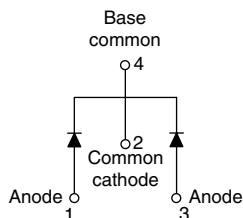


## Schottky Rectifier, 2 x 1 A


**SOT-223**


### FEATURES

- Small foot print, surface mountable
- Low profile
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Common cathode
- Designed and qualified for industrial level

### DESCRIPTION

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, freewheeling diodes, battery charging, and reverse battery protection.

### PRODUCT SUMMARY

$I_{F(AV)}$	2 x 1 A
$V_R$	100 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	2	A
$V_{RRM}$		100	V
$I_{FSM}$	$t_p = 5 \mu s$ sine	380	A
$V_F$	1 Apk, $T_J = 125^\circ C$ (per leg)	0.67	V
$T_J$	Range	- 55 to 175	$^\circ C$

### VOLTAGE RATINGS

PARAMETER	SYMBOL	20CJQ100	UNITS
DC reverse voltage	$V_R$	100	V
Working peak reverse voltage	$V_{RWM}$		

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per leg See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 129^\circ C$ , rectangular waveform	1	A
per device			2	
Maximum peak one cycle non-repetitive surge current per leg See fig. 7	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	380	
		10 ms sine or 6 ms rect. pulse	22	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25^\circ C$ , $I_{AS} = 1 A$ , $L = 2 mH$	1	mJ
Repetitive avalanche current per leg	$I_{AR}$	Current decaying linearly to zero in 1 $\mu s$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical	1	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop per leg See fig. 1	V <sub>FM</sub> <sup>(1)</sup>	1 A	T <sub>J</sub> = 25 °C	0.79	V
		2 A		0.89	
		1 A	T <sub>J</sub> = 125 °C	0.67	
		2 A		0.76	
Maximum reverse leakage current per leg See fig. 2	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>R</sub>	0.1	mA
		T <sub>J</sub> = 125 °C		10	
Typical junction capacitance per leg	C <sub>T</sub>	V <sub>R</sub> = 5 V <sub>DC</sub> (test signal range 100 kHz to 1 MHz) 25 °C		45	pF
Typical series inductance per leg	L <sub>S</sub>	Measured lead to lead 5 mm from package body		6	nH
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub>		10 000	V/μs

**Note**(1) Pulse width < 300  $\mu$ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$		- 55 to 175	$^{\circ}\text{C}$
Maximum thermal resistance, junction to ambient	$R_{thJL}$	DC operation	25	$^{\circ}\text{C/W}$
Maximum thermal resistance, junction to lead	$R_{thJA}$		65	
Approximate weight			0.13	g
			0.0045	oz.
Marking device		Case style SOT-223	2CJQJ	

**Note**(1)  $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$  thermal runaway condition for a diode on its own heatsink

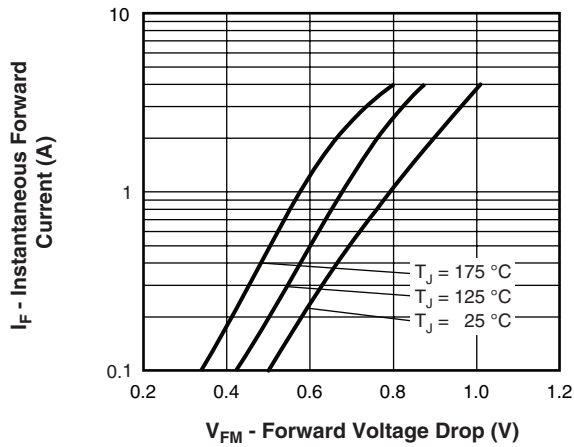


Fig. 1 - Maximum Forward Voltage Drop Characteristics

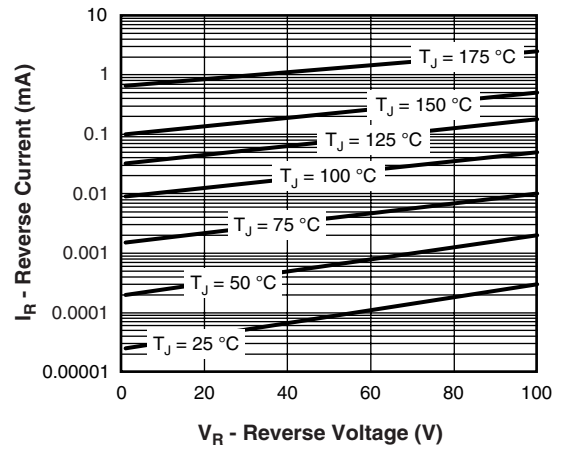


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

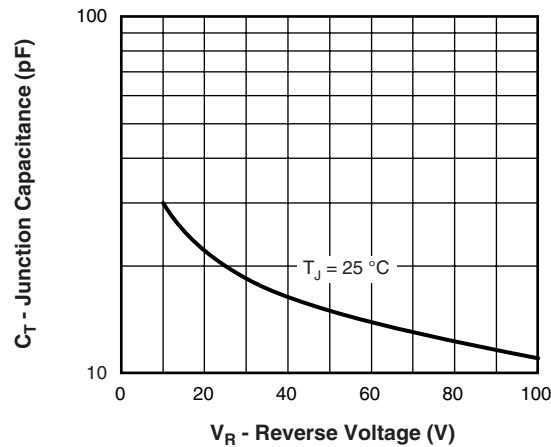
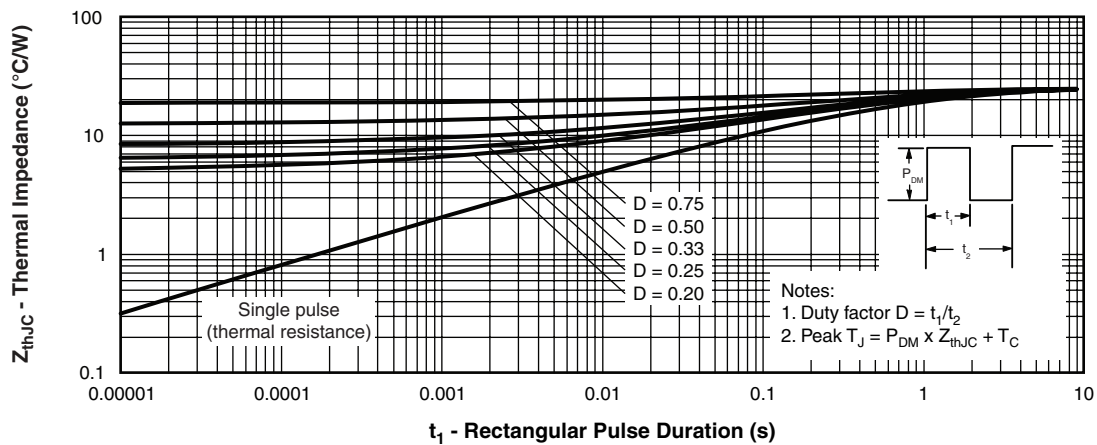


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

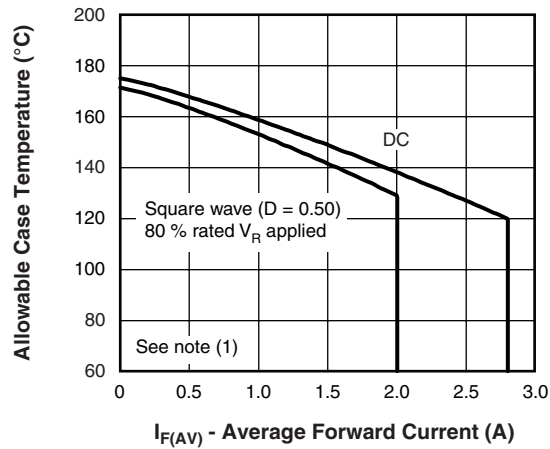


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

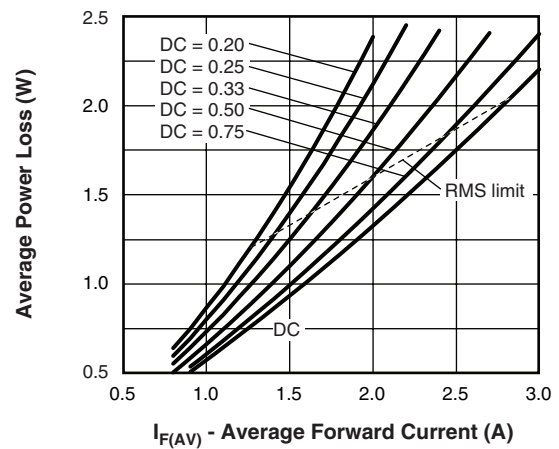


Fig. 6 - Forward Power Loss Characteristics

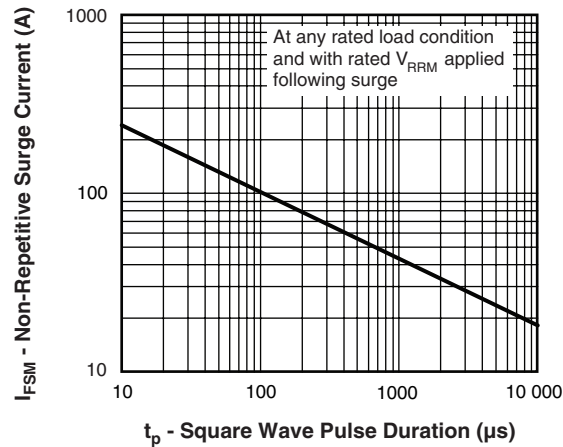


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

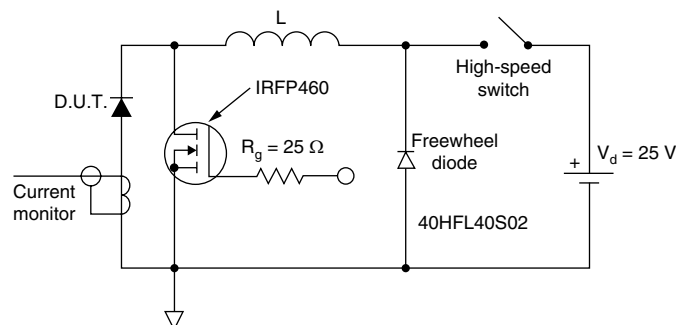


Fig. 8 - Unclamped Inductive Test Circuit

### Note

- (1) Formula used:  $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$ ;  
 $P_d$  = Forward power loss =  $I_{F(AV)} \times V_{FM}$  at  $(I_{F(AV)}/D)$  (see fig. 6);  
 $P_{dREV}$  = Inverse power loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R$  at  $V_{R1} = 80\%$  rated  $V_R$

**ORDERING INFORMATION TABLE**

Device code	<b>2</b>	<b>0</b>	<b>C</b>	<b>J</b>	<b>Q</b>	<b>100</b>	<b>-</b>
	①	②	③	④	⑤	⑥	⑦
<b>1</b>	-	Current rating (2 = 2 A)					
<b>2</b>	-	Schottky rectifier series					
<b>3</b>	-	Circuit configuration: C = Common cathode					
<b>4</b>	-	Package: J = SOT-223					
<b>5</b>	-	Schottky "Q" series					
<b>6</b>	-	Voltage rating (100 = 100 V)					
<b>7</b>	-	• None = Standard production • PbF = Lead (Pb)-free					

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95022">http://www.vishay.com/doc?95022</a>
Part marking information	<a href="http://www.vishay.com/doc?95031">http://www.vishay.com/doc?95031</a>
Packaging information	<a href="http://www.vishay.com/doc?95035">http://www.vishay.com/doc?95035</a>



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