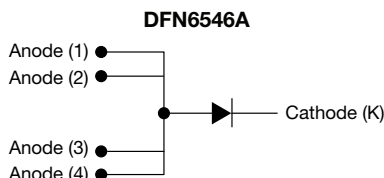
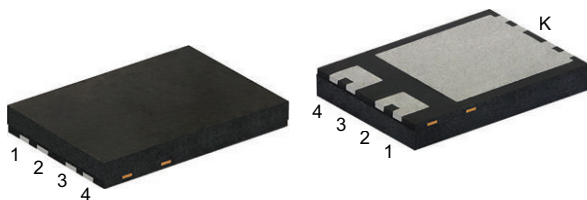


High Current Density Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.48\text{ V}$ at $I_F = 5\text{ A}$



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	150 V
I_{FSM}	260 A
V_F at $I_F = 20\text{ A}$ ($T_J = 125\text{ °C}$)	0.63 V
T_J max.	150 °C
Package	DFN6546A
Circuit configuration	Single

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 forward voltage 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



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

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V20N6153	UNIT
Device marking code		20153	
Maximum repetitive peak reverse voltage	V_{RRM}	150	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}^{(1)}$	20	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	260	A
Operating junction temperature range	$T_J^{(2)}$	-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 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 5 A	T _J = 25 °C	V _F ⁽¹⁾	0.57	-	V
	I _F = 10 A			0.69	-	
	I _F = 20 A			0.86	0.97	
	I _F = 5 A	T _J = 125 °C		0.48	-	
	I _F = 10 A			0.56	-	
	I _F = 20 A			0.63	0.67	
Reverse current	V _R = 100 V	T _J = 25 °C	I _R ⁽²⁾	0.003	-	mA
		T _J = 125 °C		3.2	-	
Reverse current	V _R = 150 V	T _J = 25 °C		-	0.3	mA
		T _J = 125 °C		9	33	
Typical junction capacitance	4.0 V, 1 MHz		C _J	1100	-	pF

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	$R_{\theta JM}^{(1)}$	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	20	N6	15	3	H	M3
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①

②

③

④

⑤

⑥

⑦

- 1** - Vishay TMBS product
- 2** - Current rating (20 = 20 A)
- 3** - Package type (N6 = DFN6546A package)
- 4** - Voltage rating (15 = 150 V)
- 5** - TMBS generation option (3 = Gen 3)
- 6** - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)
- 7** - Material / environmental category
(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
V20N6153-M3/I	0.086	I	6000	13" diameter plastic tape and reel
V20N6153HM3/I ⁽¹⁾	0.086	I	6000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

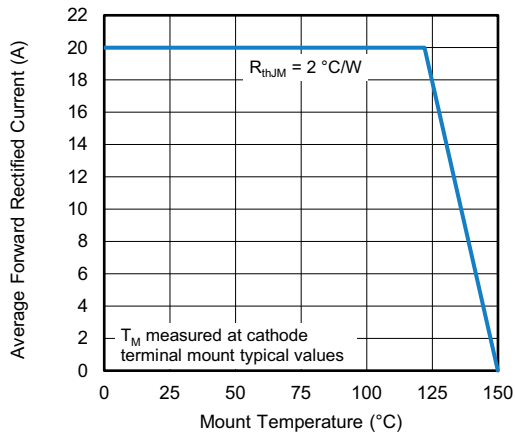
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

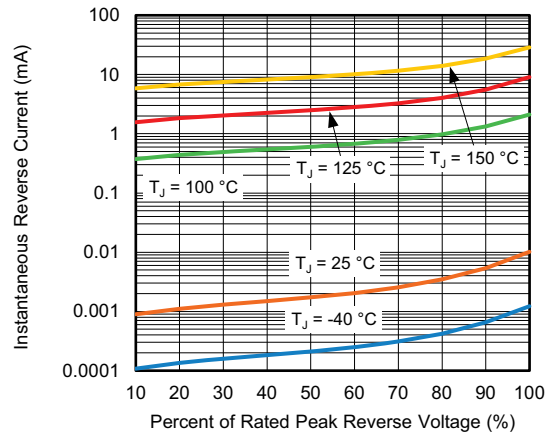


Fig. 4 - Typical Reverse Leakage Characteristics

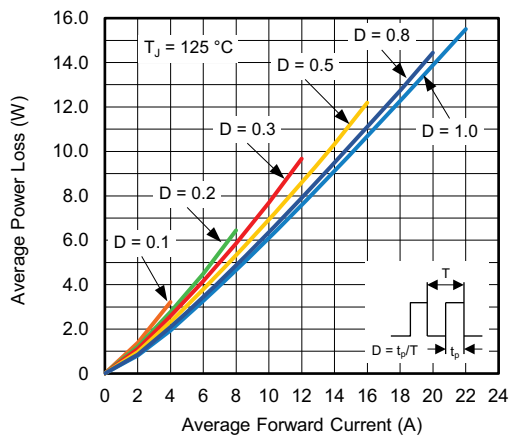


Fig. 2 - Forward Power Loss Characteristics

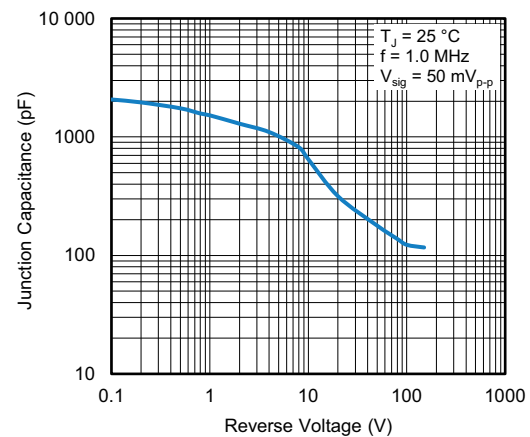


Fig. 5 - Typical Junction Capacitance

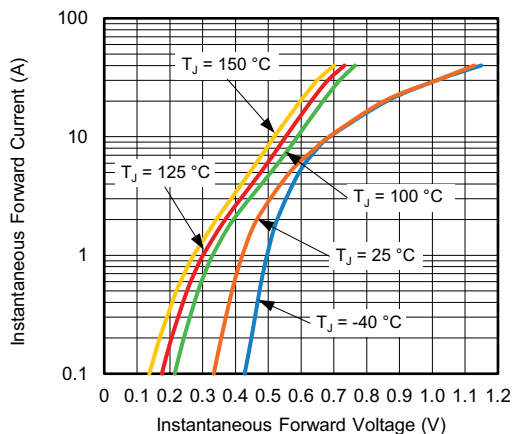


Fig. 3 - Typical Instantaneous Forward Characteristics

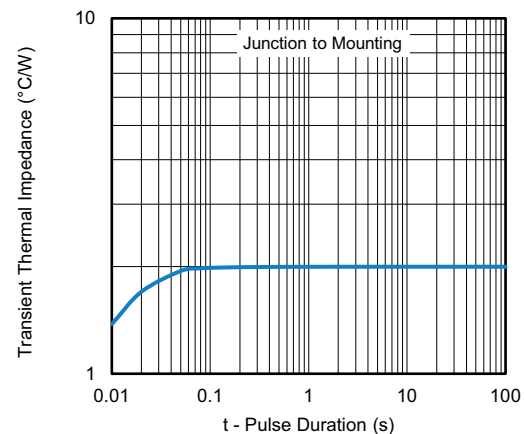
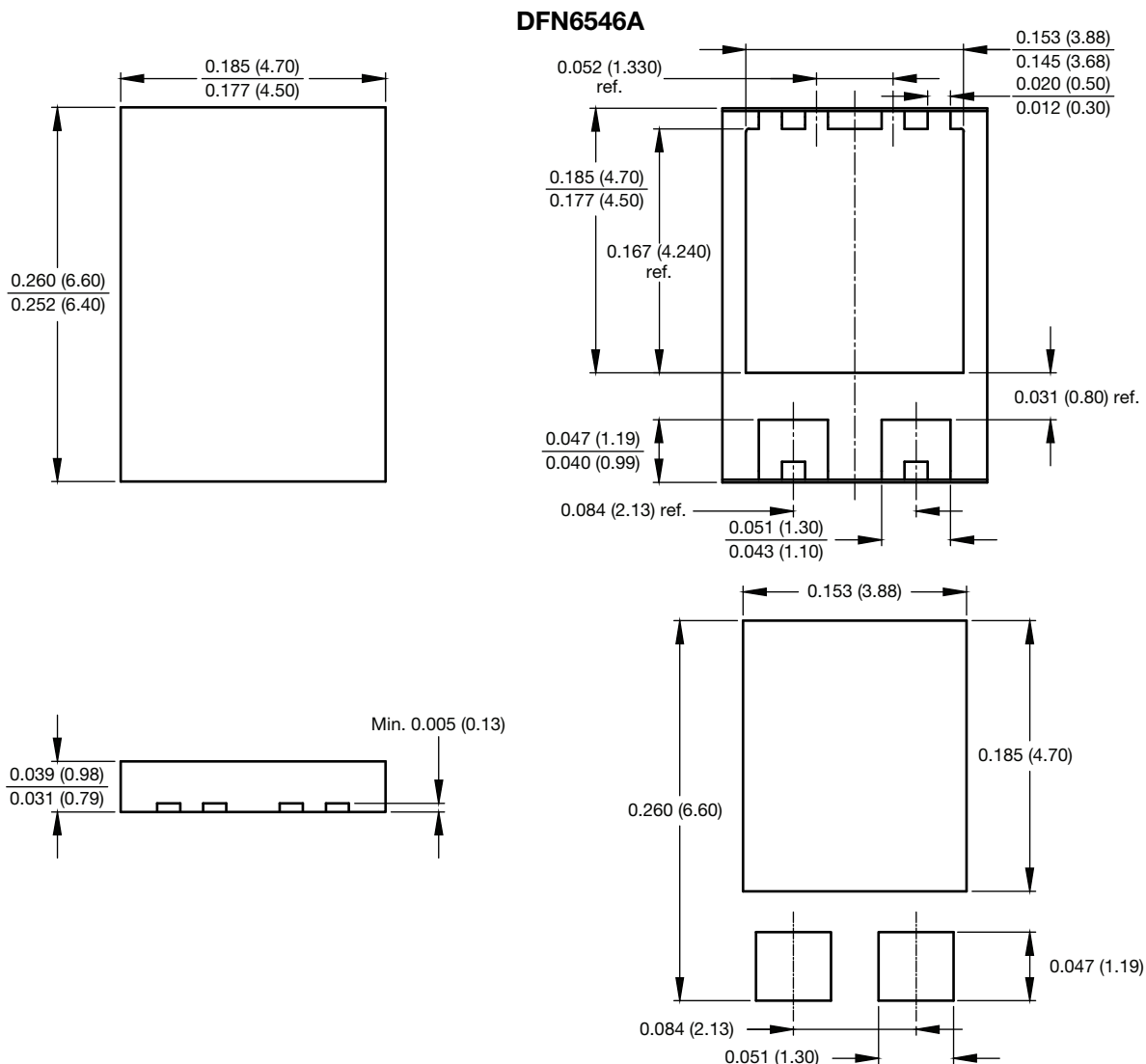


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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