Bulletin PD-20999 rev. B 12/02

International
IOR Rectifier

100BGQ100
100BGQ100J

SCHOTTKY RECTIFIER

100 Amp

Major Ratings and Characteristics

Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	100	A
	@T_C	129	℃
I_{DC}	Maximum	141	A
V_{RRM}		100	V
I_{FSM}	@tp = 5 µs sine	6300	A
V_F	@100Apk typical	0.74	V
	@T_J	125	℃
T_J	range	-55 to 175	℃

Description/ Features

This 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, reverse battery protection, and redundant power subsystems.

- 175°C T_J operation
- High Frequency Operation
- Low forward voltage drop
- Continuous High Current operation
- Guard ring for enhanced ruggedness and long term reliability
- ***PowIRtab™ package***

Case Styles

100BGQ100	100BGQ100J
	

Voltage Ratings

	Part number	100BGQ100, 100BGQ100J
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 Current	100	A	50% duty cycle @ T_C = 129°C, rectangular wave form	
$I_{F(RMS)}$	RMS Forward Current	141	A	T_C = 120°C	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current	6300	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		800		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	9	mJ	T_J = 25 °C, I_{AS} = 2 Amps, L = 4.5 mH	
I_{AR}	Repetitive Avalanche Current	2	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	Values		Units	Conditions	
		Typ.	**Max.**			
V_{FM}	Forward Voltage Drop (1) (2)	0.80	0.84	V	@ 50A	T_J = 25 °C
		0.96	1.04	V	@ 100A	
		0.64	0.66	V	@ 50A	T_J = 125 °C
		0.74	0.77	V	@ 100A	
I_{RM}	Reverse Leakage Current (1)	22	300	µA	T_J = 25 °C	V_R = rated V_R
		14	18	mA	T_J = 125°C	
$V_{F(TO)}$	Threshold Voltage	0.484		V	T_J = T_J max.	
r_t	Forward Slope Resistance	2.0		mΩ		
C_T	Max. Junction Capacitance	1320		pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25 °C	
L_S	Typical Series Inductance	3.5		nH	Measured from tab to mounting plane	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10000		V/ µs		

(1) Pulse Width < 300µs, Duty Cycle < 2%
(2) $V_{FM} = V_{F(TO)} + r_t \times I_F$

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		0.50	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.20	°C/W	Mounting surface, smooth and greased
wt	Approximate Weight		5 (0.18)	g (oz.)	
T	Mounting Torque	Min.	1.2 (10)	N*m (lbf-in)	
		Max.	2.4 (20)		
	Case Style		*PowIRtab*™		

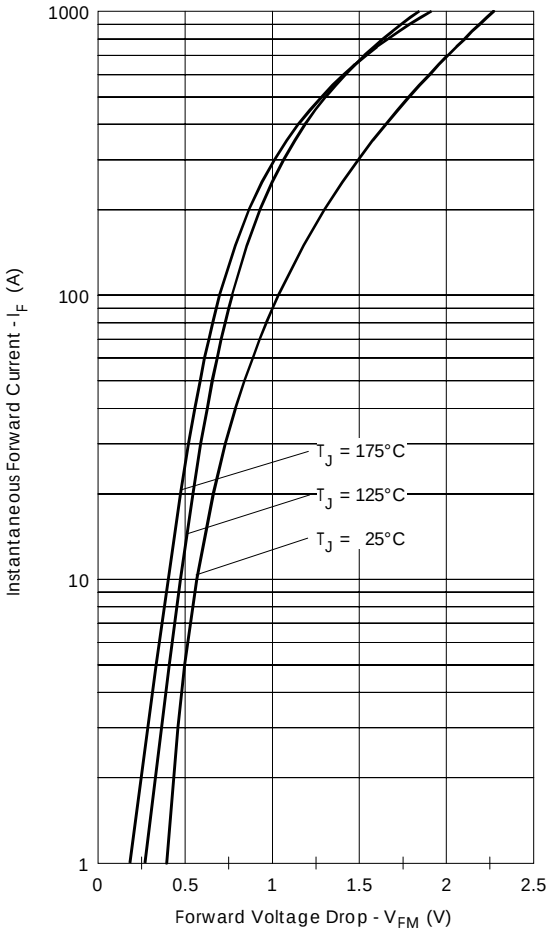


Fig. 1 - Maximum Forward Voltage Drop Characteristics

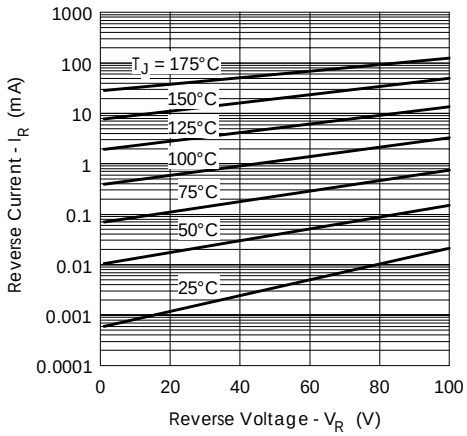


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

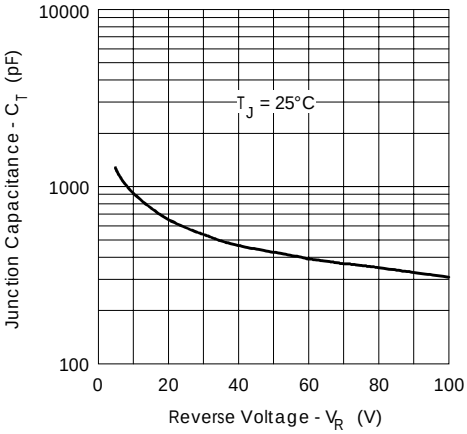


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

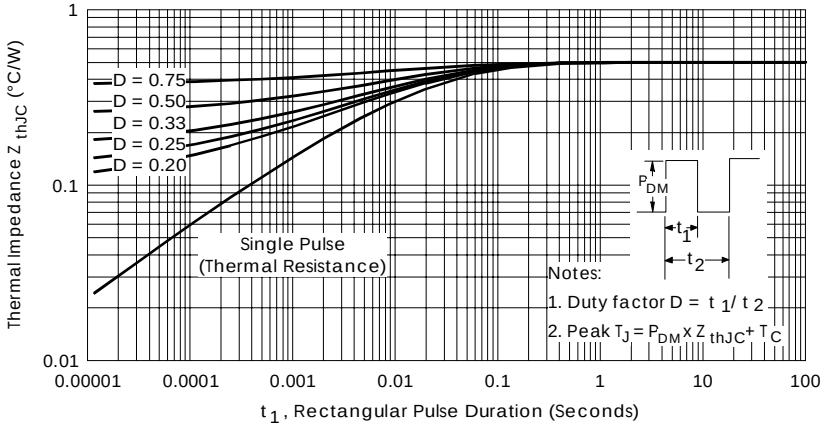


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

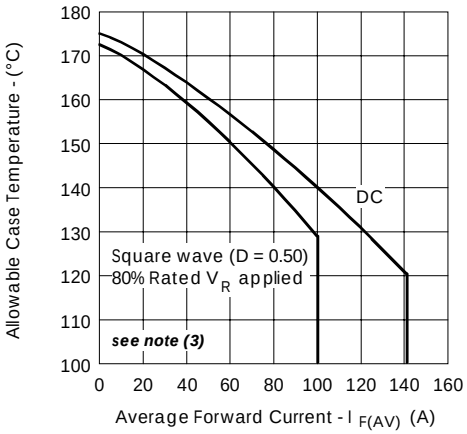


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

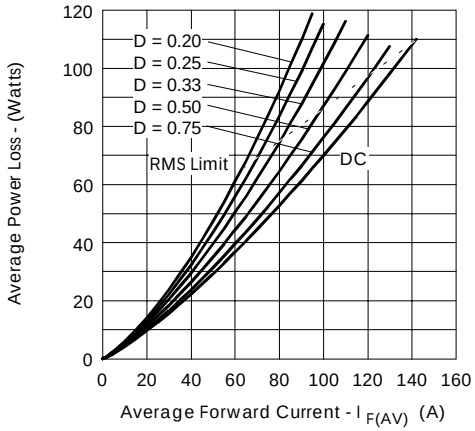


Fig. 6 - Forward Power Loss Characteristics

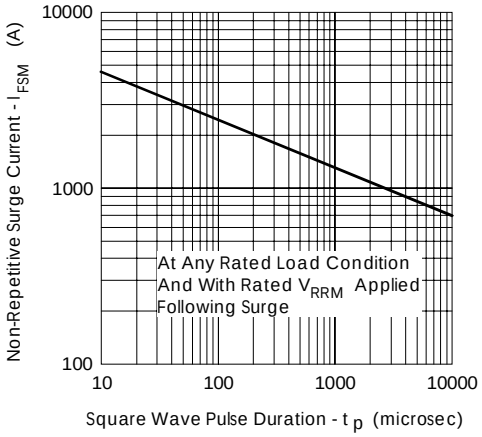


Fig. 7 - Maximum Non-Repetitive Surge Current

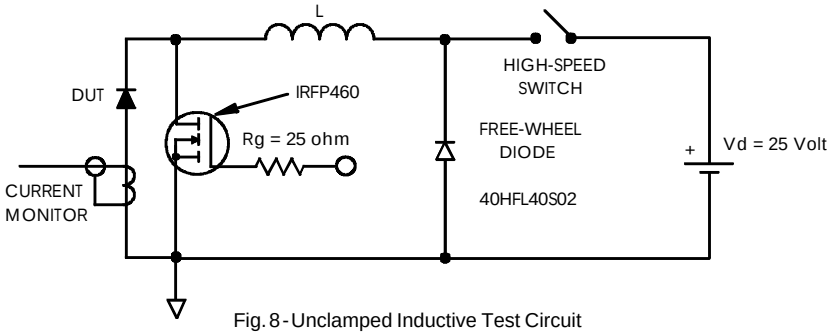
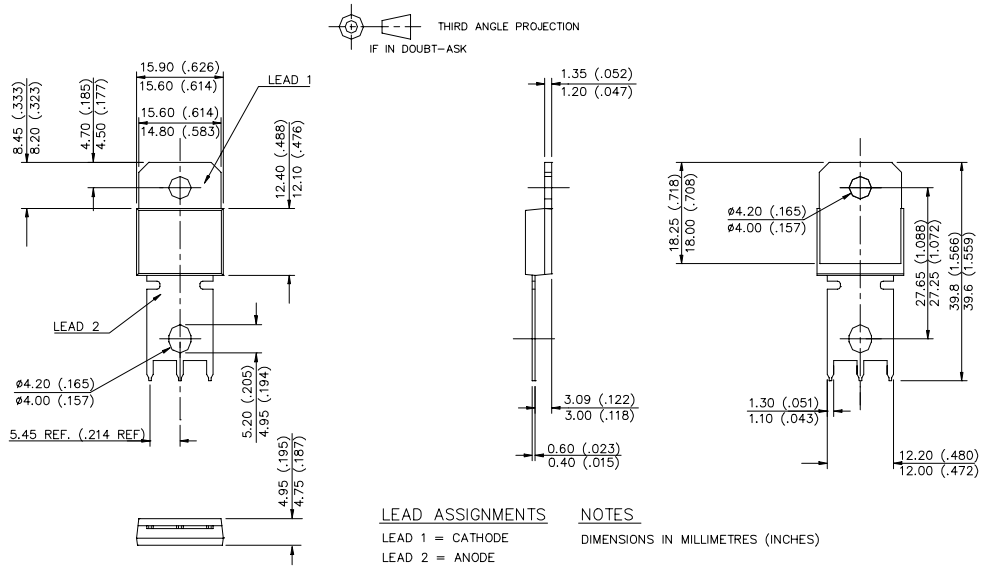


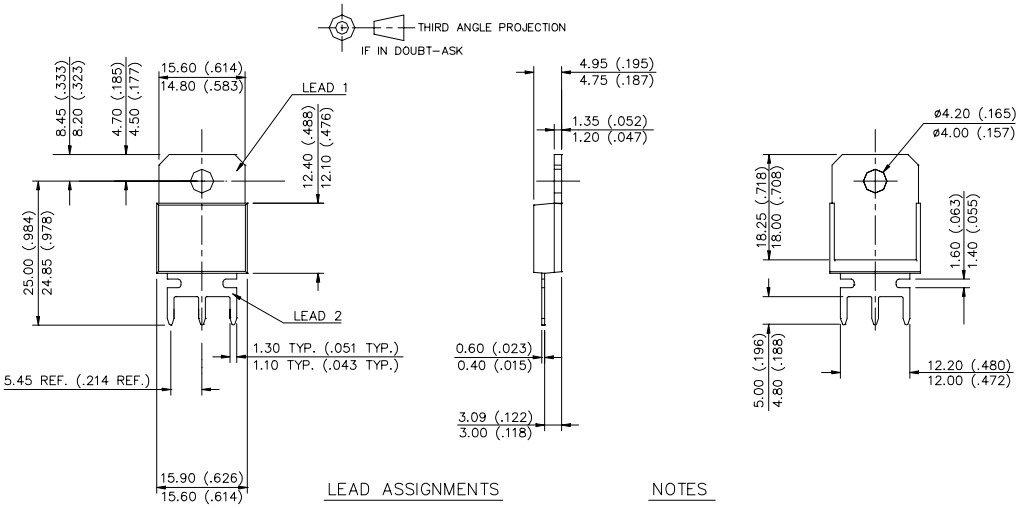
Fig. 8 - Unclamped Inductive Test Circuit

(3) 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



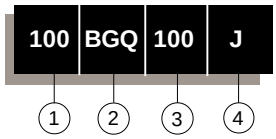
Case Style *PowIRtab*™
Dimensions in millimeters and (inches)



Case Style *PowIRtab*™ "J" version
Dimensions in millimeters and (inches)

Ordering Information Table

Device Code



1	-	Current Rating
2	-	Essential Part Number
3	-	Voltage code: Code = V_{RRM}
4	-	none = PowIRtab™ standard
		J = Short Lead Version

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

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