

SCHOTTKY RECTIFIER

2 Amp

Major Ratings and Characteristics

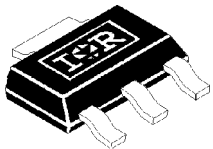
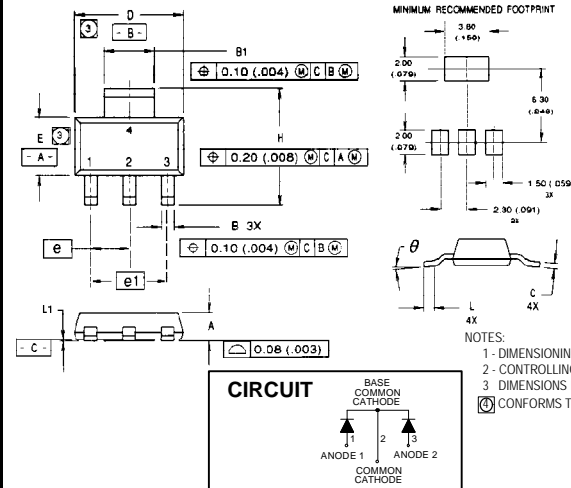
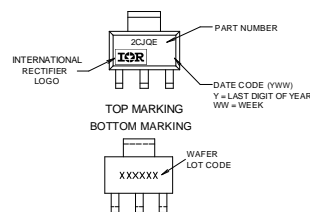
Characteristics	20CJQ030	Units
$I_{F(AV)}$ Rectangular waveform	2.0	A
V_{RRM}	30	V
I_{FSM} @ $t_p = 5\mu s$ sine	400	A
V_F @ 1.0Apk, $T_J = 125^\circ C$ (per leg)	0.42	V
T_J	-55 to 150	$^\circ C$

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 portables, switching power supplies, converters, automotive systems, 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

SOT-223

CASE STYLE	CASE OUTLINE																																																																						
																																																																							
PART MARKING 	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">DIM</th> <th colspan="2">MILLIMETERS</th> <th colspan="2">INCHES</th> </tr> <tr> <th>MIN</th> <th>MAX</th> <th>MIN</th> <th>MAX</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1.55</td> <td>1.80</td> <td>.061</td> <td>.071</td> </tr> <tr> <td>B</td> <td>0.65</td> <td>0.85</td> <td>.026</td> <td>.033</td> </tr> <tr> <td>B1</td> <td>2.95</td> <td>3.15</td> <td>.116</td> <td>.124</td> </tr> <tr> <td>C</td> <td>0.25</td> <td>0.35</td> <td>.010</td> <td>.014</td> </tr> <tr> <td>D</td> <td>6.30</td> <td>6.70</td> <td>.248</td> <td>.264</td> </tr> <tr> <td>E</td> <td>3.30</td> <td>3.70</td> <td>.130</td> <td>.146</td> </tr> <tr> <td>e</td> <td colspan="2">2.30 BSC</td> <td colspan="2">.0905 BSC</td> </tr> <tr> <td>e1</td> <td colspan="2">4.60 BSC</td> <td colspan="2">.181 BSC</td> </tr> <tr> <td>H</td> <td>6.71</td> <td>7.29</td> <td>.267</td> <td>.284</td> </tr> <tr> <td>L</td> <td colspan="2">0.91</td> <td colspan="2">.036</td> </tr> <tr> <td>L1</td> <td>0.02</td> <td>0.10</td> <td>.0008</td> <td>.004</td> </tr> <tr> <td>θ</td> <td colspan="2">10° MAX</td> <td colspan="2">10° MAX</td> </tr> </tbody> </table> <p>NOTES: 1 - DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982. 2 - CONTROLLING DIMENSION: INCH. 3 - DIMENSIONS DO NOT INCLUDE MOLD FLASH. ④ CONFORMS TO JEDEC OUTLINE TO-261AA.</p>		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	.267	.284	L	0.91		.036		L1	0.02	0.10	.0008	.004	θ	10° MAX		10° MAX	
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	.267	.284																																																																			
L	0.91		.036																																																																				
L1	0.02	0.10	.0008	.004																																																																			
θ	10° MAX		10° MAX																																																																				

20CJQ030



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		20CJQ	Units	Conditions
$I_{F(AV)}$	Max. Average Forward Current See Fig. 5	2.0	A	50% duty cycle @ $T_C = 132^\circ\text{C}$, rectangular waveform
		4.0		50% duty cycle @ $T_C = 117^\circ\text{C}$, rectangular waveform
I_{FSM}	Max. Peak One Cycle Non - Repetitive Surge Current (Per Leg) See Fig. 7	400	A	Following any rated load condition and with rated V_{RRM} applied.
		24		
E_{AS}	Non - Repetitive Avalanche Energy (Per Leg)	17	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 0.2\text{A}$, $L = 850\text{mH}$
I_{AR}	Repetitive Avalanche Current (Per Leg)	0.2	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	20CJQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) See Fig. 1 ①	0.50	V	@ 1.0A $T_J = 25^\circ\text{C}$
	0.59	V	@ 2.0A
	0.42	V	@ 1.0A $T_J = 125^\circ\text{C}$
	0.52	V	@ 2.0A
I_{RM} Max. Reverse Leakage Current (Per Leg) See Fig. 2 ①	0.1	mA	$T_J = 25^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$
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	20CJQ	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	$^\circ\text{C}/\text{W}$	DC operation
R_{thJL} Max. Thermal Resistance, Junction to Lead	25	$^\circ\text{C}/\text{W}$	DC operation — see Fig. 4.
wt Approximate Weight	0.13(.0045)	g (oz.)	
Case Style	SOT-223		

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

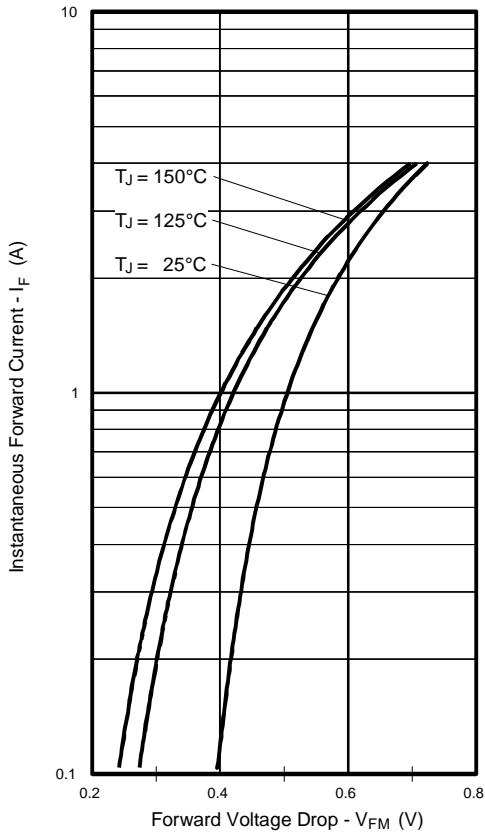


Fig. 1 Max. Forward Voltage Drop Characteristics (Per Leg)

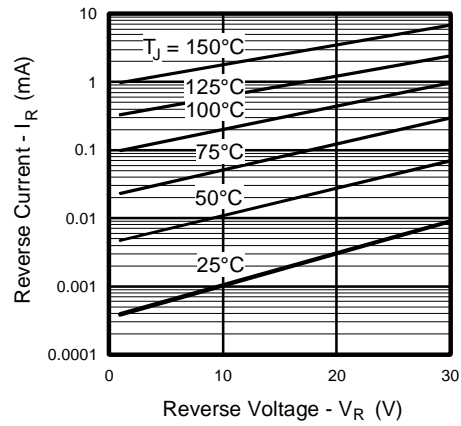


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

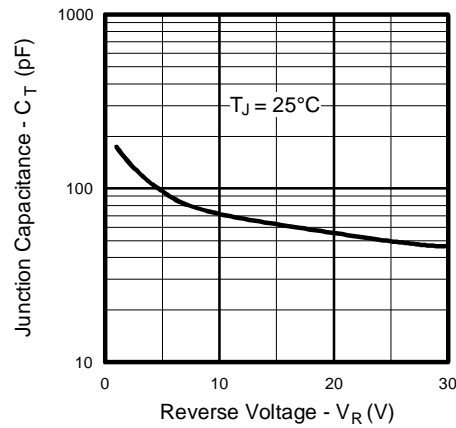


Fig. 3 Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

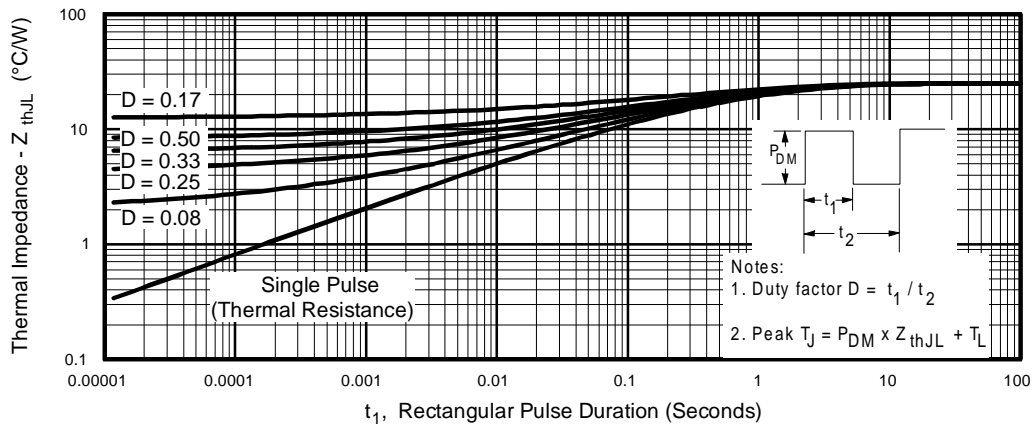


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics (Per Leg)

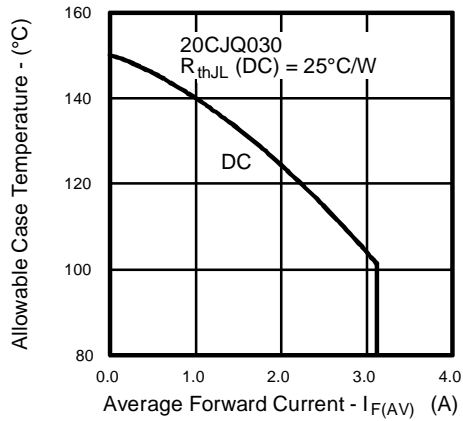


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

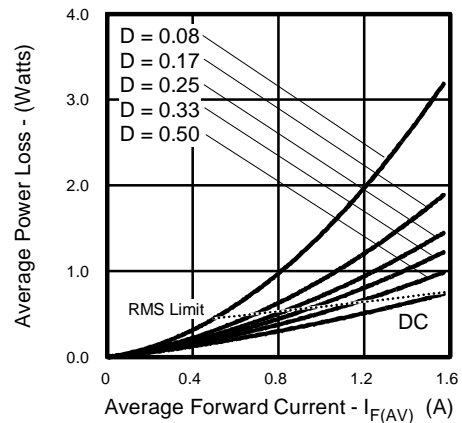


Fig. 6 Forward Power Loss Characteristics (Per Leg)

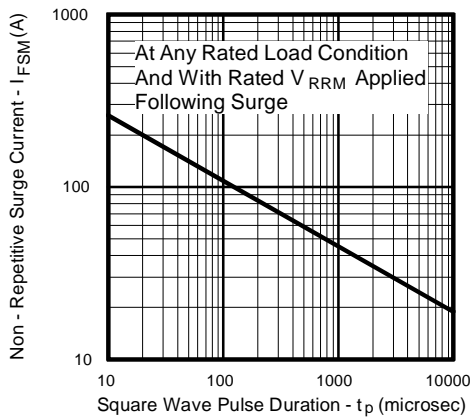


Fig.7 Max. Non-Repetitive Surge Current (Per Leg)

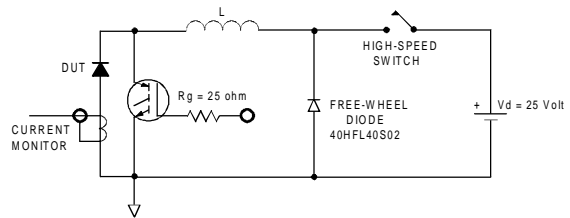


Fig. 8 Unclamped Inductive Test Circuit

Refer to the Appendix Section for the following:

Appendix D: Tape and Reel Information — See page 340.