

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	VS-100BGQ045
Manufacturer:	Vishay General Semiconductor - Diodes Division
Package:	PowerTab™, PowlRtab™
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division-vs-100bgq045.html>



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Contact Information

Email: info@antrexco.com

WhatsApp: +86-186-8066-5326

Website: <https://antrexco.com>

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Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

International
IOR Rectifier

100BGQ045
100BGQ045J

SCHOTTKY RECTIFIER

100 Amp

Major Ratings and Characteristics

Characteristics	100BGQ045	Units
$I_{F(AV)}$ Rectangular waveform	100	A
@ T_C	100	°C
I_{DC} Maximum	141	A
V_{RRM}	45	V
I_{FSM} @ $t_p = 5 \mu s$ sine	4400	A
V_F @100Apk typical	0.63	V
@ T_J	150	°C
T_J range	-55 to 150	°C

Description/ Features

The 100BGQ045 Schottky rectifier has been optimized for ultra low forward voltage drop specifically for low voltage output in high current AC/DC power supplies.

The proprietary barrier technology allows for reliable operation up to 150°C junction temperature. Typical applications are in switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 150°C T_J operation
- 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

100BGQ045



100BGQ045J



100BGQ045, 100BGQ045J

Bulletin PD-20709 rev. D 12/02

International
IR Rectifier

Voltage Ratings

Part number	100BGQ045
V_R Max. DC Reverse Voltage (V)	45
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	100BGQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	100	A	50% duty cycle @ $T_C = 100^\circ\text{C}$, rectangular wave form
$I_{F(RMS)}$ RMS Forward Current	141	A	$T_C = 95^\circ\text{C}$
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	4400	A	5 μs Sine or 3 μs Rect. pulse
	830		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	40	mJ	Following any rated load condition and with rated V_{RWM} applied
I_{AR} Repetitive Avalanche Current	6	A	$T_J = 25^\circ\text{C}$, $I_{AS} = 6\text{ Amps}$, $L = 2.0\text{ mH}$ Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	100BGQ		Units	Conditions	
	Typ.	Max.			
V_{FM} Forward Voltage Drop (1) (2)	0.52	0.56	V	@ 50A	$T_J = 25^\circ\text{C}$
	0.67	0.73	V	@ 100A	
	0.47	0.52	V	@ 50A	$T_J = 150^\circ\text{C}$
	0.63	0.68	V	@ 100A	
I_{RM} Reverse Leakage Current (1)	0.3	1	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	180	320	mA	$T_J = 125^\circ\text{C}$	
	600	1000	mA	$T_J = 150^\circ\text{C}$	
$V_{F(TO)}$ Threshold Voltage	0.379		V	$T_J = T_J \text{ max.}$	$V_R = 45\text{ V}$
r_t Forward Slope Resistance	2.7		m Ω		
C_T Max. Junction Capacitance	2700		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	10000		V/ μs	(Rated V_R)	

(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	-55 to 150	°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™		

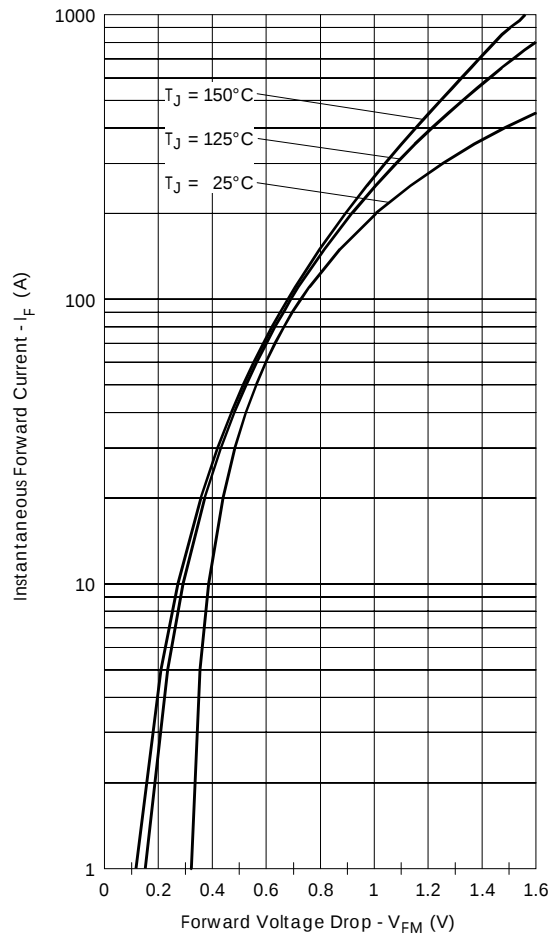


Fig. 1 - Maximum Forward Voltage Drop Characteristics

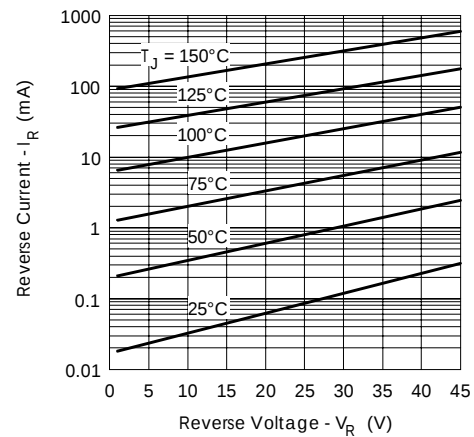


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

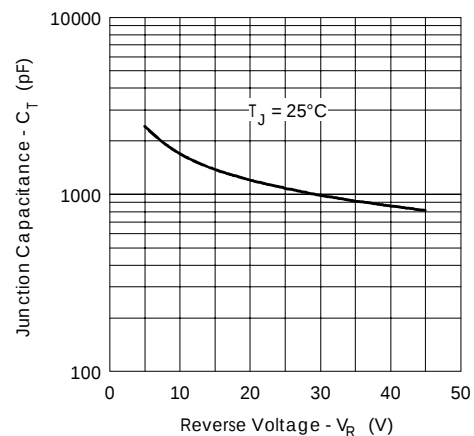


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

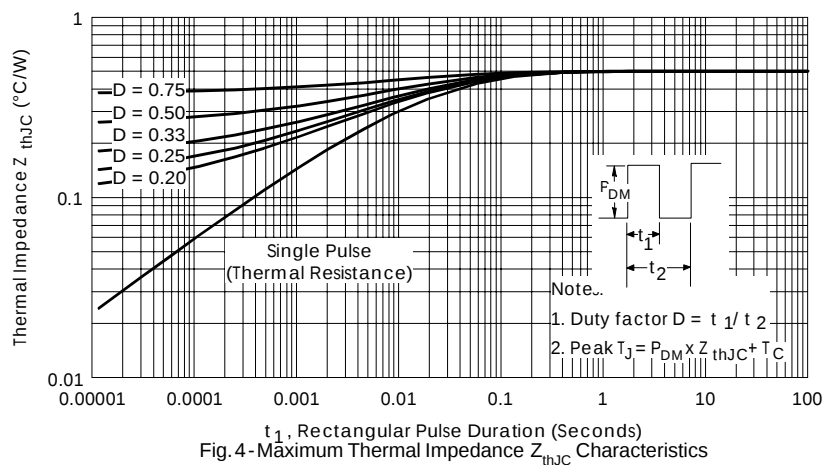


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

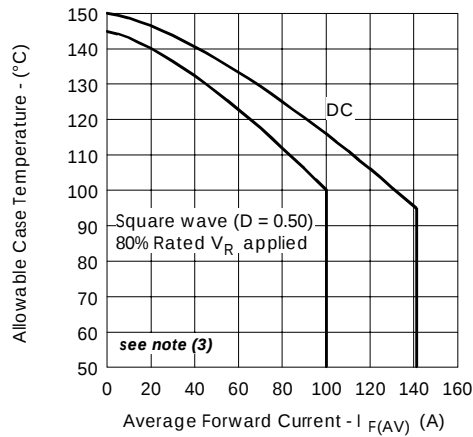


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

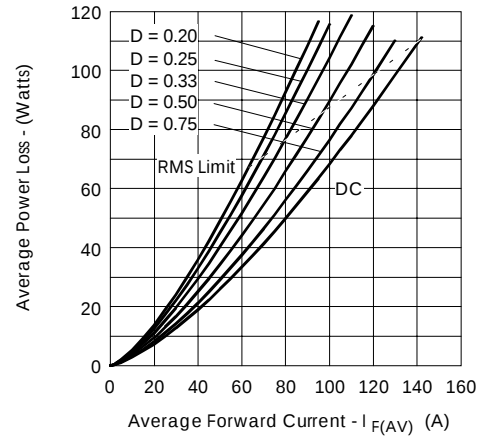


Fig. 6 - Forward Power Loss Characteristics

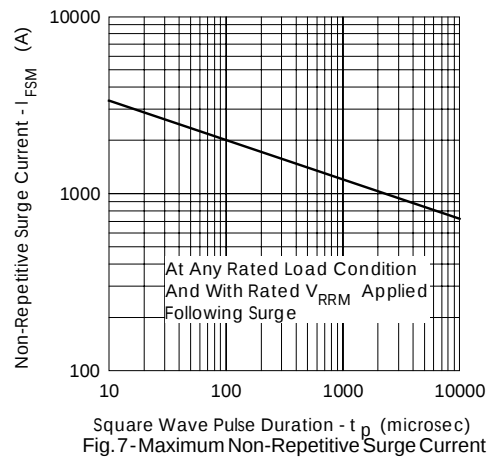


Fig. 7 - Maximum Non-Repetitive Surge Current

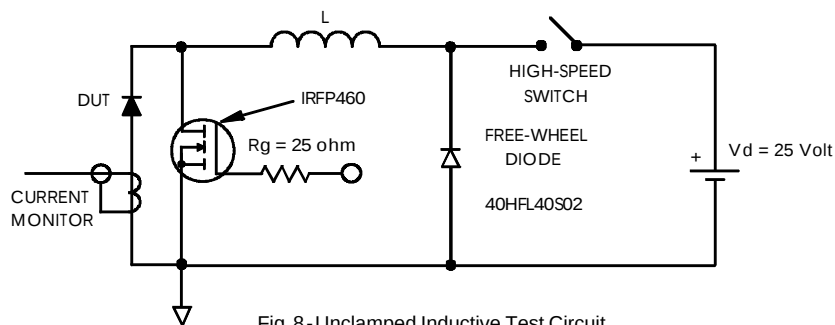


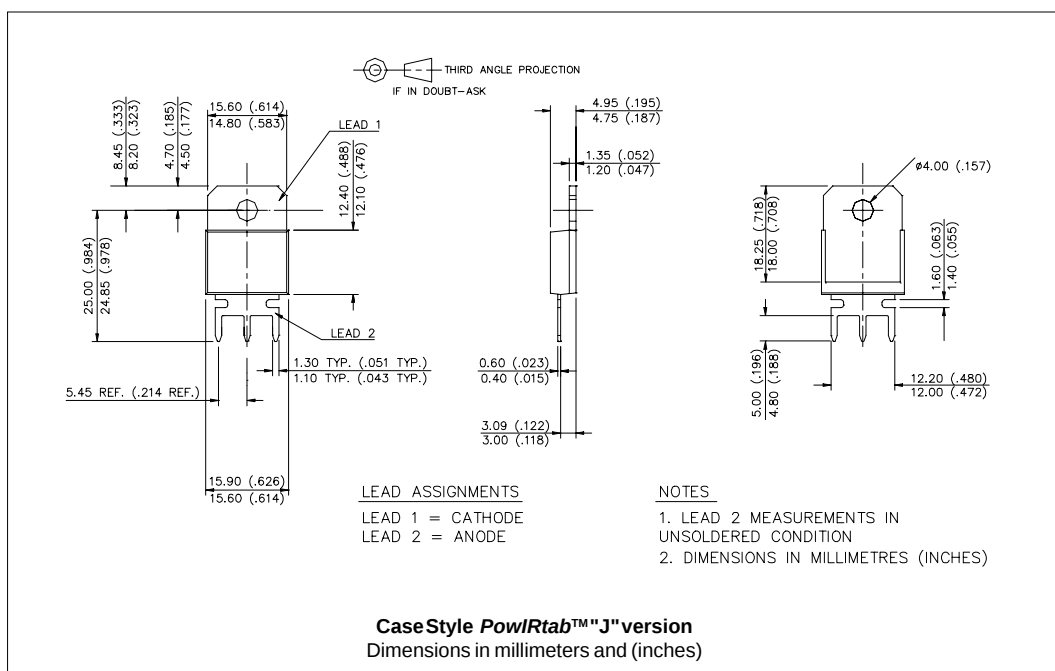
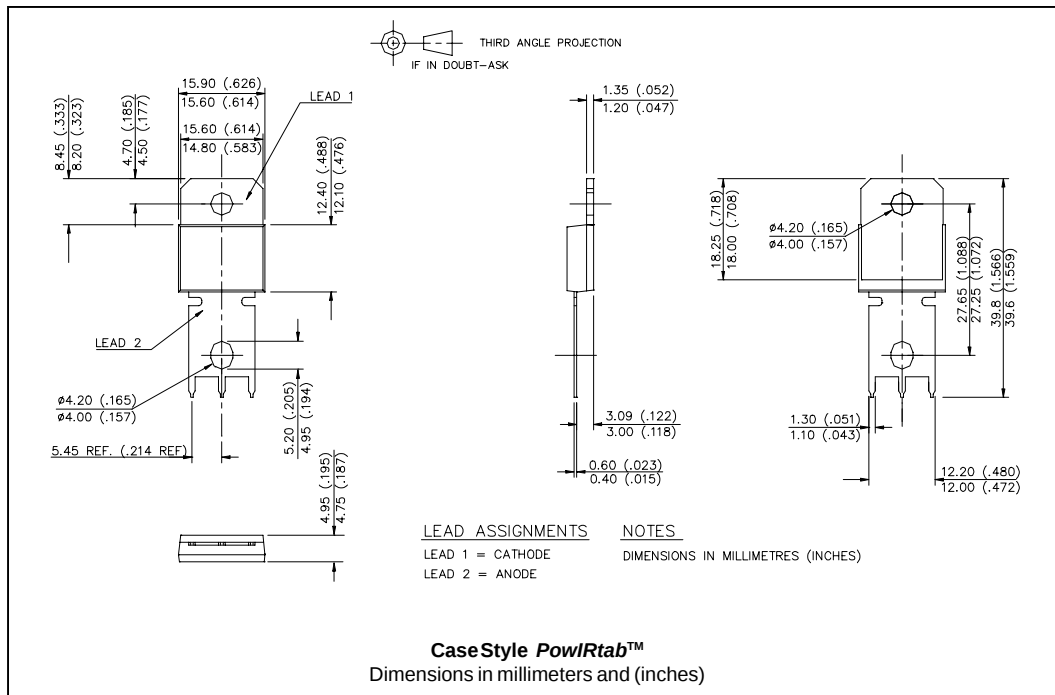
Fig. 8 - Unclamped Inductive Test Circuit

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

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	045	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	

This model has been developed by
Wizard SPICE MODEL GENERATOR(1999)
(International Rectifier Corporation)
contains Proprietary Information

SPICE Model Diode is composed by a
simple diode plus paralld VCG2T

.SUBCKT 100bgq45 ANO CAT

D1 ANO 1 DMOD (0.24359)

*Define diode model

.MODEL DMOD D(IS=6.61799286342482E-05A,N=1.0212796726385,BV=45V,
+IBV=0.115140026620575A,RS=0.0005748724,CJO=3.31930927290723E-08,
+VJ=0.456112448442971,XTI=2,EG=0.721992455742664)

*Implementation of VCG2T

VX 1 2 DC 0V

R1 2 CAT TRES 1E-6

.MODEL TRES RES(R=1,TC1=9.83346387011944)

GP1 ANO CAT VALUE={-ABS(I(VX))*(EXP(((((-2.949174E-03/

9.833464)*(V(2,CAT)*1E6)/(I(VX)+1E-6)-1))+1)*6.600191E-2*ABS(V(ANO,CAT)))-1}}

.ENDS100bgq45

Thermal Model Subcircuit

.SUBCKT 100bgq45T 5 1

CTHERM1 5 4 1.66E+3

CTHERM2 4 3 2.22E+2

CTHERM3 3 2 1.48E+5

CTHERM4 2 1 3.12E+5

R THERM1 5 4 3.42E-2

R THERM2 4 3 2.55E-1

R THERM3 3 2 8.41E-2

R THERM4 2 1 1.81E-4

.ENDS 100bgq45T

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