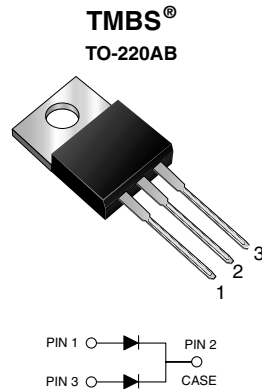




Dual High-Voltage Trench MOS Barrier Schottky Rectifier



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	100 V
I_{FSM}	250 A
Typical V_F at $I_F = 20$ A at $T_J = 125$ °C	0.63 V
T_J max.	150 °C

TYPICAL APPLICATIONS

For use in high frequency converters, high efficiency SMPS, output rectification, freewheeling, reverse battery protection, dc-to-dc system and increased power density systems.

FEATURES

- 150 °C high performance Schottky diode
- Very low forward voltage drop
- Optimized V_F vs. I_R trade off for high efficiency
- Increased ruggedness for reverse avalanche capability
- Negligible switching losses
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

MECHANICAL DATA

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

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

E3 suffix meets JESD 201 class 1A whisker test

Marking: V40100K

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

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

PARAMETER	SYMBOL	V40100K	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (fig. 1) per device per diode	$I_{F(AV)}$	40 20	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	250	A
Non-repetitive avalanche energy at $T_J = 25$ °C, $I_{AS} = 1.5$ A, $L = 60$ mH per diode	E_{AS}	67.5	mJ
Peak repetitive reverse current at $t_p = 2$ μs, 1 kHz, $T_J = 38$ °C ± 2 °C per diode	I_{RRM}	1.0	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/μs
Operating junction and storage temperature range	T_J, T_{STG}	- 40 to + 150	°C

V40100K

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Breakdown voltage ⁽²⁾	I _R = 1.0 mA	T _A = 25 °C	V _{BR}	100 (minimum)	-	V	
	I _R = 10 mA			105 (minimum)	-		
Instantaneous forward voltage per diode ⁽¹⁾	I _F = 5 A	T _A = 25 °C	V _F	0.51	-	V	
	I _F = 10 A			0.59	-		
	I _F = 20 A			0.72	0.82		
	I _F = 5 A	T _A = 125 °C		0.44	-		
	I _F = 10 A			0.53	-		
	I _F = 20 A			0.63	0.67		
Reverse current at rated V _R per diode ⁽²⁾	V _R = 70 V	T _A = 25 °C	I _R	9	-	μA	
		T _A = 125 °C		10	-	mA	
	V _R = 100 V	T _A = 25 °C		-	1000	μA	
		T _A = 125 °C		21	45	mA	

Notes

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

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V40100K	UNIT
Maximum junction to case per diode	$R_{\theta JC}$	4	$^{\circ}\text{C/W}$
per device		2	
Typical thermal resistance case to heatsink	$R_{\theta CS}$	0.5	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V40100K-E3/4W	1.85	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

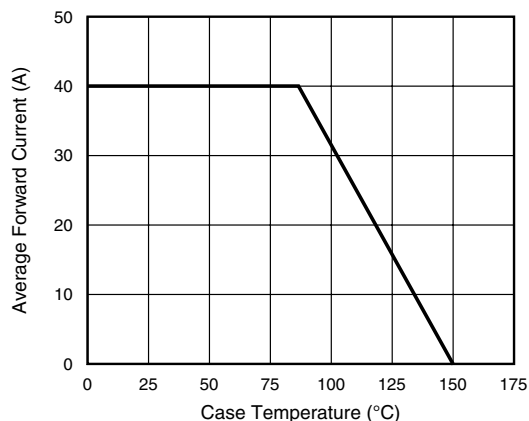
 $(T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Forward Current Derating Curve

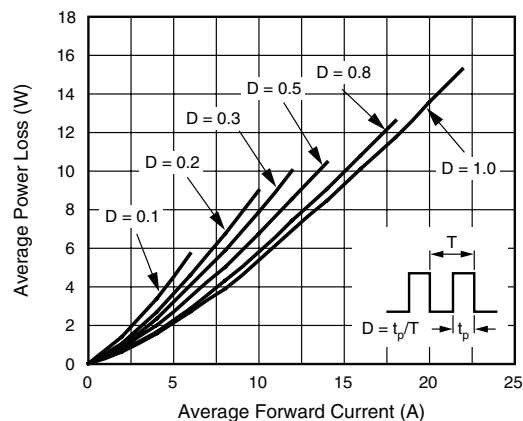


Figure 2. Forward Power Loss Characteristics Per Diode

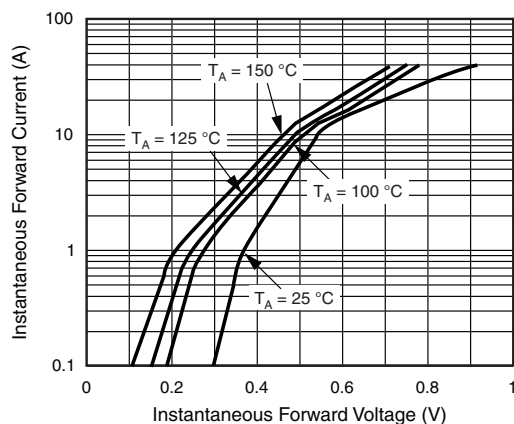


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

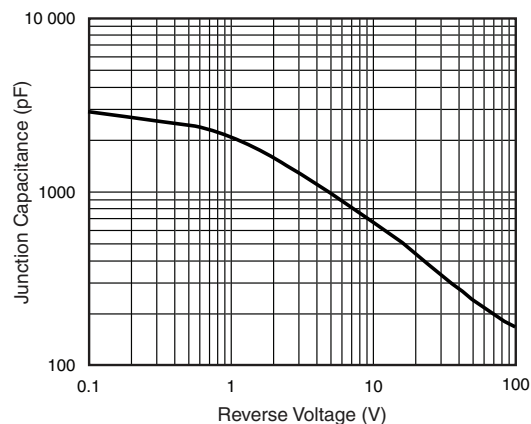


Figure 5. Typical Junction Capacitance Per Diode

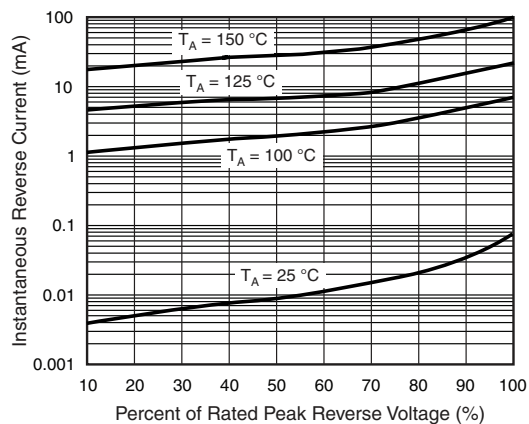


Figure 4. Typical Reverse Characteristics Per Diode

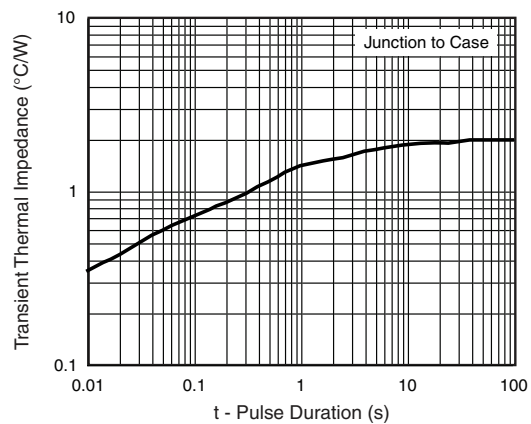
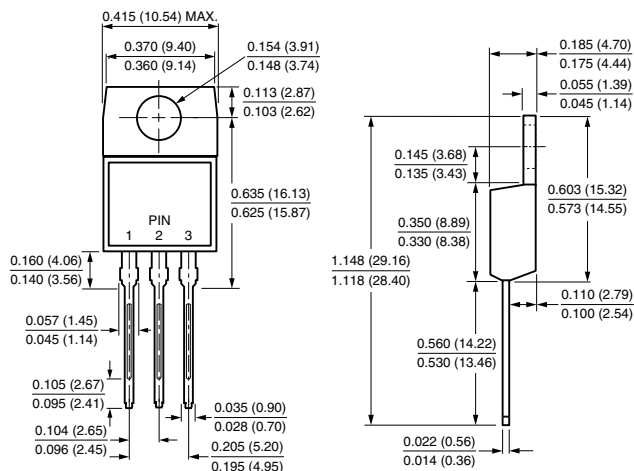


Figure 6. Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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