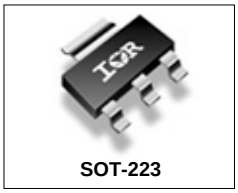
Bulletin PD-20478 rev. F 01/03

International
IOR Rectifier

20CJQ045

SCHOTTKY RECTIFIER

2 Amp



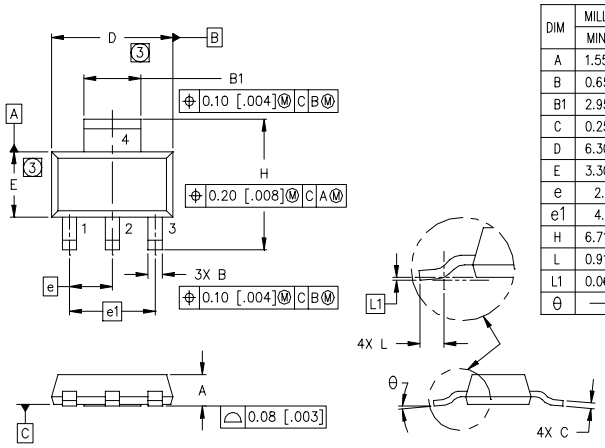
Major Ratings and Characteristics

Characteristics	20CJQ045	Units
$I_{F(AV)}$ Rectangular waveform	2.0	A
V_{RRM}	45	V
I_{FSM} @ tp = 5 µs sine	390	A
V_F @1 Apk, T_J = 125°C (per leg)	0.50	V
T_J range	- 55 to 150	°C

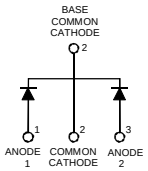
Description/Features

The 20CJQ045 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.

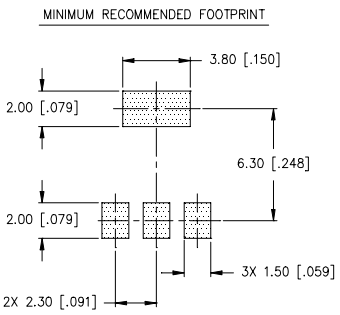
- Small footprint, surface mountable
- Low profile
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Common cathode



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)



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].

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	Values	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward (Per Leg)	2	A	50% duty cycle @ T_C = 126°C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	4		50% duty cycle @ T_C = 102°C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	390	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	23		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	2	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 4 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)	0.54	V	@ 1A	T_J = 25 °C
		0.67	V	@ 2A	
		0.50	V	@ 1A	T_J = 125 °C
		0.65	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	
$V_{F(TO)}$	Threshold Voltage	0.278	V	T_J = T_J max.	
r_t	Forward Slope Resistance	168.4	mΩ		
C_T	Typ. 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	nH	Measured lead to lead 5mm from package body	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	7700	V/ µs		

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

Thermal-Mechanical Specifications

	Parameters	Values	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
wt	Approximate Weight	0.13(.0045)	g (oz.)	
	Case Style	SOT-223		

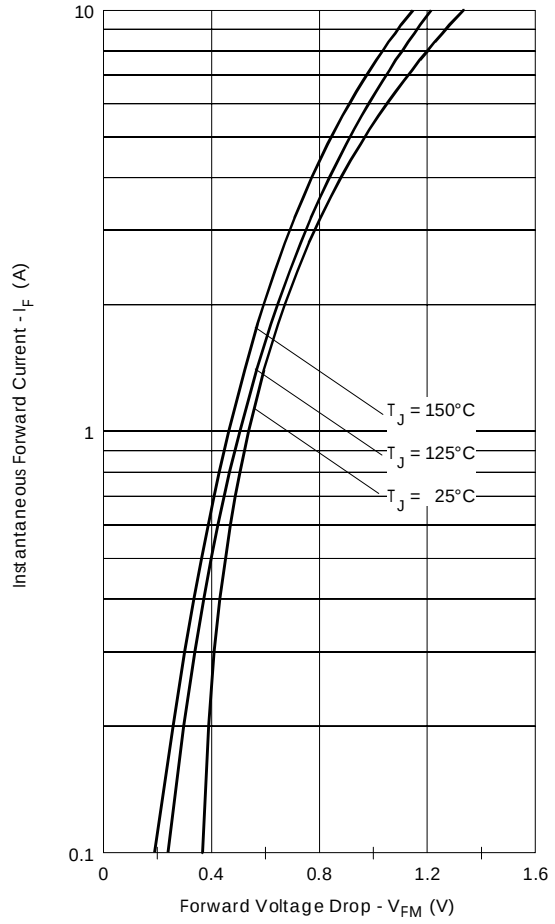


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

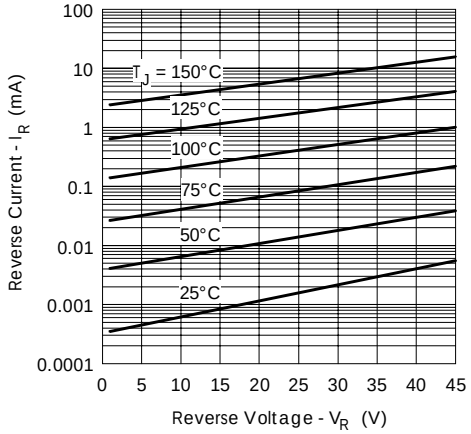


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

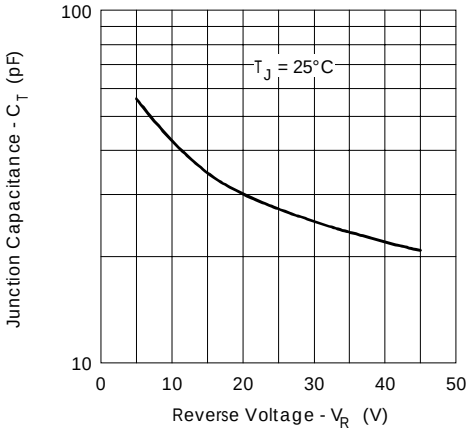


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

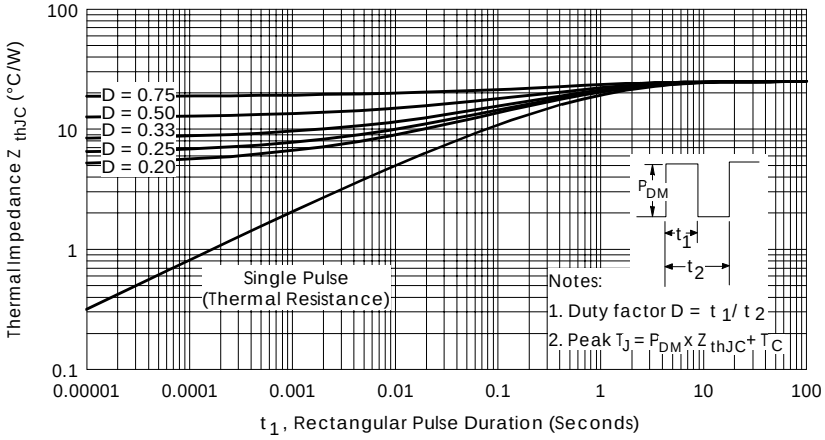


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

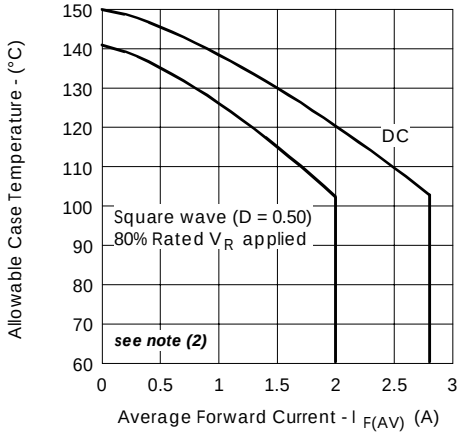


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

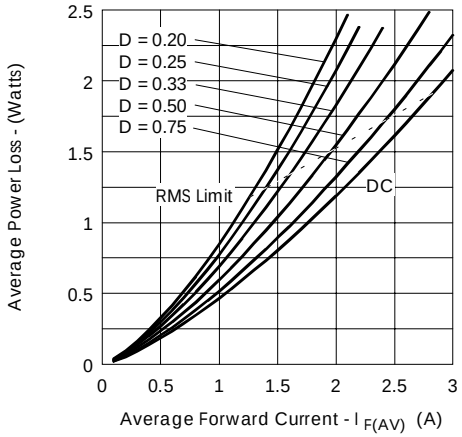


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

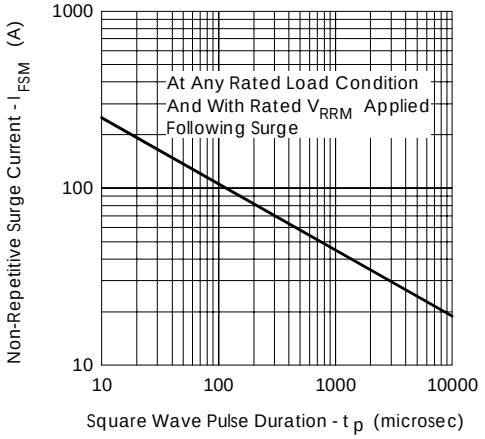


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

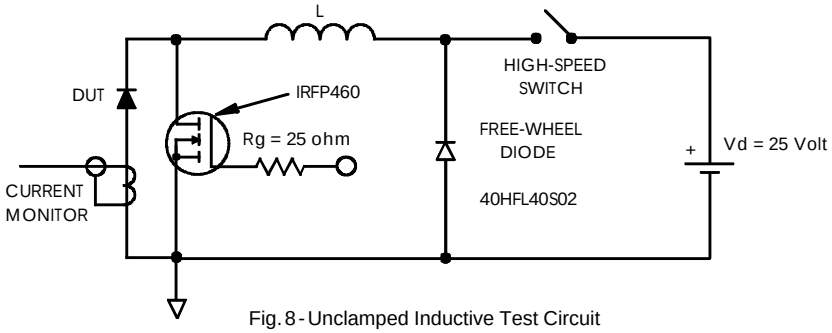
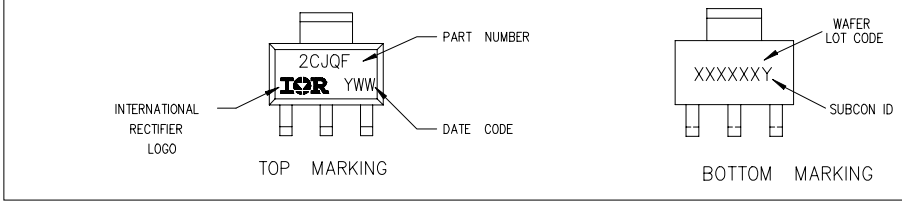


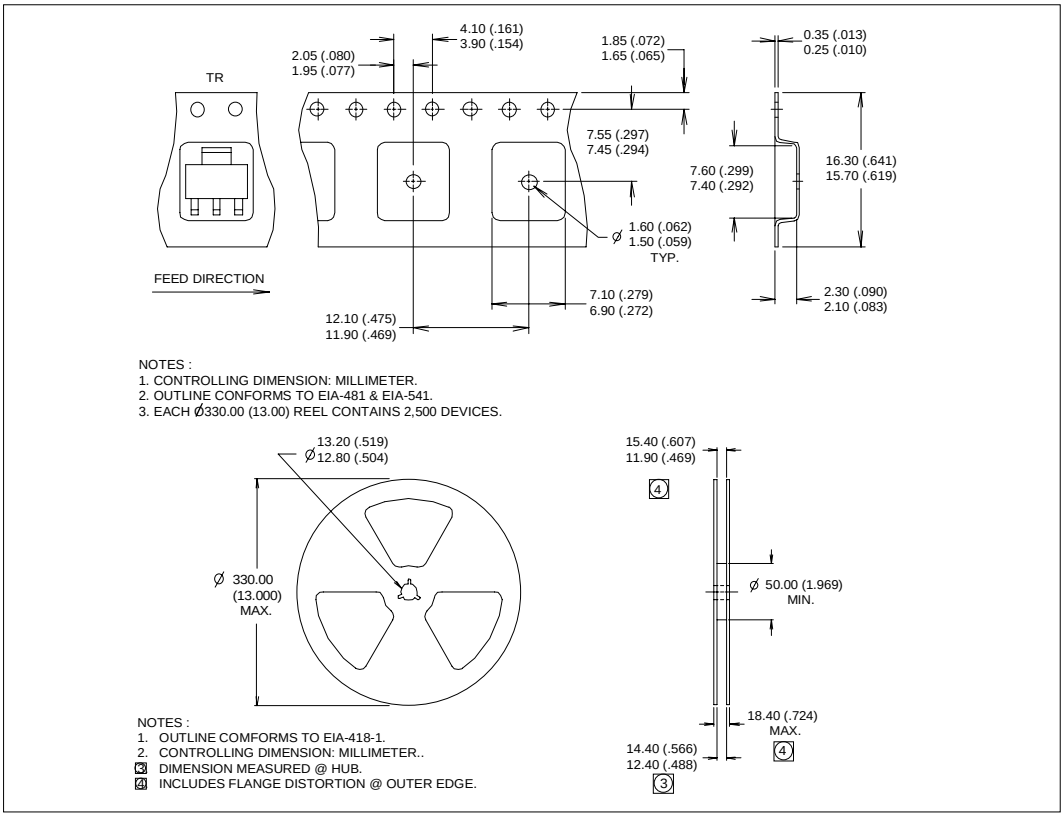
Fig. 8 - Unclamped Inductive Test Circuit

(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

Marking Information



Tape and Reel Information



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.

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