Surface-Mount TRANSZORB® Transient Voltage Suppressors

DFN3820A

LINKS TO ADDITIONAL RESOURCES

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

PRIMARY CHARACTERISTICS	
V_{BR}	12 V to 100 V
V_{WM}	10.2 V to 85.5 V
P_{PPM} (10 x 1000 µs)	600 W
T_J max.	175 °C
Polarity	Bidirectional
Package	DFN3820A
Circuit configuration	Single

FEATURES

RoHS COMPLIANT HALOGEN FREE

- 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
- Bidirectional
- 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

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: no cathode band for bidirectional types

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

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_R (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)
		MIN.	NOM.	MAX.						
6DFN12CA	6AA	11.4	12.0	12.6	1.0	10.2	2.0	6.0	35.9	16.7
6DFN13CA	6AB	12.4	13.0	13.7	1.0	11.1	2.0	5.0	33.0	18.2
6DFN15CA	6AC	14.3	15.0	15.8	1.0	12.8	1.0	5.0	28.3	21.2
6DFN16CA	6AD	15.2	16.0	16.8	1.0	13.6	1.0	5.0	26.7	22.5
6DFN18CA	6AE	17.1	18.0	18.9	1.0	15.3	1.0	5.0	23.5	25.5
6DFN20CA	6AF	19.0	20.0	21.0	1.0	17.1	1.0	5.0	21.7	27.7
6DFN22CA	6AG	20.9	22.0	23.1	1.0	18.8	1.0	5.0	19.6	30.6
6DFN24CA	6AH	22.8	24.0	25.2	1.0	20.5	1.0	5.0	18.1	33.2
6DFN27CA	6AJ	25.7	27.0	28.4	1.0	23.1	1.0	5.0	16.0	37.5
6DFN30CA	6AK	28.5	30.0	31.5	1.0	25.6	1.0	5.0	14.5	41.4
6DFN33CA	6AL	31.4	33.0	34.7	1.0	28.2	1.0	5.0	13.1	45.7
6DFN36CA	6AM	34.2	36.0	37.8	1.0	30.8	1.0	5.0	12.0	49.9
6DFN39CA	6AN	37.1	39.0	41.0	1.0	33.3	1.0	5.0	11.1	53.9
6DFN43CA	6AP	40.9	43.0	45.2	1.0	36.8	1.0	5.0	10.1	59.3
6DFN47CA	6AQ	44.7	47.0	49.4	1.0	40.2	1.0	10.0	9.3	64.8
6DFN51CA	6AR	48.5	51.0	53.6	1.0	43.6	1.0	10.0	8.6	70.1
6DFN56CA	6AS	53.2	56.0	58.8	1.0	47.8	1.0	10.0	7.8	77.0
6DFN62CA	6AT	58.9	62.0	65.1	1.0	53.0	1.0	10.0	7.1	85.0
6DFN68CA	6AU	64.6	68.0	71.4	1.0	58.1	1.0	10.0	6.5	92.0
6DFN75CA	6AV	71.3	75.0	78.8	1.0	64.1	1.0	10.0	5.8	104
6DFN82CA	6AW	77.9	82.0	86.1	1.0	70.1	1.0	10.0	5.3	113
6DFN91CA	6AX	86.5	91.0	95.5	1.0	77.8	1.0	10.0	4.8	125
6DFN100CA	6AY	95.0	100	105	1.0	85.5	1.0	10.0	4.4	137

Notes
(1) Pulse test: $t_p \leq 50$ ms
(2) Surge current waveform per fig. 3 and derated per fig. 2
(3) All terms and symbols are consistent with ANSI/IEEE C62.35

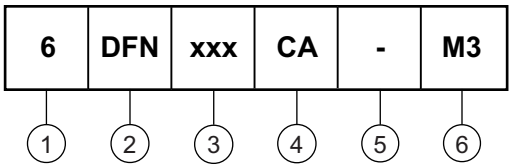
THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	$R_{\theta JA}$ (1)	140	175	°C/W
	$R_{\theta JM}$ (2)	5	6.5	°C/W

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

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 (CA ± 5 %, bidirectional)

5 - Quality grade (H = AEC-Q101 qualified, - = 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
6DFN12CA-M3/H	0.023	H	3500	7" diameter plastic tape and reel
6DFN12CA-M3/I	0.023	I	14 000	13" diameter plastic tape and reel

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

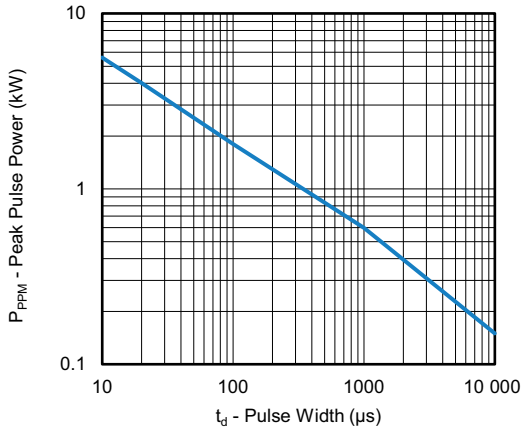


Fig. 1 - Peak Pulse Power Rating Curve

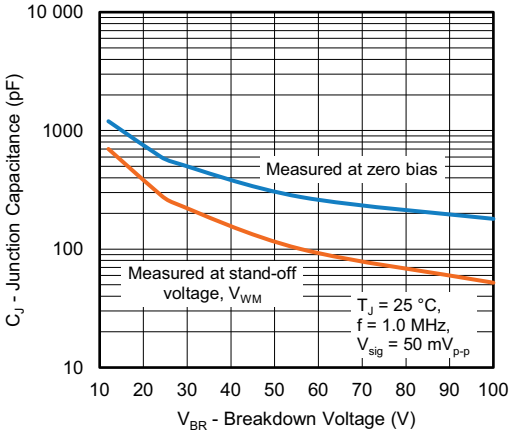


Fig. 4 - Typical Junction Capacitance

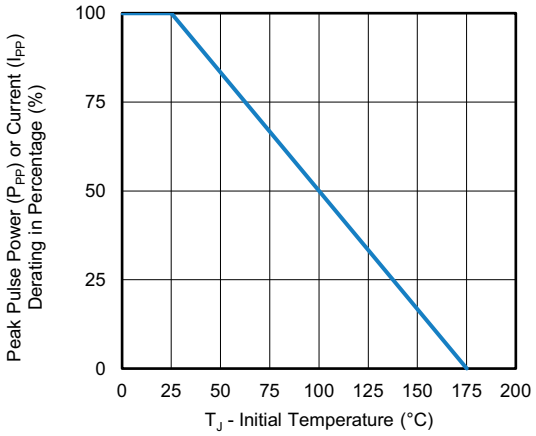


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

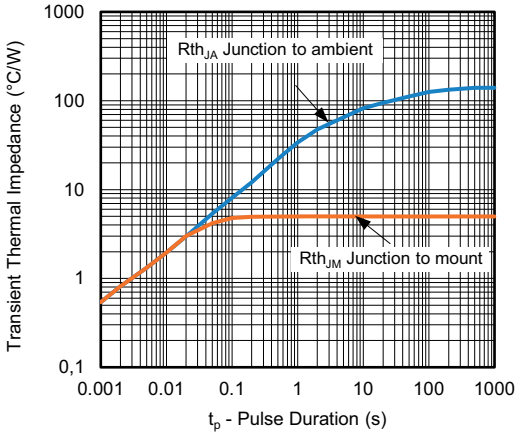


Fig. 5 - Typical Transient Thermal Impedance

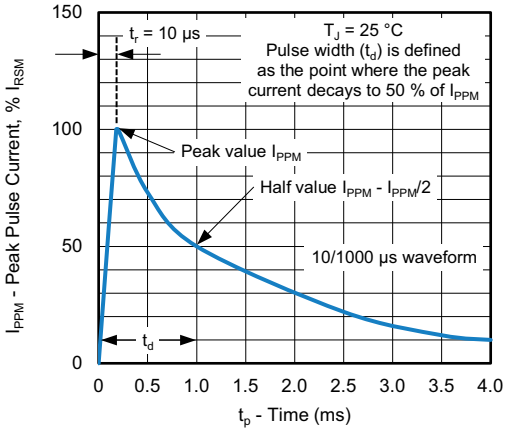


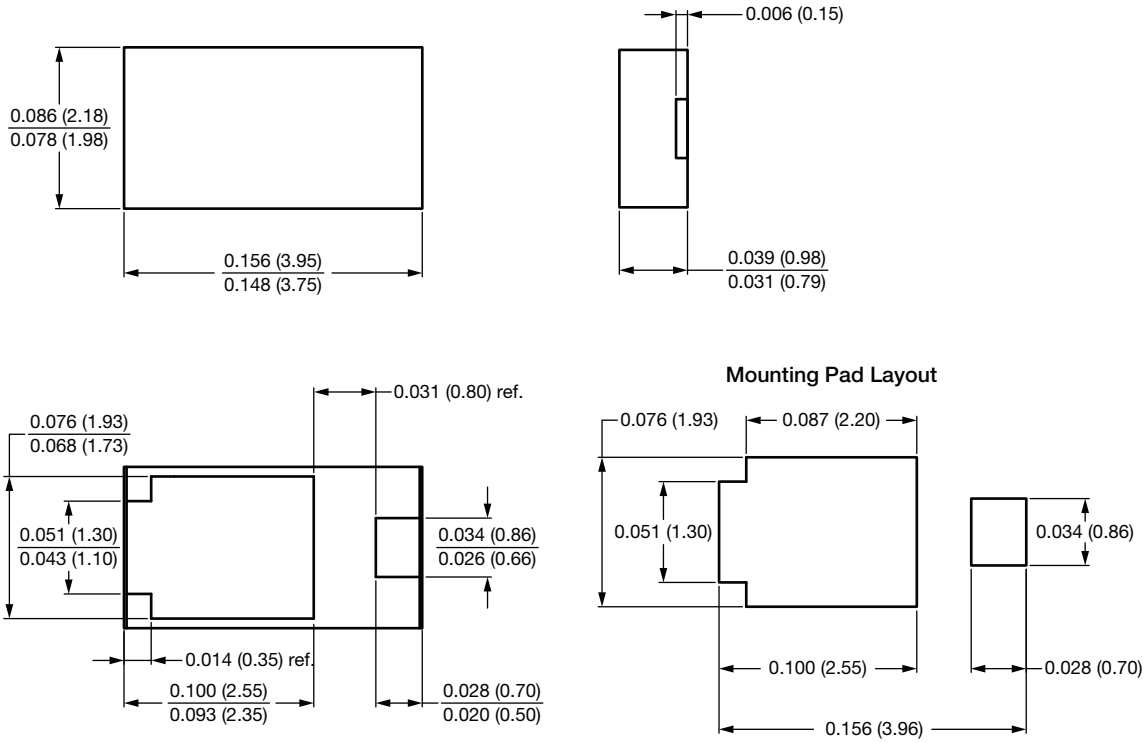
Fig. 3 - Pulse Waveform

Note

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

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN3820A



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