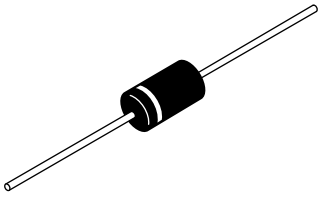
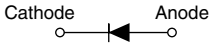
Schottky Rectifier, 3.3 A



C-16



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

RoHS COMPLIANT

PRODUCT SUMMARY	
$I_{F(AV)}$	3.3 A
V_R	90/100 V

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}			

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	A
Maximum peak one cycle non-repetitive surge current, T_J = 25 °C See fig. 6	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	370	
		10 ms sine or 6 ms rect. pulse		60	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 1 A, 18 µs square pulse		3.0	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 1.5 x V_R typical		0.5	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V_{FM} (1)	3 A	T_J = 25 °C	0.85	V
		6 A		0.97	
		3 A	T_J = 125 °C	0.69	
		6 A		0.80	
Maximum reverse leakage current See fig. 2	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	0.1	mA
		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	nH
Maximum voltage rate of charge	dV/dt	Rated V_R		10 000	V/µs

Note

(1) Pulse width < 300 µs, 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	
Approximate weight			1.2	g
			0.042	oz.
Marking device		Case style C-16	31DQ09G	
			31DQ10G	

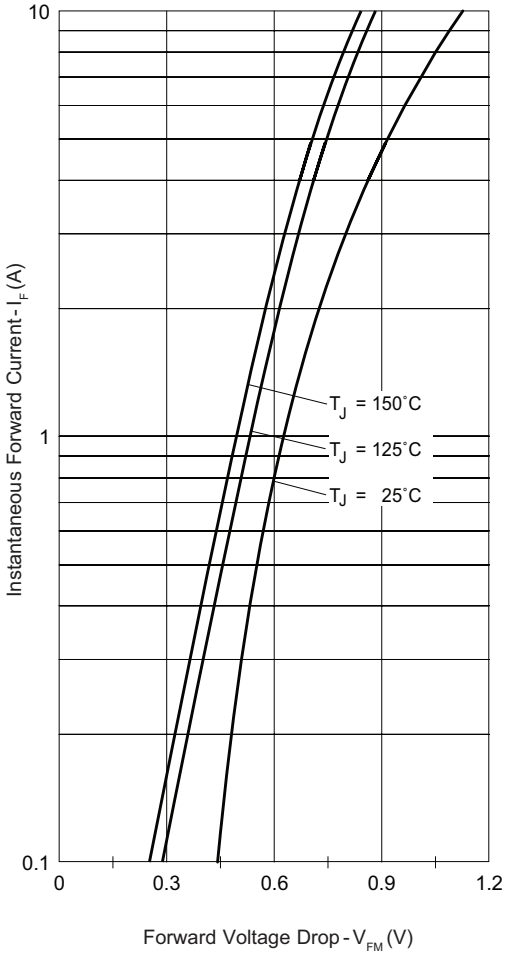


Fig. 1 - Maximum Forward Voltage Drop Characteristics

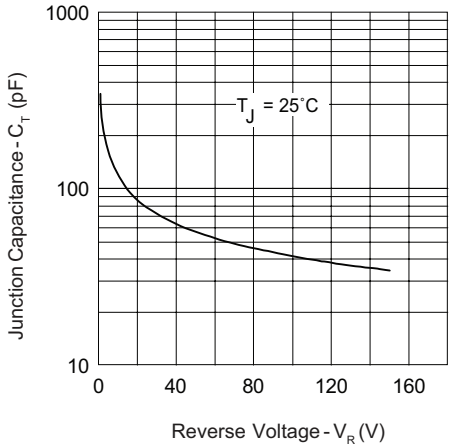


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

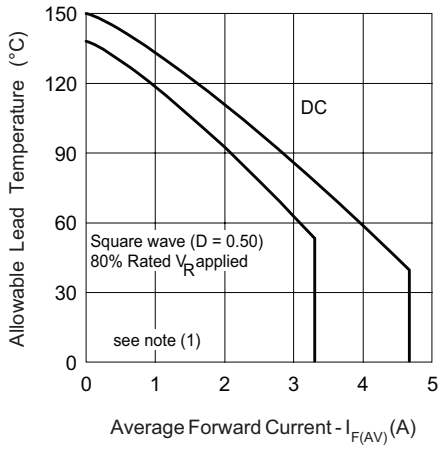


Fig. 4 - Maximum Allowable Lead Temperature vs. Average Forward Current

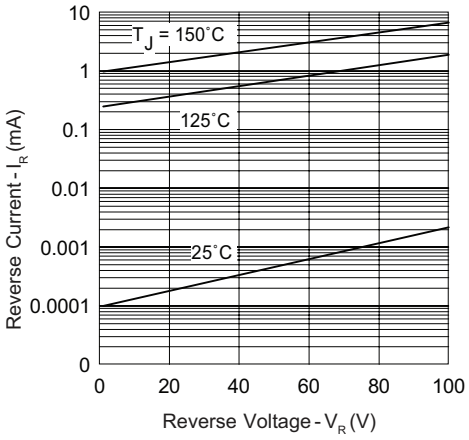


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

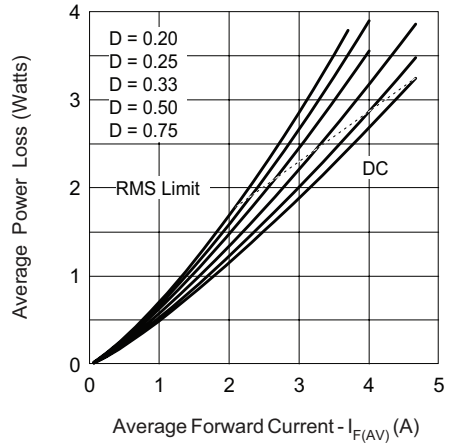


Fig. 5 - Forward Power Loss Characteristics

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

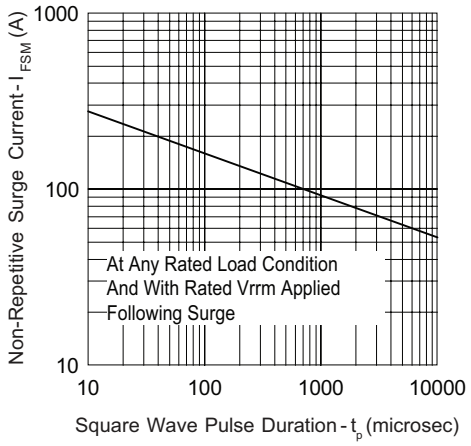


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE

Device code

31	D	Q	10	G	TR	-
1	2	3	4	5	6	7

1 - 31 = 3.3 A (axial and small packages - current is x 10)

2 - D = DO-41 package

3 - Q = Schottky Q.. series

4 - 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

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