Bulletin PD-20995 rev. F 12/02

International
IOR Rectifier

100BGQ015
100BGQ015J

SCHOTTKY RECTIFIER

100 Amp

Major Ratings and Characteristics

Characteristics	100BGQ015	Units
$I_{F(AV)}$ Rectangular waveform	100	A
@ T_C	91	°C
I_{DC} Maximum	141	A
V_{RRM}	15	V
I_{FSM} @ tp = 5 μs sine	5000	A
V_F @100Apk typical	0.38	V
@ T_J	125	°C
T_J range	- 55 to 125	°C

Description/ Features

The 100BGQ015 Schottky rectifier has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125° C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125°C T_J operation (V_R < 5V)
- Optimized for OR-ing applications
- High frequency operation
- Ultra low forward voltage drop
- Continuous High Current operation
- Guard ring for enhanced ruggedness and long term reliability
- ***PowIRtab™ package***

Case Styles

100BGQ015	100BGQ015J
	

Voltage Ratings

	Part number		100BGQ015
V_R	Max. DC Reverse Voltage (V)	@ T_J = 100 °C	15
V_R	Max. DC Reverse Voltage (V)	@ T_J = 125 °C	5

Absolute Maximum Ratings

	Parameters	100BGQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	100	A	50% duty cycle @ T_C = 91°C, rectangular wave form	
$I_{F(RMS)}$	RMS Forward Current	141	A	T_C = 88°C	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	5000	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current	1000		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 = 3 x V_R typical	

Electrical Specifications

	Parameters	100BGQ Typ.	100BGQ Max.	Units	Conditions	
V_{FM}	Forward Voltage Drop (1) (2)	0.34	0.37	V	@ 50A	T_J = 25 °C
		0.42	0.46	V	@ 100A	
		0.26	0.29	V	@ 50A	T_J = 125 °C
		0.38	0.42	V	@ 100A	
I_{RM}	Reverse Leakage Current (1)	7	18	mA	T_J = 25 °C	V_R = rated V_R
		580	870	mA	T_J = 100 °C	
		480	700	mA	T_J = 100 °C V_R = 12V	
		1	1.2	A	T_J = 125 °C V_R = 5V	
$V_{F(TO)}$	Threshold Voltage	0.155		V	T_J = T_J max.	
r_t	Forward Slope Resistance	2.45		mΩ		
C_T	Max. Junction Capacitance	3800		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		100BGQ	Units	Conditions
T_J	Max. Junction Temperature Range		-55 to 125	°C	
T_{stg}	Max. Storage Temperature Range		-55 to 150	°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*™		

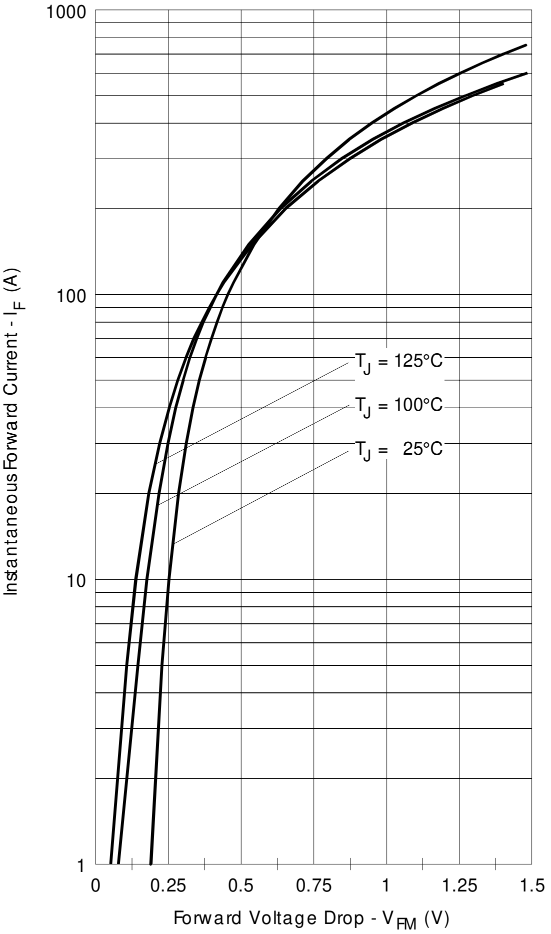


Fig. 1 - Maximum Forward Voltage Drop Characteristics

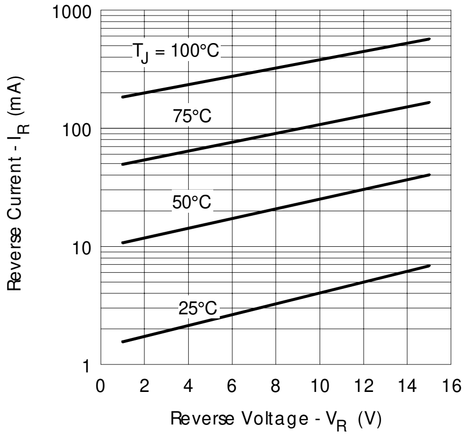


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

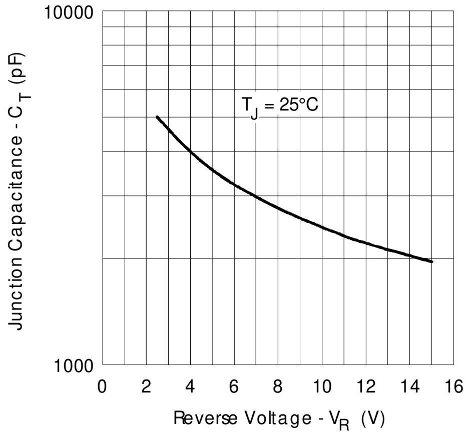


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

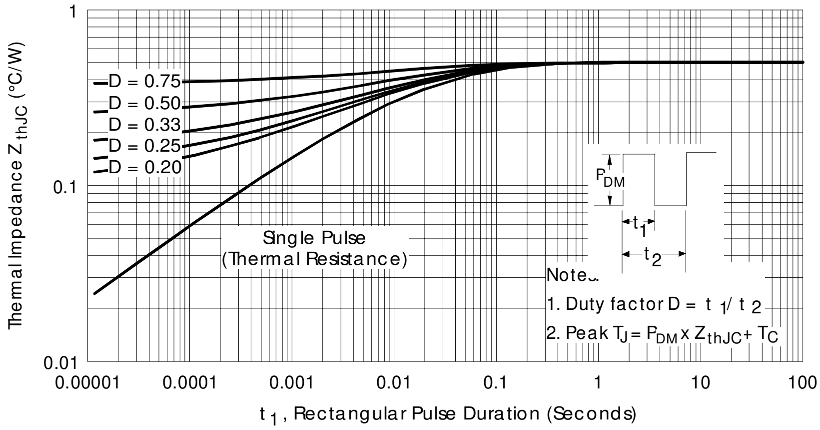


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

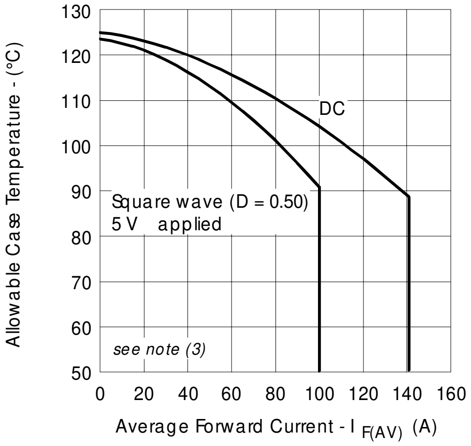


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

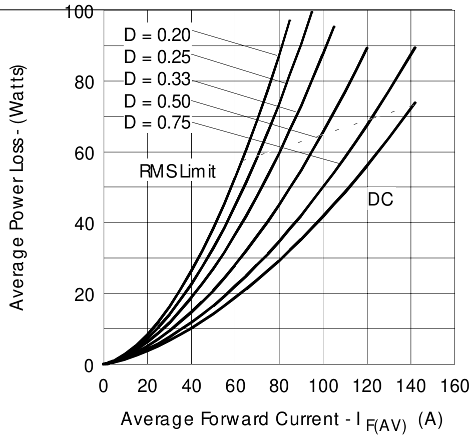


Fig. 6 - Forward Power Loss Characteristics

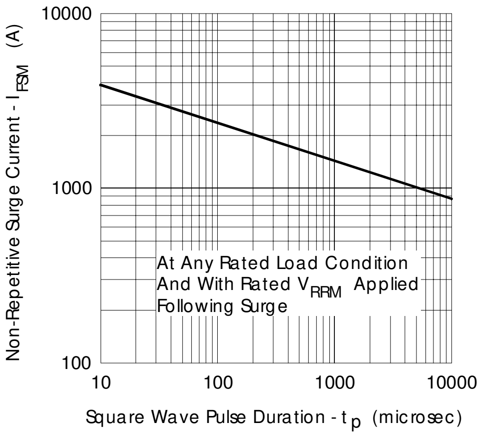


Fig. 7 - Maximum Non-Repetitive Surge Current

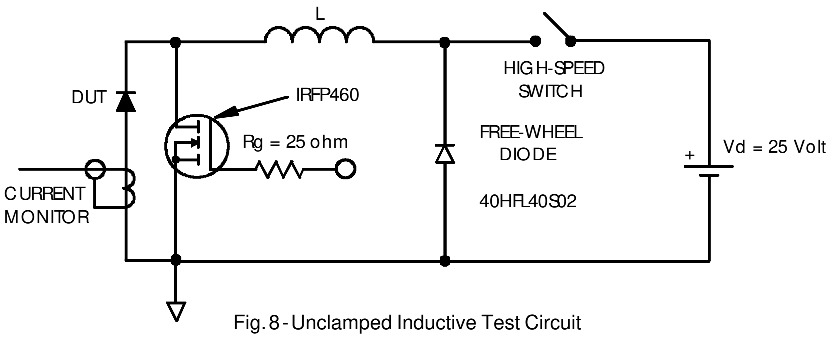


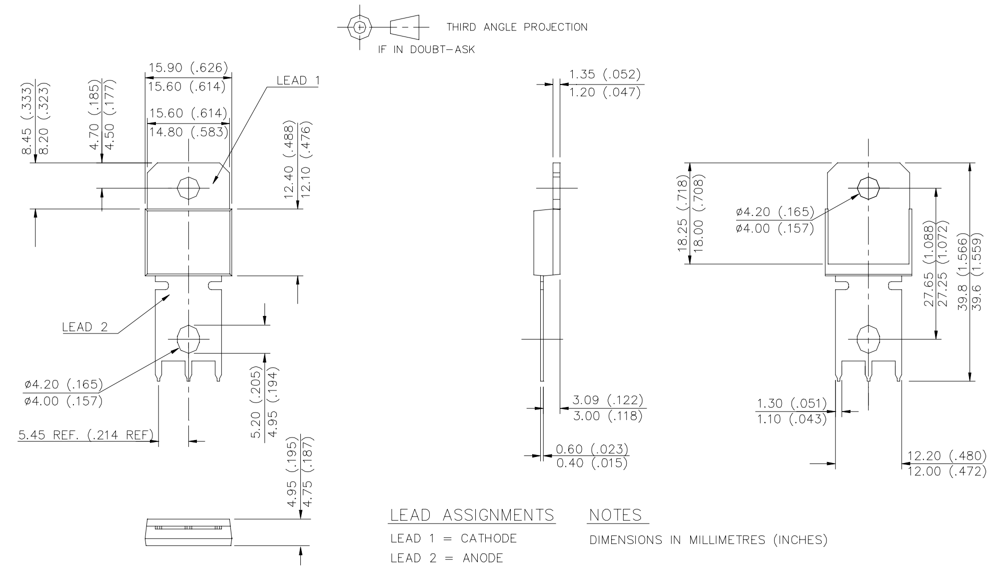
Fig. 8 - Unclamped Inductive Test Circuit

(3) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

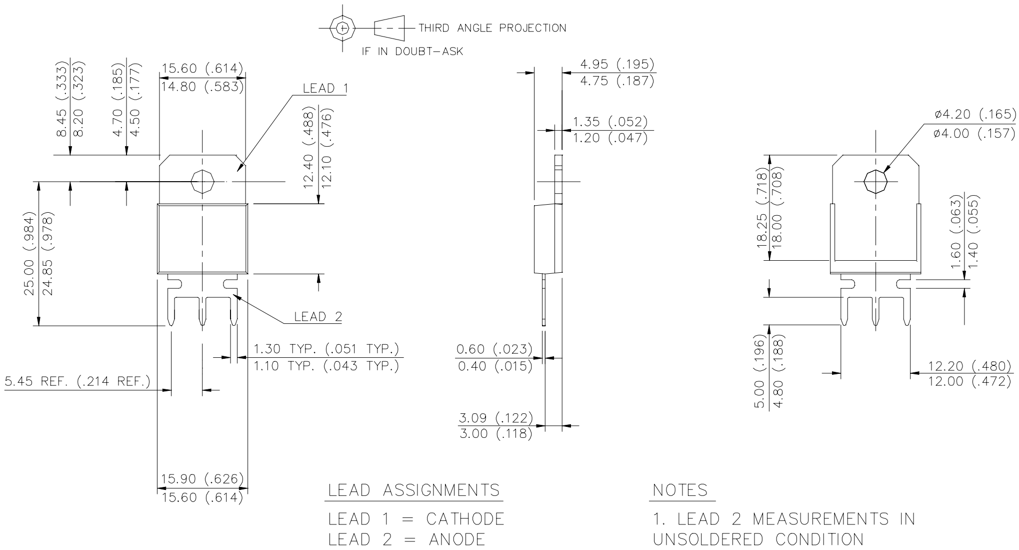
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM}$ @ $(I_{F(AV)} / D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; I_R @ V_{R1} = 80% rated V_R

Outline Table



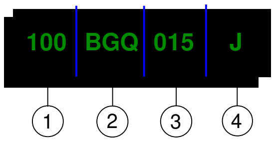
CaseStyle *PowIRtab*™
Dimensions in millimeters and (inches)



CaseStyle *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
6 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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