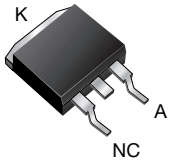
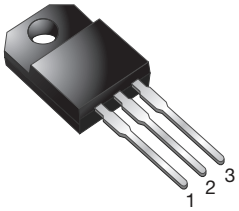
High Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low V_F = 0.446 V at I_F = 5 A

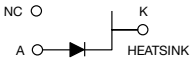
D²PAK (TO-263AB)



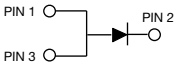
ITO-220AB



VB20100S



VF20100S



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for D²PAK (TO-263AB) package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for ITO-220AB package)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT HALOGEN FREE

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: ITO-220AB, D²PAK (TO-263AB)

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

VF20100-M3 suffix meets JESD 201 class 1A whisker test

VI20100-M3 suffix meets JESD 201 class 2 whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	100 V
I_{FSM}	250 A
V_F at I_F = 20 A	0.69 V
T_J max.	150 °C
Package	ITO-220AB, D²PAK (TO-263AB)
Circuit configuration	Single

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

PARAMETER	SYMBOL	VF20100S	VB20100S	UNIT
Max. repetitive peak reverse voltage	V_{RRM}	100		V
Max. average forward rectified current (fig. 1)	$I_{F(AV)}$	20		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	250		A
Non-repetitive avalanche energy at T_J = 25 °C, L = 60 mH	E_{AS}	210		mJ
Peak repetitive reverse current at t_p = 2 µs, 1 kHz, T_J = 38 °C ± 2 °C	I_{RRM}	1.0		A
Voltage rate of change (rated V_R)	dV/dt	10 000		V/µs
Isolation voltage (ITO-220AB only) from terminal to heatsink t = 1 min	V_{AC}	1500		V
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150		°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I_R = 10 mA	T_A = 25 °C	V_{BR}	105 (min.)	-	V
Instantaneous forward voltage	I_F = 5 A	T_A = 25 °C	V_F (1)	0.51	-	V
	I_F = 10 A			0.60	-	
	I_F = 20 A			0.79	0.90	
	I_F = 5 A	T_A = 125 °C		0.45	-	
	I_F = 10 A			0.53	-	
	I_F = 20 A			0.69	0.76	
Reverse current	V_R = 70 V	T_A = 25 °C	I_R (2)	17	-	µA
		T_A = 125 °C		7	-	mA
	V_R = 100 V	T_A = 25 °C		70	500	µA
		T_A = 125 °C		14	30	mA

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VF20100S	VB20100S	UNIT
Typical thermal resistance	$R_{\theta JC}$	4.0	2.0	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ITO-220AB	VF20100S-M3/4W	1.75	4W	50/tube	Tube
D^2PAK (TO-263AB)	VB20100S-M3/4W	1.37	4W	50/tube	Tube
D^2PAK (TO-263AB)	VB20100S-M3/8W	1.37	8W	800/reel	Tape and reel

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

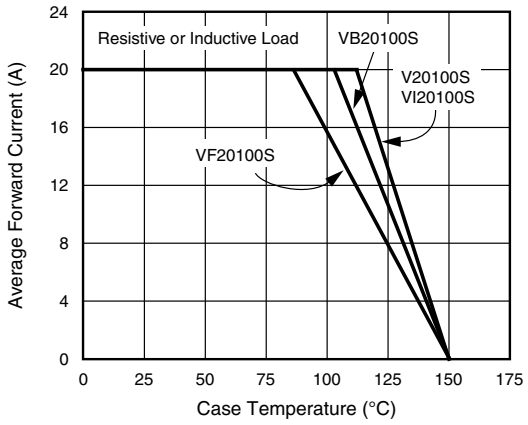


Fig. 1 - Maximum Forward Current Derating Curve

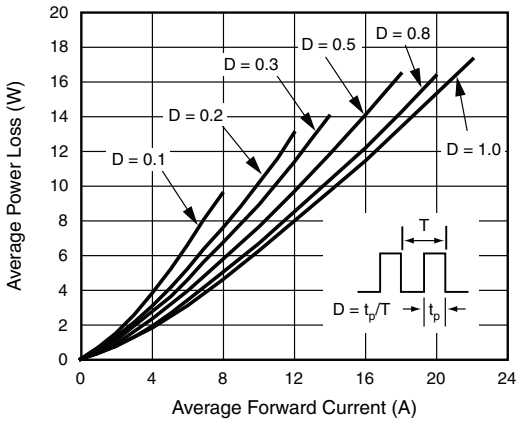


Fig. 2 - Forward Power Loss Characteristics

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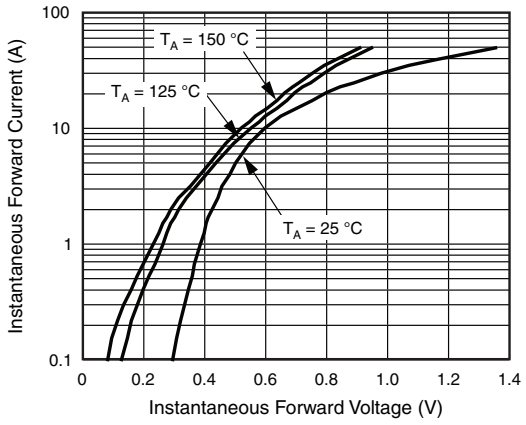


Fig. 3 - Typical Instantaneous Forward Characteristics

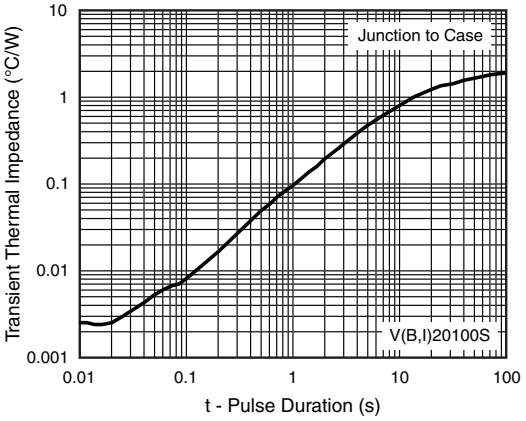


Fig. 6 - Typical Transient Thermal Impedance

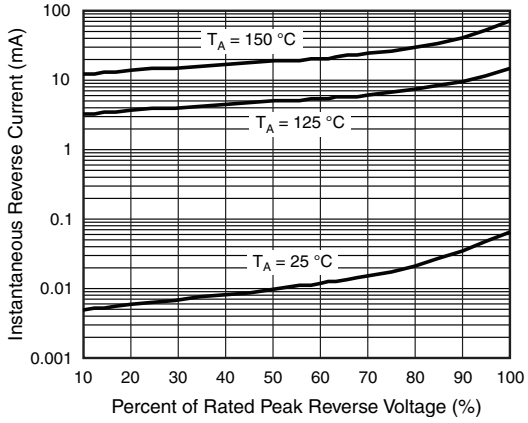


Fig. 4 - Typical Reverse Characteristics

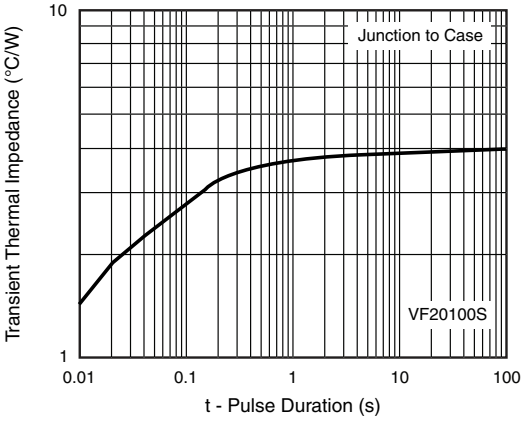


Fig. 7 - Typical Transient Thermal Impedance

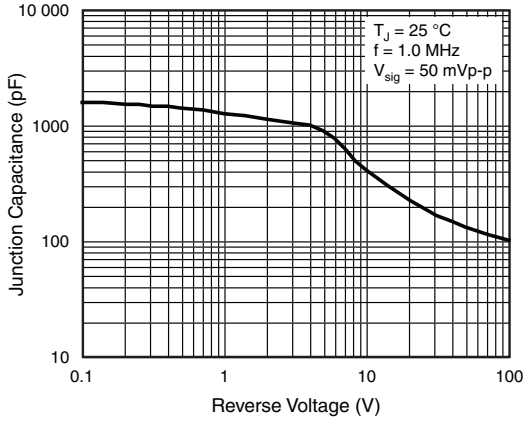
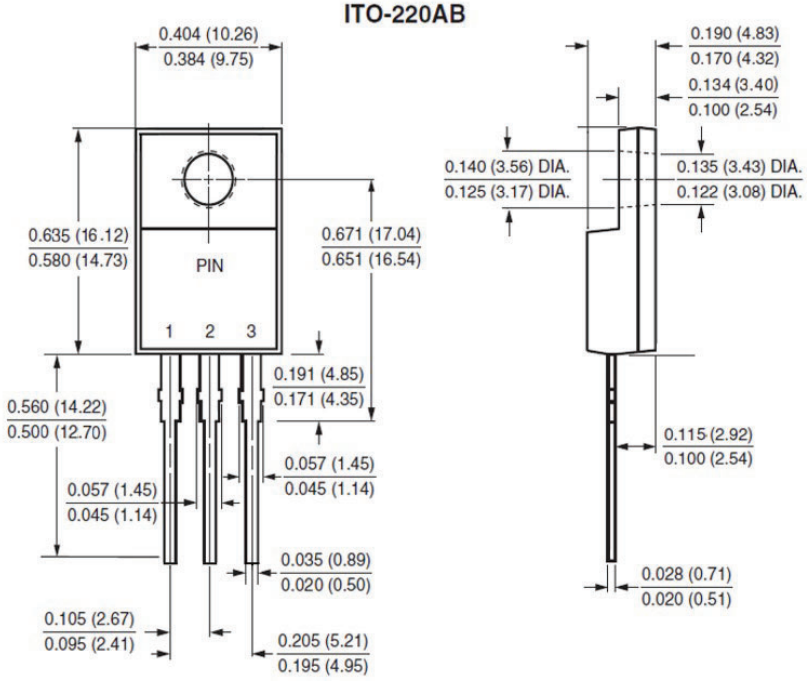


Fig. 5 - Typical Junction Capacitance

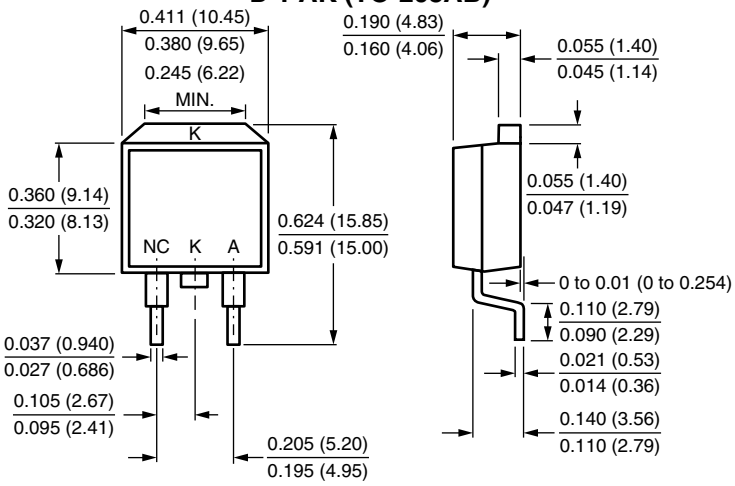
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

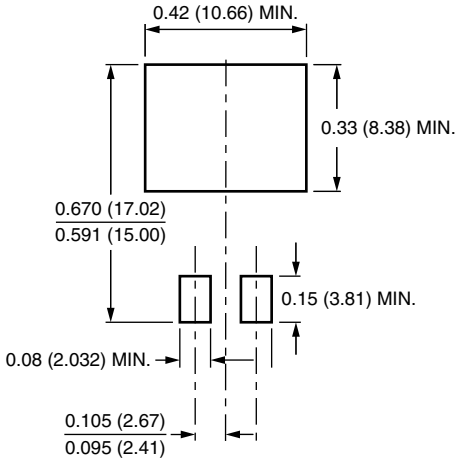
ITO-220AB



D²PAK (TO-263AB)



Mounting Pad Layout



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