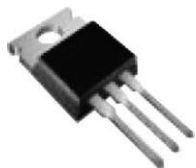
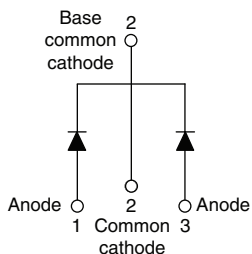


Schottky Rectifier, 20 A



TO-220AB


FEATURES

- 150 °C T_J operation
- Center tap package
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level


RoHS*
COMPLIANT

PRODUCT SUMMARY

$I_{F(AV)}$	20 A
V_R	100 V

DESCRIPTION

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform (per device)	20	A
V_{RRM}		100	V
I_{FRM}	$T_C = 133\text{ °C}$ (per leg)	20	A
I_{FSM}	$t_p = 5\text{ }\mu\text{s}$ sine	850	
V_F	10 Apk, $T_J = 125\text{ °C}$	0.65	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR20100CTKPbF	UNITS
Maximum DC reverse voltage	V_R	100	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 133\text{ °C}$, rated V_R	10	A
			20	
Peak repetitive forward current per leg	I_{FRM}	Rated V_R , square wave, 20 kHz, $T_C = 133\text{ °C}$	20	
Non-repetitive peak surge current	I_{FSM}	5 μs sine or 3 μs rect. pulse	850	
		Following any rated load condition and with rated V_{RRM} applied	150	
Peak repetitive reverse surge current	I_{RRM}	2.0 μs , 1.0 kHz	0.5	mJ
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25\text{ °C}$, $I_{AS} = 2\text{ A}$, $L = 12\text{ mH}$	24	

* Pb containing terminations are not RoHS compliant, exemptions may apply

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop	$V_{FM}^{(1)}$	10 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.80	V	
		20 A		0.95		
		10 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.65		0.80
		20 A				
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	Rated DC voltage	0.10	mA	
		$T_J = 125\text{ }^{\circ}\text{C}$		6		
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.433	V	
Forward slope resistance	r_t			15.8	mΩ	
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		400	pF	
Typical series inductance	L_S	Measured from top of terminal to mounting plane		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/μs	

Note

(1) Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range	T _J		- 65 to 150	°C
Maximum storage temperature range	T _{Stg}		- 65 to 175	
Maximum thermal resistance, junction to case per leg	R _{thJC}	DC operation	2.0	°C/W
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased (Only for TO-220)	0.50	
Maximum thermal resistance, junction to ambient	R _{thJA}	DC operation (For D ² PAK and TO-262)	50	
Approximate weight			2	g
			0.07	oz.
Mounting torque	minimum	Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Device marking		TO-220 package style	MBR20100CTK	

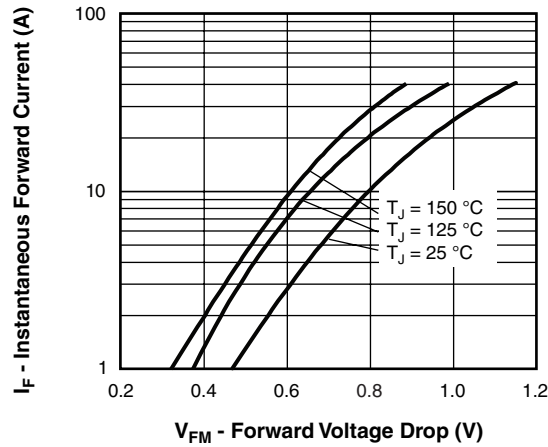


Fig. 1 - Maximum Forward Voltage Drop Characteristics
(Per Leg)

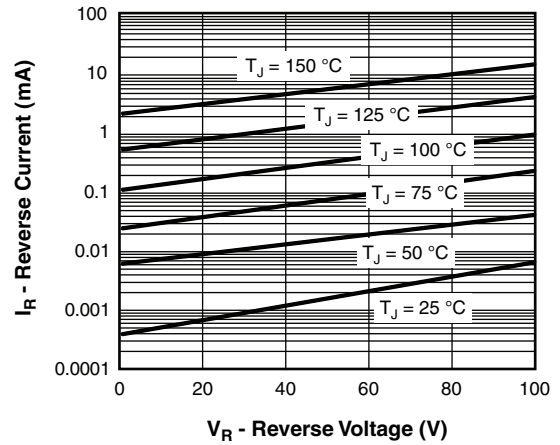


Fig. 2 - Typical Values of Reverse Current vs.
Reverse Voltage (Per Leg)

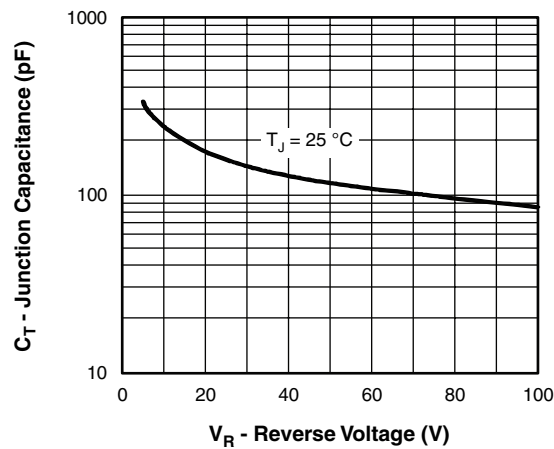


Fig. 3 - Typical Junction Capacitance vs.
Reverse Voltage (Per Leg)

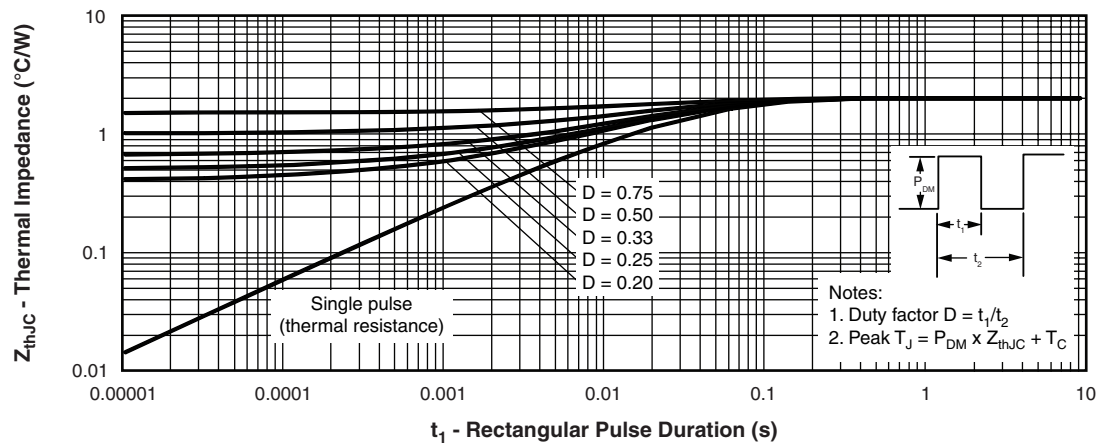


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

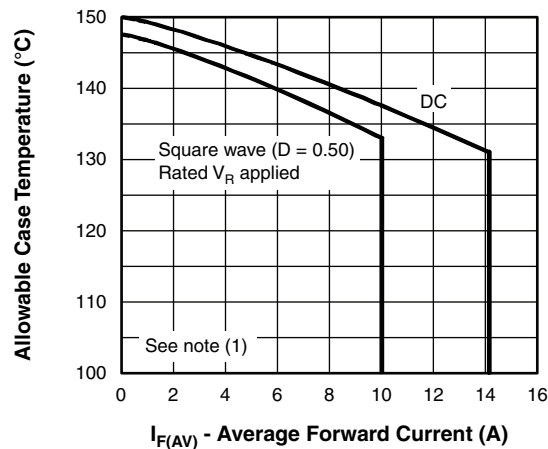


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

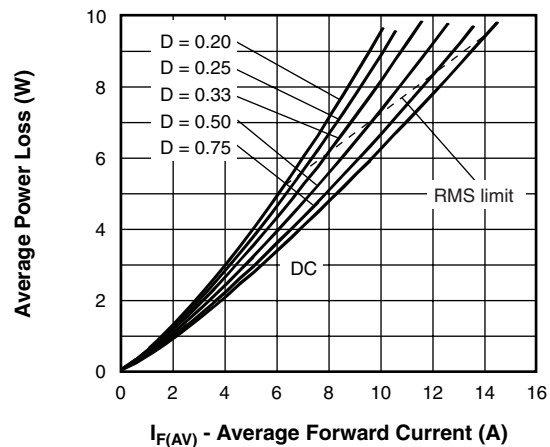


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

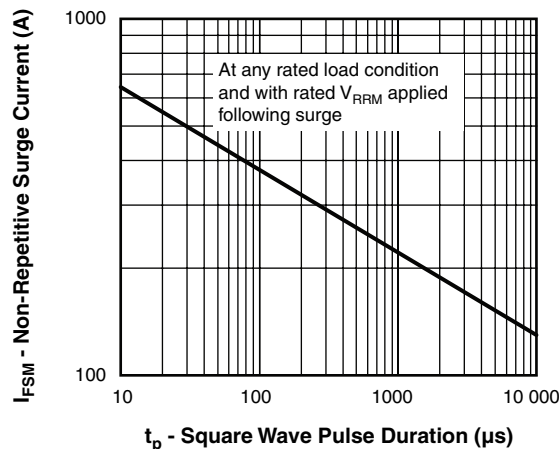


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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

**ORDERING INFORMATION TABLE**

Device code	MBR	20	100	CT	K	PbF
	1	2	3	4	5	6

- | | | |
|----------|---|------------------------------|
| 1 | - | MBR series |
| 2 | - | Current rating (20 = 20 A) |
| 3 | - | Voltage rating (100 = 100 V) |
| 4 | - | CT = Center tap (dual) |
| 5 | - | K = Schottky generation |
| 6 | - | PbF = Lead (Pb)-free |

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95222
Part marking information	http://www.vishay.com/doc?95215



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