

International
IOR Rectifier

21DQ04

SCHOTTKY RECTIFIER

2 Amp

Major Ratings and Characteristics

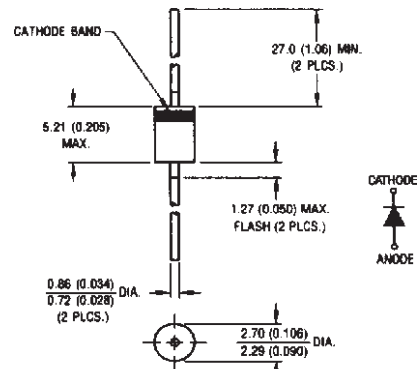
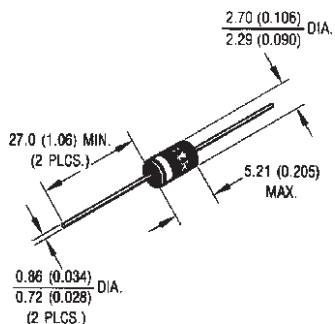
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	2	A
V_{RRM}	40	V
V_F @2 Apk, $T_J = 125^\circ\text{C}$	0.5	V
T_J range	-40 to 150	$^\circ\text{C}$

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

CASE STYLE AND DIMENSIONS



Conform to JEDEC Outline DO-204AL (DO-41)

Dimensions in millimeters and inches

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 °C
		0.60	0.65	V	@ 4A	
		0.42	0.5	V	@ 2A	T _J = 125 °C
		0.56	0.62	V	@ 4A	
I _{RM} Max. Reverse Leakage Current (1)		0.01	0.50	mA	T _J = 25 °C	V _R = rated V _R
		5.2	10	mA	T _J = 125 °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

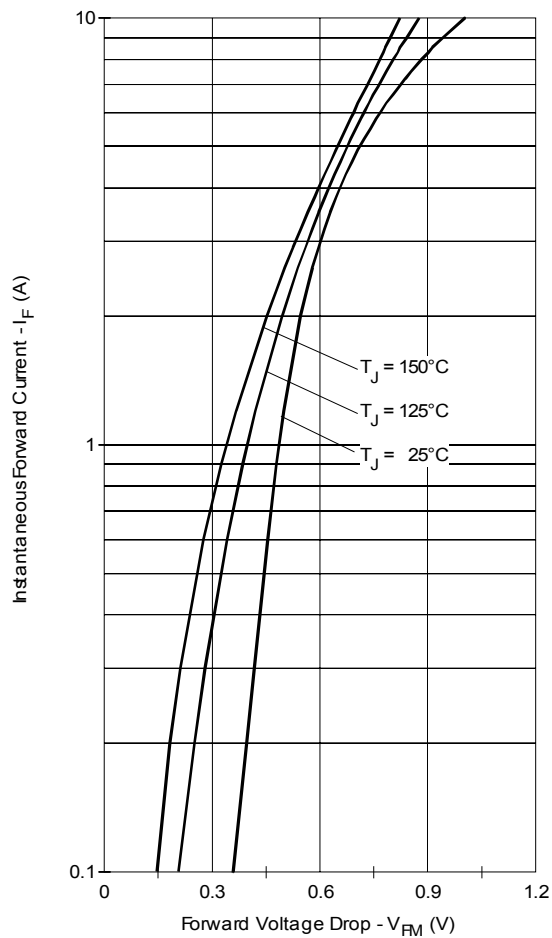


Fig. 1 - Maximum Forward Voltage Drop Characteristics

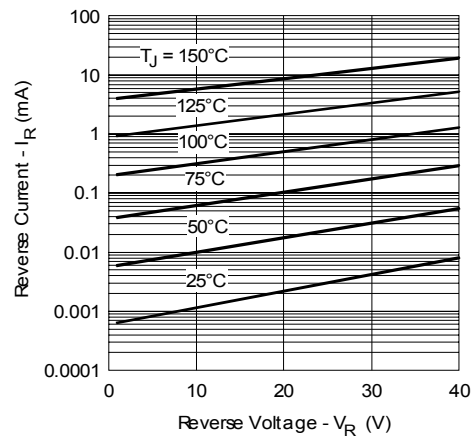


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

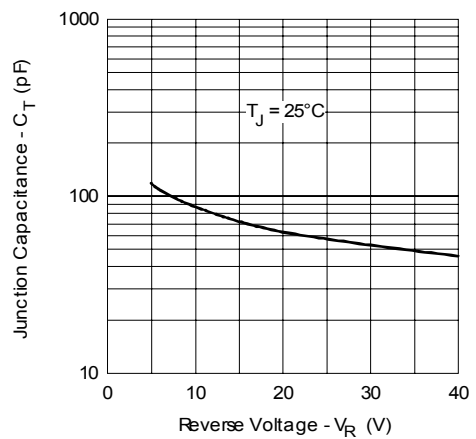


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

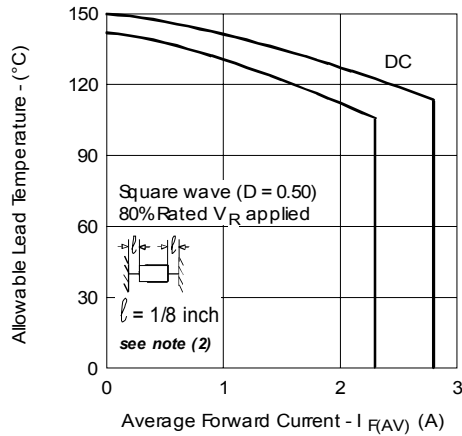


Fig. 4 - Maximum Allowable Lead Temperature Vs. Average Forward Current

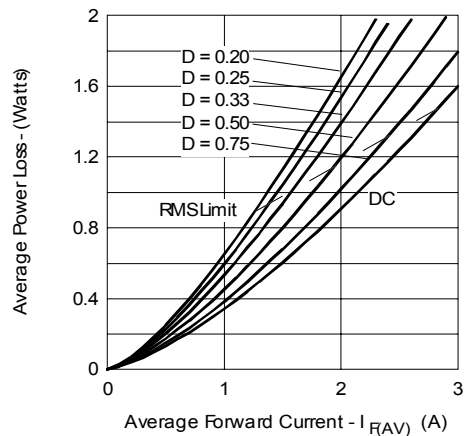


Fig. 5 - Forward Power Loss Characteristics

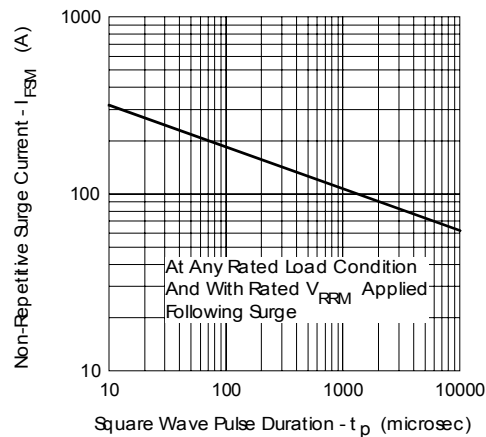


Fig. 6 - Maximum Non-Repetitive Surge Current

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

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

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

Ordering Information Table

Device Code		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.

International
IR Rectifier

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 11/04



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