

PowerTab[®]

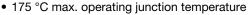
Vishay Semiconductors

High Performance Schottky Rectifier, 100 A



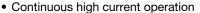
PRIMARY CHARACTERISTICS					
I _{F(AV)} 100 A					
V_{R}	100 V				
V _F at I _F	0.82 V				
I _{RM}	180 mA at 125 °C				
E _{AS}	9 mJ				
T _J max.	175 °C				
Package	PowerTab [®]				
Circuit configuration	Single				

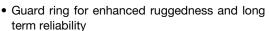
FEATURES













- Screw mounting only
- Designed and qualified according to JEDEC®-JESD 47
- PowerTab[®] package
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION

The VS-100BGQ100 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.

MAJOR RATINGS AND CHARACTERISTICS					
SYMBOL	CHARACTERISTICS	VALUES	UNITS		
	Rectangular waveform	100	Α		
I _{F(AV)}	T _C	124	°C		
V _{RRM}		100	V		
I _{FSM}	t _p = 5 μs sine	6300	А		
.,,	100 A _{pk} (typical)	0.77	V		
V_{F}	T _J	125	°C		
T _J	Range	-55 to +175	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	100BGQ100	UNITS	
Maximum DC reverse voltage	V_{R}	100	V	
Maximum working peak reverse voltage	V_{RWM}	100	V	

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	I _{F(AV)}	50 % duty cycle at T _C = 124 °C, rectangular waveform		100	Α
Maximum peak one cycle	l=a	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	6300	A
non-repetitive surge current	I _{FSM}	10 ms sine or 6 ms rect. pulse		800	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 2 A, L = 4.5 mH		9	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T _J maximum V _A = 1.5 x V _R typical		А	



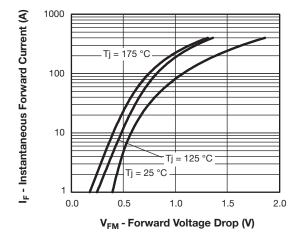
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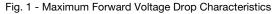
ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES		UNITS
PANAIVIETEN	STIVIDOL			TYP.	MAX.	UNITS
	V _{FM} ⁽¹⁾	50 A	T _J = 25 °C	0.83	0.86	- V
Forward voltage drap		100 A		1.01	1.08	
Forward voltage drop		50 A	T _J = 125 °C	0.66	0.7	
		100 A		0.77	0.82	
Daviera la disease accompant	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	22	300	μA
Reverse leakage current		T _J = 125 °C		14	18	mA
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$, (test signal range 100 kHz to 1 MHz) 25 °C		13	20	pF
Typical series inductance	L _S	Measured from tab to mounting plane		3	.5	nH
Maximum voltage rate of change	dV/dt	Rated V _R 10 000 V/µs			V/µs	

Note

⁽¹⁾ Pulse width $< 300 \mu s$, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction and temperature range	d storage	T _J , T _{Stg}		-55 to +175	°C	
Maximum thermal resistance, junction to case		R _{thJC}	DC operation	0.50	°C/W	
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.30		
Approximate weight				5	g	
				0.18	OZ.	
Mounting torque —	minimum			1.2 (10)	N·m	
	maximum			2.4 (20)	(lbf \cdot in)	
Marking device Case style PowerTab® 1		100BC	Q100			





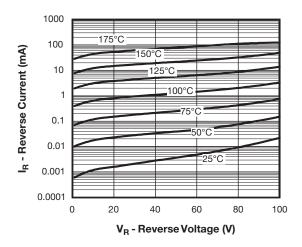


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



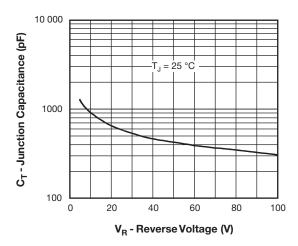


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

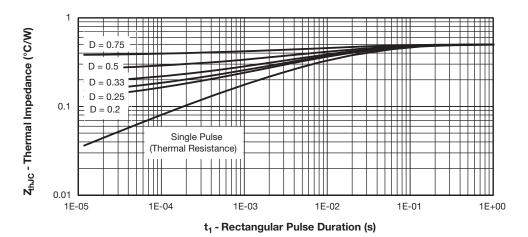


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

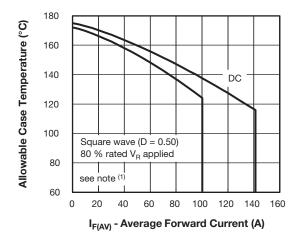


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

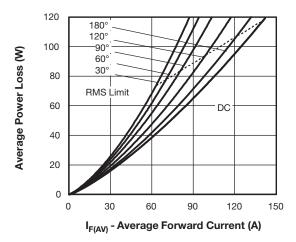


Fig. 6 - Forward Power Loss Characteristics

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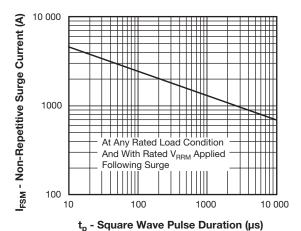


Fig. 7 - Maximum Non-Repetitive Surge Current

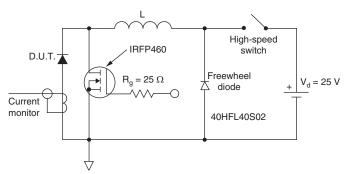


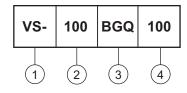
Fig. 8 - - Unclamped Inductive Test Circuit

Note

 $^{(1)}$ Formula used: T_C = T_J - (Pd + Pd_{REV}) x R_{th,JC}; Pd = forward power loss = I_{F(AV)} x V_{FM} at (I_{F(AV)}/D) (see fig. 6); Pd_{REV} = inverse power loss = V_{R1} x I_R (1 - D); I_R at V_{R1} = 80 % rated V_R

ORDERING INFORMATION TABLE

Device code



1 - Vishay Semiconductors product

2 - Current rating

Essential part number

4 - Voltage code = V_{RRM}

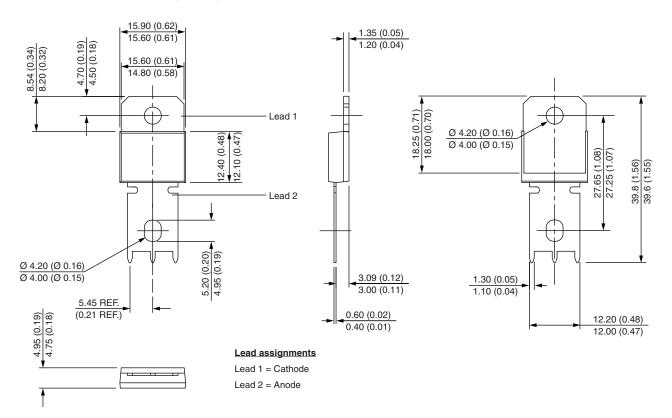
LINKS TO RELATED DOCUMENTS				
Dimensions <u>www.vishay.com/doc?95240</u>				
Part marking information	www.vishay.com/doc?95370			
Application note	www.vishay.com/doc?95179			
SPICE model	www.vishay.com/doc?96588			



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DIMENSIONS in millimeters (inches)





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