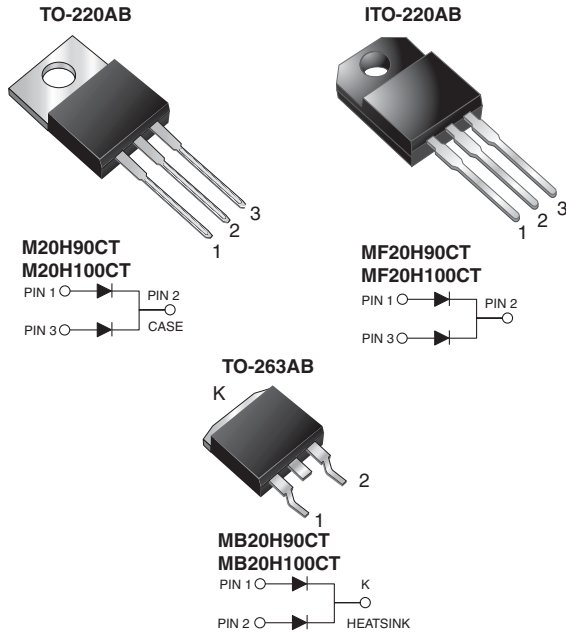


# Dual Common Cathode High Voltage Schottky Rectifier

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-220AB and ITO-220AB package)
- AEC-Q101 qualified available  
 - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://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 and polarity protection application.

## MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, 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	
$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	90 V to 100 V
$I_{FSM}$	250 A
$I_R$	4.5 $\mu$ A
$V_F$	0.64
$T_J$ max.	175 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variations	Dual Common Cathode

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	M20H90CT	M20H100CT	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	$I_{F(AV)}$	total device		A
		per diode		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	250		A
Peak repetitive reverse current per diode at $t_p = 2.0$ $\mu$ s, 1 kHz	$I_{RRM}$	1.0		
Voltage rate of change (rated $V_R$ )	dV/dt	10 000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +175		°C
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1$ min	$V_{AC}$	1500		V



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
Maximum instantaneous forward voltage per diode	$V_F^{(1)}$	$I_F = 10\text{ A}$	$T_C = 25\text{ }^\circ\text{C}$	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 at working peak reverse voltage per diode	$I_R^{(2)}$	Rated $V_R$	$T_J = 25\text{ }^\circ\text{C}$	4.5	$\mu\text{A}$
			$T_J = 125\text{ }^\circ\text{C}$	6.0	mA

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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	M	MF	MB	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	5.8	2.0	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	M20H100CT-E3/45	1.85	45	50/tube	Tube
ITO-220AB	MF20H100CT-E3/45	1.99	45	50/tube	Tube
TO-263AB	MB20H100CT-E3/45	1.35	45	50/tube	Tube
TO-263AB	MB20H100CT-E3/81	1.35	81	800/reel	Tape and reel
TO-220AB	M20H100CTHE3/45 <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MF20H100CTHE3/45 <sup>(1)</sup>	1.99	45	50/tube	Tube
TO-263AB	MB20H100CTHE3/45 <sup>(1)</sup>	1.35	45	50/tube	Tube
TO-263AB	MB20H100CTHE3/81 <sup>(1)</sup>	1.35	81	800/reel	Tape and reel
TO-220AB	M20H100CTHE3_A/P <sup>(1)</sup>	1.85	45	50/tube	Tube
ITO-220AB	MF20H100CTHE3_A/P <sup>(1)</sup>	1.99	45	50/tube	Tube

**Note**

(1) AEC-Q101 qualified



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

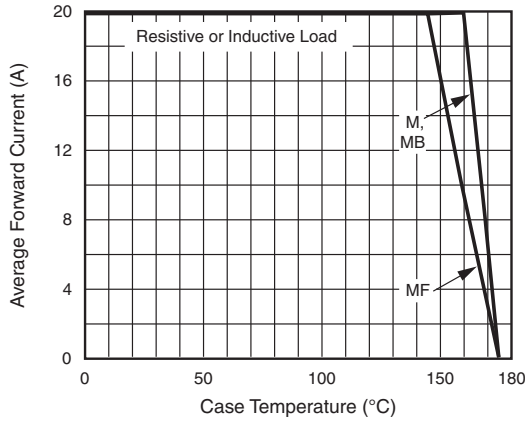


Fig. 1 - Forward Current Derating Curve

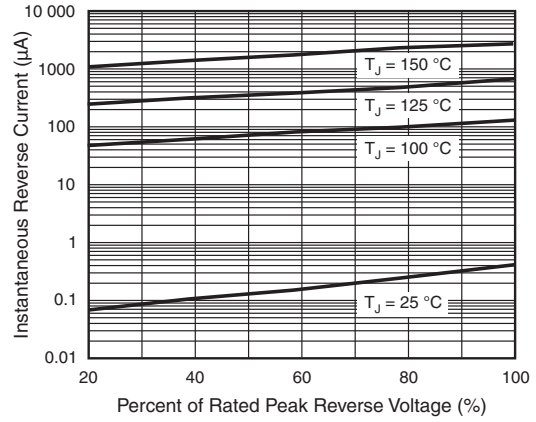


Fig. 4 - Typical Reverse Characteristics Per Diode

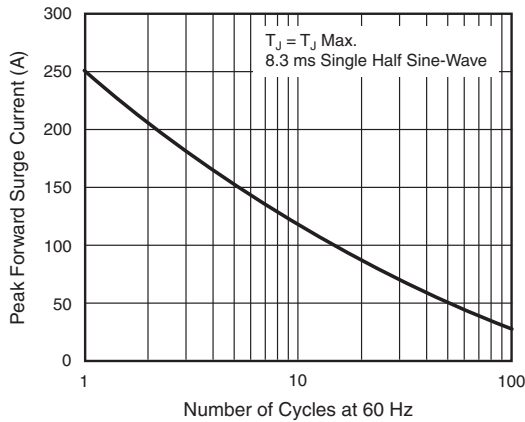


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

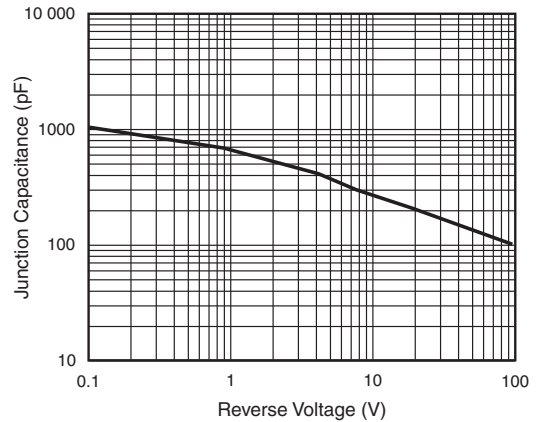


Fig. 5 - Typical Junction Capacitance Per Diode

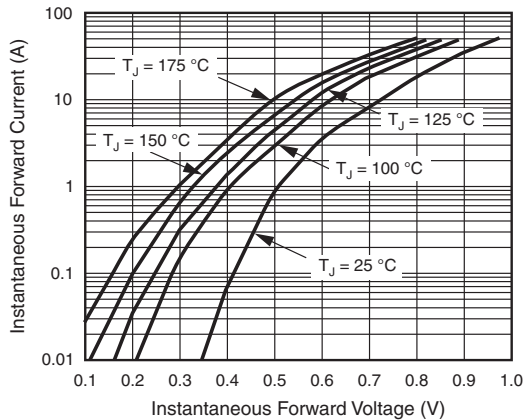


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

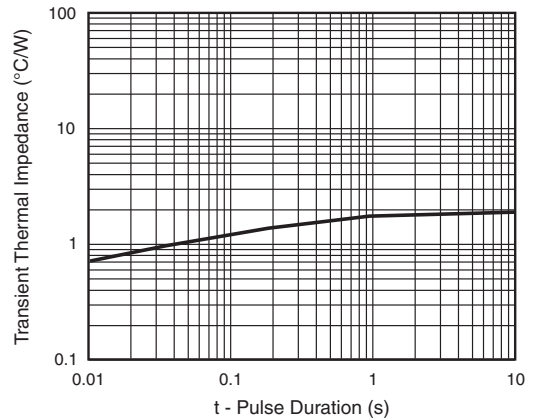
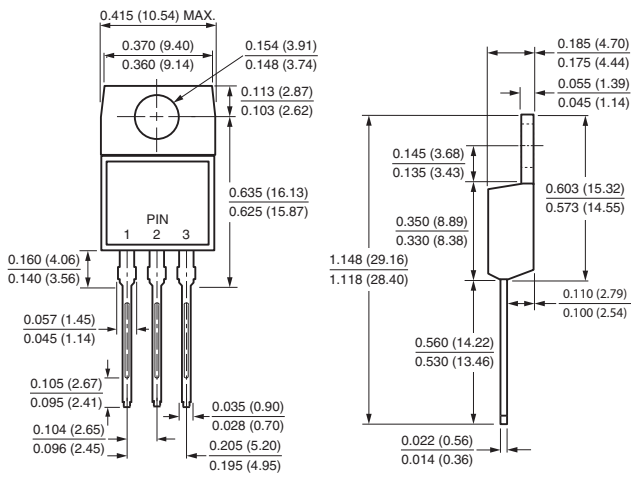


Fig. 6 - Typical Transient Thermal Impedance Per Diode

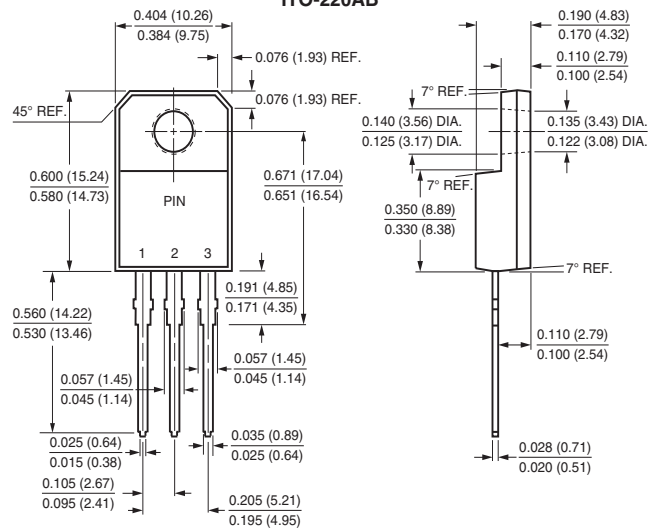


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

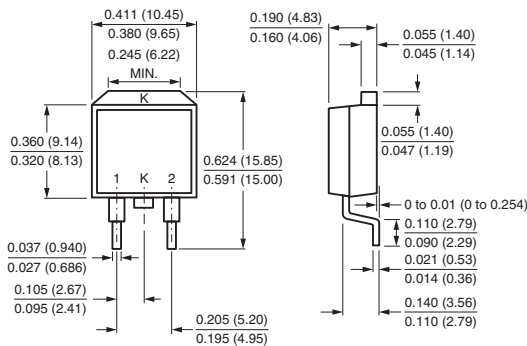
#### TO-220AB



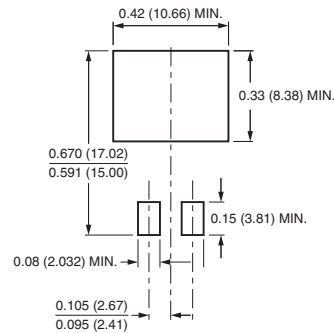
#### ITO-220AB



#### TO-263AB



#### Mounting Pad Layout





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