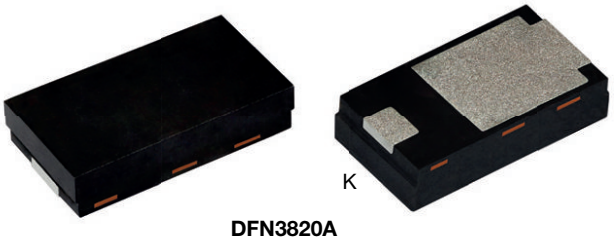
Surface Mount TRANSZORB® Transient Voltage Suppressors



DFN3820A

Cathode ○—|◀|—○ Anode

LINKS TO ADDITIONAL RESOURCES

Ultra Librarian EDA / CAD | Related Documents | Packages | Marking | Application Notes

PRIMARY CHARACTERISTICS	
V_{BR}	6.8 V to 51 V
V_{WM}	5.8 V to 43.6 V
P_{PPM} (10 x 1000 µs)	600 W
T_J max.	175 °C
Polarity	Unidirectional
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 placement
- Junction passivation optimized design passivated anisotropic rectifier technology
- Unidirectional
- Excellent clamping capability
- Peak pulse power: 600 W (10/1000 µs)
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- 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

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, medical, and telecommunication.

MECHANICAL DATA

Case: DFN3820A
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and industrial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end, heatsink is anode

MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 µs waveform (fig. 1) (1)	P_{PPM}	600	W
Peak pulse current with a 10/1000 µs waveform (fig. 3) (1)	I_{PPM}	See table next page	A
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +175	°C

Note

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V_{BR} (1) AT I_T (V)			TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_R (µA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} T_J = 150 °C I_D (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (3) αT (%/°C)
		MIN.	NOM.	MAX.							
6DFN6.8A	6ZS	6.45	6.80	7.14	10	5.80	1000	2000	57.1	10.5	0.047
6DFN7.5A	6ZT	7.13	7.50	7.88	10	6.40	250	500	53.1	11.3	0.052
6DFN8.2A	6ZV	7.79	8.20	8.61	10	7.02	100	200	49.6	12.1	0.056
6DFN9.1A	6ZW	8.65	9.10	9.55	1.0	7.78	25	50	44.8	13.4	0.060
6DFN10A	6ZY	9.5	10.0	10.5	1.0	8.55	5.0	20	41.4	14.5	0.064
6DFN11A	6ZZ	10.5	11.0	11.6	1.0	9.40	2.0	5.0	38.5	15.6	0.067
6DFN12A	6AA	11.4	12.0	12.6	1.0	10.2	2.0	6.0	35.9	16.7	0.070
6DFN13A	6AB	12.4	13.0	13.7	1.0	11.1	2.0	5.0	33.0	18.2	0.072
6DFN15A	6AC	14.3	15.0	15.8	1.0	12.8	1.0	5.0	28.3	21.2	0.076
6DFN16A	6AD	15.2	16.0	16.8	1.0	13.6	1.0	5.0	26.7	22.5	0.078
6DFN18A	6AE	17.1	18.0	18.9	1.0	15.3	1.0	5.0	23.5	25.5	0.080
6DFN20A	6AF	19.0	20.0	21.0	1.0	17.1	1.0	5.0	21.7	27.7	0.082
6DFN22A	6AG	20.9	22.0	23.1	1.0	18.8	1.0	5.0	19.6	30.6	0.084
6DFN24A	6AH	22.8	24.0	25.2	1.0	20.5	1.0	5.0	18.1	33.2	0.085
6DFN27A	6AJ	25.7	27.0	28.4	1.0	23.1	1.0	5.0	16.0	37.5	0.087
6DFN30A	6AK	28.5	30.0	31.5	1.0	25.6	1.0	5.0	14.5	41.4	0.088
6DFN33A	6AL	31.4	33.0	34.7	1.0	28.2	1.0	5.0	13.1	45.7	0.089
6DFN36A	6AM	34.2	36.0	37.8	1.0	30.8	1.0	5.0	12.0	49.9	0.090
6DFN39A	6AN	37.1	39.0	41.0	1.0	33.3	1.0	5.0	11.1	53.9	0.091
6DFN43A	6AP	40.9	43.0	45.2	1.0	36.8	1.0	5.0	10.1	59.3	0.092
6DFN47A	6AQ	44.7	47.0	49.4	1.0	40.2	1.0	10.0	9.3	64.8	0.092
6DFN51A	6AR	48.5	51.0	53.6	1.0	43.6	1.0	10.0	8.6	70.1	0.093

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) Surge current waveform per fig. 3 and derated per fig. 2

(3) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at $T_J = V_{BR}$ at 25 °C x (1 + αT x (T_J - 25))

(4) All terms and symbols are consistent with ANSI/IEEE C62.35

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	$R_{\theta JA}$ (1)	140	175	°C/W
	$R_{\theta JM}$ (2)	5	6.5	°C/W

Notes

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

(2) Thermal resistance junction-to-mount to follow JEDEC® 51-14 using Transient Dual Interface Test Method (TDIM)

IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	VALUE
IEC 61000-4-2	Contact discharge	C = 150 pF, R = 330 Ω	ESD	30 kV
	Air discharge			30 kV

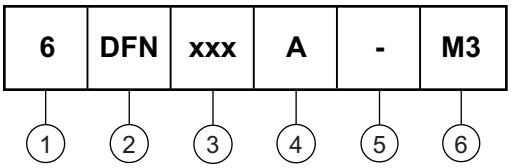
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ORDERING INFORMATION TABLE

Device code



1 - Peak pulse power rating (6 = 600 W)

2 - DFN package

3 - Nominal breakdown voltage

4 - Breakdown voltage tolerance and polarity (A ± 5 %, unidirectional)

5 - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)

6 - 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
6DFN6.8A-M3/H	0.023	H	3500	7" diameter plastic tape and reel
6DFN6.8A-M3/I	0.023	I	14 000	13" diameter plastic tape and reel

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

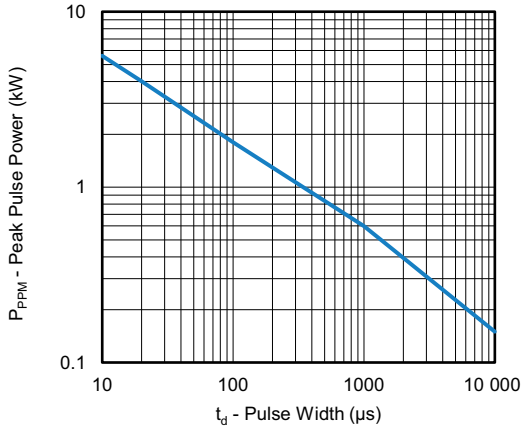


Fig. 1 - Peak Pulse Power Rating Curve

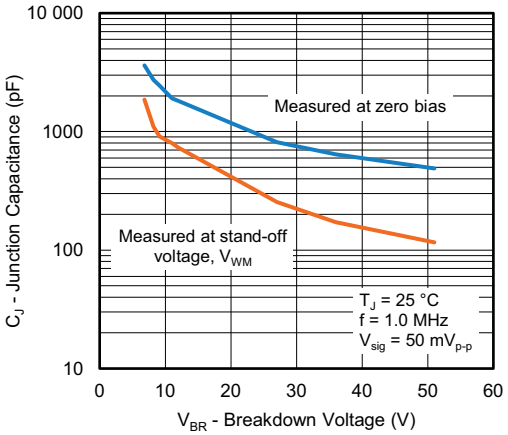


Fig. 4 - Typical Junction Capacitance

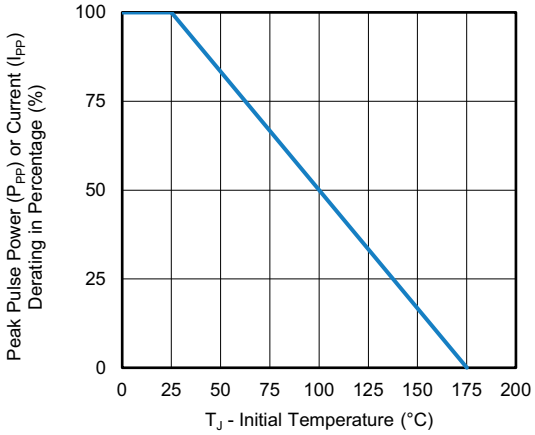


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

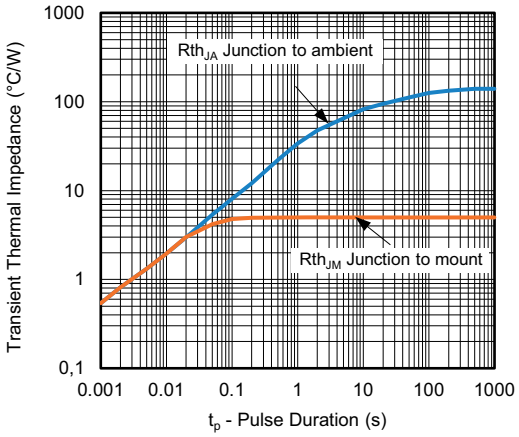


Fig. 5 - Typical Transient Thermal Impedance

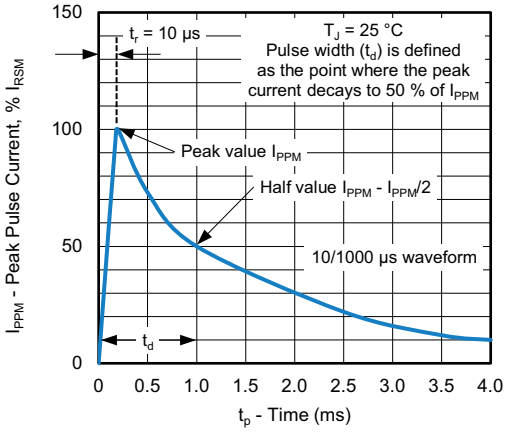


Fig. 3 - Pulse Waveform

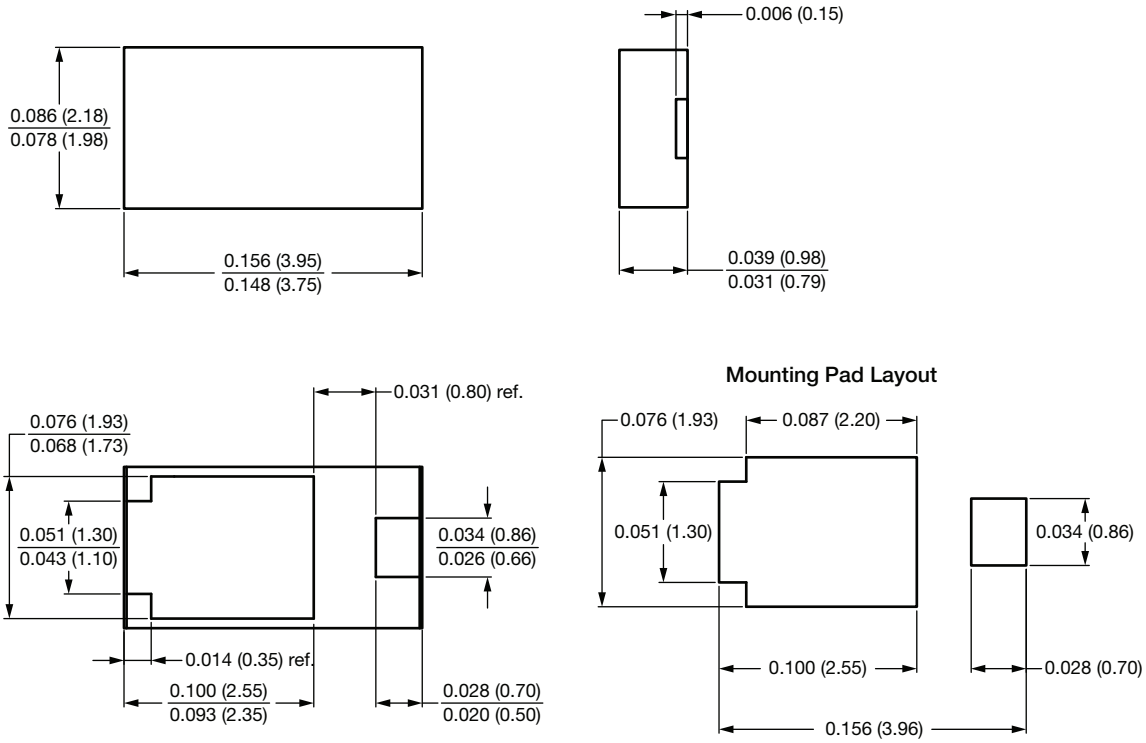
Note

- Fig. 1, power calculations is based on I_{PPM} times defined maximum clamping voltage by pulse width

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN3820A



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