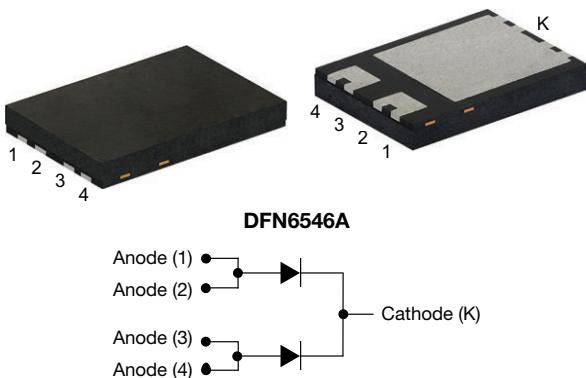


## High Current Density Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low  $V_F$  = 0.38 V at  $I_F$  = 5 A



### LINKS TO ADDITIONAL RESOURCES


[Application Notes](#)

[Marking](#)

[Packages](#)

### FEATURES

- Low profile package - typical height of 0.88 mm
- Leadless DFN package with side-wettable flanks suitable for customer AOI (Automatic Optical Inspection)
- Very low reverse leakage by TMBS Gen3 technology
- Low power losses, high efficiency
- Compatible to SMPC (TO-277A) package case outline
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code; base P/NHM3
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

### MECHANICAL DATA

**Case:** DFN6546A

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

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 meets JESD 201 class 2 whisker test

PRIMARY CHARACTERISTICS	
$I_F(AV)$	2 x 7.5 A
$V_{RRM}$	60 V
$I_{FSM}$	160 A
$V_F$ at $I_F$ = 7.5 A ( $T_J$ = 125 °C)	0.44 V
$T_J$ max.	150 °C
Package	DFN6546A
Circuit configuration	Common cathode

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

PARAMETER		SYMBOL	V15N6L63C	UNIT
Device marking code			15LFC	
Maximum repetitive peak reverse voltage		$V_{RRM}$	60	V
Maximum average forward rectified current (fig. 1)	per device	$I_F(AV)$ <sup>(1)</sup>	15	A
	per diode		7.5	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load per diode		$I_{FSM}$	160	A
Operating junction temperature range		$T_J$ <sup>(2)</sup>	-40 to +150	°C
Storage temperature range		$T_{STG}$	-55 to +150	°C

#### Notes

(1) With infinite heatsink

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

ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.
Instantaneous forward voltage per diode	$I_F = 5\text{ A}$	$T_J = 25^\circ\text{C}$	$V_F$ <sup>(1)</sup>	0.46	-
	$I_F = 7.5\text{ A}$			0.50	0.56
	$I_F = 5\text{ A}$	$T_J = 125^\circ\text{C}$		0.38	-
	$I_F = 7.5\text{ A}$			0.44	0.50
Reverse current per diode	$V_R = 60\text{ V}$	$T_J = 25^\circ\text{C}$	$I_R$ <sup>(2)</sup>	-	0.2
		$T_J = 125^\circ\text{C}$		6.5	15
Typical junction capacitance per diode	$4.0\text{ V}, 1\text{ MHz}$		$C_J$	1500	-
					pF

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: pulse width  $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TYP.	MAX.	UNIT	
Thermal resistance per device	$R_{\theta JM}$ <sup>(1)</sup>	2		2.5	$^\circ\text{C/W}$

**Note**

(1) Thermal resistance junction to mount follows JEDEC® 51-14 transient dual interface test method (TDIM)

**ORDERING INFORMATION TABLE**

Device code	V	15	N6	L	6	3	C	H	M3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

- |          |  |
|----------|--|
| <b>1</b> | - Vishay TMBS product  |
| <b>2</b> | - Current rating (15 = 15 A)   |
| <b>3</b> | - Package type (N6 = DFN6546A package)   |
| <b>4</b> | - Process type (L = low $V_F$ )  |
| <b>5</b> | - Voltage rating (6 = 60 V)  |
| <b>6</b> | - TMBS generation option (3 = Gen 3)   |
| <b>7</b> | - Circuit configuration (C = common cathode)   |
| <b>8</b> | - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)                                       |
| <b>9</b> | - Material / environmental category<br>(M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free) |

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
V15N6L63C-M3/I	0.086	I	6000	13" diameter plastic tape and reel
V15N6L63CHM3/I <sup>(1)</sup>	0.086	I	6000	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

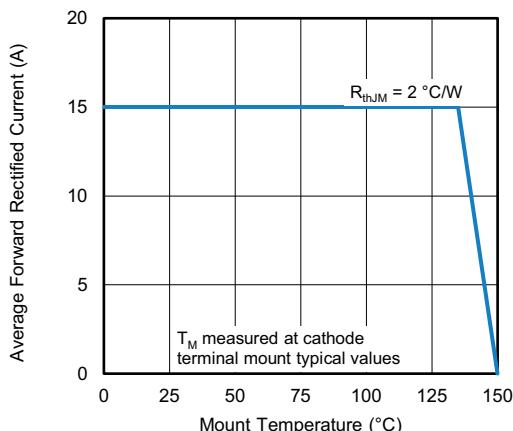
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

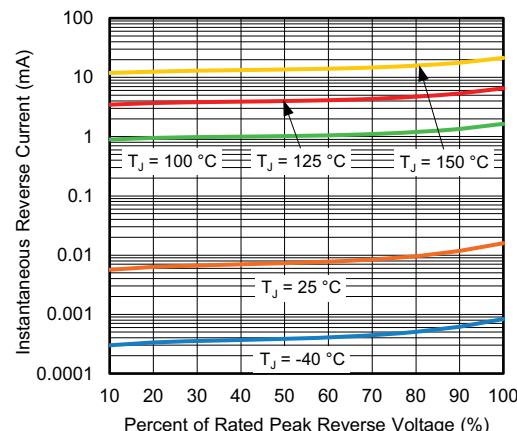


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

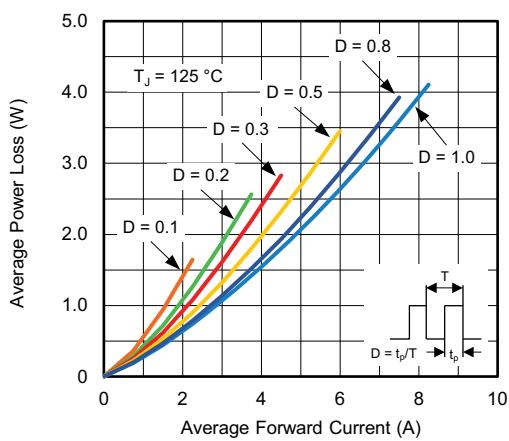


Fig. 2 - Forward Power Loss Characteristics Per Diode

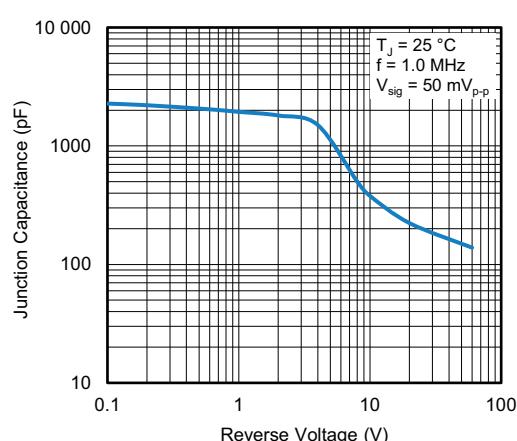


Fig. 5 - Typical Junction Capacitance Per Diode

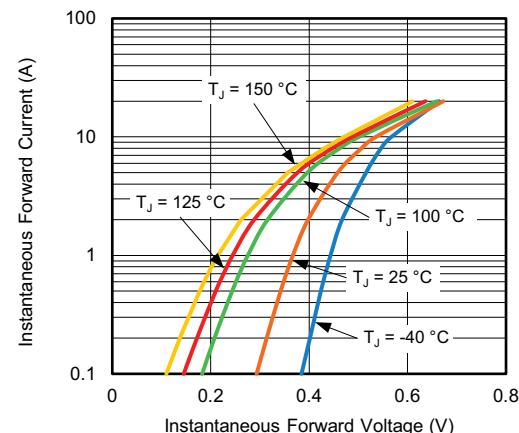


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

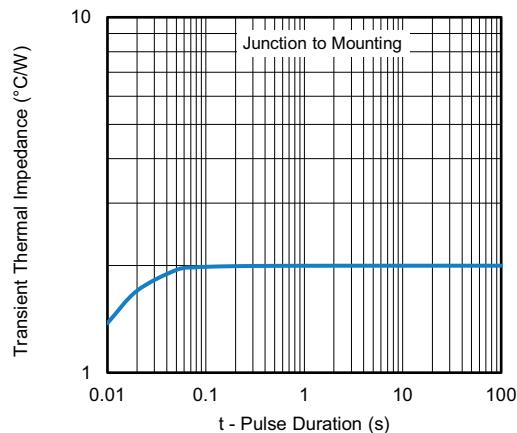
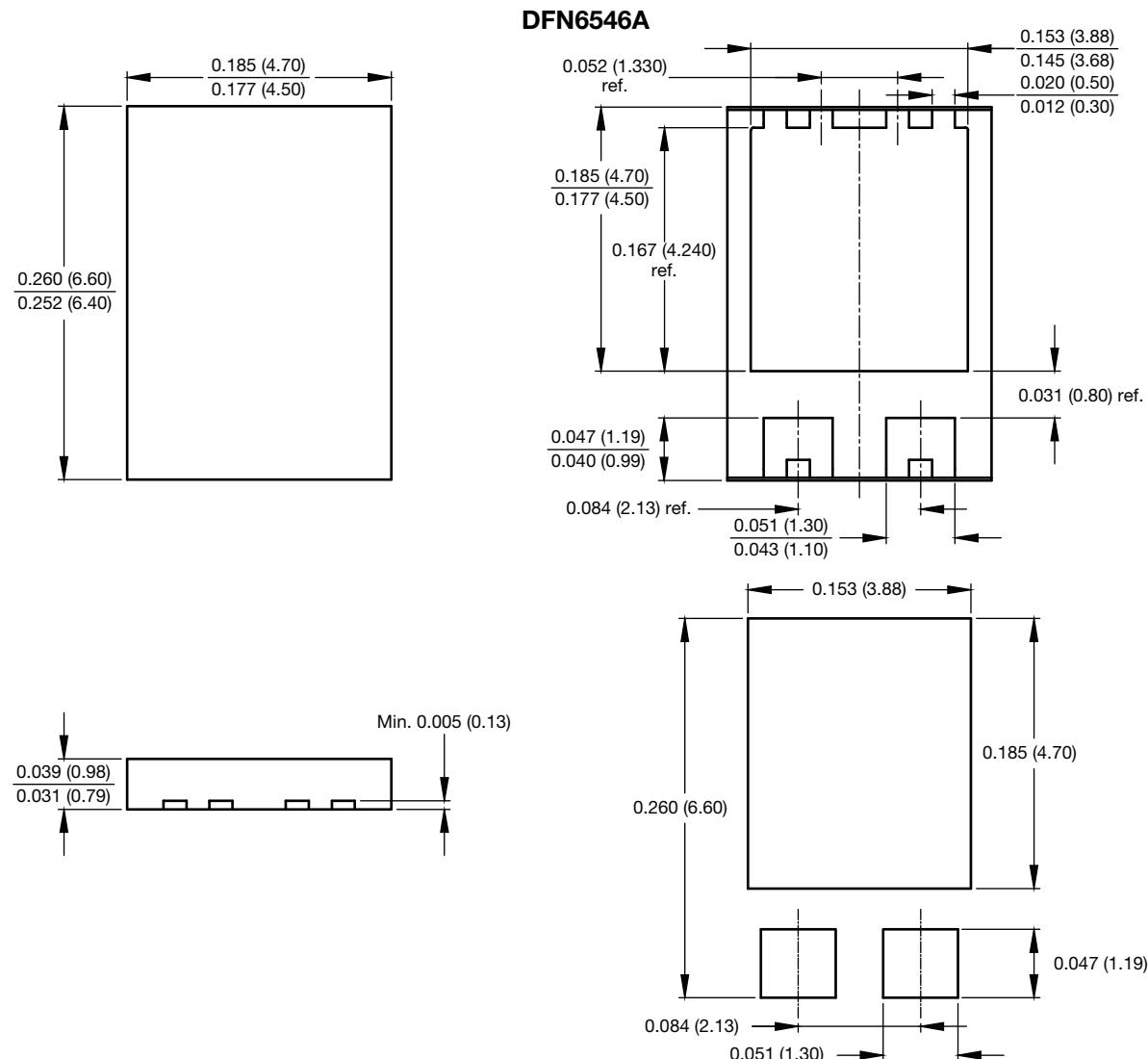


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)


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