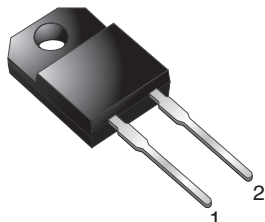
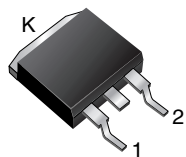


## Schottky Barrier Rectifier

**ITO-220AC**

**MBRF16xx**

**D<sup>2</sup>PAK (TO-263AB)**

**MBRB16xx**


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
Available

### 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 D<sup>2</sup>PAK (TO-263AB) package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for ITO-220AC package)
- AEC-Q101 qualified available
  - Automotive ordering code:
  - Base P/NHE3 (for ITO-220AC)
  - Base P/NHM3 (for D<sup>2</sup>PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### 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:** ITO-220AC, D<sup>2</sup>PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3\_X - RoHS-compliant, AEC-Q101 qualified  
("X" denotes revision code, e.g. A, B, ...)

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free, AEC-Q101 qualified

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

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 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
$T_J$ max.	150 °C
Package	ITO-220AC, D <sup>2</sup> PAK (TO-263AB)
Circuit configuration	Single

**MAXIMUM RATINGS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	MBRF1635	MBRB1645 MBRF1645	MBRB1660	UNIT
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	35	45	60	V
Working peak reverse voltage	V <sub>RWM</sub>	35	45	60	
Maximum DC blocking voltage	V <sub>DC</sub>	35	45	60	
Maximum average forward rectified current at T <sub>C</sub> = 125 °C	I <sub>F(AV)</sub>	16			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150			
Peak repetitive reverse current at t <sub>p</sub> = 2.0 μs, 1 kHz	I <sub>RRM</sub>	1.0		0.5	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000			V/μs
Operating junction temperature range	T <sub>J</sub>	-65 to +150			°C
Storage temperature range	T <sub>STG</sub>	-65 to +175			
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	V <sub>AC</sub>	1500			V

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS		MBRF1635	MBRB1645 MBRF1645	MBRB1660	UNIT
Maximum instantaneous forward voltage	$V_F^{(1)}$	$I_F = 16\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	0.63		0.75	V
		$I_F = 16\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$	0.57		0.65	
Maximum instantaneous reverse current at DC blocking voltage	$I_R^{(1)}$	Rated $V_R$	$T_C = 25\text{ }^{\circ}\text{C}$	0.2		1.0	mA
			$T_C = 125\text{ }^{\circ}\text{C}$	40		50	

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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	MBRF	MBRB	UNIT
Typical thermal resistance from junction to case	$R_{\theta JC}$	3.0	1.5	$^{\circ}\text{C/W}$

**ORDERING INFORMATION** (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ITO-220AC	MBRF1645-E3/45	1.94	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	MBRB1645-M3/I	1.33	I	800/reel	Tape and reel
ITO-220AC	MBRF1645HE3_A/P <sup>(1)</sup>	1.94	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	MBRB1645HM3/I <sup>(1)</sup>	1.33	I	800/reel	Tape and reel

**Note**

(1) AEC-Q101 qualified



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

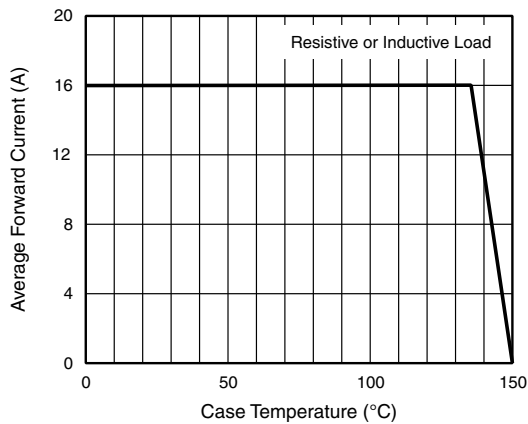


Fig. 1 - Forward Current Derating Curve

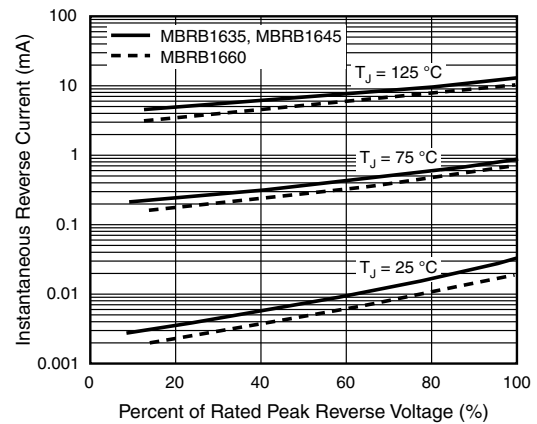


Fig. 4 - Typical Reverse Characteristics

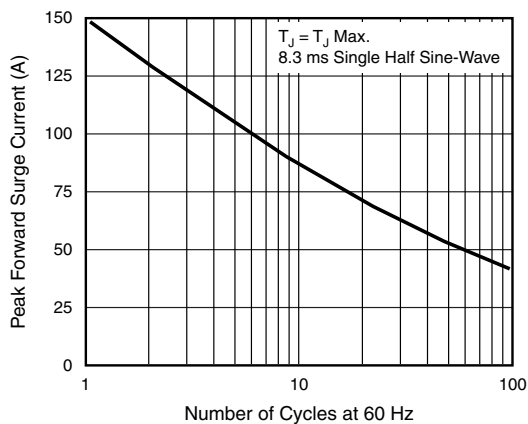


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

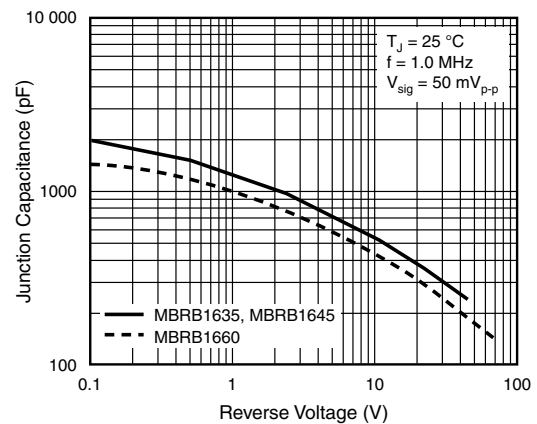


Fig. 5 - Typical Junction Capacitance

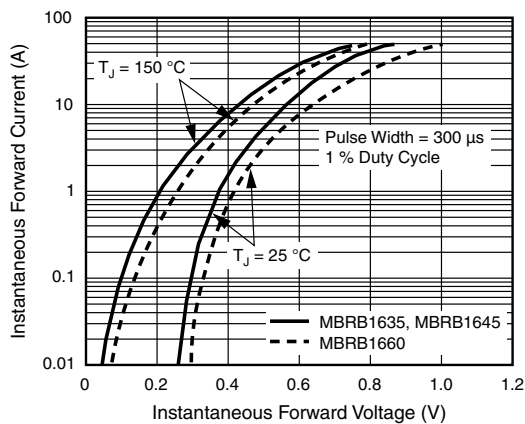


Fig. 3 - Typical Instantaneous Forward Characteristics

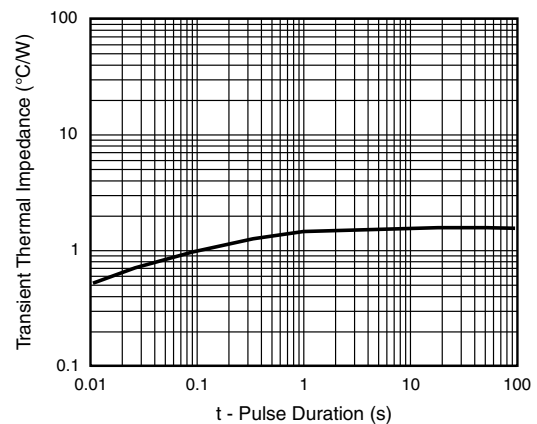
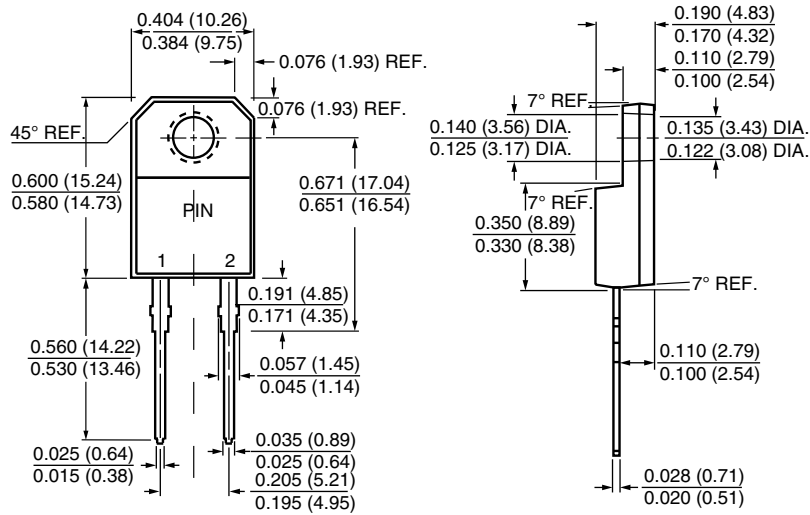


Fig. 6 - Typical Transient Thermal Impedance

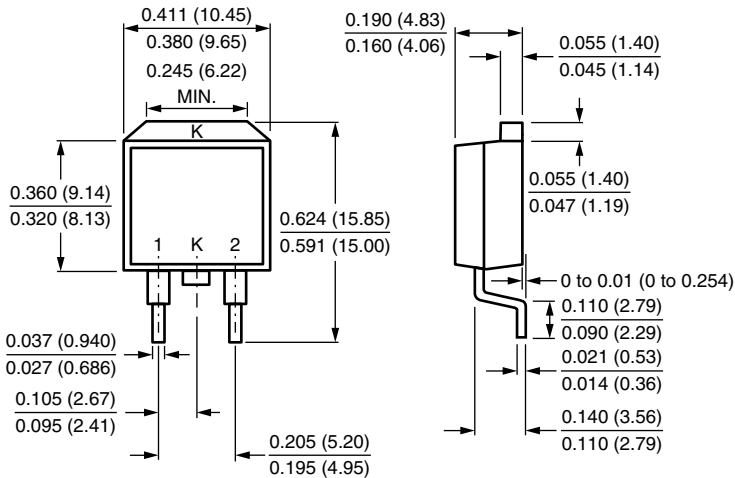


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

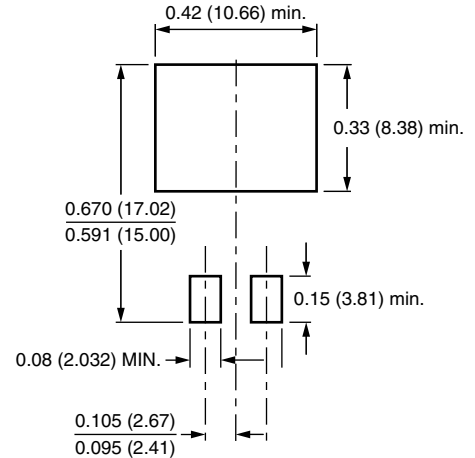
### ITO-220AC



### D<sup>2</sup>PAK (TO-263AB)



### Mounting Pad Layout





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