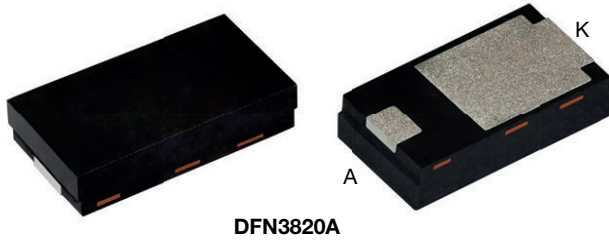


Surface-Mount Standard Rectifier



DFN3820A

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	4 A
V_{RRM}	200 V, 400 V, 600 V
I_{FSM}	60 A
V_F at $I_F = 4$ A ($T_J = 125$ °C)	0.86 V
I_R	10 μ A
T_J max.	175 °C
Package	DFN3820A
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)
- Ideal for automated replacement
- Oxide planar chip junction
- Low forward voltage drop
- Typical IR less than 0.1 μ A
- ESD capability
- 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

General purpose, power line polarity protection and rail-to-rail protection in consumer, industrial, and automotive applications.

MECHANICAL DATA

Case: DFN3820A

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 meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	SE40ND	SE40NG	SE40NJ	UNIT
Device marking code		4D	4G	4J	
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Maximum average forward rectified current (fig.1)	$I_{F(AV)}$ ⁽¹⁾	4			A
	$I_{F(AV)}$ ⁽²⁾	1.7			
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	60			A
Operating junction temperature range	T_J ⁽³⁾	-55 to +175			°C
Storage temperature range	T_{STG}	-55 to +175			

Notes

- (1) Mounted on 25 x 25mm pad area, 2 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area
- (3) 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 = 2 A	T _J = 25 °C	V _F ⁽¹⁾	0.91	-	V
	I _F = 4 A			0.97	1.1	
	I _F = 2 A	T _J = 125 °C		0.79	-	
	I _F = 4 A			0.86	0.98	
Reverse current	Rated V _R	T _J = 25 °C	I _R ⁽²⁾	-	10	µA
		T _J = 125 °C		21	100	
Typical reverse recovery time	I _F = 0.5 A, I _R = 01 A, I _{rr} = 0.25 A		t _{rr}	1.2	-	µs
Typical junction capacitance	4.0 V, 1 MHz		C _J	24	-	pF

Notes

- (1) Pulse test: 300 µs pulse width, 1 % duty cycle
- (2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾⁽²⁾	135	169	°C/W
	R _{θJM} ⁽³⁾	5	6.3	

Notes

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

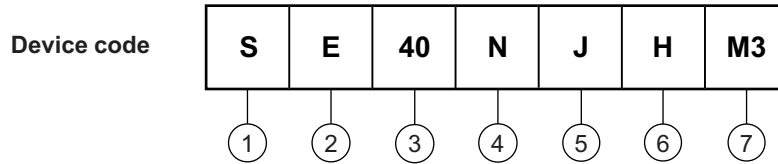
IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T _A = 25 °C unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V _C	H3B	> 8 kV
AEC-Q101-002	Machine model (contact mode)	C = 200 pF, R = 0 Ω		M4	> 400 V
JESD22-A114	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ		3B	> 8 kV
JESD22-A115	Machine model (contact mode)	C = 200 pF, R = 0 Ω		C	> 400 V
IEC 61000-4-2 ⁽²⁾	Human body model (contact mode)	C = 150 pF, R = 330 Ω		4	> 8 kV
	Human body model (air-discharge mode) ⁽¹⁾	C = 150 pF, R = 330 Ω		4	> 15 kV

Notes

- (1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance > 30 kV
- (2) System ESD standard



ORDERING INFORMATION TABLE



- 1** - Vishay standard recovery product
- 2** - Oxide planar chip technology
- 3** - Current rating (40 = 4 A)
- 4** - Package type (N = DFN package)
- 5** - Voltage rating (D = 200 V, G = 400 V, J = 600 V)
- 6** - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)
- 7** - Material / Environment 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
SE40NJ-M3/H	0.023	H	3500	7" diameter plastic tape and reel
SE40NJ-M3/I	0.023	I	14 000	13" diameter plastic tape and reel
SE40NJHM3/H ⁽¹⁾	0.023	H	3500	7" diameter plastic tape and reel
SE40NJHM3/I ⁽¹⁾	0.023	I	14 000	13" diameter plastic tape and reel

Note

⁽¹⁾ AEC-Q101 qualified

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

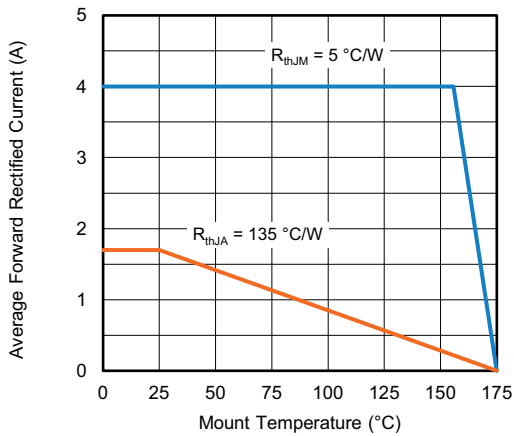


Fig. 1 - Maximum Forward Current Derating Curve

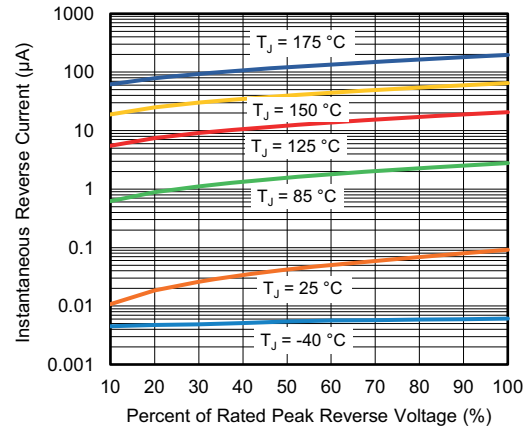


Fig. 4 - Typical Reverse Leakage Characteristics

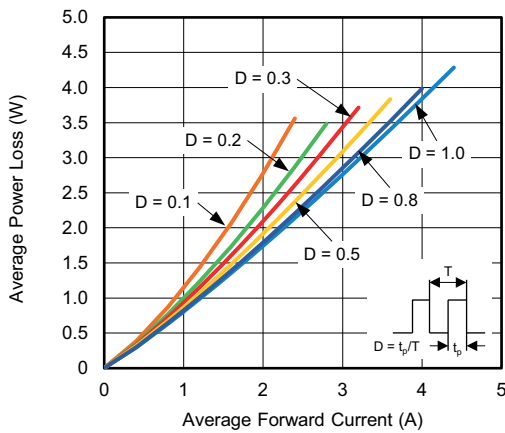


Fig. 2 - Forward Power Loss Characteristics

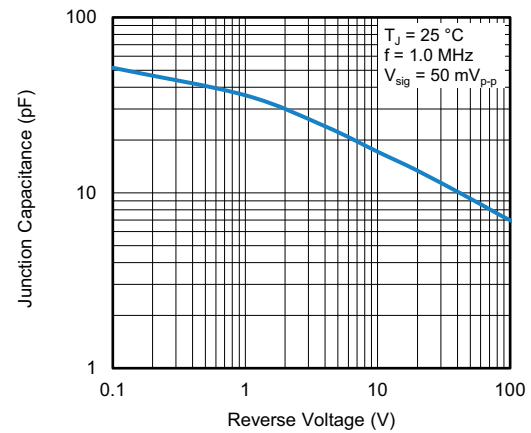


Fig. 5 - Typical Junction Capacitance

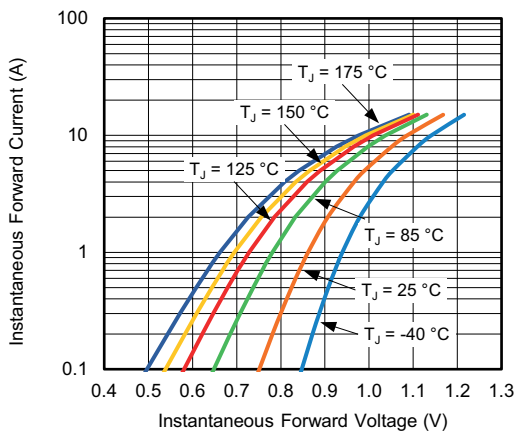


Fig. 3 - Typical Instantaneous Forward Characteristics

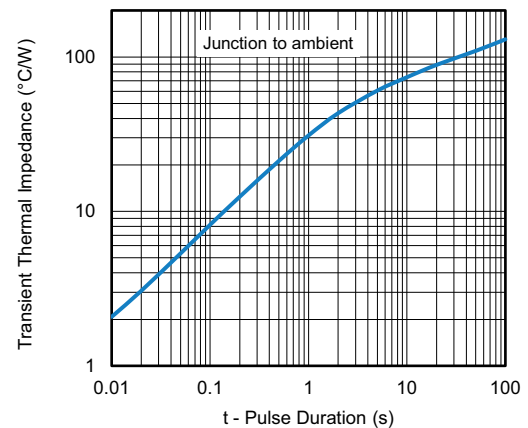
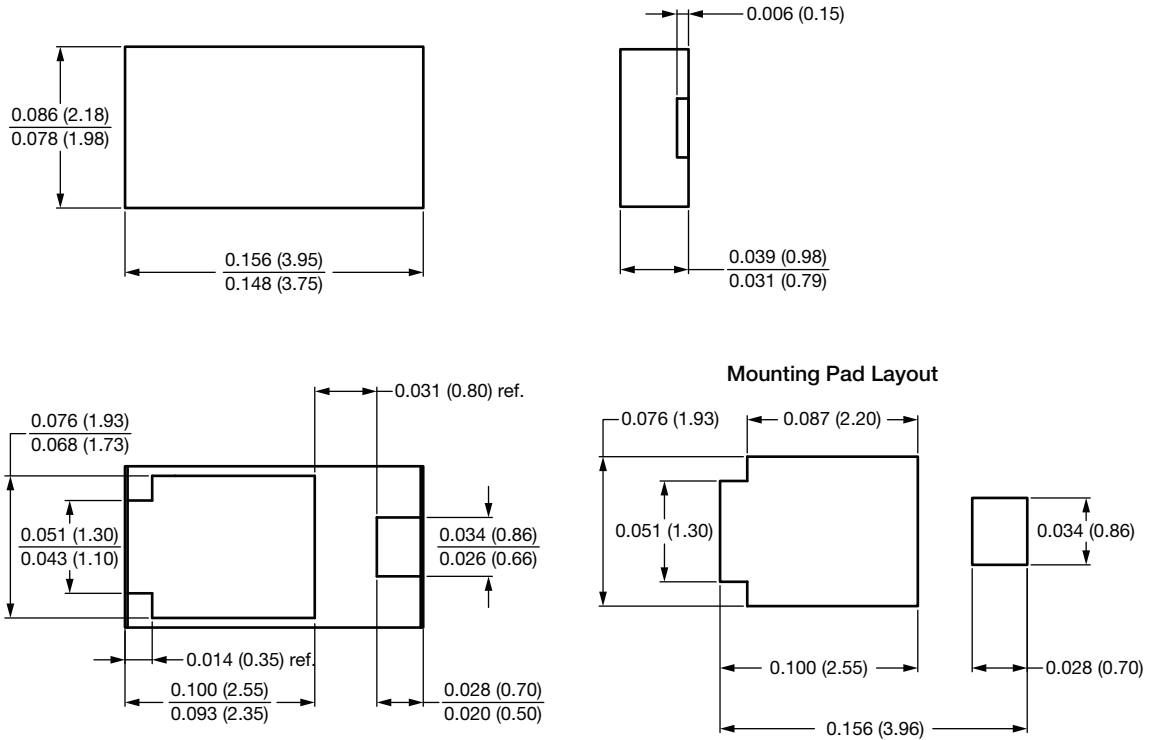


Fig. 6 - Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN3820A





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