

International  
**IR** Rectifier

100BGQ100  
 100BGQ100J

SCHOTTKY RECTIFIER

100 Amp

#### Major Ratings and Characteristics

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



#### 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 @ $T_C = 129^\circ\text{C}$ , rectangular waveform
$I_{F(RMS)}$ RMS Forward Current	141	A	$T_C = 120^\circ\text{C}$
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	6300	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse
	800		10ms Sine or 6ms Rect. pulse
$E_{AS}$ Non-Repetitive Avalanche Energy	9	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2$ Amps, $L = 4.5$ mH
$I_{AR}$ Repetitive Avalanche Current	2	A	Current decaying linearly to zero in 1 $\mu\text{sec}$ Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

## Electrical Specifications

Parameters	Values		Units	Conditions	
	Typ.	Max.			
$V_{FM}$ Forward Voltage Drop (1) (2)	0.80	0.84	V	@ 50A	$T_J = 25^\circ\text{C}$
	0.96	1.04	V	@ 100A	
	0.64	0.66	V	@ 50A	$T_J = 125^\circ\text{C}$
	0.74	0.77	V	@ 100A	
$I_{RM}$ Reverse Leakage Current (1)	22	300	$\mu\text{A}$	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	14	18	mA	$T_J = 125^\circ\text{C}$	
$V_{F(TO)}$ Threshold Voltage	0.484		V	$T_J = T_J \text{ max.}$	
$r_t$ Forward Slope Resistance	2.0		m $\Omega$		
$C_T$ Max. Junction Capacitance	1320		pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$	
$L_S$ Typical Series Inductance	3.5		nH	Measured from tab to mounting plane	
dv/dt Max. Voltage Rate of Change (Rated $V_R$ )	10000		V/ $\mu\text{s}$		

(1) Pulse Width < 300 $\mu\text{s}$ , 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	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 175	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case	0.50	$^\circ\text{C/W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.20	$^\circ\text{C/W}$	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™		

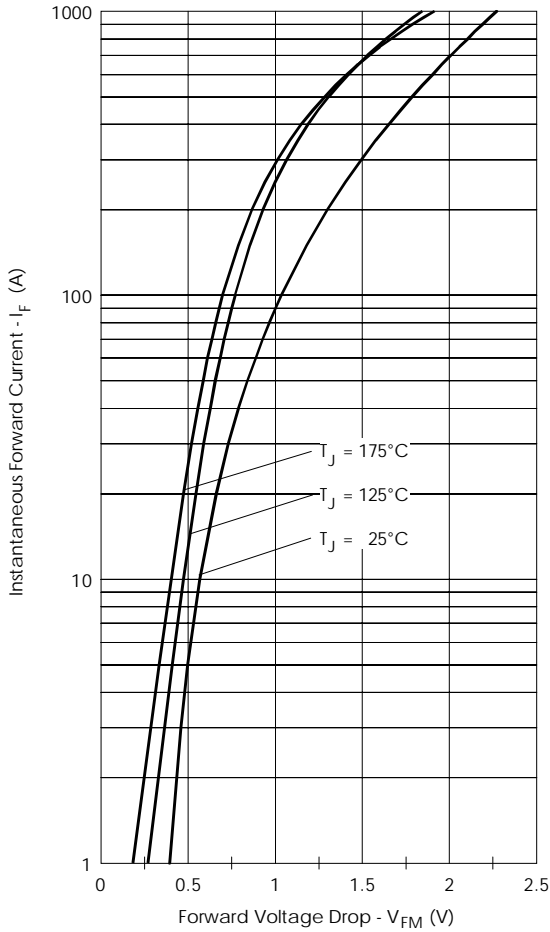


Fig. 1 - Maximum Forward Voltage Drop Characteristics

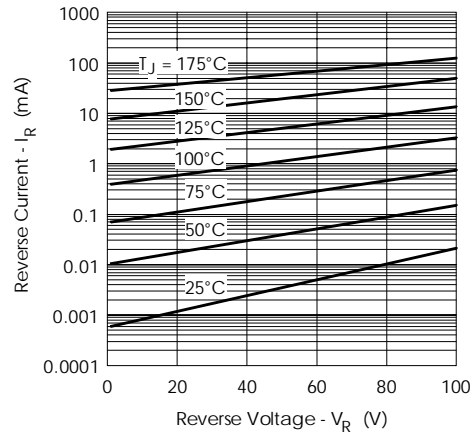


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

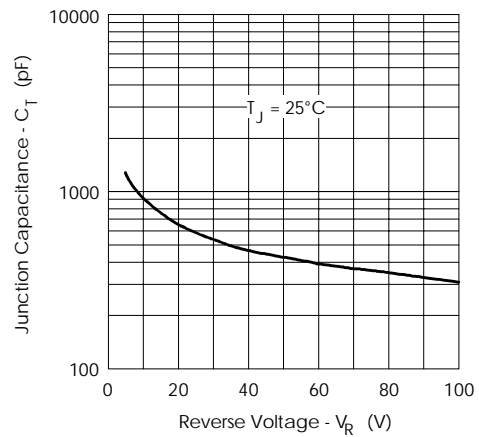


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

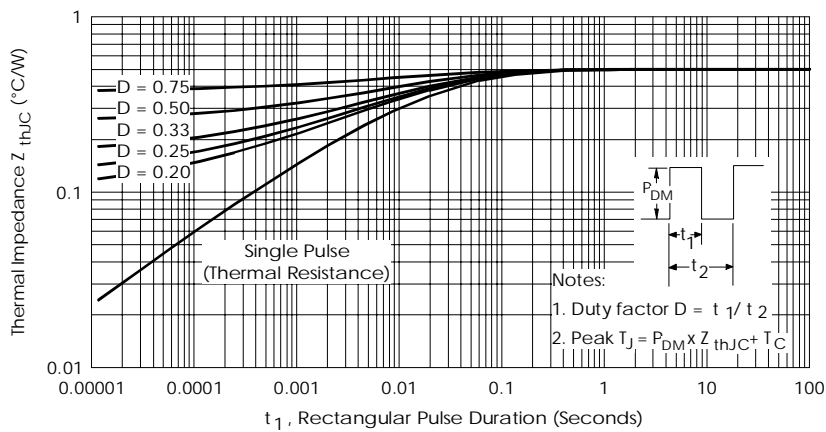


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

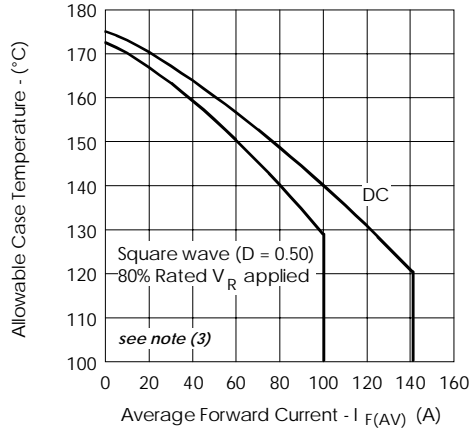


Fig.5- Maximum Allowable Case Temperature Vs. Average Forward Current

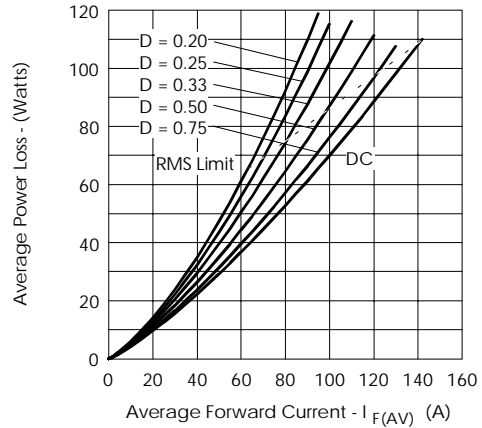


Fig.6- Forward Power Loss Characteristics

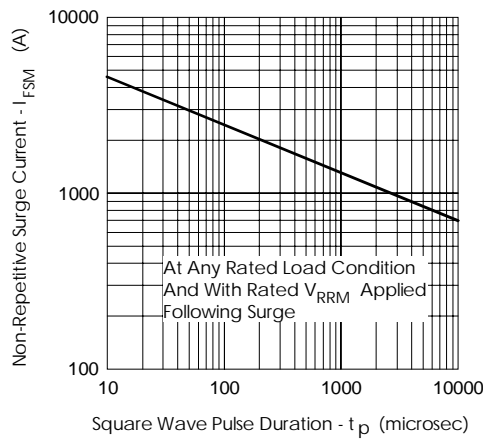


Fig.7- Maximum Non-Repetitive Surge Current

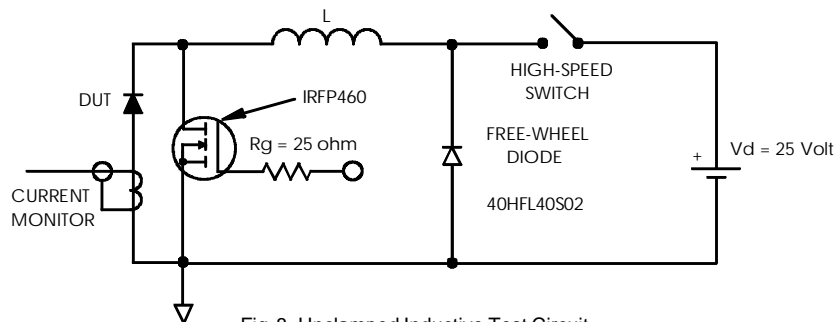


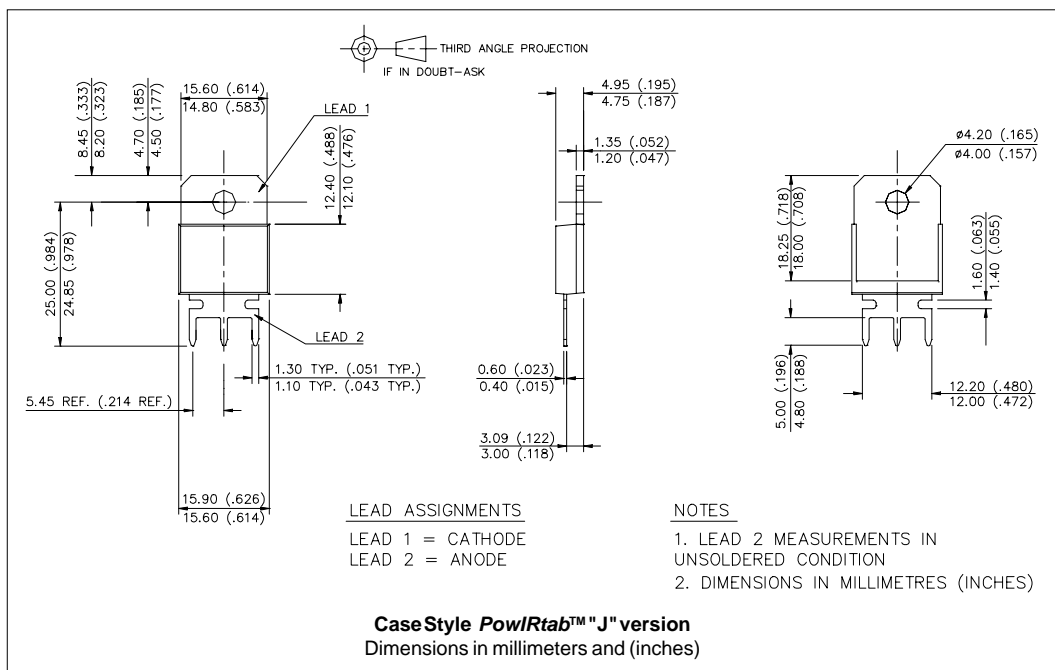
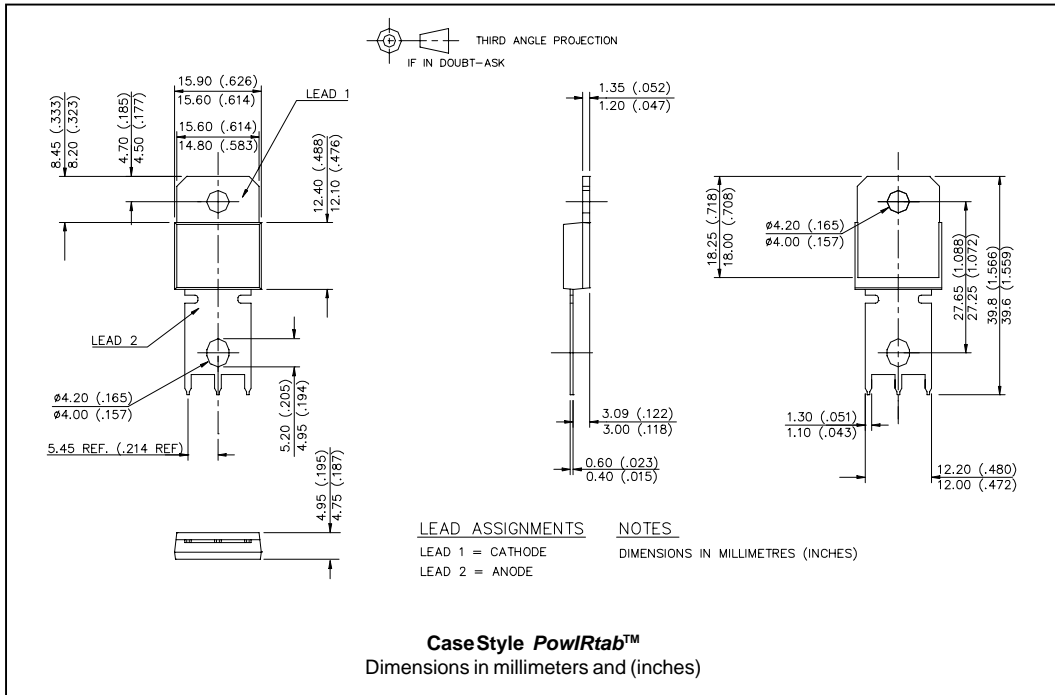
Fig.8- Unclamped Inductive Test Circuit

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

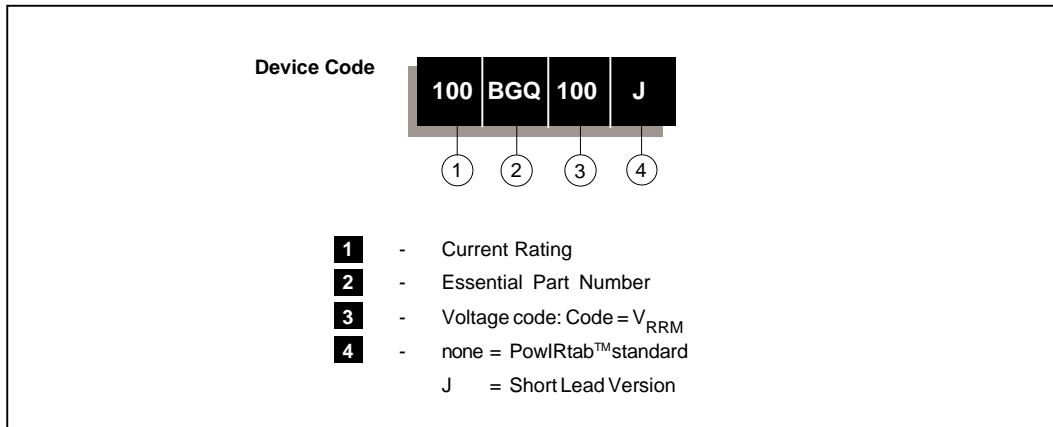
$P_d$  = Forward Power Loss =  $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);

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

Outline Table



### Ordering Information Table



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.



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