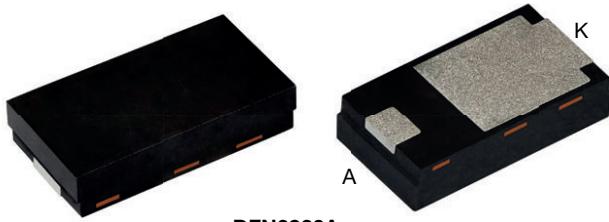


High Current Density Surface-Mount Schottky Barrier Rectifier


DFN3820A

Anode → Cathode

LINKS TO ADDITIONAL RESOURCES



FEATURES

- Low profile package - typical height of 0.88 mm
- Leadless DFN package with side-wettable flanks suitable for customer AOI (Automatic Optical Inspection)
- Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code; base P/NHM3
- Compatible to SMP (DO-220AA) package case outline
- Material categorization: for definitions of compliance please see 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: DFN3820A

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 meet JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

PRIMARY CHARACTERISTICS	
I _{F(AV)}	1.0 A
V _{RRM}	40 V
I _{FSM}	30 A
V _F at I _F = 0.5 A (T _J = 125 °C)	0.34 V
T _J max.	150 °C
Package	DFN3820A
Circuit configuration	Single

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

PARAMETER	SYMBOL	SS1N42	UNIT
Device marking code		S14	
Maximum repetitive peak reverse voltage	V _{RRM}	40	V
Maximum average forward rectified current (fig. 1)	I _{F(AV)} ⁽¹⁾	1	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	30	A
Operating junction temperature range	T _J ⁽²⁾	-40 to +150	°C
Storage temperature range	T _{STG}	-55 to +150	°C

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

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

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	
Instantaneous forward voltage	$I_F = 0.5 \text{ A}$	$T_J = 25^\circ\text{C}$	V_F ⁽¹⁾	0.43	-	
	$I_F = 1.0 \text{ A}$			0.49	0.54	
	$I_F = 0.5 \text{ A}$	$T_J = 125^\circ\text{C}$		0.34	-	
	$I_F = 1.0 \text{ A}$			0.43	0.49	
Reverse current	$V_R = 40 \text{ V}$	$T_J = 25^\circ\text{C}$	I_R ⁽²⁾	-	0.05	
		$T_J = 125^\circ\text{C}$		2	4	
Typical junction capacitance	4.0 V, 1 MHz		C_J	45	-	

Notes

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

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

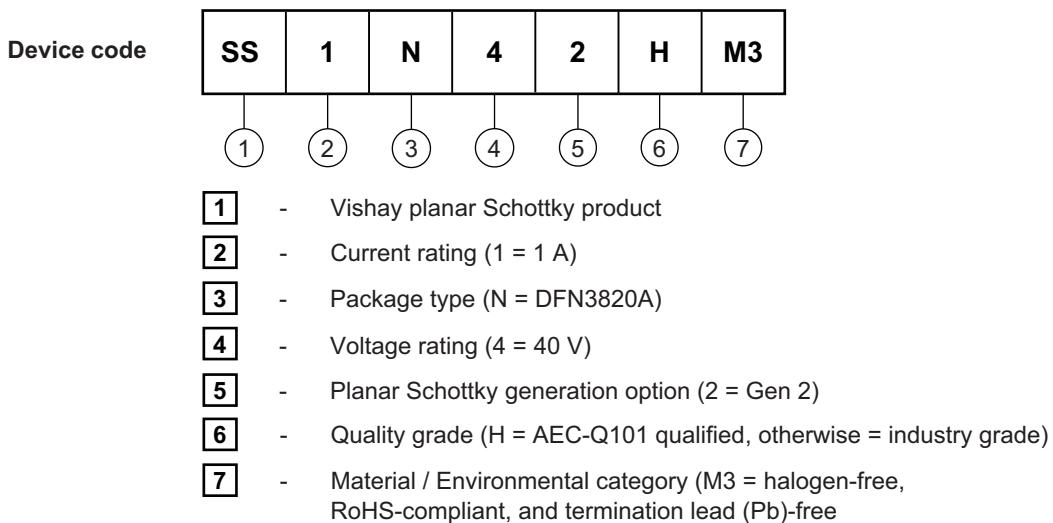
THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)					
PARAMETER		SYMBOL	TYP.	MAX.	UNIT
Thermal resistance		$R_{\theta JA}$ ⁽¹⁾⁽²⁾	150	188	°C/W
		$R_{\theta JM}$ ⁽³⁾	7.5	9.4	

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) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

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

ORDERING INFORMATION TABLE


ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
SS1N42-M3/H	0.023	H	3500	7" diameter plastic tape and reel	
SS1N42-M3/I	0.023	I	14 000	13" diameter plastic tape and reel	
SS1N42HM3/H ⁽¹⁾	0.023	H	3500	7" diameter plastic tape and reel	
SS1N42HM3/I ⁽¹⁾	0.023	I	14 000	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified

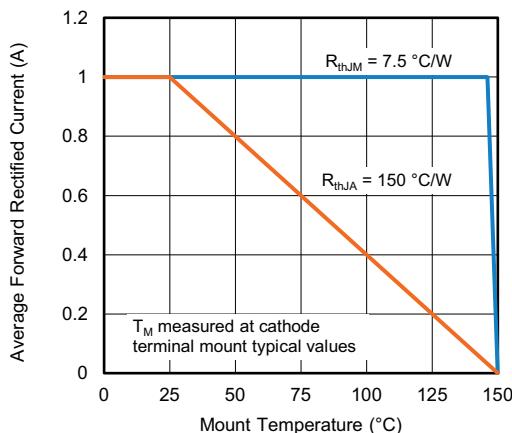
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

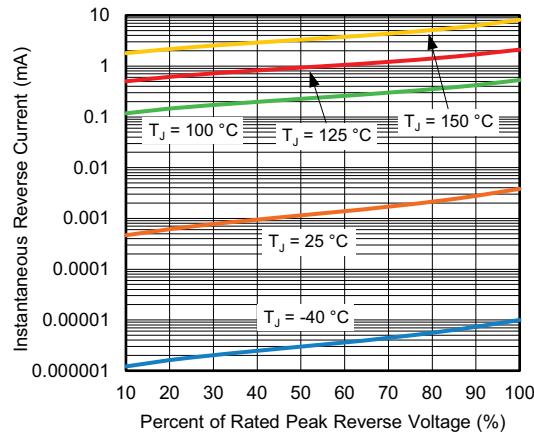


Fig. 4 - Typical Reverse Characteristics

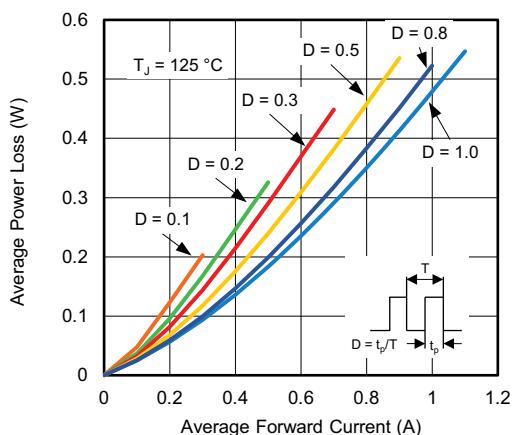


Fig. 2 - Forward Power Loss Characteristics

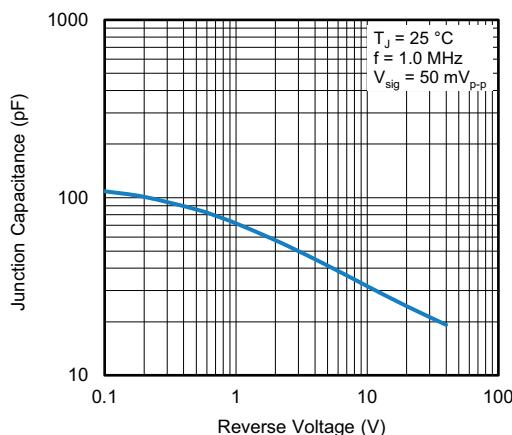


Fig. 5 - Typical Junction Capacitance

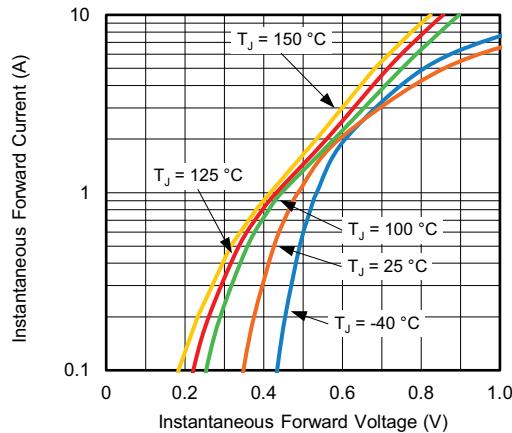


Fig. 3 - Typical Instantaneous Forward Characteristics

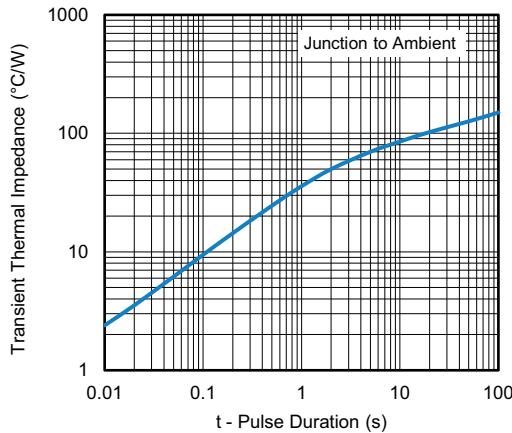
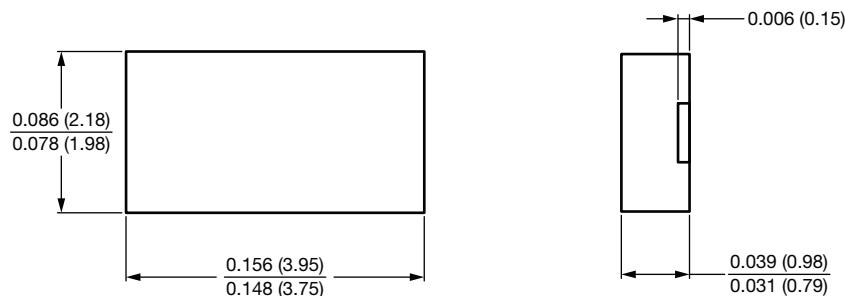
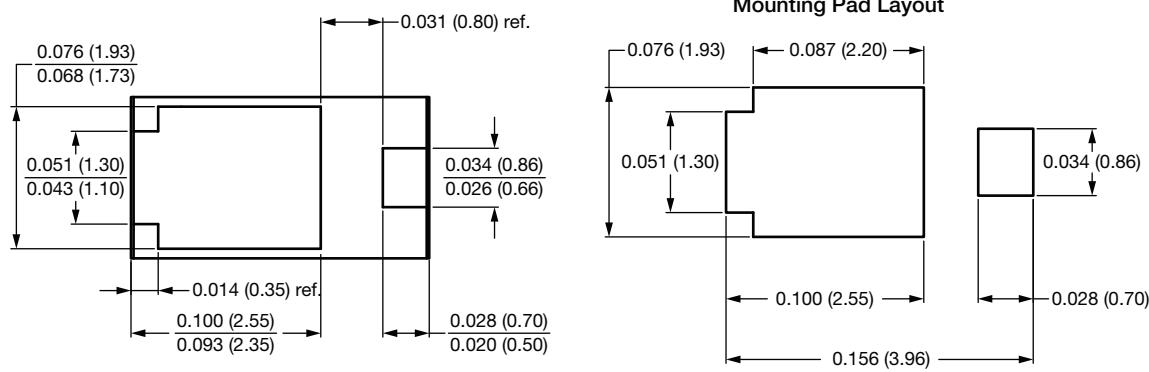


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN3820A

Mounting Pad Layout




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