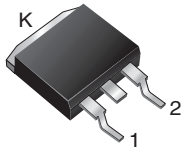
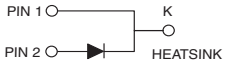
Schottky Barrier Rectifier

High Barrier Technology for Improved High Temperature Performance

D²PAK (TO-263AB)





DESIGN SUPPORT TOOLS

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3D Models Available

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	60 V
I_{FSM}	150 A
V_F	0.61 V
I_R	100 µA
T_J max.	175 °C
Package	D²PAK (TO-263AB)
Circuit configuration	Single

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
- 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: D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating
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
HE3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

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

PARAMETER	SYMBOL	MBRB10H60	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	60	V
Working peak reverse voltage	V_{RWM}	60	
Maximum DC blocking voltage	V_{DC}	60	
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	10	A
Non-repetitive avalanche energy at 25 °C, I_{AS} = 4 A, L = 10 mH	E_{AS}	80	mJ
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150	A
Peak repetitive reverse current at t_p = 2.0 µs, 1 kHz	I_{RRM}	0.5	
Peak non-repetitive reverse energy (8/20 µs waveform)	E_{RSM}	10	mJ
Electrostatic discharge capacitor voltage Human body model: C = 100 pF, R = 1.5 kΩ	V_C	25	kV
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

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ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MBRB10H60**		**UNIT**
				TYP.	**MAX.**	
Maximum instantaneous forward voltage	V_F (1)	I_F = 10 A	T_J = 25 °C	-	0.71	V
		I_F = 10 A	T_J = 125 °C	0.57	0.61	
		I_F = 20 A	T_J = 25 °C	-	0.85	
		I_F = 20 A	T_J = 125 °C	0.68	0.71	
Maximum reverse current	I_R (2)	Rated V_R	T_J = 25 °C	-	100	μA
			T_J = 125 °C	2.0	12	mA

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**MBRB10H60**	**UNIT**
Typical thermal resistance	$R_{\theta JC}$	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-263AB	MBRB10H60HE3_B/P (1)	1.33	P	50/tube	Tube
TO-263AB	MBRB10H60HE3_B/I (1)	1.33	I	800/reel	Tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_C = 25 °C unless otherwise noted)

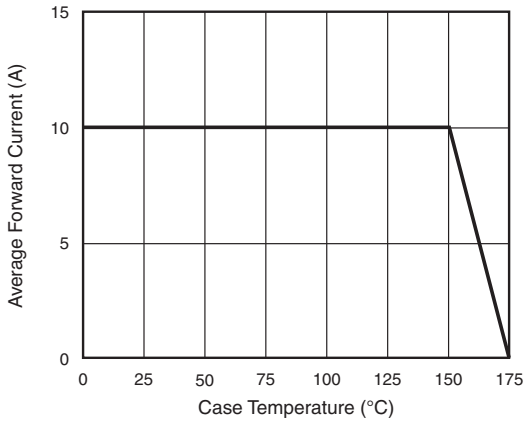

Fig. 1 - Forward Current Derating Curve

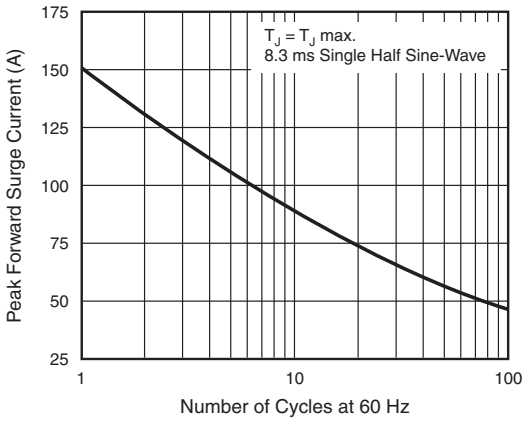

Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

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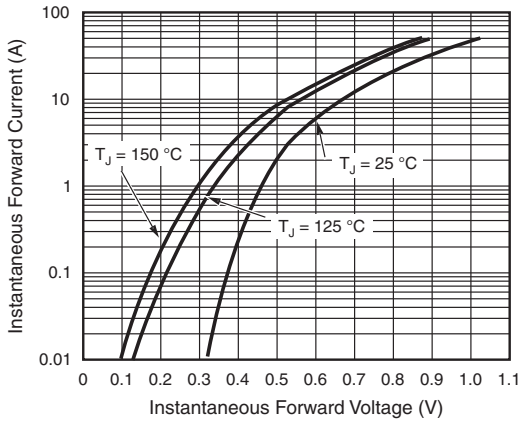


Fig. 3 - Typical Instantaneous Forward Characteristics

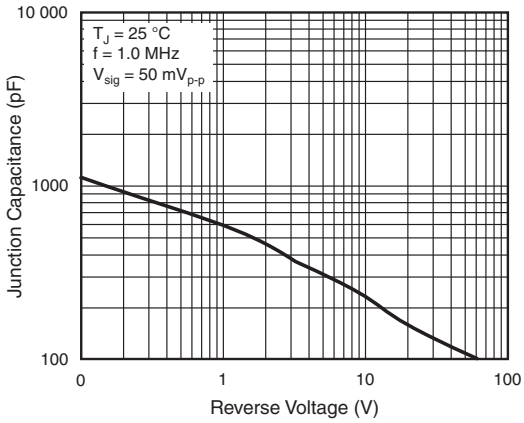


Fig. 5 - Typical Junction Capacitance

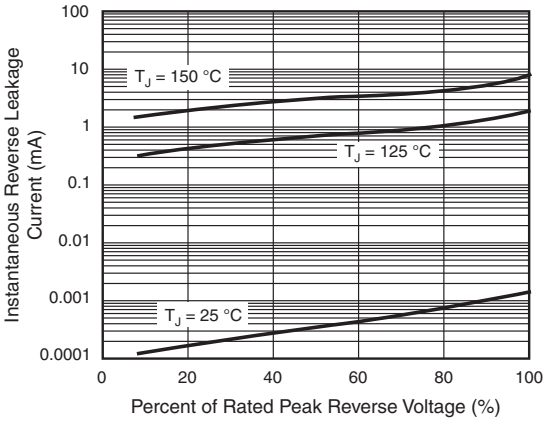


Fig. 4 - Typical Reverse Characteristics

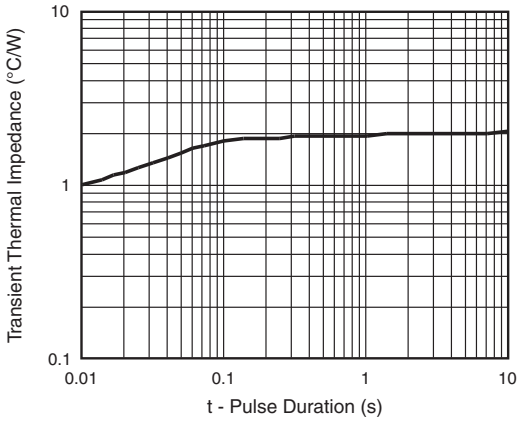
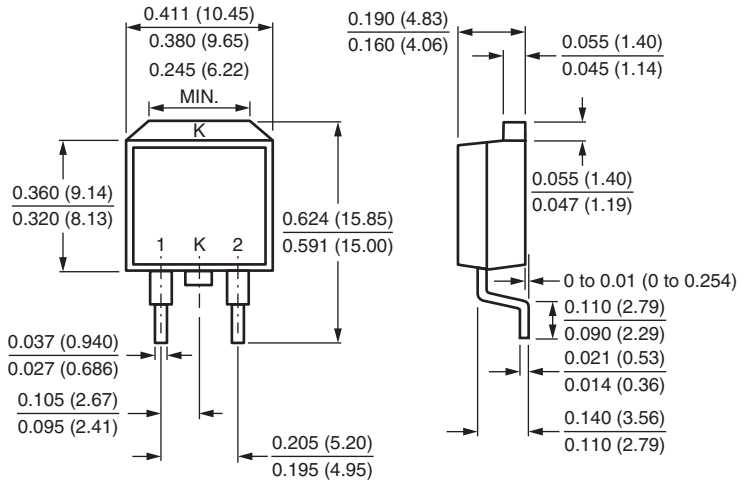


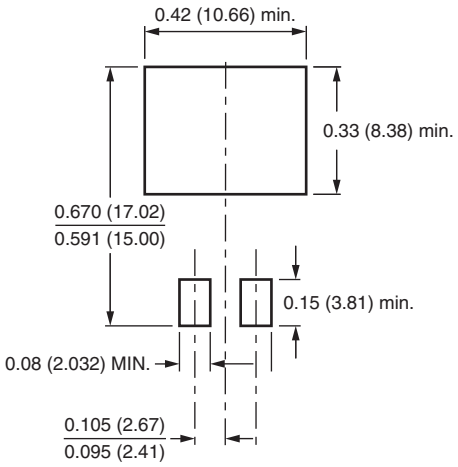
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D^2PAK (TO-263AB)



Mounting Pad Layout



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