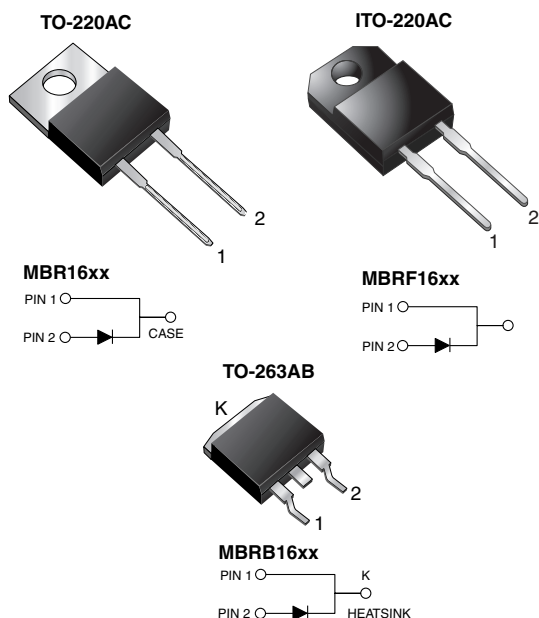


Schottky Barrier Rectifier



FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- 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_A
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and 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
Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified
("X" denotes revision code, e.g. A, B, ...)

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

$I_{F(AV)}$	16 A
V_{RRM}	35 V to 60 V
I_{FSM}	150 A
V_F	0.57 V, 0.65 V
$T_J \text{ max.}$	150 °C
Package	TO-220AC, ITO-220AC, TO-263AB
Diode variations	Single die

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

PARAMETER	SYMBOL	MBR1635	MBR1645	MBR1660	UNIT
Maximum repetitive peak reverse voltage	V _{RRM}	35	45	60	V
Working peak reverse voltage	V _{RWM}	35	45	60	
Maximum DC blocking voltage	V _{DC}	35	45	60	
Maximum average forward rectified current at T _C = 125 °C	I _{F(AV)}	16			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	150			
Peak repetitive reverse current at t _p = 2.0 μs, 1 kHz	I _{RRM}	1.0		0.5	
Voltage rate of change (rated V _R)	dV/dt	10 000			V/μs
Operating junction temperature range	T _J	-65 to +150			°C
Storage temperature range	T _{STG}	-65 to +175			
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V _{AC}	1500			V



ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	TEST CONDITIONS		MBR1635	MBR1645	MBR1660	UNIT
Maximum instantaneous forward voltage	V _F ⁽¹⁾	I _F = 16 A	T _C = 25 °C	0.63		0.75	V
		I _F = 16 A	T _C = 125 °C	0.57		0.65	
Maximum instantaneous reverse current at DC blocking voltage	I _R ⁽¹⁾	Rated V _R	T _C = 25 °C	0.2		1.0	mA
			T _C = 125 °C	40		50	

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 from junction to case	$R_{\theta JC}$	1.5	3.0	1.5	$^{\circ}\text{C/W}$

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR1645-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF1645-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB1645-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB1645-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	MBR1645HE3/45 ⁽¹⁾	1.80	45	50/tube	Tube
ITO-220AC	MBRF1645HE3/45 ⁽¹⁾	1.94	45	50/tube	Tube
TO-263AB	MBRB1645HE3/45 ⁽¹⁾	1.33	45	50/tube	Tube
TO-263AB	MBRB1645HE3/81 ⁽¹⁾	1.33	81	800/reel	Tape and reel
TO-263AB	MBRB1645HE3_A/P ⁽¹⁾	1.33	P	50/tube	Tube
TO-263AB	MBRB1645HE3_A/I ⁽¹⁾	1.33	I	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified



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

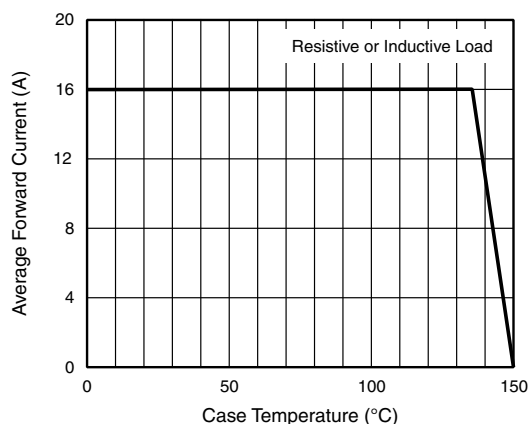


Fig. 1 - Forward Current Derating Curve

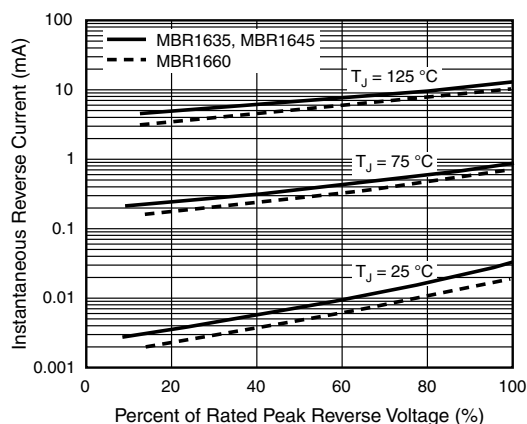


Fig. 4 - Typical Reverse Characteristics

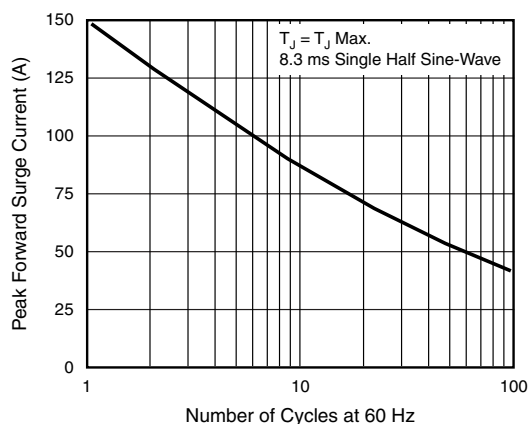


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

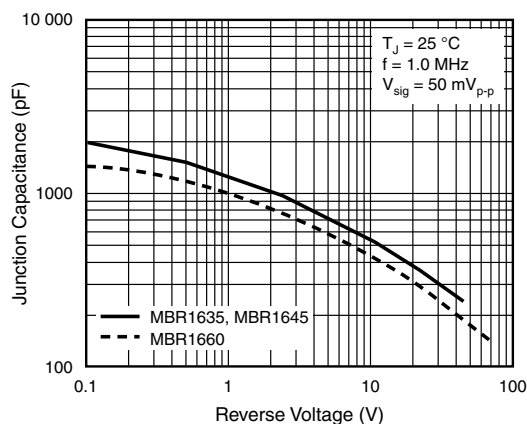


Fig. 5 - Typical Junction Capacitance

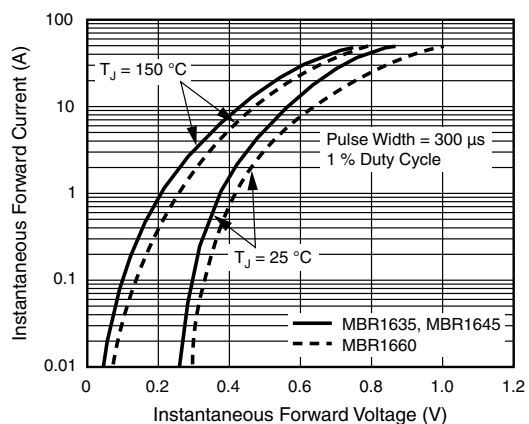


Fig. 3 - Typical Instantaneous Forward Characteristics

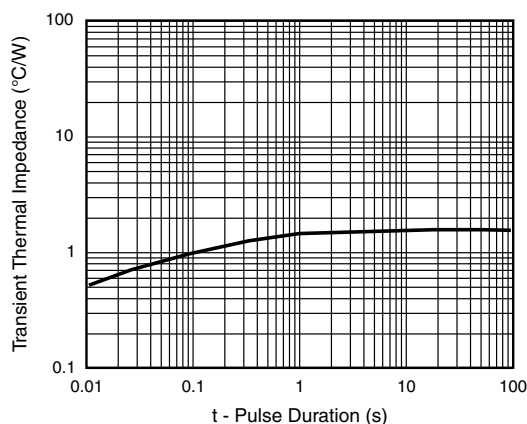
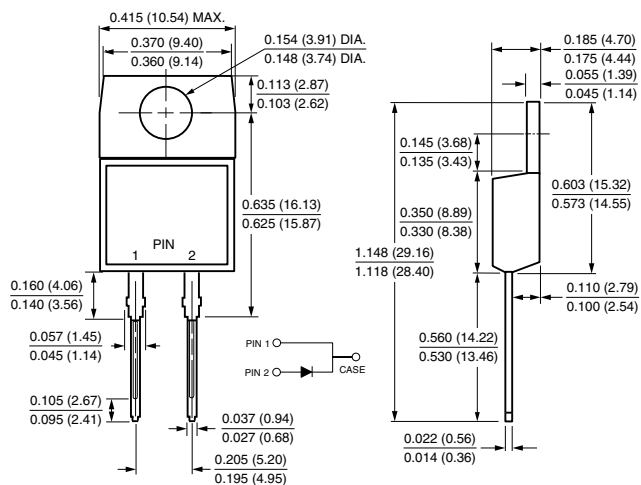


Fig. 6 - Typical Transient Thermal Impedance

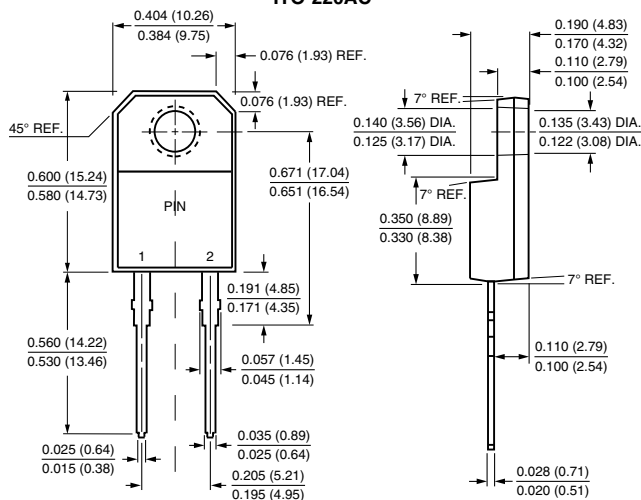


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

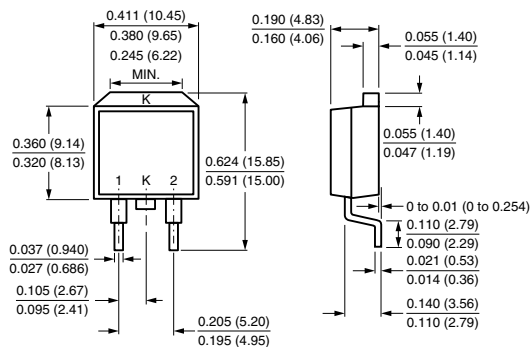
TO-220AC



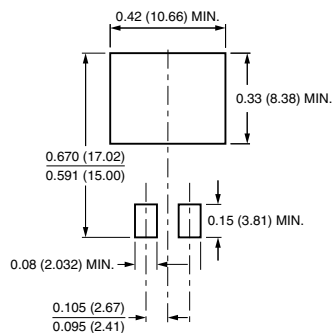
ITO-220AC



TO-263AB



Mounting Pad Layout





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