

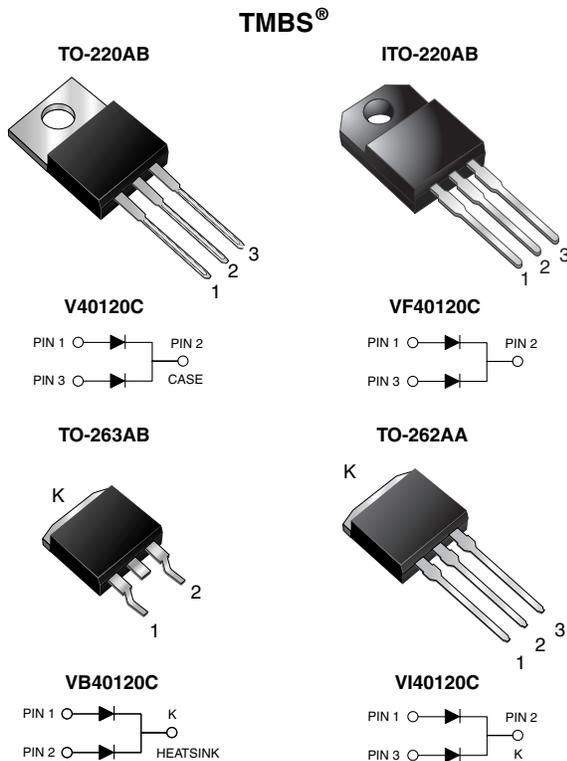


**New Product**  
**V40120C, VF40120C, VB40120C & VI40120C**

Vishay General Semiconductor

## Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.43\text{ V}$  at  $I_F = 5\text{ A}$



### FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB, ITO-220AB and TO-262AA package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, TO-263AB and TO-262AA

Epoxy meets UL 94V-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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
$V_{RRM}$	120 V
$I_{FSM}$	250 A
$V_F$ at $I_F = 20\text{ A}$	0.63 V
$T_J$ max.	150 °C

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V40120C	VF40120C	VB40120C	VI40120C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	120				V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	per device		40		A
		per diode		20		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	250				A
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500				V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 40 to + 150				°C

ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	120 (minimum)	-	V
Instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A I <sub>F</sub> = 20 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.50 0.60 0.78	- - 0.88	V
	I <sub>F</sub> = 5 A I <sub>F</sub> = 10 A I <sub>F</sub> = 20 A	T <sub>A</sub> = 125 °C		0.43 0.53 0.63	- - 0.71	
Reverse current per diode <sup>(2)</sup>	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	19 10	- -	μA mA
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C		- 22	500 45	μA mA

**Notes:**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V40120C	VF40120C	VB40120C	VI40120C	UNIT
Typical thermal resistance per diode	R <sub>θJC</sub>	1.8	4.0	1.8	1.8	°C/W

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-220AB	V40120C-E3/4W	1.88	4W	50/tube	Tube	
ITO-220AB	VF40120C-E3/4W	1.76	4W	50/tube	Tube	
TO-263AB	VB40120C-E3/4W	1.39	4W	50/tube	Tube	
TO-263AB	VB40120C-E3/8W	1.39	8W	800/reel	Tape and reel	
TO-262AA	VI40120C-E3/4W	1.46	4W	50/tube	Tube	

**RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

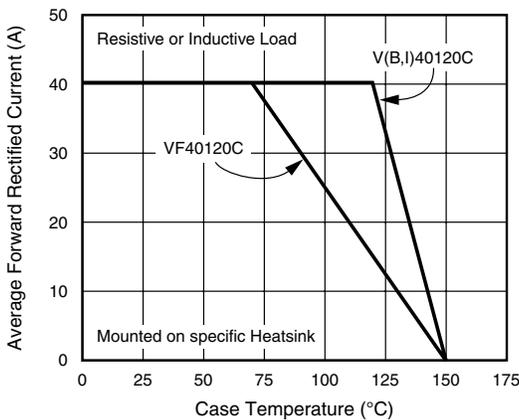


Figure 1. Maximum Forward Current Derating Curve

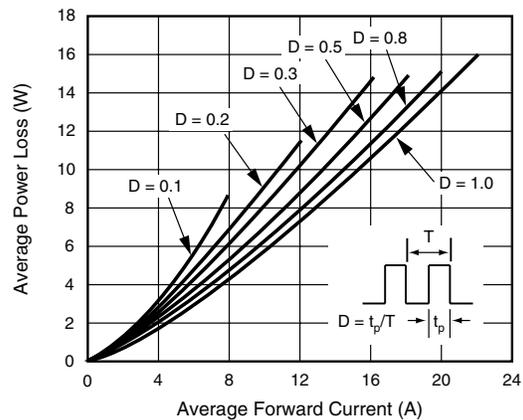


Figure 2. Forward Power Loss Characteristics Per Diode

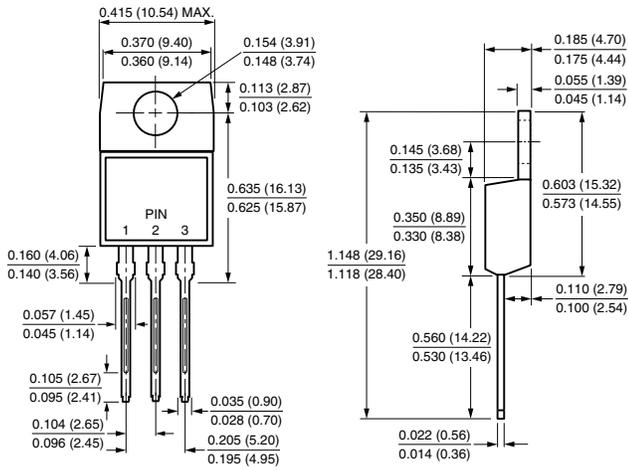
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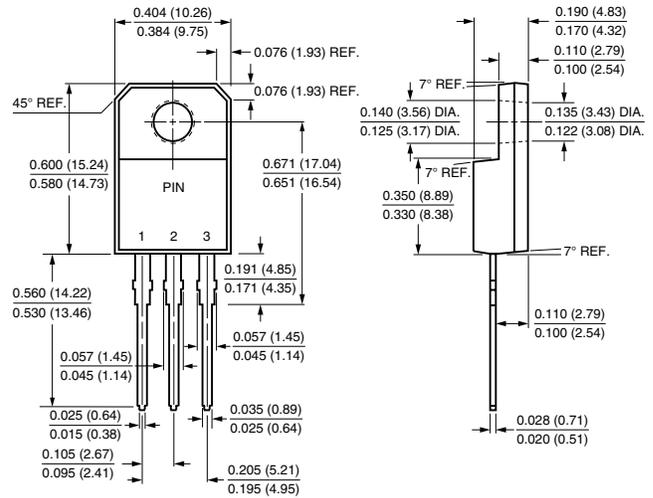
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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

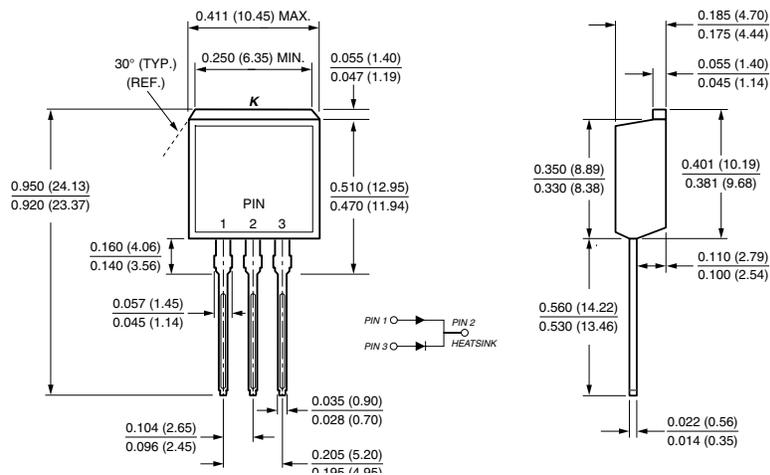
TO-220AB



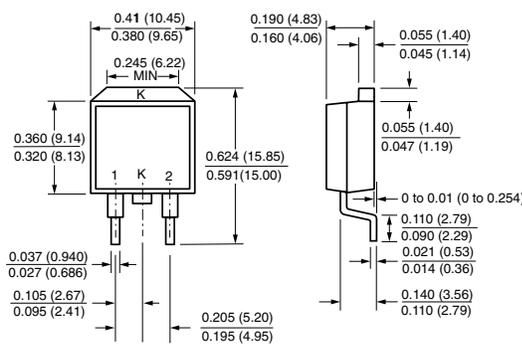
ITO-220AB



TO-262AA



TO-263AB



Mounting Pad Layout

