Bulletin PD-20635 rev. A 12/01

International
IOR Rectifier

63CTQ100

SCHOTTKY RECTIFIER

60 Amp

Major Ratings and Characteristics

Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform (Per Device)	60	A
I_{FRM}	@ T_C = 139°C (Per Leg)	60	A
V_{RRM}		100	V
I_{FSM}	@ tp = 5 µs sine	1500	A
V_F	@ 30 Apk, T_J = 125°C	0.69	V
T_J	range	-65 to 175	°C

Description/Features

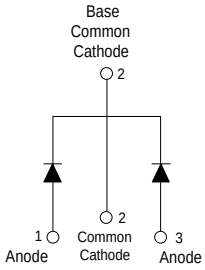
This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery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

- 175° C T_J operation
- Center tap TO-220 package
- 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

63CTQ100





TO-220

Voltage Ratings

	Parameters	63CTQ100
V_R	Max. DC Reverse Voltage (V)	100
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	Values	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	30	A	50% duty cycle @ T_C = 139°C, rectangular wave form	
	Current (Per Device)	60			
I_{FRM}	Peak Repetitive Forward Current (Per Leg)	60	A	Rated V_R, square wave, 20kHz T_C = 140° C	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	1500	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg)	300		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	11.25	mJ	T_J = 25°C, I_{AS} = 0.75Amps, L = 40mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	0.75	A	Current decaying linearty to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	Typ.	Max.	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.78	0.82	V	@ 30A	T_J = 25 °C
		0.94	1.0	V	@ 60A	
		0.64	0.69	V	@ 30A	T_J = 125 °C
		0.78	0.83	V	@ 60A	
I_{RM}	Max. Instantaneus Reverse Current	0.02	0.3	mA	T_J = 25 °C	Rated DC voltage
		11	20	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	1100		pF	V_R = 5V_{DC} (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance	8.0		nH	Measured from top of terminal to mounting plane	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10000		V/ µs		

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

Thermal-Mechanical Specifications

	Parameters		Values	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)		1.2	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance Case to Heatsink		0.50	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	Non-lubricated threads
		Max.	12 (10)		

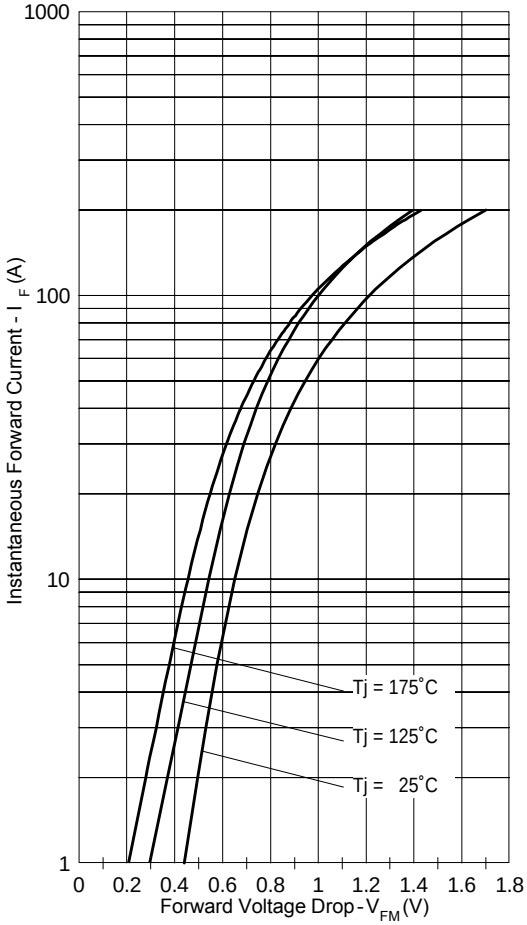


Fig. 1 - Maximum Forward Voltage Drop Characteristics

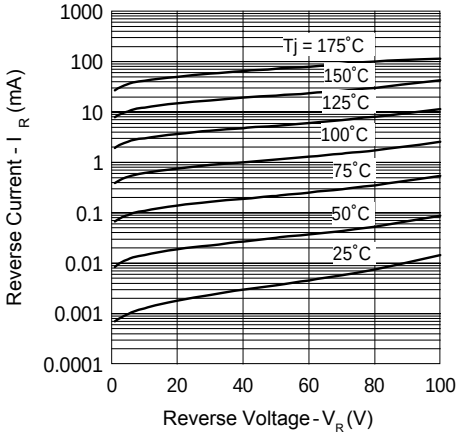


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

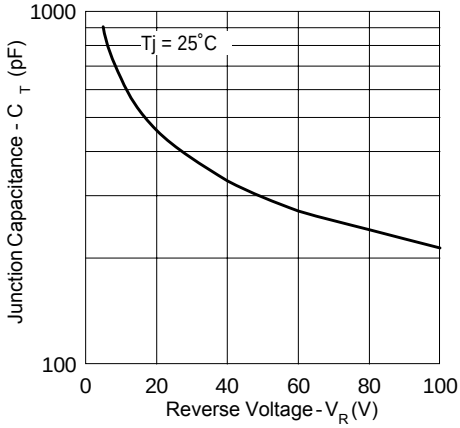


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

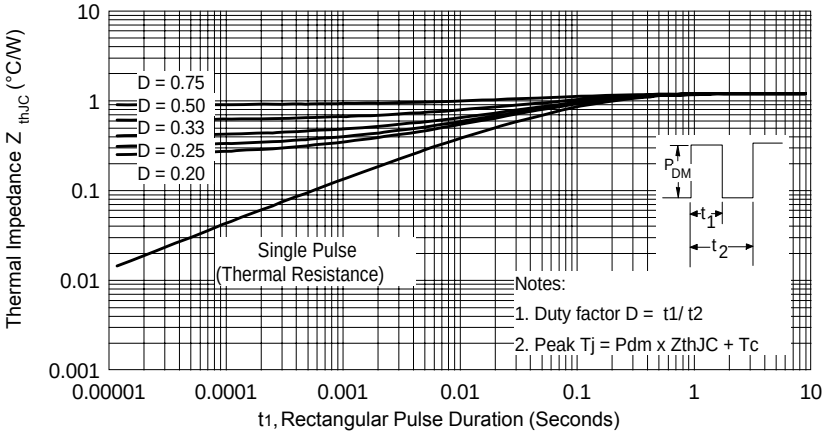


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

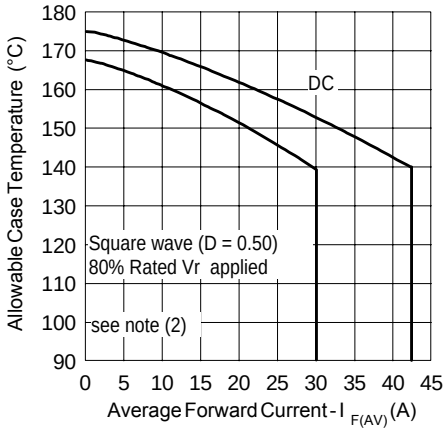


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

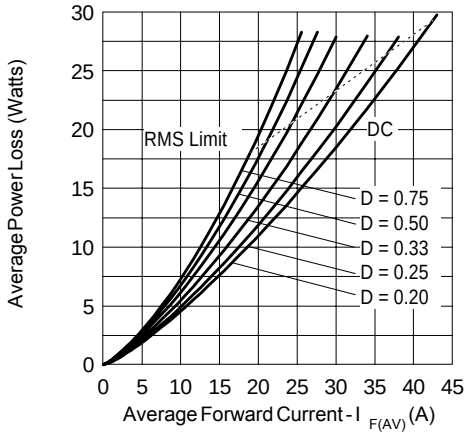


Fig. 6 - Forward Power Loss Characteristics

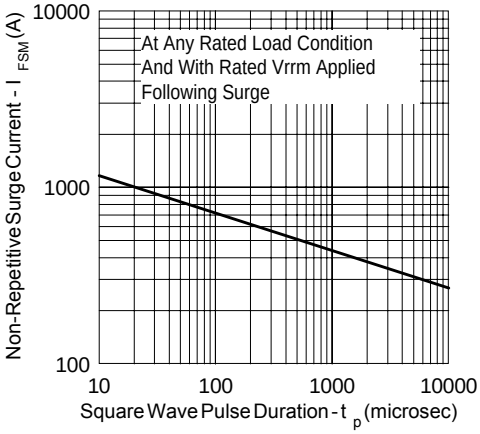
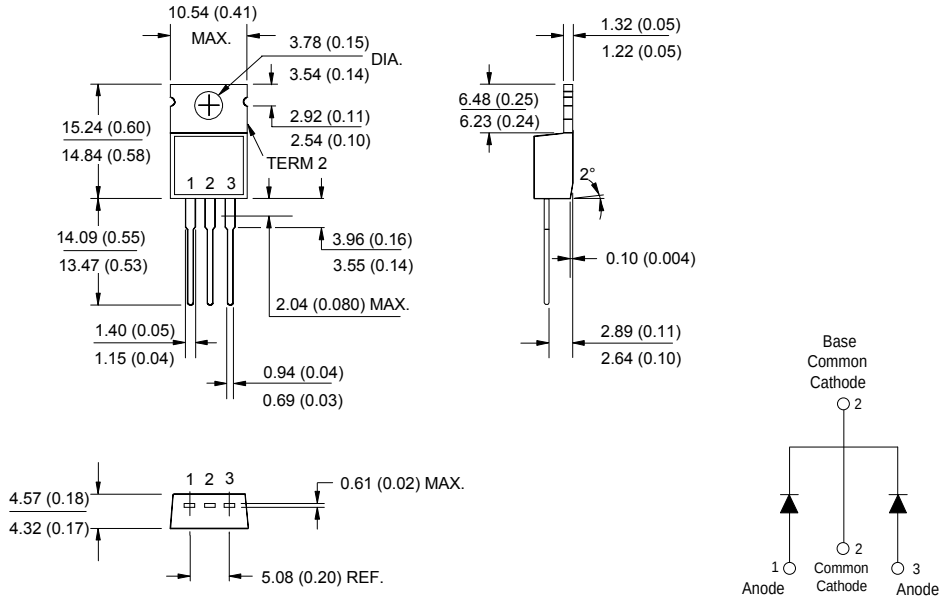


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(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

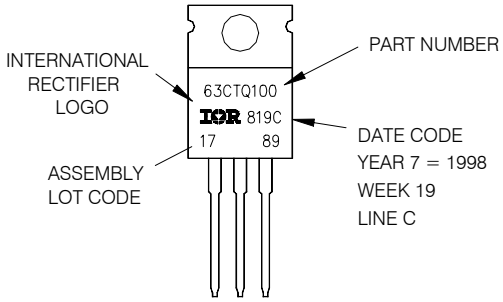
Outline Table



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

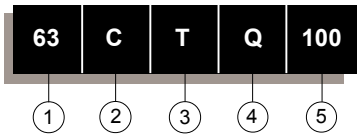
Marking Information

EXAMPLE: THIS IS AN 63CTQ100
LOT CODE 1789
ASSEMBLED ON WW 19, 1998
IN THE ASSEMBLY LINE "C"



Ordering Information Table

Device Code



1	-	Essential Part Number
2	-	Common Cathode
3	-	T = TO-220
4	-	Q = Schottky Q Series
5	-	Voltage Rating — 100 = 100V

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

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 12/01