V3FL45

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Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifiers



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	3.0 A			
V _{RRM}	45 V			
I _{FSM}	50 A			
V_F at I_F = 2 A (T_A = 125 °C)	0.43 V			
T _J max.	150 °C			
Package	SMF (DO-219AB)			
Circuit configuration	Single			

FEATURES

- Trench MOS Schottky technology
- Low profile package
- Ideal for automated placement
- Low forward voltage drop, low power losses
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Wave and reflow solderable
- AEC-Q101 qualified available
 Automotive ordering code: base P/NHM3
- Compatible to SOD-123W package case outline
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: SMF (DO-219AB)

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	V3FL45	UNIT	
Device marking code		3LE		
Maximum repetitive peak reverse voltage	V _{RRM}	45	V	
Maximum average forward rectified current (fig.1)	I _{F(AV)} ⁽¹⁾	2.5	- A	
	I _{F(AV)} ⁽²⁾	3.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	50	А	
Operating junction temperature range	T _J ⁽³⁾	-40 to +150	- °C	
Storage temperature range	T _{STG}	-55 to +150		

Notes

⁽¹⁾ Free air, mounted on FR4 PCB, 2 oz. standard footprint

⁽²⁾ Mounted on FR4 PCB, 2 oz.10 mm x 10 mm copper pad area

 $^{(3)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{0JA}

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COMPLIANT

HALOGEN

FREE

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V3FL45

ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 1.5 A	– T _A = 25 °C		0.44	-	- V
	I _F = 3.0 A		V _E (1)	0.50	0.58	
	I _F = 1.5 A	- T _A = 125 °C	- VF (')	0.34	-	
	I _F = 3.0 A			0.43	0.51	
Reverse current	V _B = 45 V	T _A = 25 °C	– I _R ⁽²⁾	-	0.75	mA
	$v_{\rm R} = 45 v$	$T_A = 125 \text{ °C}$	'R (=/	4	15	IIIA
Typical junction capacitance	4.0 V, 1 MHz		CJ	370	-	pF

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25$ °c unless otherwise noted)				
PARAMETER	SYMBOL	V3FL45	UNIT	
Typical thermal resistance	R _{0JA} (1)(2)	125	°C/W	
	R _{θJM} ⁽³⁾	18		

Notes

 $^{(1)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

⁽²⁾ Device mounted on FR4 PCB, 2 oz. standard footprint, thermal resistance R_{0JA} – junction-to-ambient

 $^{(3)}$ Device mounted on 10 mm x 10 mm pad size area footprint; thermal resistance $R_{\theta JM}$ – junction-to-mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V3FL45-M3/H	0.015	Н	3000	7" diameter plastic tape and reel
V3FL45-M3/I	0.015	I	10 000	13" diameter plastic tape and reel
V3FL45HM3/H ⁽¹⁾	0.015	н	3000	7" diameter plastic tape and reel
V3FL45HM3/I ⁽¹⁾	0.015	l	10 000	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified

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

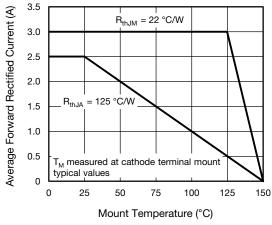
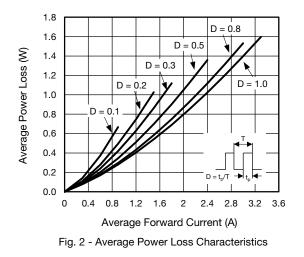
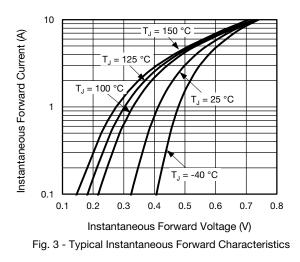


Fig. 1 - Maximum Forward Current Derating Curve





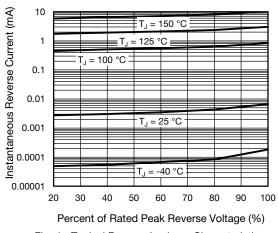
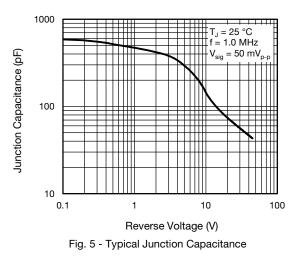


Fig. 4 - Typical Reverse Leakage Characteristics



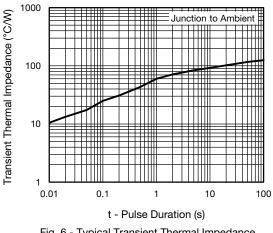


Fig. 6 - Typical Transient Thermal Impedance

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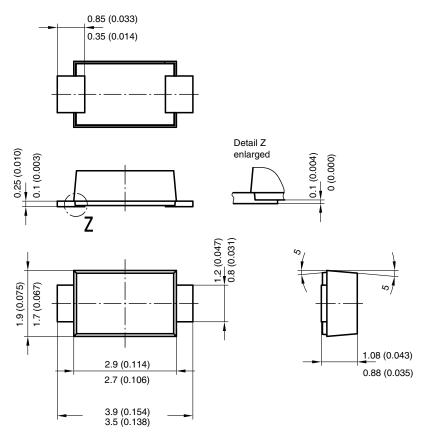
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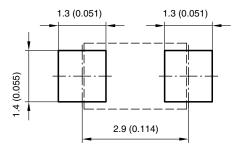
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PACKAGE OUTLINE DIMENSIONS in millimeters (inches)



Foot print recommendation:



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