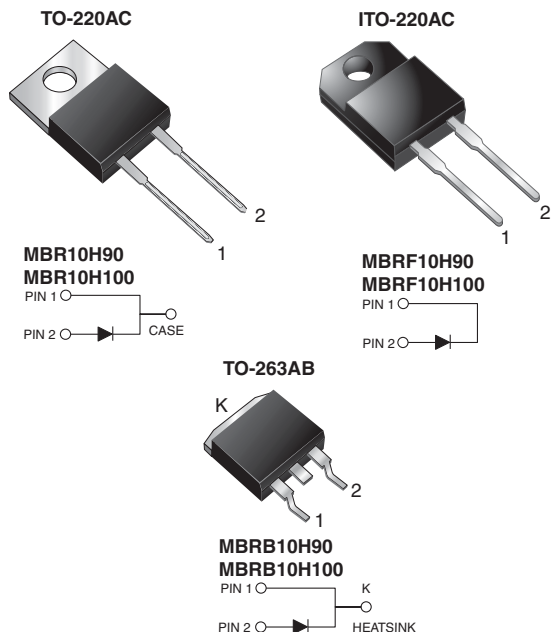


High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, or polarity protection application.

MECHANICAL DATA

Case: TO-220AC, ITO-220AC, TO-263AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	90 V to 100 V
I_{FSM}	250 A
V_F	0.64 V
I_R	4.5 μ A
T_J max.	175 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	MBR10H90	MBR10H100	UNIT
Maximum repetitive peak reverse voltage	V _{RRM}	90	100	V
Working peak reverse voltage	V _{RWM}	90	100	
Maximum DC blocking voltage	V _{DC}	90	100	
Maximum average forward rectified current	I _{F(AV)}	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	250		
Peak repetitive reverse current at t _p = 2.0 μs, 1 kHz	I _{RRM}	0.5		
Voltage rate of change (rated V _R)	dV/dt	10 000		V/μs
Operating junction and storage temperature range	T _J , T _{STG}	-65 to +175		°C
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V _{AC}	1500		V



ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
Maximum instantaneous forward voltage	$V_F^{(1)}$	$I_F = 10\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	0.77	V
		$I_F = 10\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$	0.64	
		$I_F = 20\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	0.88	
		$I_F = 20\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$	0.73	
Maximum reverse current	$I_R^{(2)}$	Rated V_R	$T_J = 25\text{ }^{\circ}\text{C}$	4.5	μA
			$T_J = 125\text{ }^{\circ}\text{C}$	6.0	mA

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.7	5.8	2.7	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR10H100-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF10H100-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB10H100-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB10H100-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	MBR10H100HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	MBRF10H100HE3/45 ⁽¹⁾	1.94	45	50/tube	Tube
TO-263AB	MBRB10H100HE3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	MBRB10H100HE3/81 ⁽¹⁾	1.33	81	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES ($T_C = 25^\circ\text{C}$ unless otherwise noted)

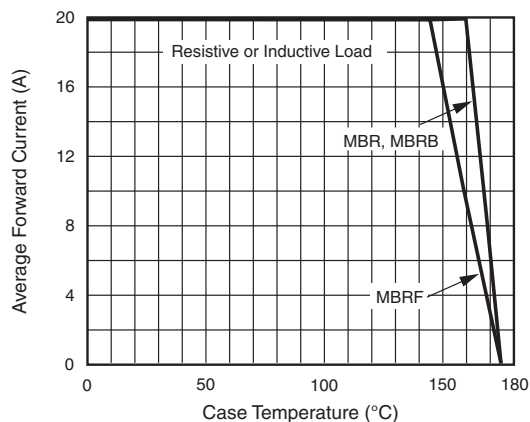


Fig. 1 - Forward Current Derating Curve

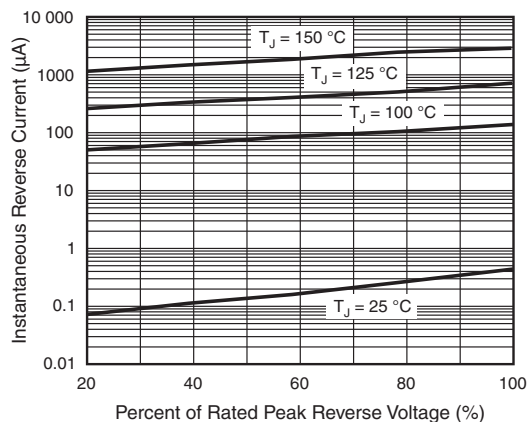


Fig. 4 - Typical Reverse Characteristics

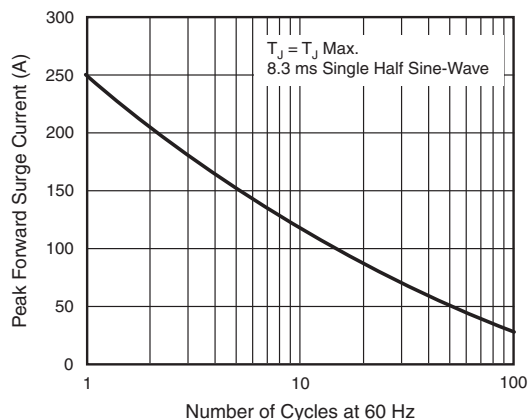


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

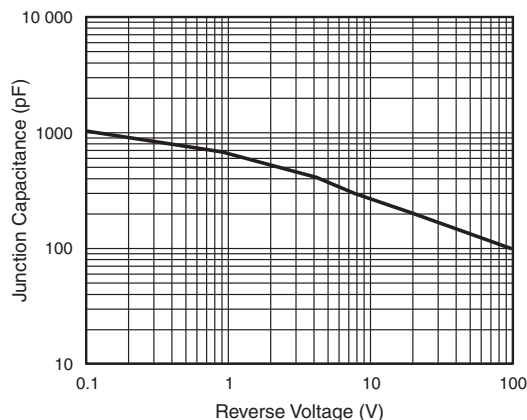


Fig. 5 - Typical Junction Capacitance

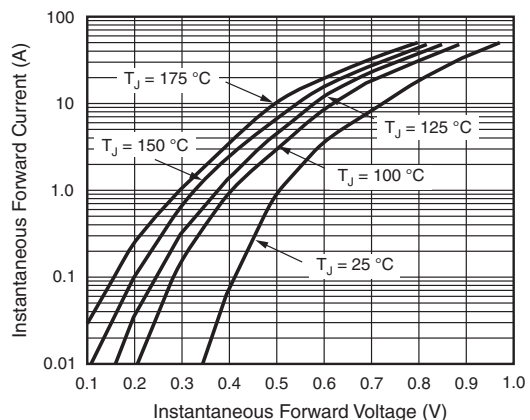


Fig. 3 - Typical Instantaneous Forward Characteristics

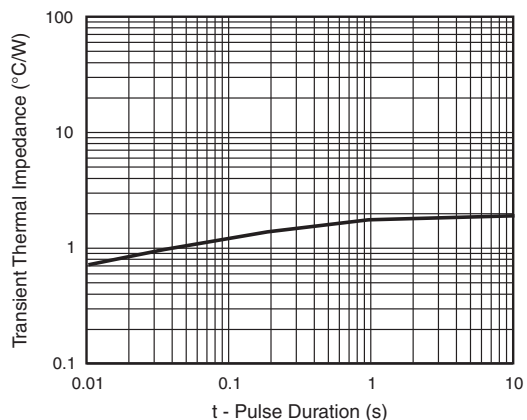
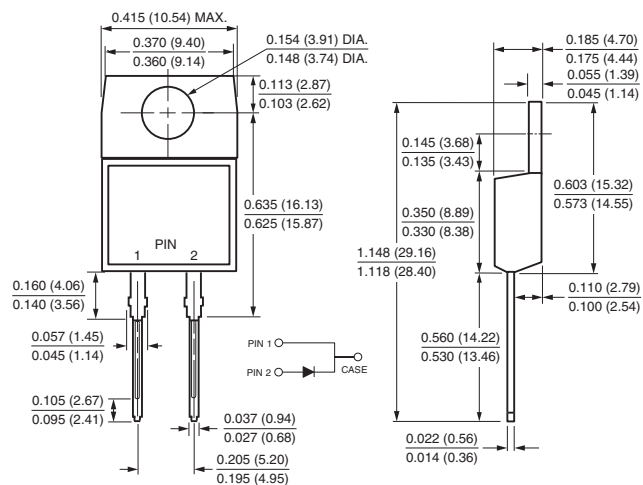


Fig. 6 - Typical Transient Thermal Impedance

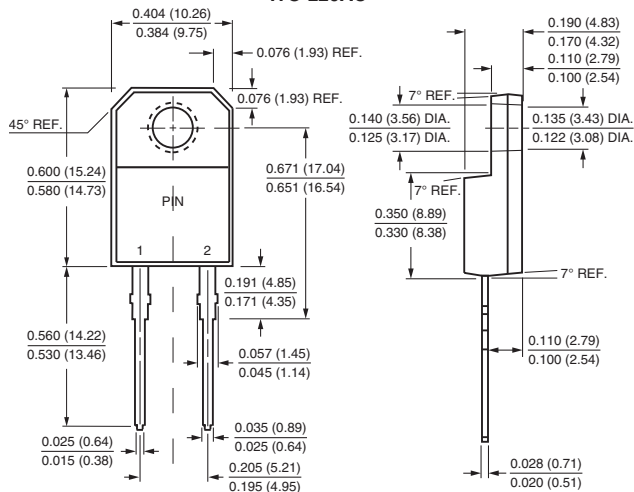


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

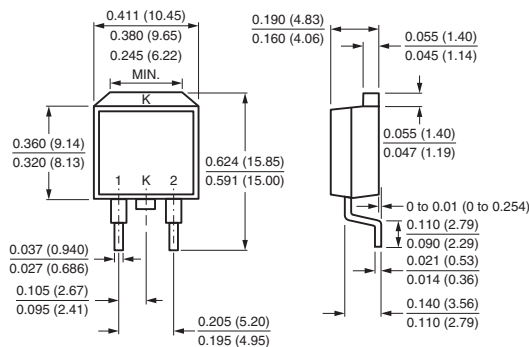
TO-220AC



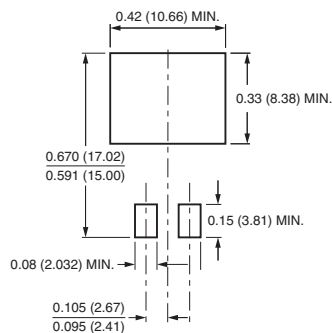
ITO-220AC



TO-263AB



Mounting Pad Layout





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