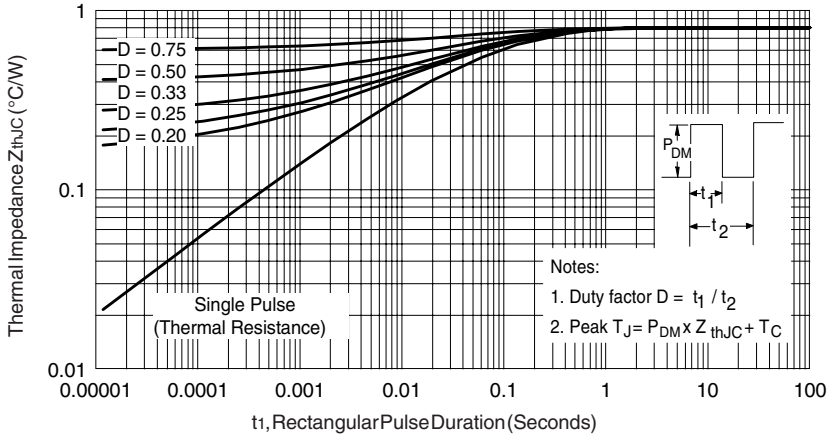

Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

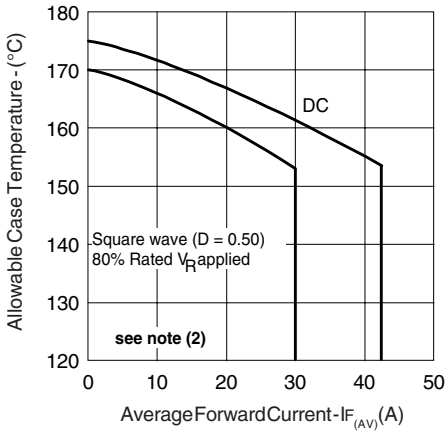

Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

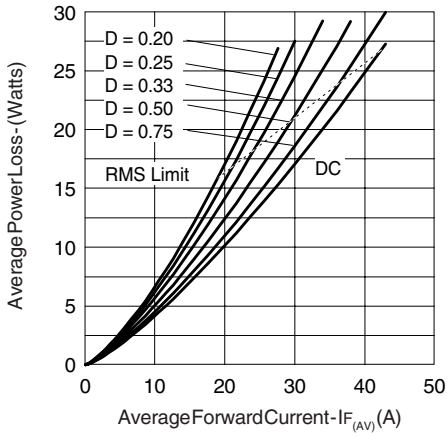

Fig. 6 - Forward Power Loss Characteristics

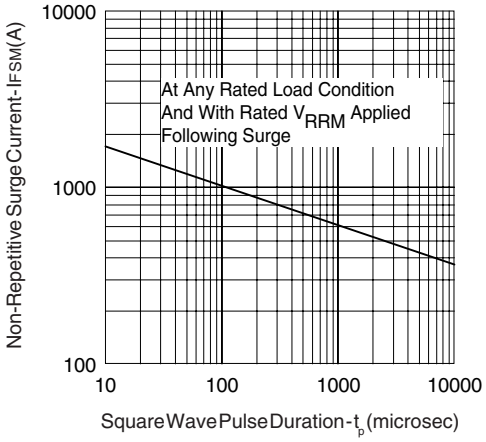

Fig. 7 - Max. Non-Repetitive Surge Current

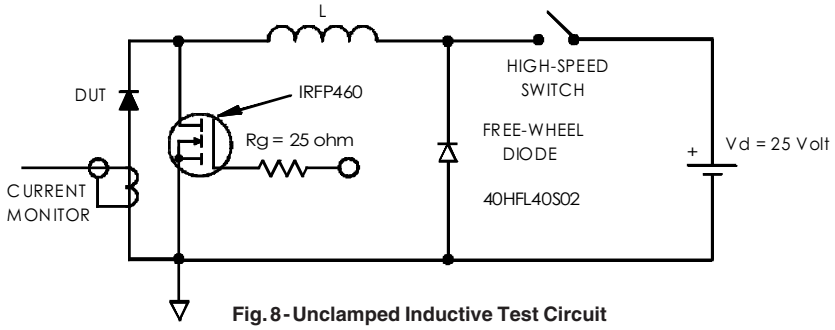

Fig. 8 - Unclamped Inductive Test Circuit

(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

International
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