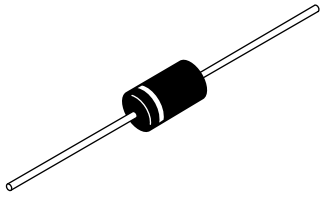
Schottky Rectifier, 3.3 A



C-16

FEATURES

- Low profile, axial leaded outline
- High frequency operation
- Very low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free plating
- Designed and qualified for industrial level

RoHS COMPLIANT

PRODUCT SUMMARY	
$I_{F(AV)}$	3.3 A
V_R	30/40 V

DESCRIPTION

The 31DQ.. 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}		30/40	V
I_{FSM}	t_p = 5 µs sine	450	A
V_F	3 Apk, T_J = 25 °C	0.57	V
T_J		- 40 to 150	°C

VOLTAGE RATINGS				
PARAMETER	SYMBOL	31DQ03	31DQ04	UNITS
Maximum DC reverse voltage	V_R	30	40	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_L = 117 °C, rectangular waveform		3.3	A
Maximum peak one cycle non-repetitive surge current See fig. 6	I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	450	
		10 ms sine or 6 ms rect. pulse		90	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 1.0 A, L = 12 mH		6.0	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		1.0	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	0.57	V
		6 A		0.71	
		3 A	T_J = 125 °C	0.51	
		6 A		0.62	
Maximum reverse leakage current See fig. 4	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	1	mA
		T_J = 125 °C		20	
Typical junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz) 25 °C		190	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 (1), 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}	With fin 20 mm x 20 mm (0.79" x 0.79") 1.0 mm (0.04") thickness	15	
Approximate weight			1.2	g
			0.042	oz.
Marking device		Case style C-16	31DQ03	
			31DQ04	

Note

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

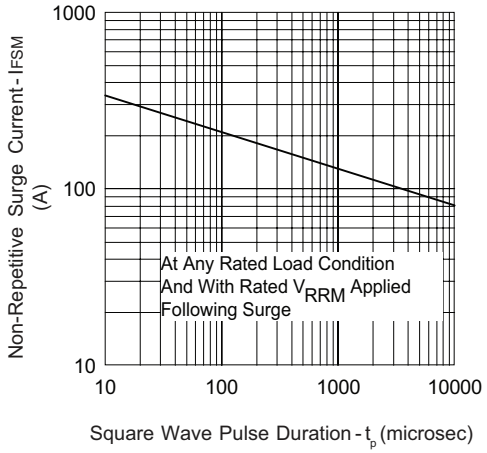


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE

Device code

31	D	Q	04	TR
1	2	3	4	5

1 - 31 = 3.1 A (axial and small packages - current is x 10)

2 - D = DO-201 package

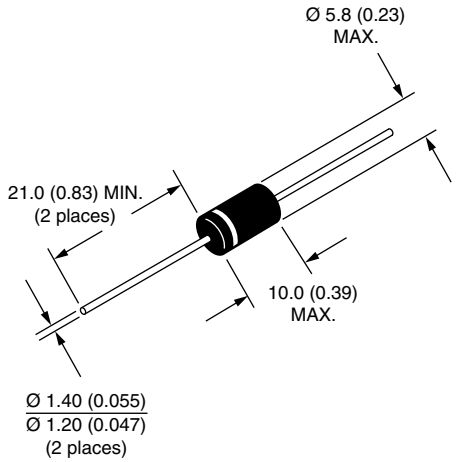
3 - Q = Schottky Q.. series

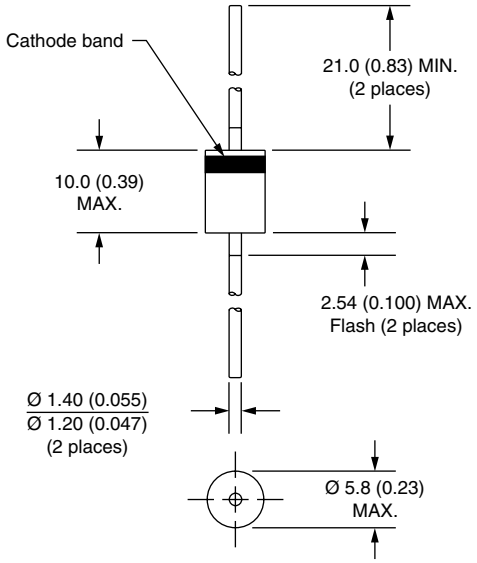
4 - 04 = Voltage ratings
- 03 = 30 V
- 04 = 40 V

5 - • TR = Tape and reel package (1200 pcs)
• None = Box package (500 pcs)

Axial DO-201AD (C-16)

DIMENSIONS in millimeters (inches)

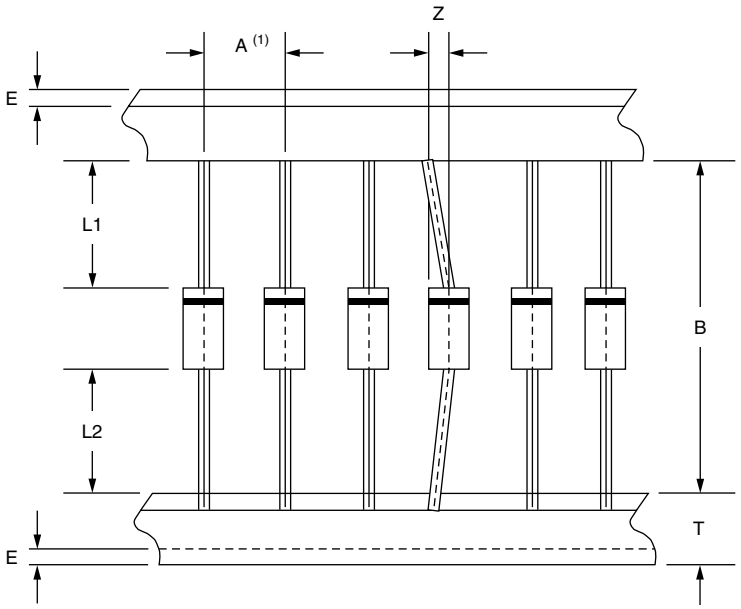


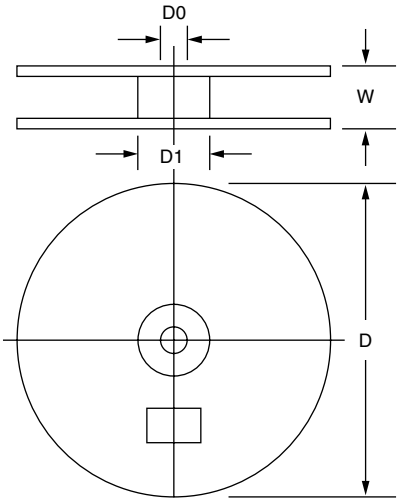


Schottky Axial < 4 A
for DO-201AD (C-16)

Axial devices are packed in accordance with EIA standard RS-296-D and specification.

COMPONENT OUTLINE	COMPONENT PITCH A ± 0.5 mm (0.020")	INNER TAPE PITCH B ± 1.5 mm (0.059")	CUMULATIVE PITCH TOLERANCE	QUANTITY PER REEL	QUANTITY PER CARTON
DO-201AD	10.0 mm	52.4 mm	2.0 mm/10 pitch	1200	4800





ITEM	SYMBOL	SPECIFICATIONS (mm)	SPECIFICATIONS (INCHES)
Component alignment	Z	1.2 maximum	0.048 maximum
Tape width	T	6.0 ± 0.4	0.236 ± 0.016
Exposed adhesive	E	0.8 maximum	0.032 maximum
Body eccentricity	| L1-L2 |	1.0 maximum	0.040 maximum
Reel outside diameter	D	330.0	13.0
Reel inner diameter	D1	85.7 ± 0.3	3.375 ± 0.012
Feed hole diameter	D0	16.6 ± 0.4	0.655 ± 0.016
Reel width (2)	W	79.0 ± 1.0	3.110 ± 0.040

Notes

(1) Each component lead shall be sandwiched between tapes for a minimum of 3.2 mm (0.126")

(2) The reel width “W” for 26 mm taping is 50.0 ± 1.0 mm (1.97" ± 0.040")