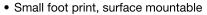
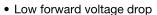


PRODUCT SUMMARY		
I _{F(AV)}	1.0 A	
V_{R}	100 V	

FEATURES





RoHS

- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- \bullet Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}\text{C}$
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level

DESCRIPTION

The VS-10BQ100PbF surface mount Schottky rectifier has been designed for applications requiring low forward drop and very small foot prints on PC boards. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS					
SYMBOL	CHARACTERISTICS	VALUES	UNITS		
I _{F(AV)}	Rectangular waveform	1.0	Α		
V _{RRM}		100	V		
I _{FSM}	t _p = 5 μs sine	780	Α		
V _F	1.0 Apk, T _J = 125 °C	0.62	V		
TJ	Range	- 55 to 175	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	VS-10BQ100PbF	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 _L = 152 °C, rectangular waveform		1.0	Α
Maximum peak one cycle non-repetitive surge current		5 µs sine or 3 µs rect. pulse	Following any rated load condition and with	780	А
	I _{FSM}	10 ms sine or 6 ms rect. pulse	rated V _{RRM} applied	38	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25 ^{\circ}\text{C}, I_{AS} = 0.5 \text{A}, L = 8 \text{mH}$		1.0	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		0.5	Α



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V _{FM} ⁽¹⁾	1 A	- T _J = 25 °C	0.78	V
		2 A		0.89	
		1 A	T _J = 125 °C	0.62	
		2 A		0.72	
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.5	- mA
See fig. 2	IRM ***	T _J = 125 °C		1	
Typical junction capacitance	C _T	$V_R = 5 V_{DC}$, (test signal range 100 kHz to 1 MHz), 25 °C		42	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		2.0	nH
Maximum voltage rate of charge	dV/dt	Rated V _R		10 000	V/µs

Note

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

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction and storage temperature range	T _J ⁽¹⁾ , T _{Stg}		- 55 to 175	°C	
Maximum thermal resistance, junction to lead	R _{thJL} (2)	DC operation	36	°C/W	
Maximum thermal resistance, junction to ambient	R _{thJA}		80	C/VV	
Approximate weight			0.10	g	
			0.003	oz.	
Marking device		Case style SMB (similar DO-214AA)	V	1J	

Notes

⁽¹⁾ $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

⁽²⁾ Mounted 1" square PCB



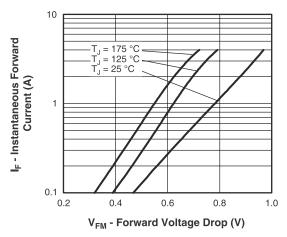


Fig. 1 - Maximum Forward Voltage Drop Characteristics

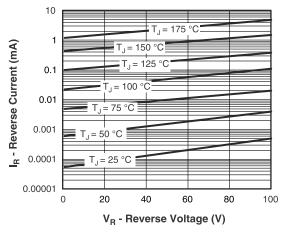


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

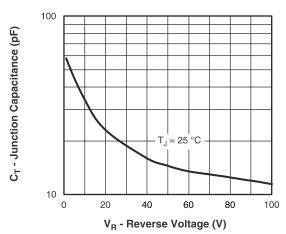


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

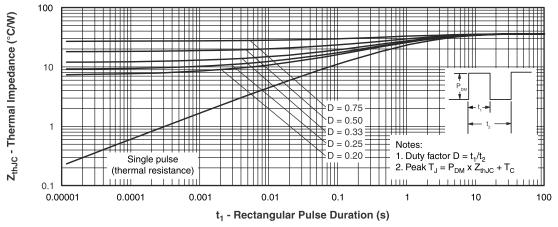


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)



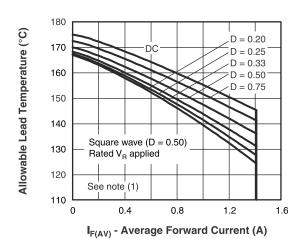


Fig. 5 - Maximum Average Forward Current vs. Allowable Lead Temperature

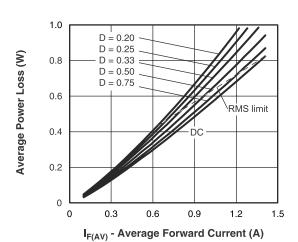


Fig. 6 - Maximum Average Forward Dissipation vs. Average Forward Current

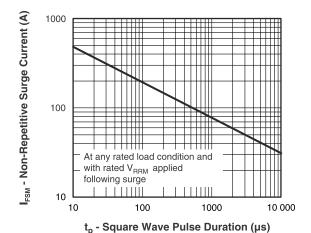


Fig. 7 - Maximum Peak Surge Forward Current vs. Pulse Duration

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



SMB

DIMENSIONS in millimeters (inches)

