

International
IOR Rectifier

21DQ04

SCHOTTKY RECTIFIER

2 Amp

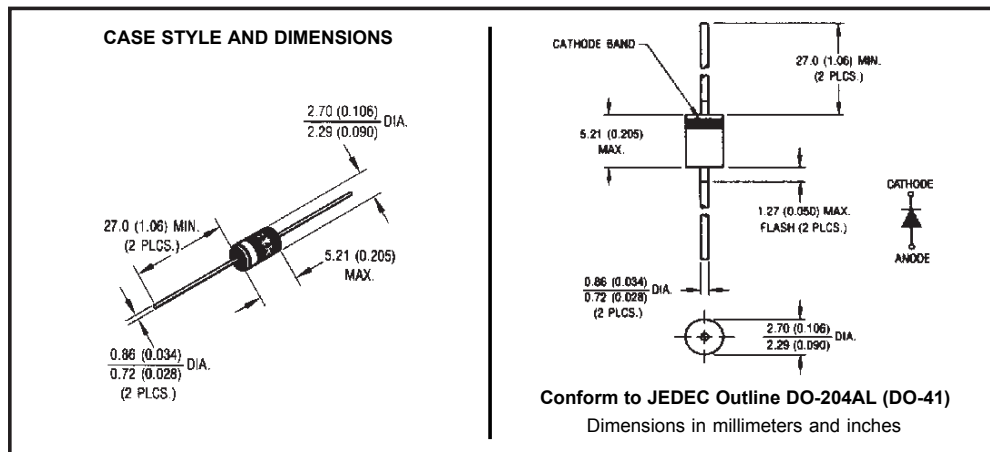
Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	2	A
V_{RRM}	40	V
V_F @2 Apk, $T_J = 125^\circ\text{C}$	0.5	V
T_J range	-40 to 150	$^\circ\text{C}$

Description/Features

The 21DQ04 axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- Low profile, axial leaded outline
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free plating



Voltage Ratings

Part number	21DQ04
V_R Max. DC Reverse Voltage (V)	40
V_{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	21DQ04	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	2	A	50% duty cycle @ $T_C = 112^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	420	A	5 μs Sine or 3 μs Rect. pulse
	70		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	5.0	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1.0$ Amps, $L = 10$ mH
I_{AR} Repetitive Avalanche Current	1.0	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	21DQ04		Units	Conditions	
	Typ.	Max.			
V_{FM} Max. Forward Voltage Drop (1)	0.49	0.55	V	@ 2A	$T_J = 25^\circ\text{C}$
	0.60	0.65	V	@ 4A	
	0.42	0.5	V	@ 2A	$T_J = 125^\circ\text{C}$
	0.56	0.62	V	@ 4A	
I_{RM} Max. Reverse Leakage Current (1)	0.01	0.50	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
	5.2	10	mA	$T_J = 125^\circ\text{C}$	
C_T Typical Junction Capacitance	130		pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C	
L_S Typical Series Inductance	8.0		nH	Measured lead to lead 5mm from package body	

(1) Pulse Width < 300 μs , Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	21DQ04	Units	Conditions
T_J Max. Junction Temperature Range (*)	-40 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
R_{thJA} Max. Thermal Resistance Junction to Ambient	100	$^\circ\text{C/W}$	DC operation Without cooling fin
R_{thJL} Typical Thermal Resistance Junction to Lead	25	$^\circ\text{C/W}$	DC Operation (* See Fig. 4)
wt Approximate Weight	0.33(0.012)		g (oz.)
Case Style	DO-204AL(DO-41)		

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

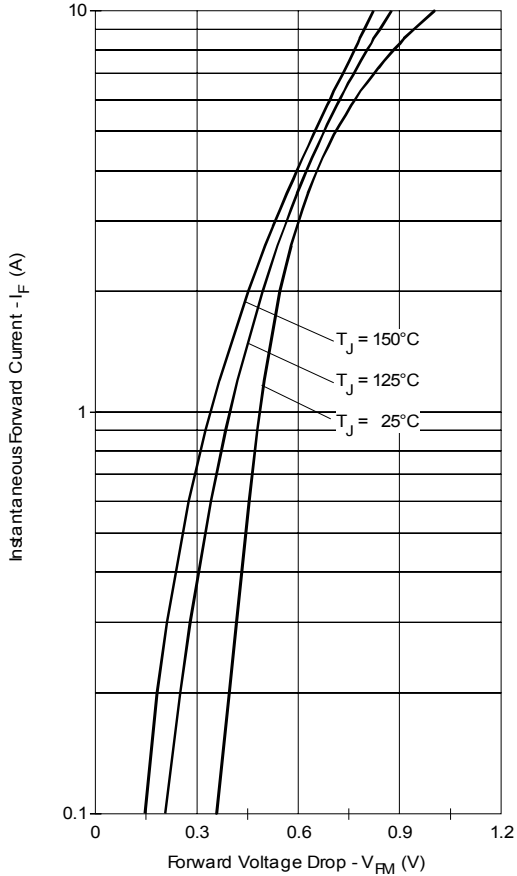


Fig. 1 - Maximum Forward Voltage Drop Characteristics

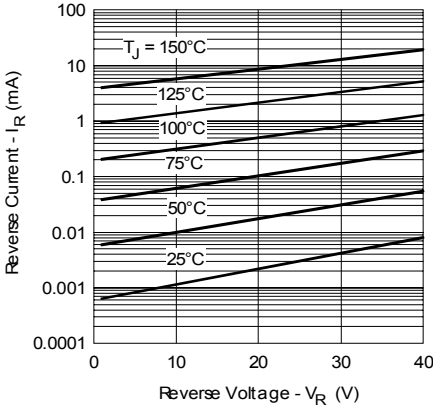


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

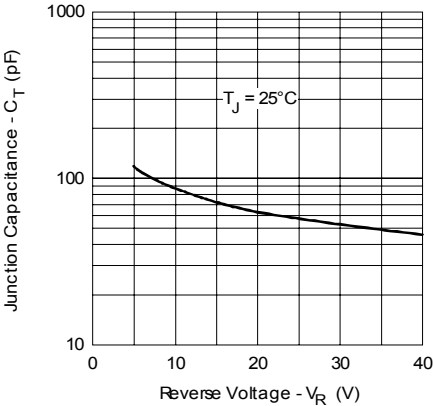


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

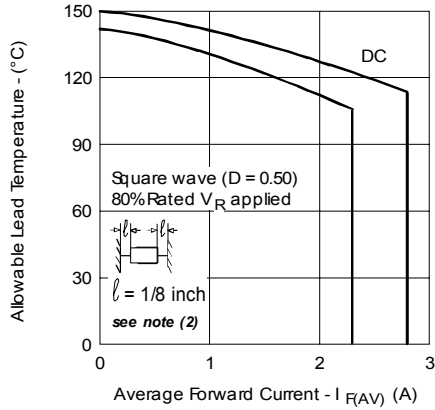


Fig. 4 - Maximum Allowable Lead Temperature Vs. Average Forward Current

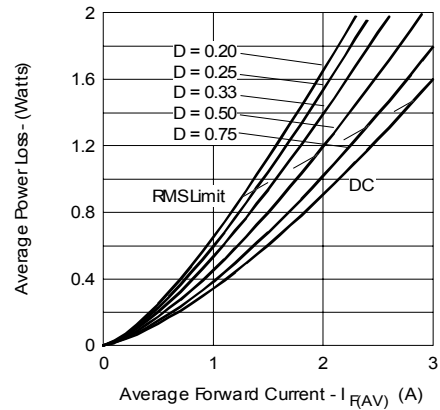


Fig. 5 - Forward Power Loss Characteristics

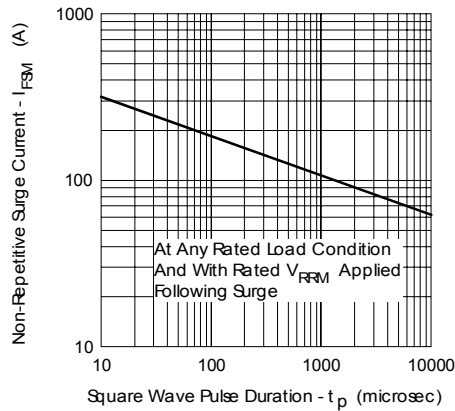


Fig. 6 - Maximum Non-Repetitive Surge Current

(2) Formula used: $T_L = T_J - (Pd + Pd_{REV}) \times R_{thJL}$;

Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 5);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 80\%$ rated V_R

Ordering Information Table

Device Code											
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">21</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">Q</td> <td style="padding: 5px;">04</td> <td style="padding: 5px;">TR</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> </tr> </table>	21	D	Q	04	TR	①	②	③	④	⑤
21	D	Q	04	TR							
①	②	③	④	⑤							
1	- 21 = 2.1A (Axial and small packages - Current is x10)										
2	- D = DO-41 package										
3	- Q = Schottky Q.. Series										
4	- 04 = Voltage Rating : 40V										
5	- TR= Tape & Reel package (5000 pcs)										
	TB= Tape & Box package (Ammunition -3000 pcs)										
	- = Box package (1000 pcs)										

Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level and Lead-Free.
 Qualification Standards can be found on IR's Web site.



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