

SCHOTTKY RECTIFIER

20CJQ030

2 Amp

Major Ratings and Characteristics

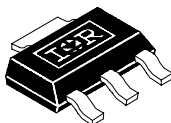
Characteristics	20CJQ030	Units
$I_{F(AV)}$ Rectangular waveform	2.0	A
V_{RRM}	30	V
I_{FSM} @ $t_p = 5 \mu s$ sine	400	A
V_F @ 1.0Apk, $T_J = 125^\circ C$ (Per Leg)	0.42	V
T_J	-55 to 150	$^\circ C$

Description / Features

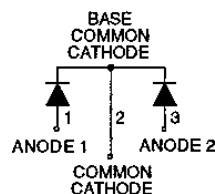
The 20CJQ030 surface-mount Schottky rectifier has been designed for applications requiring very low forward drop and very small foot prints. Typical applications are in portable, switching power supplies, converters, automotive systems, free-wheeling diodes, battery charging and reverse battery protection.

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

CASE STYLE



CIRCUIT



Voltage Ratings

Part number		20CJQ030
V_R	Max. DC Reverse Voltage (V)	30
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters		20CJQ030	Units	Conditions		
I _{F(AV)}	Max. Average Forward Current	2.0	A	50% duty cycle @ T _C = 132°C, rectangular waveform		
	See Fig. 5	4.0		50% duty cycle @ T _C = 117°C, rectangular waveform		
I _{FSM}	Max. Peak One Cycle Non - Repetitive Surge Current (Per Leg) See Fig. 7	400	A	5μsSine or 3μs Rect. pulse	Following any rated load condition and rated V _{RWM}	
		24		10msSine or 6ms Rect pulse		
E _{AS}	Max. Average Forward Current (Per Leg)	17	mJ	T _J = 25°C, I _{AS} = 0.2A, L = 850mH		
I _{AR}	Repetitive Avalanche Current (Per Leg)	0.2	A	Current decaying linearly to zero in 1μsec Frequency limited by T _J max. V _A = 1.5 X V _R typical		

Electrical Specifications

Parameters		20CJQ030	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop (Per Leg) See Fig. 1 ①	0.50	V	@ 1.0A	T _J = 25°C
		0.59	V	@ 2.0A	
		0.42	V	@ 1.0A	T _J = 125°C
		0.52	V	@ 2.0A	
I _{RM}	Max. Reverse Leakage Current (Per Leg) See Fig. 2 ①	0.1	mA	T _J = 25°C	V _R = rated V _R
		15	mA	T _J = 125°C	
C _T	Max. Junction Capacitance (Per Leg)	120	pF	V _R = 5V _{DC} , (test signal range 100KHz to 1MHz) 25°C	
L _S	Typical Series Inductance (Per Leg)	6.0	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V _R)	4600	V/μs		

Thermal-Mechanical Specifications

Parameters		20CJQ030	Units	Conditions
T_J	Max. Junction Temperature Range	-55 to 150	$^\circ\text{C}$	
T_{stg}	Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
R_{thJA}	Max. Thermal Resistance, Junction to Ambient	65	$^\circ\text{C/W}$	DC operation
R_{thJL}	Max. Thermal Resistance, Junction to Lead	25	$^\circ\text{C/W}$	DC operation -See Fig. 4
w_t	Weight (Typical)	0.13(.0045)	g (oz.)	
	Case Style	SOT-223		

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

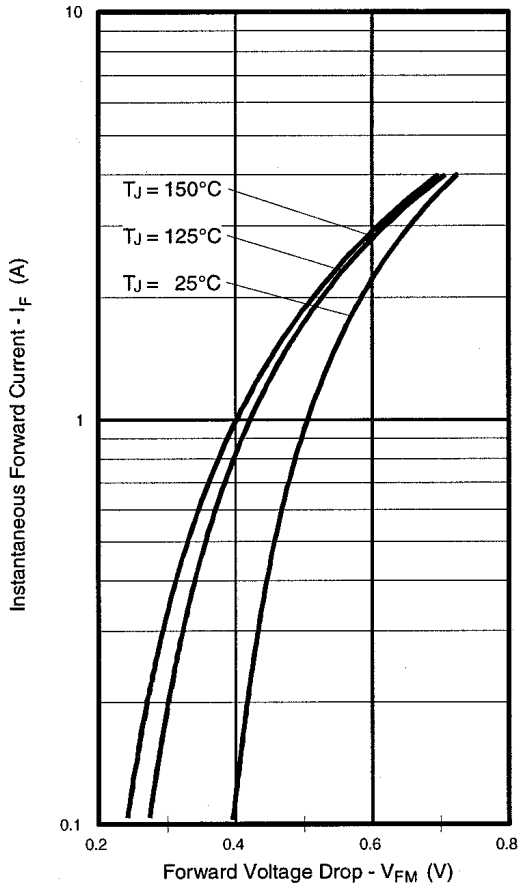


Fig. 1 Max. Forward Voltage Drop Characteristics (Per Leg)

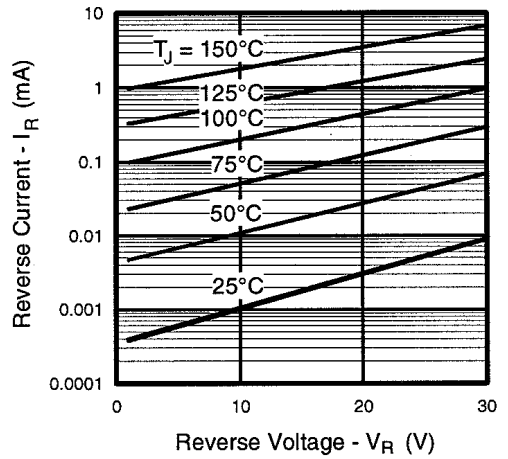


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

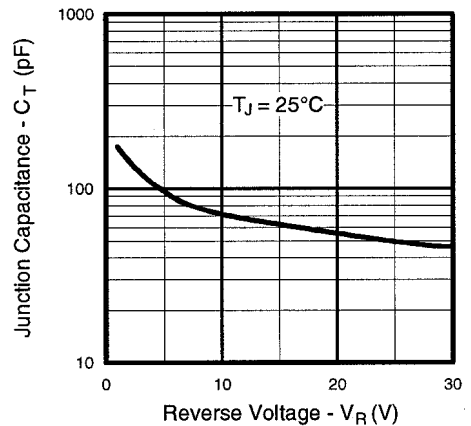


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

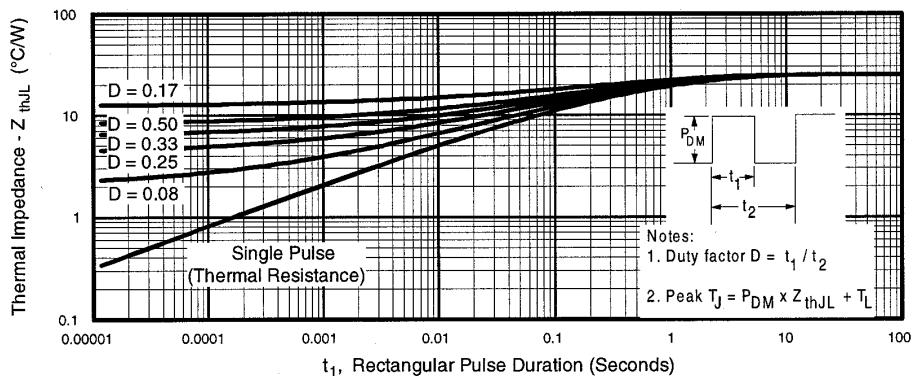


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics (Per Leg)

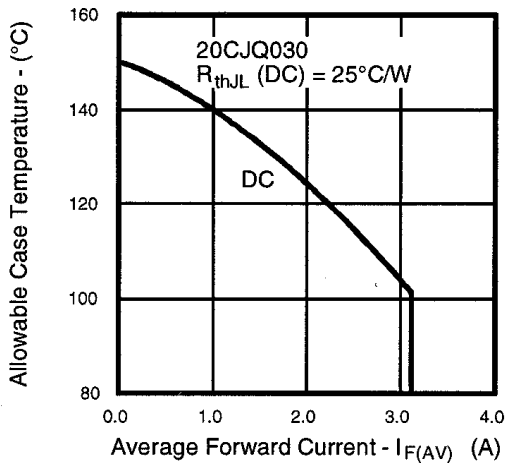


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

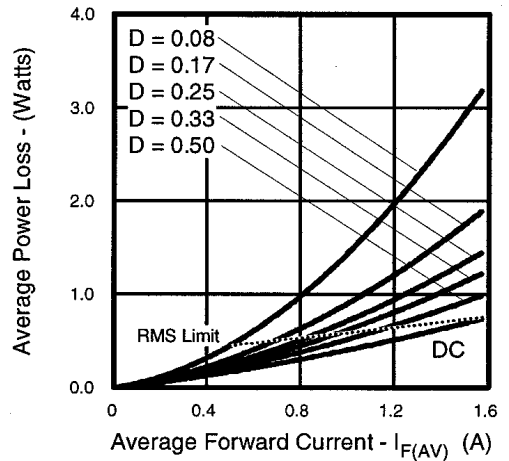


Fig. 6 Forward Power Loss Characteristics (Per Leg)

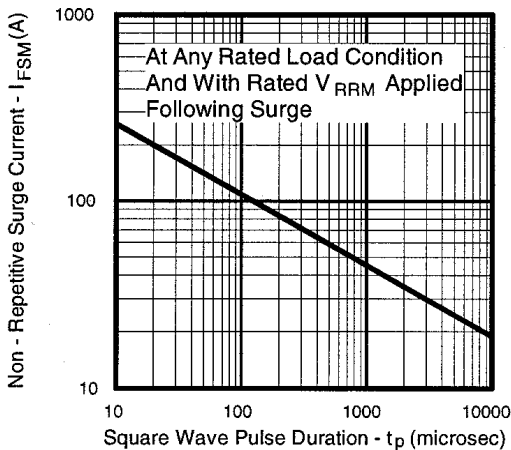


Fig.7 Max. Non-Repetitive Surge Current (Per Leg)

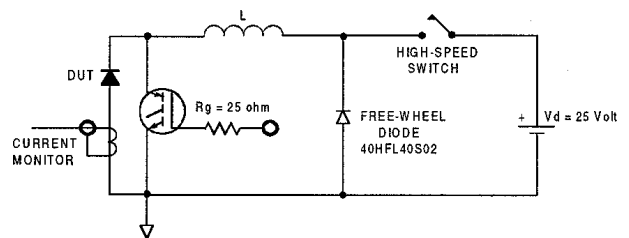
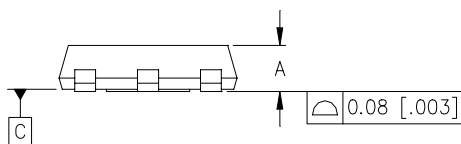
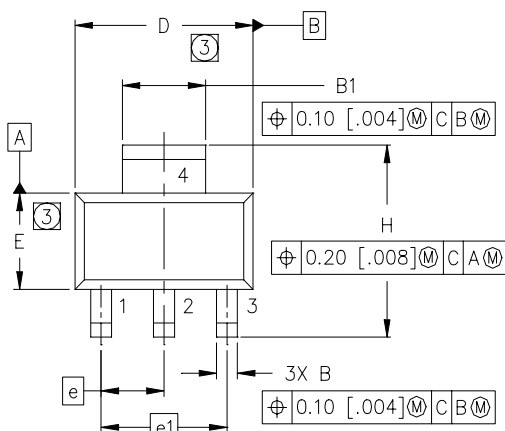
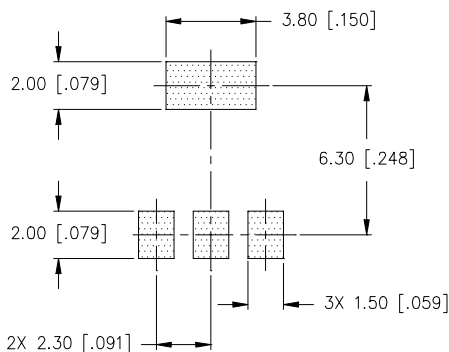


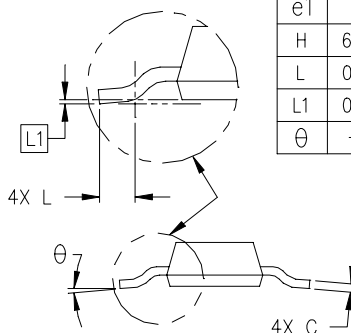
Fig. 8 Unclamped Inductive Test Circuit



MINIMUM RECOMMENDED FOOTPRINT



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°



LEAD ASSIGNMENTS

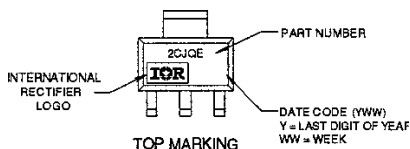
- 1 = ANODE
- 2 = CATHODE
- 3 = ANODE

NOTES:

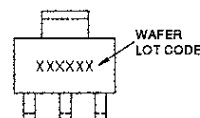
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS DO NOT INCLUDE MOLD FLASH.
4. OUTLINE CONFORMS TO JEDEC OUTLINE TO-261AA.
5. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].

Part Marking Information

SOT-223

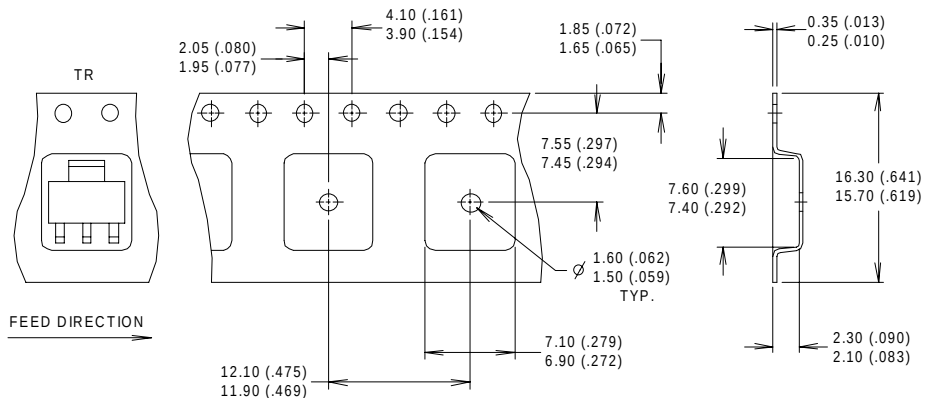


BOTTOM MARKING



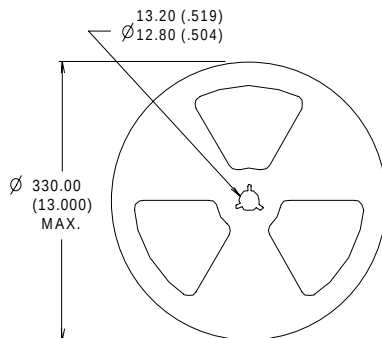
Tape & Reel Information

SOT-223 Outline



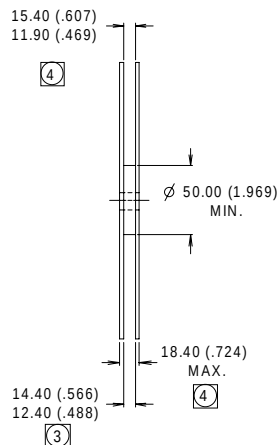
NOTES :

1. CONTROLLING DIMENSION: MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.
3. EACH $\phi 330.00$ (13.00) REEL CONTAINS 2,500 DEVICES.



NOTES :

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

International
IR Rectifier**WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245, Tel: (310) 322 3331**IR GREAT BRITAIN:** Hurst Green, Oxted, Surrey RH8 9BB, UK Tel: ++ 44 1883 732020**IR CANADA:** 15 Lincoln Court, Brampton, Ontario L6T3Z2, Tel: (905) 453 2200**IR GERMANY:** Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590**IR ITALY:** Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 451 0111**IR FAR EAST:** K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo Japan 171 Tel: 81 3 3983 0086**IR SOUTHEAST ASIA:** 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994 Tel: ++ 65 838 4630**IR TAIWAN:** 16 Fl. Suite D. 207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan Tel: 886-2-2377-9936<http://www.irf.com/>

Data and specifications subject to change without notice. 2/99