Bulletin PD-20480 rev. H 07/06

International
IOR Rectifier

20CJQ100

SCHOTTKY RECTIFIER

2 Amp

$I_{F(AV)}$ = 2 Amp
V_R = 100V

Major Ratings and Characteristics

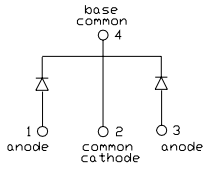
Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	2.0	A
V_{RRM}		100	V
I_{FSM}	@ tp = 5 µs sine	380	A
V_F	@1 Apk, T_J = 125°C (per leg)	0.67	V
T_J	range	- 55 to 175	°C

Description/ Features

The 20CJQ100 surface mount Schottky rectifier series has been designed for applications requiring very low forward drop and very small foot prints. Typical applications are in portables, switching power supplies, converters, automotive system, free-wheeling diodes, battery charging, and reverse battery protection.

- Small footprint, surface mountable
- Low profile
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Common cathode

Case Styles



SOT-223

Voltage Ratings

	Part number	20CJQ100
V_R	Max. DC Reverse Voltage (V)	100
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	Values	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	2	A	50% duty cycle @ T_C = 129°C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	4			
I_{FSM}	Max. Peak One Cycle Non-Repetitive	380	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg) * See Fig. 7	22		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	1	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 2 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	1	A	Current decaying linearly to zero in 1 µsec Frequency limited by T_J max. V_A = 1.5 x V_R typical	

Electrical Specifications

	Parameters	Values	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.79	V	@ 1A	T_J = 25 °C
		0.89	V	@ 2A	
		0.67	V	@ 1A	T_J = 125 °C
		0.76	V	@ 2A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.1	mA	T_J = 25 °C	V_R = rated V_R
		10	mA	T_J = 125 °C	
C_T	Typ. Junction Capacitance (Per Leg)	45	pF	V_R = 5V_{DC} (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance (Per Leg)	6	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change	10000	V/ µs	(Rated V_R)	

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

Thermal-Mechanical Specifications

	Parameters	Values	Units	Conditions
T_J	Max. Junction Temperature Range (*)	-55 to 175	°C	
T_{stg}	Max. Storage Temperature Range	-55 to 175	°C	
R_{thJA}	Max. Thermal Resistance Junction to Ambient	65	°C/W	DC operation
R_{thJL}	Max. Thermal Resistance Junction to Lead	25	°C/W	
wt	Approximate Weight	0.13 (.0045)	g (oz.)	
	Case Style	SOT-223		
	Device Marking	2CJQJ		

(*) $\frac{dPtot}{dTj} < \frac{1}{Rth(j\text{-}a)}$ thermal runaway condition for a diode on its own heatsink

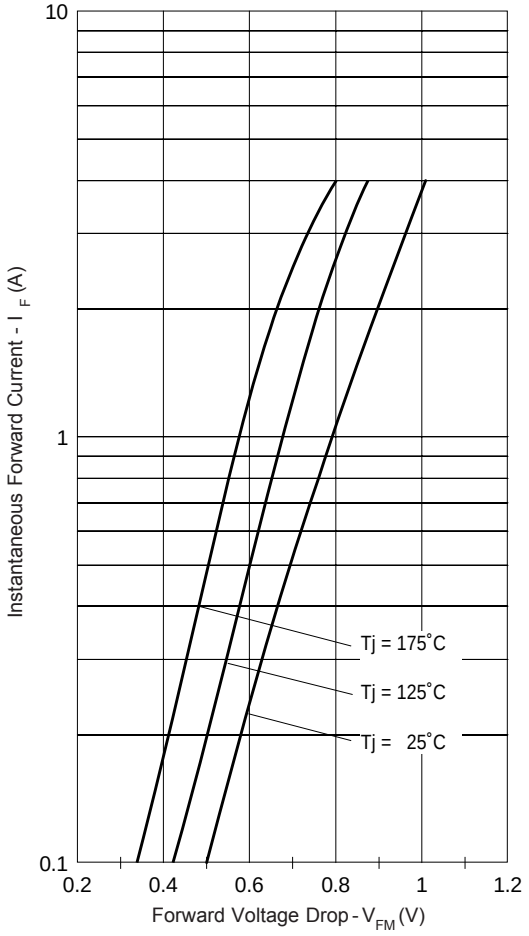


Fig. 1 - Maximum Forward Voltage Drop Characteristics

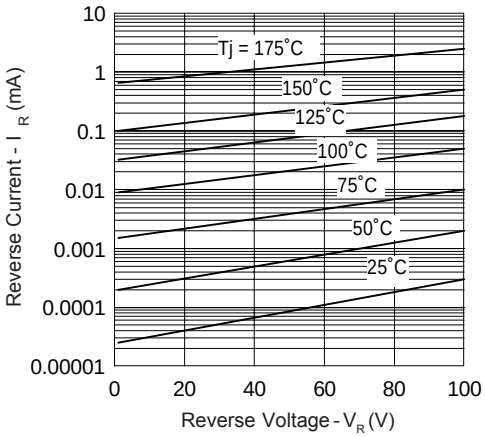


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

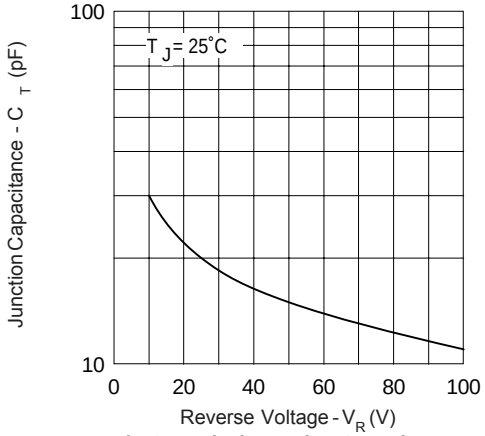


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

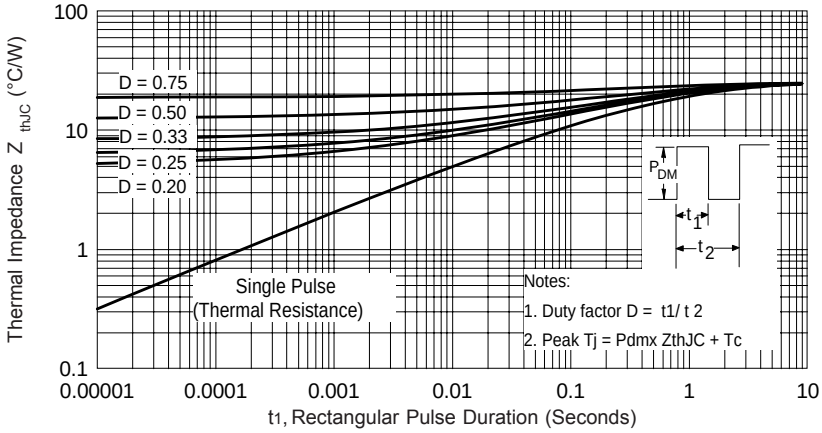


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

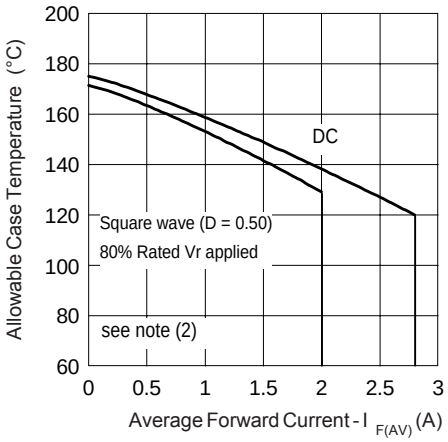


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

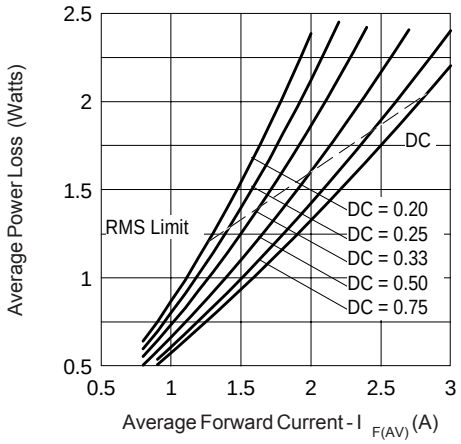


Fig. 6 - Forward Power Loss Characteristics

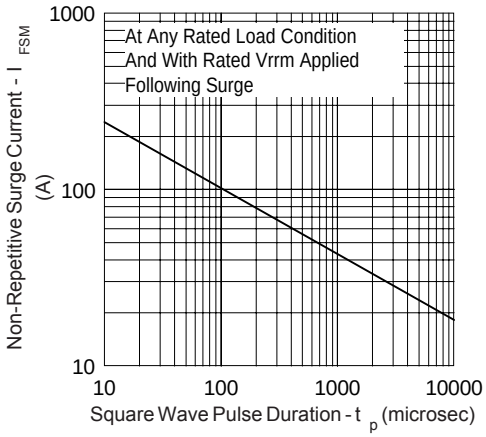


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

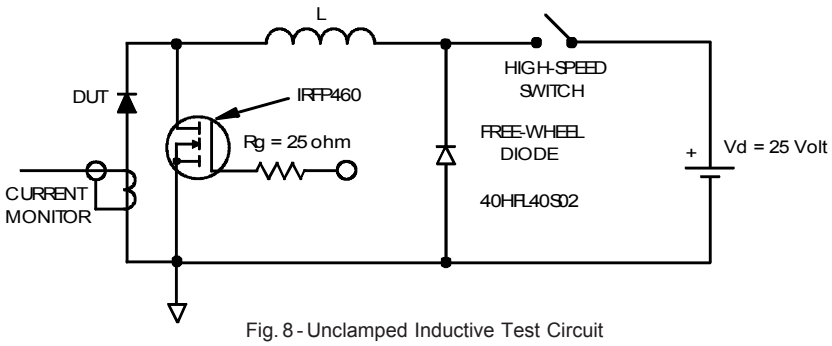
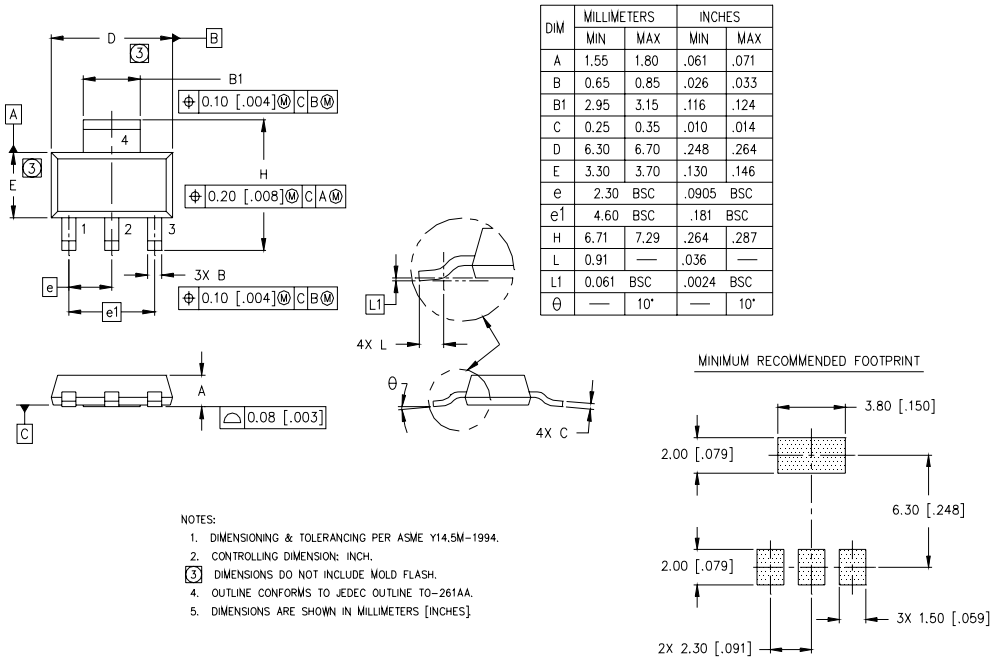


Fig. 8 - Unclamped Inductive Test Circuit

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

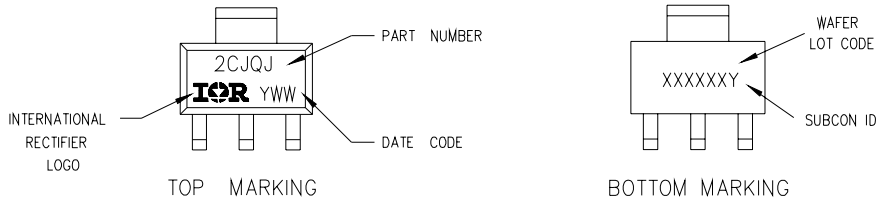
Outline Table



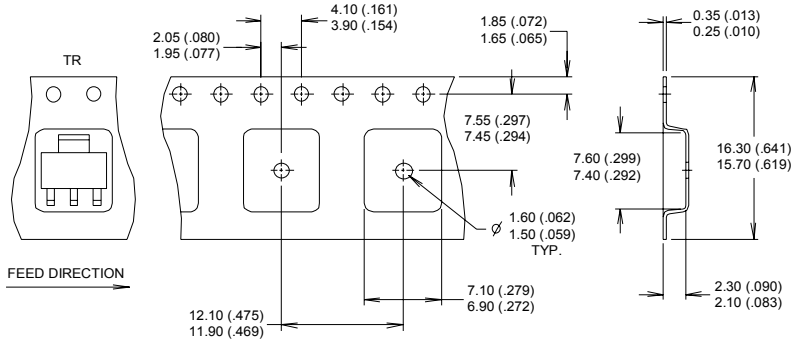
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.55	1.80	.061	.071
B	0.65	0.85	.026	.033
B1	2.95	3.15	.116	.124
C	0.25	0.35	.010	.014
D	6.30	6.70	.248	.264
E	3.30	3.70	.130	.146
e	2.30 BSC		.0905 BSC	
e1	4.60 BSC		.181 BSC	
H	6.71	7.29	.264	.287
L	0.91	—	.036	—
L1	0.061 BSC		.0024 BSC	
θ	—	10°	—	10°

Conform to JEDEC Outline SOT-223 (TO-261AA)
Dimensions in millimeters and (inches)

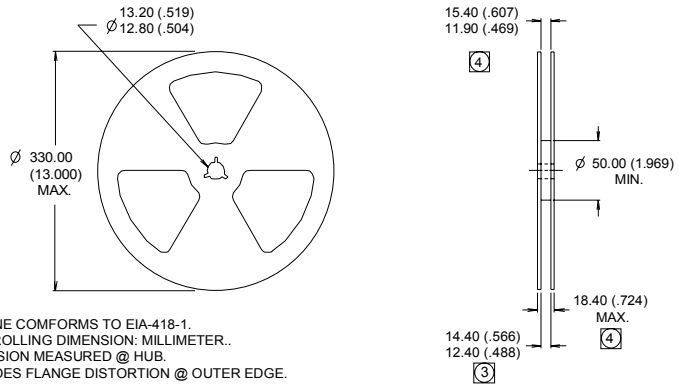
Marking Information



Tape and Reel Information



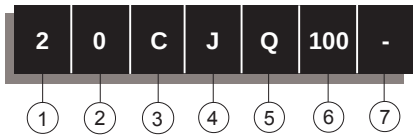
NOTES :
1. CONTROLLING DIMENSION: MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.
3. EACH Ø330.00 (13.00) REEL CONTAINS 2,500 DEVICES.



NOTES :
1. OUTLINE COMFORMS TO EIA-418-1.
2. CONTROLLING DIMENSION: MILLIMETER..
3 DIMENSION MEASURED @ HUB.
4 INCLUDES FLANGE DISTORTION @ OUTER EDGE.

Ordering Information Table

Device Code



1	-	Current Rating (2 = 2A)
2	-	Schottky Rectifier Series
3	-	Circuit Configuration C = Common Cathode
4	-	Package J = SOT-223
5	-	Schottky "Q" Series
6	-	Voltage Rating (100 = 100V)
7	-	• none = Standard Production • PbF = Lead-Free

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

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 07/06