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Vishay General Semiconductor

Dual Common Cathode Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



PRIMARY CHARACTERISTICS						
I _{F(AV)}	40 A					
V_{RRM}	35 V, 45 V, 50 V, 60 V					
I _{FSM}	400 A					
V_{F}	0.55 V, 0.60 V					
T _J max.	175 °C					
Package	TO-3P (TO-247AD)					
Circuit configuration	Common cathode					

FEATURES

- Power pack
- · Guardring for overvoltage protection
- Lower power losses, high efficiency
- · Low forward voltage drop
- · High forward surge capability
- High frequency operation
- Solder dip 260 °C, 40 s
- Material categorization: for definitions of compliance please see 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, or polarity protection application.

MECHANICAL DATA

Case: TO-3P (TO-247AD)

Epoxy meets UL 94 V-0 flammability rating

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A

whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	MBR40H35PT	MBR40H45PT	MBR40H50PT	MBR40H60PT	UNIT	
Maximum repetitive peak reverse voltage	V_{RRM}	35	45	50	60	V	
Maximum working peak reverse voltage	V_{RWM}	35	45	50	60	V	
Maximum DC blocking voltage	V_{DC}	35	45	50	60	V	
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	40					
Non-repetitive avalanche energy per diode 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 per diode	I _{FSM}	400				Α	
Peak repetitive reverse surge current per diode (1)	I _{RRM}	2.0 1.0			Α		
Peak non-repetitive reverse energy (8/20 µs waveform)	E _{RSM}	30 25			mJ		
Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 k Ω	V _C	25				kV	
Voltage rate of change at (rated V _R)	dV/dt	10 000				V/µs	
Operating junction temperature range	TJ	-65 to +175				°C	
Storage temperature range	T _{STG}	-65 to +175 °C				°C	

Note

 $^{(1)}$ 2.0 μ s pulse width, f = 1.0 kHz



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ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	MBR40H35PT MBR40H45PT		MBR40H50PT MBR40H60PT		UNIT	
			TYP.	MAX.	TYP.	MAX.	İ	
Maximum instantaneous forward voltage per diode ⁽¹⁾	I _F = 20 A T _J = 25 °C	V _F	-	0.63	-	0.69	V	
	I _F = 20 A T _J = 125 °C		0.49	0.55	0.56	0.60		
	I _F = 40 A T _J = 25 °C		-	0.73	-	0.83		
	I _F = 40 A T _J = 125 °C		0.62	0.66	0.68	0.72		
Maximum reverse current at rated V _R per diode ⁽²⁾	T _J = 25 °C T _J = 125 °C	I _R	- 9.0	150 25	- 6.0	150 25	μA mA	

Notes

 $^{(1)}$ Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

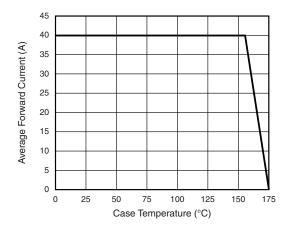
THERMAL CHARACTERISTICS							
PARAMETER	SYMBOL	MBR40H35PT	MBR40H45PT	MBR40H50PT	MBR40H60PT	UNIT	
Thermal resistance, junction to case per diode	$R_{\theta JC}$	1.2			°C/W		

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-247AD	MBR40H45PT-E3/45	6.13	45	30/tube	Tube		



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



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Fig. 1 - Forward Current Derating Curve

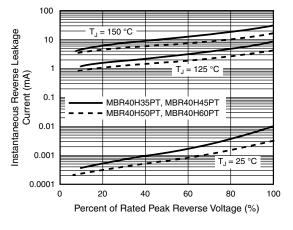


Fig. 4 - Typical Reverse Characteristics Per Diode

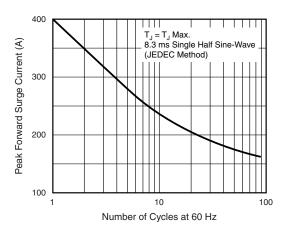


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

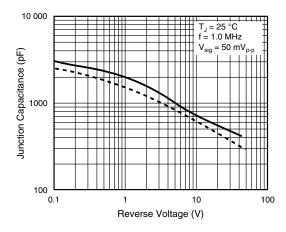


Fig. 5 - Typical Junction Capacitance Per Diode

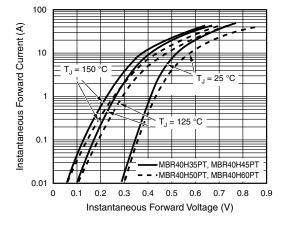


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

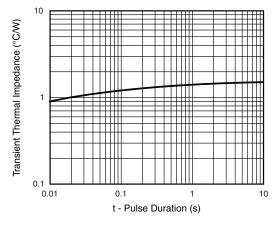


Fig. 6 - Typical Transient Thermal Impedance Per Diode

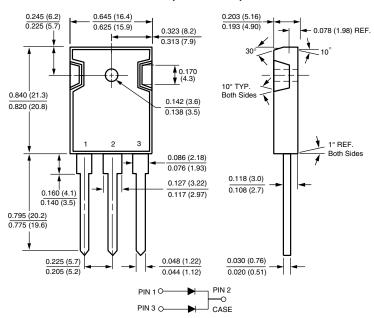


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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-3P (TO-247AD)





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