

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} @ $t_p = 5 \mu s$ 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) @ $T_J = 100^\circ\text{C}$	15
V_R Max. DC Reverse Voltage (V) @ $T_J = 125^\circ\text{C}$	5

Absolute Maximum Ratings

Parameters	100BGQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	100	A	50% duty cycle @ $T_C = 91^\circ\text{C}$, rectangular wave form
$I_{F(RMS)}$ RMS Forward Current	141	A	$T_C = 88^\circ\text{C}$
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	5000 1000	A	5 μs Sine or 3 μs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RRM} applied
E_{AS} Non-Repetitive Avalanche Energy	9	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{ Amps}$, $L = 4.5\text{ mH}$
I_{AR} Repetitive Avalanche Current	2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 3 \times V_R$ typical

Electrical Specifications

Parameters	100BGQ		Units	Conditions	
	Typ.	Max.			
V_{FM} Forward Voltage Drop (1) (2)	0.34	0.37	V	@ 50A	$T_J = 25^\circ\text{C}$
	0.42	0.46	V	@ 100A	
	0.26	0.29	V	@ 50A	$T_J = 125^\circ\text{C}$
	0.38	0.42	V	@ 100A	
I_{RM} Reverse Leakage Current (1)	7	18	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	580	870	mA	$T_J = 100^\circ\text{C}$	
	480	700	mA	$T_J = 100^\circ\text{C}$ $V_R = 12\text{V}$	
	1	1.2	A	$T_J = 125^\circ\text{C}$ $V_R = 5\text{V}$	
$V_{F(TO)}$ Threshold Voltage	0.155		V	$T_J = T_J \text{ max.}$	
r_t Forward Slope Resistance	2.45		m Ω		
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 < 300 μs , 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	-55to 125	°C	
T _{stg}	Max. Storage Temperature Range	-55to 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™		

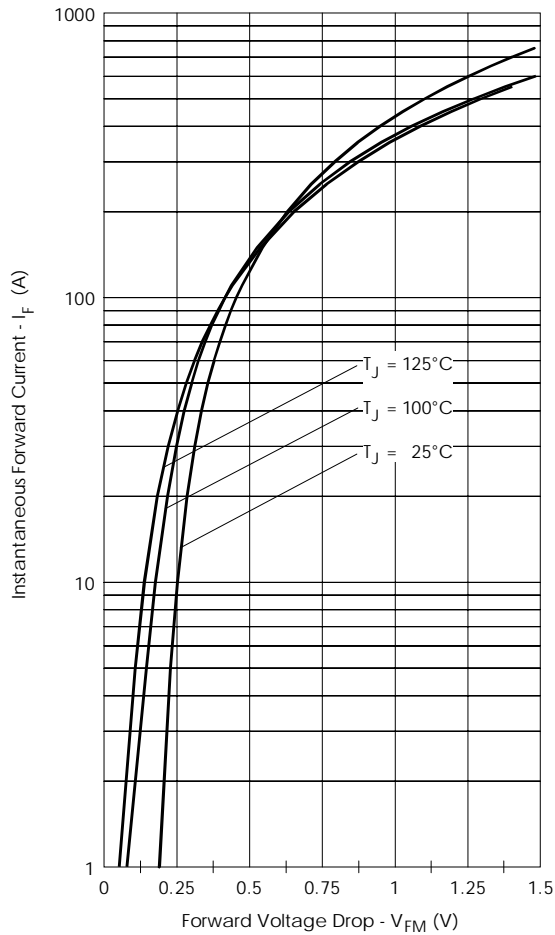


Fig. 1 - Maximum Forward Voltage Drop Characteristics

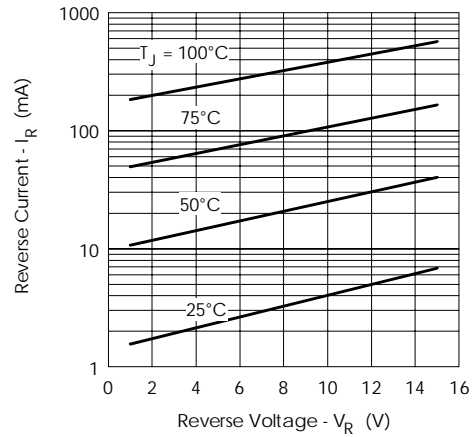


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

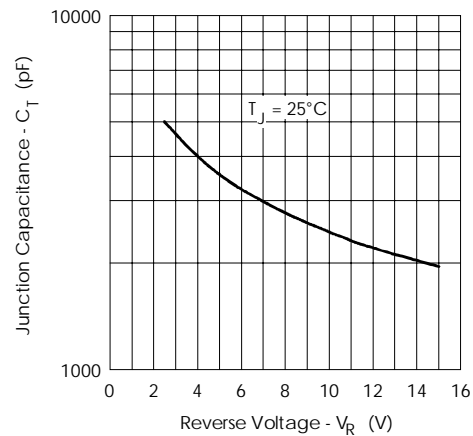


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

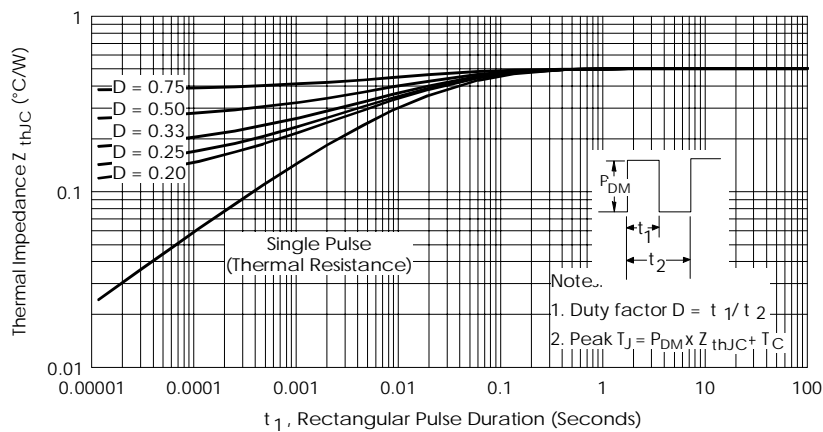


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

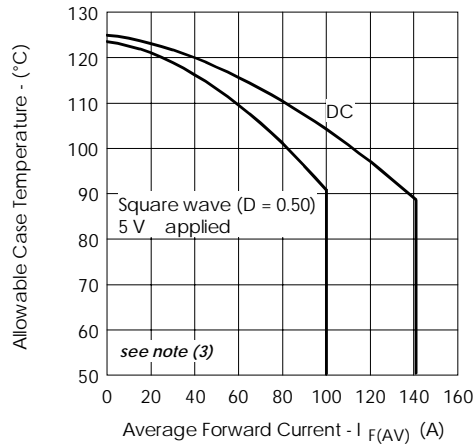


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

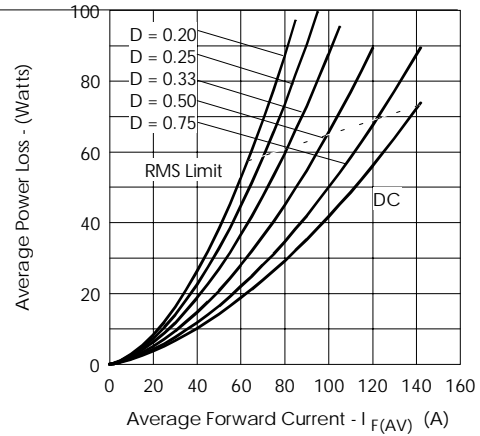


Fig. 6 - Forward Power Loss Characteristics

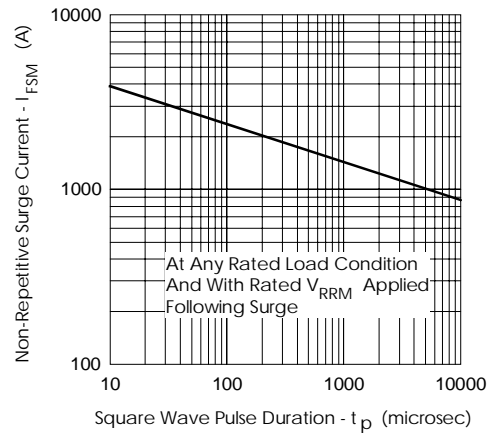


Fig. 7 - Maximum Non-Repetitive Surge Current

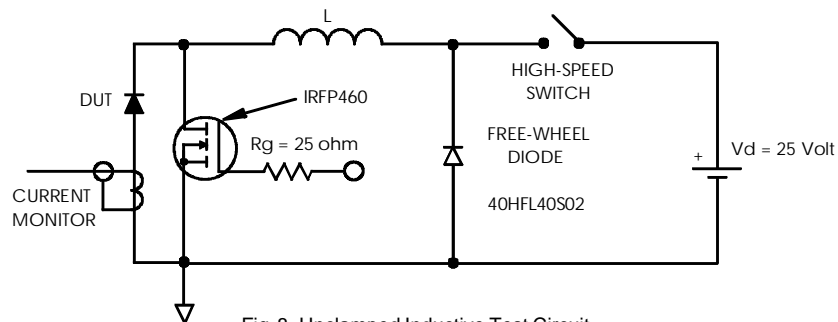


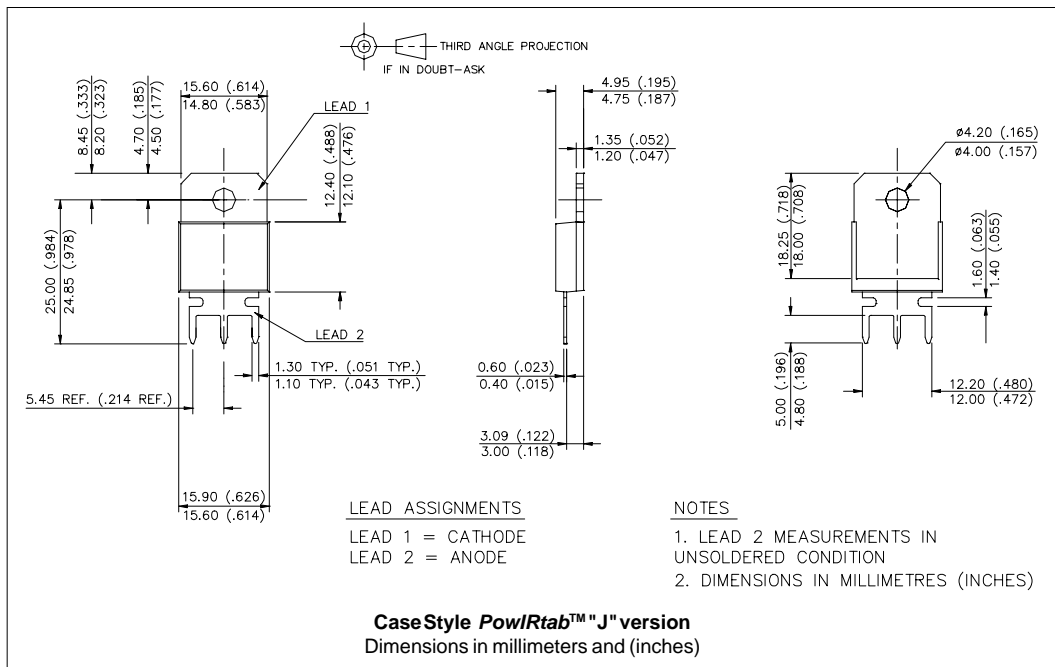
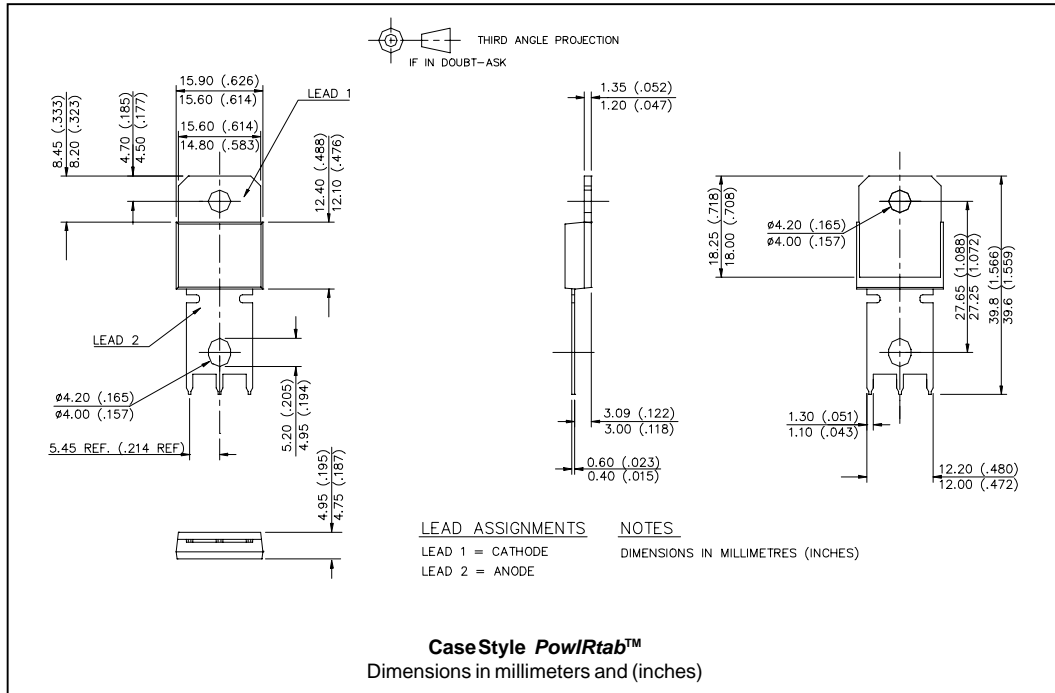
Fig. 8 - Unclamped Inductive Test Circuit

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

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

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

Outline Table



Ordering Information Table

Device Code			
100	BGQ	015	J
①	②	③	④
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

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. 12/02