FEATURES Trench MOS Schottky technology

- · Low forward voltage drop, low power losses
- · High efficiency operation
- HALOGEN • Solder bath temperature 275 °C maximum, 10 s, FREE per JESD 22-B106
- · Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in high frequency converters, switching power supplies, freewheeling diodes, OR-ing diode, DC/DC converters, and reverse battery protection.

MECHANICAL DATA

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

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

M3 suffix 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	V40120CI	UNIT	
Maximum repetitive peak reverse voltage		V _{RRM}	120	V	
Maximum average forward rectified current (fig. 1)	per device	I=	40	A	
	per diode	IF(AV)	20		
Peak forward surge current 8.3 ms single half sine-way on rated load per diode	I _{FSM}	250	А		
Operating junction temperature range		T _J ⁽¹⁾	-40 to +150	- °C	
Storage temperature range		T _{STG}	-55 to +150		

Note

⁽¹⁾ The heat generated must be less than the thermal conductivity from junction to ambient: $dP_D/dT_J < 1/R_{0.IA}$

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Dual High Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.41$ V at $I_F = 5$ A

TO-220AB

PIN 2

20 A

120 V

250 A

0.62 V

150 °C

TO-220AB

Common cathode

TMBS[®]

PIN 3 O	CASE
Y CHARACTE	RISTICS
I _{E(AV)}	2 x

PIN 1 O

PRIMARY

V_{RRM}

IFSM

V_F at I_F = 20 A (125 °C)

T_J max.

Package

Diode variation





RoHS COMPLIANT

V40120CI



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 5 A	T _A = 25 °C	V _F ⁽¹⁾	0.48	-	V	
	I _F = 10 A			0.57	-		
	I _F = 20 A			0.74	0.82		
	$I_F = 5 A$	T _A = 125 °C		0.41	-		
	I _F = 10 A			0.52	-		
	I _F = 20 A			0.62	0.70		
Reverse current per diode	V _R = 90 V	T _A = 25 °C	I _R ⁽²⁾	0.01	-	mA	
		T _A = 125 °C		9.0	-		
	V _R = 120 V	T _A = 25 °C		-	0.7		
		T _A = 125 °C		20.0	38		
Junction capacitance	4 V, 1MHz		CJ	2400	-	pF	

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V40120CI	UNIT	
Typical thermal resistance per device	$R_{ ext{ heta}JC}$	1.7	°C/W	

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
V40120CI-M3/P	1.88	Р	50/tube	Tube		



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

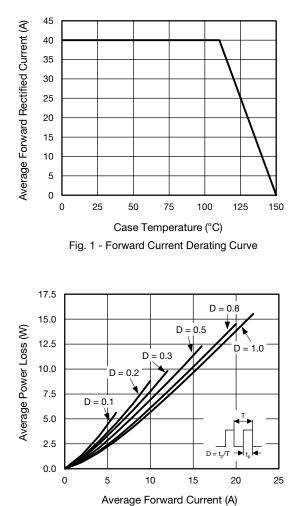


Fig. 2 - Forward Power Loss Characteristics Per Diode

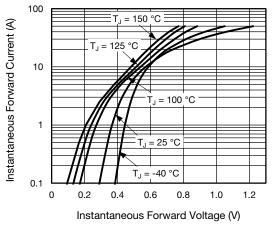


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

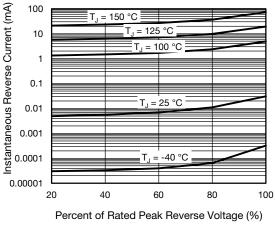
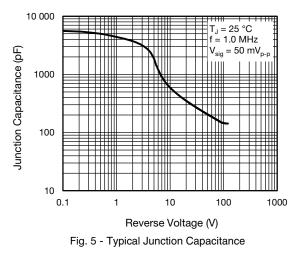


Fig. 4 - Typical Reverse Characteristics Per Diode



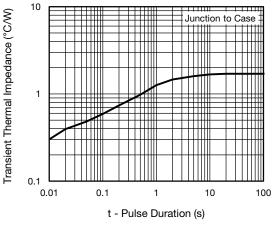


Fig. 6 - Typical Transient Thermal Impedance Per Device

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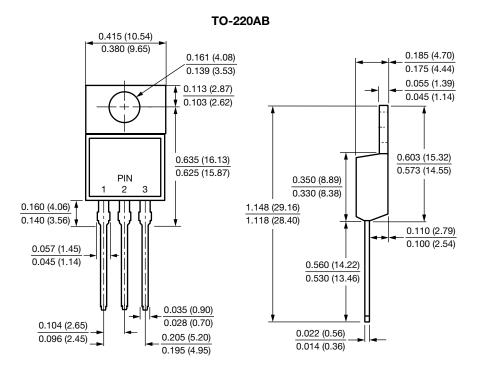
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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