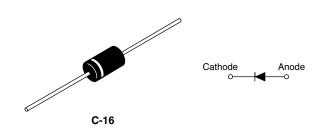


Vishay High Power Products

Schottky Rectifier, 3.3 A



PRODUCT SUMMARY	1
I _{F(AV)}	3.3 A

 V_{R}

90/100 V

FEATURES

- Low profile, axial leaded outline
- High frequency operation



- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation forenhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long termreliability
- Lead (Pb)-free plating
- Designed and qualified for industrial level

DESCRIPTION

The 31DQ..G axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. 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	3.3	A	
V _{RRM}		90/100	V	
I _{FSM}	t _p = 5 μs sine	370	A	
V _F	3 Apk, T _J = 25 °C	0.85	V	
T _J		- 40 to 150	°C	

VOLTAGE RATINGS					
PARAMETER	SYMBOL	31DQ09G	31DQ10G	UNITS	
Maximum DC reverse voltage	V_{R}	90	100	V	
Maximum working peak reverse voltage	V_{RWM}	90			

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 4	$I_{F(AV)}$ 50 % duty cycle at T_C = 53.4 °C, rectangular waveform		3.3		
Maximum peak one cycle non-repetitive surge current, T _{.I} = 25 °C	C I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	370	Α
See fig. 6		10 ms sine or 6 ms rect. pulse		60	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25$ °C, $I_{AS} = 1$ A, 18 μ s square pulse		3.0	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T_J maximum $V_A = 1.5 \text{ x } V_R$ typical		0.5	Α

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31DQ09G, 31DQ10G

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V (1)	3 A	T _J = 25 °C	0.85	V
		6 A		0.97	
See fig. 1	V _{FM} ⁽¹⁾	3 A	T _J = 125 °C	0.69	
		6 A		0.80	
Maximum reverse leakage current	leakage current	T _J = 25 °C	V _R = Rated V _R	0.1	mA mA
See fig. 2	'RM \''	T _J = 125 °C		3	
Typical junction capacitance	C _T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		110	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		9.0	nΗ
Maximum voltage rate of charge	dV/dt	Rated V _R		10 000	V/µs

Note

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

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T _J , T _{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to ambient	R _{thJA}	DC operation Without cooling fin	80	°C/W
Typical thermal resistance, junction to lead	R _{thJL}	DC operation	34	· C/VV
Approximate weight			1.2	g
Approximate weight		0.042	OZ.	
Marking device		Cara at la C 10	31DQ09G	
		Case style C-16		Q10G

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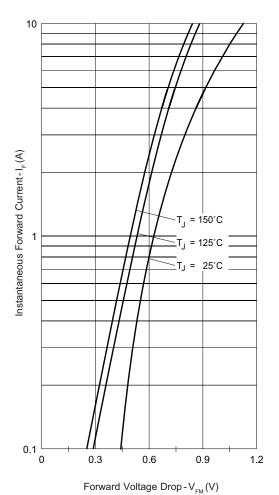


Fig. 1 - Maximum Forward Voltage Drop Characteristics

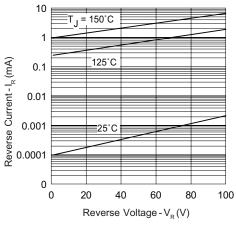


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

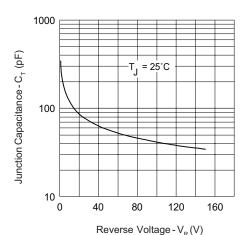


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

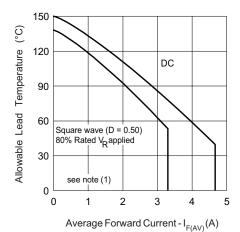


Fig. 4 - Maximum Allowable Lead Temperature vs.
Average Forward Current

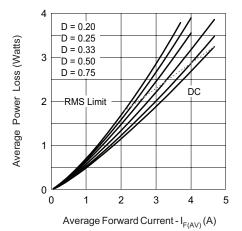


Fig. 5 - Forward Power Loss Characteristics

Note

⁽⁶⁾ Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$; $Pd = Forward power loss = I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6); $Pd_{REV} = Inverse power loss = V_{R1} \times I_R$ (1 - D); I_R at $V_{R1} = 80$ % rated V_R

Vishay High Power Products Schottky Rectifier, 3.3 A



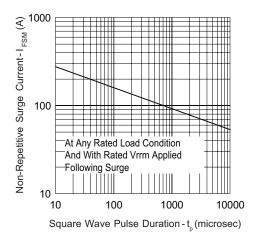
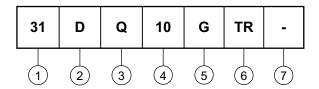


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE

Device code



- 1 31 = 3.3 A (axial and small packages current is x 10)
- 2 D = DO-41 package
- 3 Q = Schottky Q.. series
- 09 = 90 V 10 = Voltage ratings 09 = 90 V 10 = 100 V
- 5 G = Schottky generation
- 6 • None = Box package (500 pcs)
 - TR = Tape and reel package (1200 pcs)
- 7 • None = Standard production
 - PbF = Lead (Pb)-free

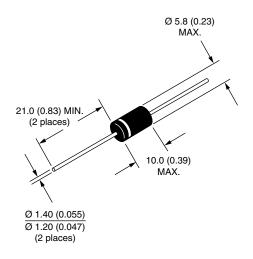
LINKS TO RELATED DOCUMENTS			
Dimensions	http://www.vishay.com/doc?95242		
Part marking information	http://www.vishay.com/doc?95304		
Packaging information	http://www.vishay.com/doc?95309		
SPICE model	http://www.vishay.com/doc?95300		

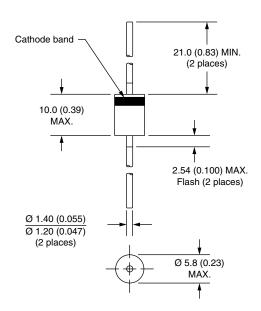


Vishay Semiconductors

Axial DO-201AD (C-16)

DIMENSIONS in millimeters (inches)









Vishay

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