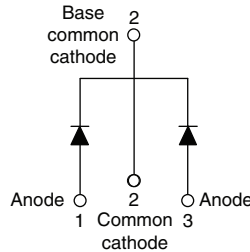


Schottky Rectifier, 2 x 10 A



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
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level



RoHS
COMPLIANT

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 10 A
V_R	80 V to 100 V

DESCRIPTION

This center tap Schottky rectifier series 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}		80 to 100	V
I_{FRM}	$T_C = 133\text{ °C}$ (per leg)	20	A
I_{FSM}	$t_p = 5\ \mu\text{s}$ sine	850	A
V_F	10 Apk, $T_J = 125\text{ °C}$	0.65	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR2080CTKPbF	MBR2090CTKPbF	MBR20100CTKPbF	UNITS
Maximum DC reverse voltage	V_R	80	90	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	A
Non-repetitive peak surge current	I_{FSM}	5 μs sine or 3 μs rect. pulse	850	
		Surge applied at rated load conditions half wave, single phase, 60 Hz	150	
Peak repetitive reverse surge current	I_{RRM}	2.0 μs , 1.0 kHz	0.5	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25\text{ °C}$, $I_{AS} = 2\text{ A}$, $L = 12\text{ mH}$	24	mJ

MBR20...CTKPbF Series

Vishay High Power Products

Schottky Rectifier,
2 x 10 A



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	
		20 A		0.80	
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	$V_{F(TO)}$	$T_J = T_J$ maximum		0.433	V
Forward slope resistance	r_t			15.8	m Ω
Maximum junction capacitance	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$		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	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}			- 65 to 175	
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation		2.0	$^\circ\text{C}/\text{W}$
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased		0.50	
Approximate weight				2	g
				0.07	oz.
Mounting torque	<div style="display: flex; justify-content: space-between; width: 100%;"> minimum maximum </div>		Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
				12 (10)	
Marking device		Case style TO-220AB		MBR2080CTK	
				MBR2090CTK	
				MBR20100CTK	

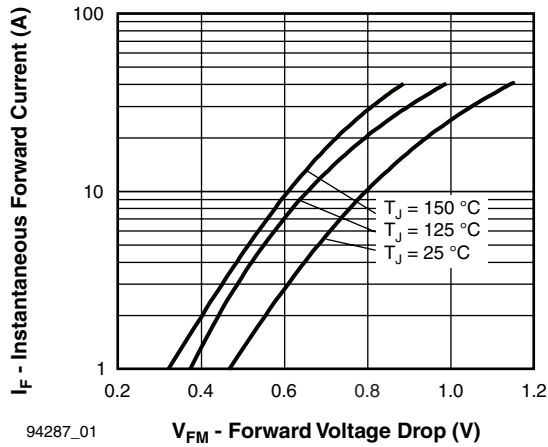


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

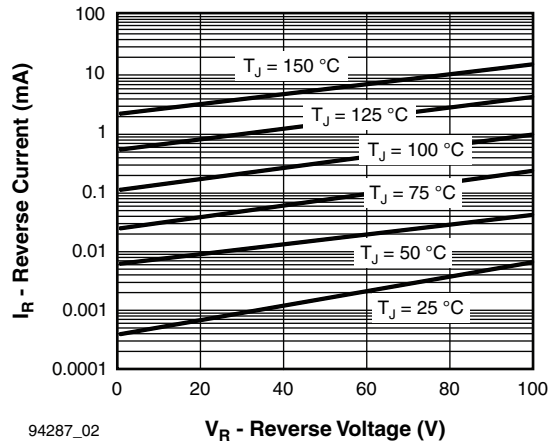


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

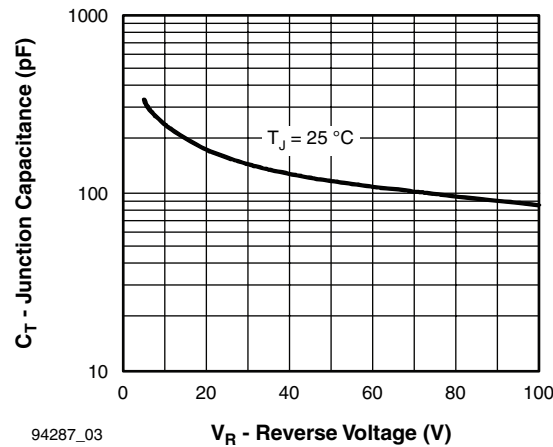


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

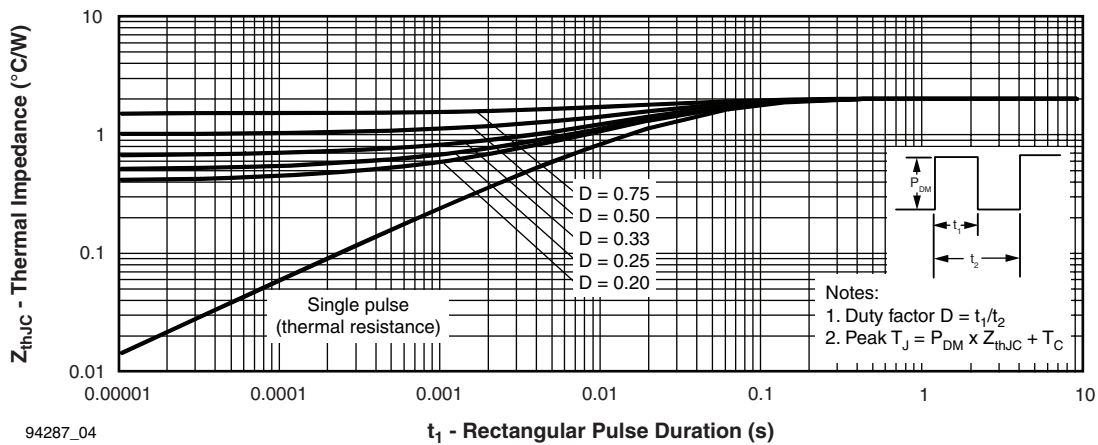
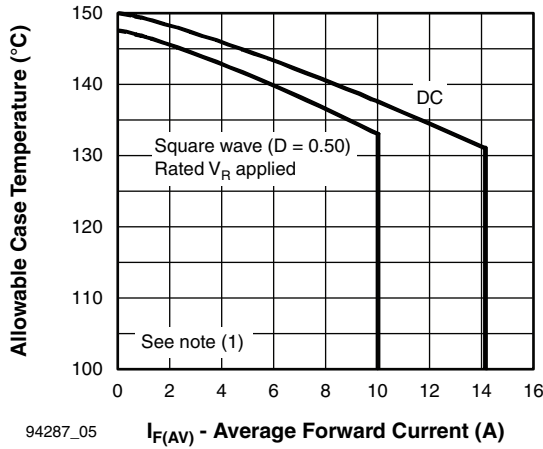
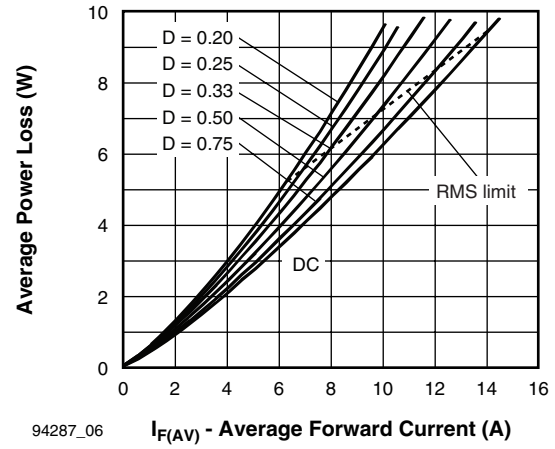


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)



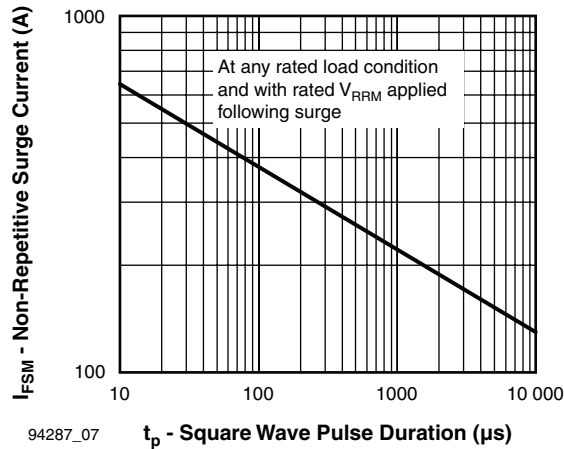
94287_05 $I_{F(AV)}$ - Average Forward Current (A)

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



94287_06 $I_{F(AV)}$ - Average Forward Current (A)

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



94287_07 t_p - Square Wave Pulse Duration (μ s)

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

Note

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

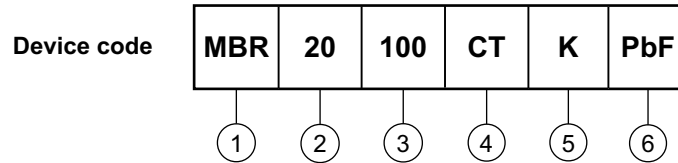


MBR20...CTKPbF Series

Schottky Rectifier,
2 x 10 A

Vishay High Power Products

ORDERING INFORMATION TABLE



- 1** - MBR series
- 2** - Current rating (20 = 20 A)
- 3** - Voltage rating

80 = 80 V
90 = 90 V
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	www.vishay.com/doc?95222
Part marking information	www.vishay.com/doc?95225



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