PD - 2.478A

International
IOR Rectifier

20CJQ045

SCHOTTKY RECTIFIER

2 Amp

Major Ratings and Characteristics

Characteristics	20CJQ045	Units
$I_{F(AV)}$ Rectangular waveform	2.0	A
V_{RRM}	45	V
I_{FSM} @ tp = 5µs sine	390	A
V_F @ 1.0Apk, T_J = 125°C (per leg)	0.46	V
T_J	-55 to 150	°C

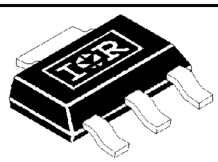
Description / Features

The 20CJQ045 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.

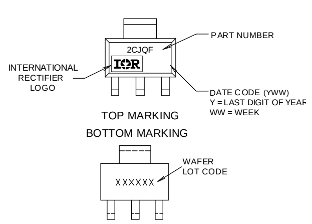
- Small footprint, surface mountable
- Low profile
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long-term reliability
- Common Cathode

SOT-223

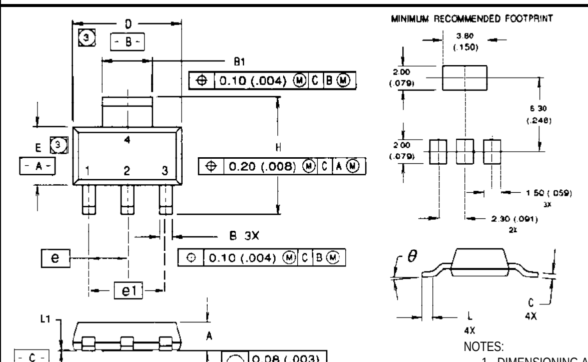
CASE STYLE



PART MARKING



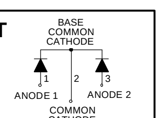
CASE OUTLINE



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	.287	.264
L	—	0.91	—	.036
L1	0.02	0.10	.0008	.004
θ	10° MAX		10° MAX	

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.

CIRCUIT



Voltage Ratings

Part number		20CJQ045
V_R	Max. DC Reverse Voltage (V)	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

	Parameters	20CJQ	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current	2.0	A	50% duty cycle @ T_C = 126°C, rectangular waveform	
	See Fig. 5	4.0		50% duty cycle @ T_C = 110°C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non - Repetitive	390	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition
	Surge Current (Per Leg) See Fig. 7	23		10ms Sine 0r 6ms Rect. pulse	and with rated V_{RRM} applied.
E_{AS}	Non - Repetitive Avalanche Energy (Per Leg)	15	mJ	T_J = 25°C, I_{AS} = 0.2A, L = 750mH	
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		20CJQ	Units		Conditions
V_{FM}	Max. Forward Voltage Drop	0.50	V	@ 1.0A	T_J = 25°C
	(Per Leg) See Fig. 1 ①	0.62	V	@ 2.0A	
		0.46	V	@ 1.0A	T_J = 125°C
		0.60	V	@ 2.0A	
I_{RM}	Max. Reverse Leakage Current	0.1	mA	T_J = 25°C	V_R = rated V_R
	(Per Leg) See Fig. 2 ①	7.5	mA	T_J = 125°C	
C_T	Max. Junction Capacitance (Per Leg)	70	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)	7700	V/µs		

Thermal-Mechanical Specifications

	Parameters	20CJQ	Units	Conditions
T_J	Max.Junction Temperature Range	-55 to 150	°C	
T_{STG}	Max. Storage Temperature Range	-55 to 150	°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	DC operation — see Fig. 4.
wt	Approximate Weight	0.13(.0045)	g (oz.)	
	Case Style	SOT-223		

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

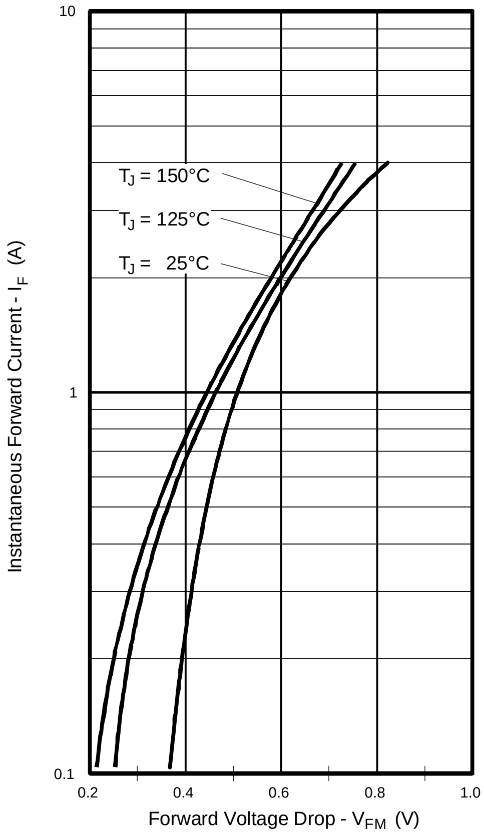


Fig. 1 Max. Forward Voltage Drop Characteristics (Per Leg)

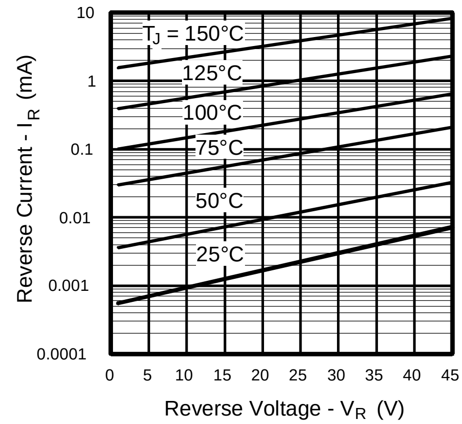


Fig. 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

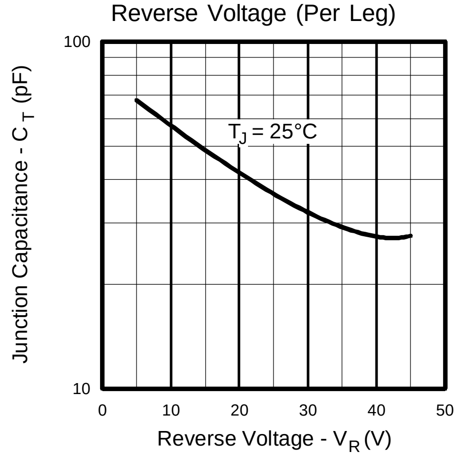


Fig. 3 Typical Junction CapacitanceVs. Reverse Voltage (Per Leg)

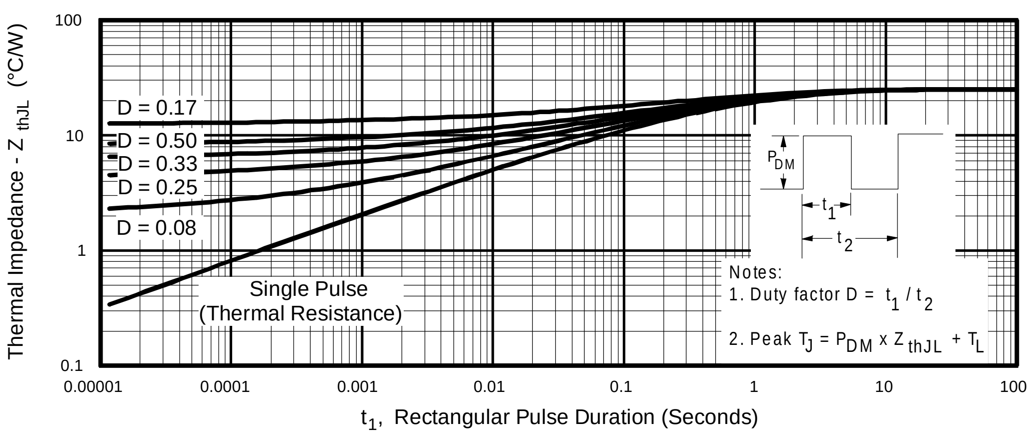


Fig. 4 Max. Thermal Impedance Z_{thJL} Characteristics (Per Leg)

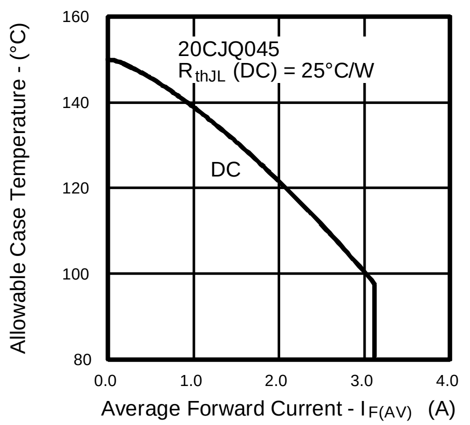


Fig. 5 Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

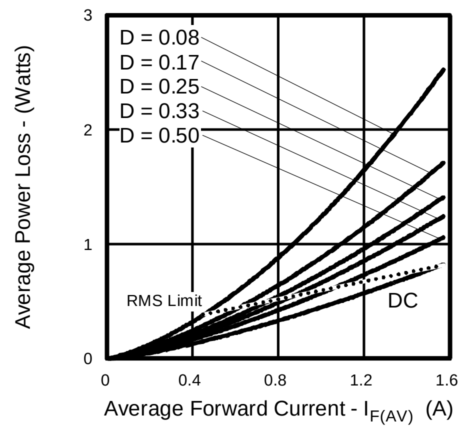


Fig. 6 Forward Power Loss Characteristics (Per Leg)

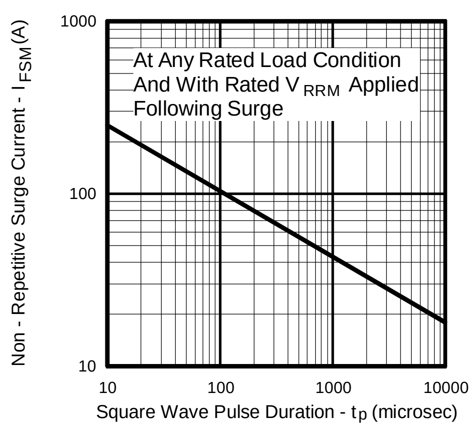


Fig.7 Max. Non-Repetitive Surge Current (Per Leg)

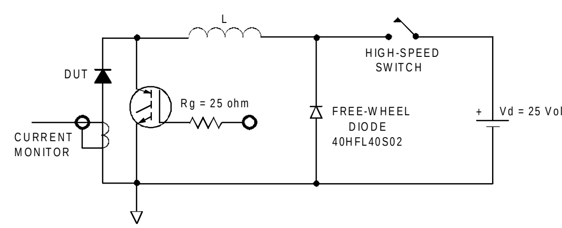


Fig. 8 Unclamped Inductive Test Circuit

Refer to the Appendix Section for the following:

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