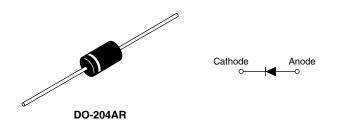


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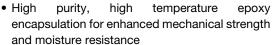
Schottky Rectifier, 5 A



PRODUCT SUMMARY				
Package	DO-204AR			
I _{F(AV)}	5 A			
V_{R}	60 V, 80 V, 100 V			
V _F at I _F	0.52 V			
I _{RM} max.	7.0 mA at 125 °C			
T _J max.	175 °C			
Diode variation	Single die			
E _{AS}	7.5 mJ			

FEATURES

- 175 °C T_J operation
- Low forward voltage drop
- High frequency operation





- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for commercial level
- Material categorization: For definitions of compliance please see <u>www.vishav.com/doc?99912</u>

DESCRIPTION

The VS-50SQ... axial leaded Schottky rectifier series 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, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS						
SYMBOL	CHARACTERISTICS	VALUES	UNITS			
I _{F(AV)}	Rectangular waveform	5	Α			
V _{RRM}	Range	60 to 100	V			
I _{FSM}	t _p = 5 μs sine	1900	А			
V _F	5 Apk, T _J = 125 °C	0.52	V			
T _J	Range	- 55 to 175	°C			

VOLTAGE RATINGS					
PARAMETER	SYMBOL	VS-50SQ060 VS-50SQ060-M3	VS-50SQ080 VS-50SQ080-M3	VS-50SQ100 VS-50SQ100-M3	UNITS
Maximum DC reverse voltage	V _R	60	80	100	V
Maximum working peak reverse voltage	V_{RWM}	00	80	100	V

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 5	I _{F(AV)}	50 % duty cycle at T _C = 119 °C, rectangular waveform		5	
Maximum peak one cycle non-repetitive surge current	l=	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated	1900	Α
See fig. 7	IFSM	10 ms sine or 6 ms rect. pulse	V _{RRM} applied	290	
Non-repetitive avalanche energy	E _{AS}	T _J = 25 °C, I _{AS} = 1.0 A, L = 15 mH		7.5	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		1.0	Α



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ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
	V _{FM} ⁽¹⁾	5 A	T _J = 25 °C	0.66	V	
Maximum forward voltage drop See fig. 1		10 A		0.77		
		5 A	- T _J = 125 °C	0.52		
		10 A		0.62		
Maximum reverse leakage current	I _{RM} ⁽¹⁾	T _J = 25 °C	V _R = Rated V _R	0.55	mΛ	
See fig. 2	'RM '''	T _J = 125 °C	V _R = nateu V _R	7	mA mA	
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$, (test signal range 100 kHz to 1 MHz), 25 °C		500	pF	
Typical series inductance	L _S	Measured lead to lead 5 mm from body		10	nH	
Maximum voltage rate of change	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 , T _{Stg}		- 55 to 175	°C
Maximum thermal resistance, junction to lead	R _{thJL}	DC operation; see fig. 4 1/8" lead length	8.0	°C/W
Typical thermal resistance, junction to air	R _{thJA}		44	-C/W
Approximate weight			1.4	g
Approximate weight			0.049	OZ.
			5080	2060
Marking device		Case style DO-204AR (JEDEC)	50SQ080	
			5080	Q100

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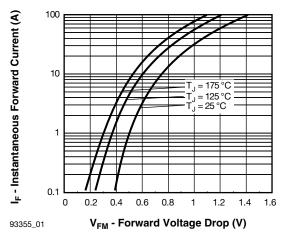


Fig. 1 - Maximum Forward Voltage Drop Characteristics

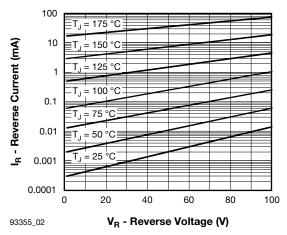


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

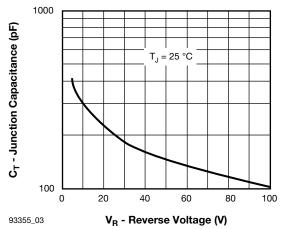


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

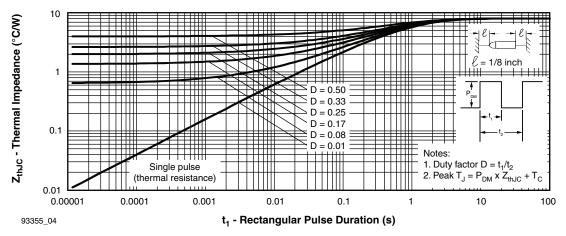


Fig. 4 - Maximum Thermal Impedance Z_{thJL} Characteristics

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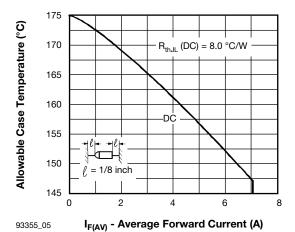


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

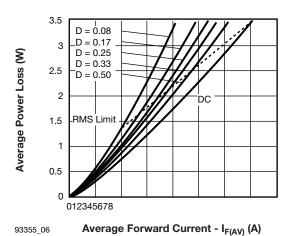


Fig. 6 - Forward Power Loss Characteristics

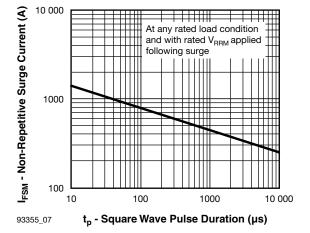


Fig. 7 - Maximum Non-Repetitive Surge Current

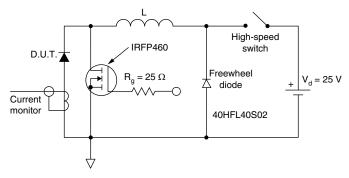
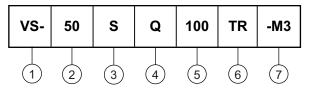


Fig. 8 - Unclamped Inductive Test Circuit

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ORDERING INFORMATION TABLE





- Vishay Semiconductors product

- 50 = Current x 10

3 - S = DO-204AR

Q = Schottky Q series

060 = 60 V 080 = 80 V 100 = 100 V

6 - TR = Tape and reel package

None = Bulk package

7 - Environmental digit

• None = Lead (Pb)-free and RoHS compliant

• -M3 = Halogen-free, RoHS compliant, and terminations lead (Pb)-free

ORDERING INFORMATION (Example)				
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION	
VS-50SQ060	300	300	Bulk	
VS-50SQ060TR	1500	1500	Tape and reel	
VS-50SQ060-M3	300	300	Bulk	
VS-50SQ060TR-M3	1500	1500	Tape and reel	
VS-50SQ080	300	300	Bulk	
VS-50SQ080TR	1500	1500	Tape and reel	
VS-50SQ080-M3	300	300	Bulk	
VS-50SQ080TR-M3	1500	1500	Tape and reel	
VS-50SQ100	300	300	Bulk	
VS-50SQ100TR	1500	1500	Tape and reel	
VS-50SQ100-M3	300	300	Bulk	
VS-50SQ100TR-M3	1500	1500	Tape and reel	

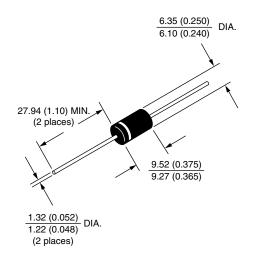
LINKS TO RELATED DOCUMENTS			
Dimensions	www.vishay.com/doc?95243		
Part marking information	www.vishay.com/doc?95325		
Packaging information	www.vishay.com/doc?95338		
SPICE model	www.vishay.com/doc?95394		

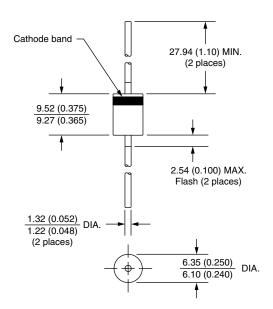


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Axial DO-204AR

DIMENSIONS in millimeters (inches)







Legal Disclaimer Notice

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