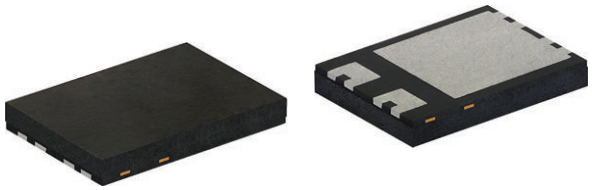
Surface Mount TRANSZORB® Transient Voltage Suppressors



DFN6546A

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)	3000 W
T_J max.	175 °C
Polarity	Bidirectional
Package	DFN6546A
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: 3000 W (10/1000 µs)
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compatible to SMPC (TO-277A) 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: DFN6546A
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}	3000	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.							
3KDFN12CA	3KNA	11.4	12.0	12.6	1.0	10.2	5.0	50	180	16.7	0.070
3KDFN13CA	3KNB	12.4	13.0	13.7	1.0	11.1	5.0	50	165	18.2	0.072
3KDFN15CA	3KNC	14.3	15.0	15.8	1.0	12.8	2.0	20	142	21.2	0.076
3KDFN16CA	3KND	15.2	16.0	16.8	1.0	13.6	2.0	20	133	22.5	0.078
3KDFN18CA	3KNE	17.1	18.0	18.9	1.0	15.3	1.0	10	118	25.5	0.080
3KDFN20CA	3KNF	19.0	20.0	21.0	1.0	17.1	1.0	10	108	27.7	0.082
3KDFN22CA	3KNG	20.9	22.0	23.1	1.0	18.8	1.0	10	98.0	30.6	0.084
3KDFN24CA	3KNH	22.8	24.0	25.2	1.0	20.5	1.0	10	90.4	33.2	0.085
3KDFN27CA	3KNJ	25.7	27.0	28.4	1.0	23.1	1.0	10	80.0	37.5	0.087
3KDFN30CA	3KNK	28.5	30.0	31.5	1.0	25.6	1.0	10	72.5	41.4	0.088
3KDFN33CA	3KNL	31.4	33.0	34.7	1.0	28.2	1.0	10	65.6	45.7	0.089
3KDFN36CA	3KNM	34.2	36.0	37.8	1.0	30.8	1.0	10	60.1	49.9	0.090
3KDFN39CA	3KNN	37.1	39.0	41.0	1.0	33.3	1.0	10	55.7	53.9	0.091
3KDFN43CA	3KNP	40.9	43.0	45.2	1.0	36.8	1.0	10	50.6	59.3	0.092
3KDFN47CA	3KNQ	44.7	47.0	49.4	1.0	40.2	1.0	10	46.3	64.8	0.092
3KDFN51CA	3KNR	48.5	51.0	53.6	1.0	43.6	1.0	10	42.8	70.1	0.093
3KDFN56CA	3KNS	53.2	56.0	58.8	1.0	47.8	1.0	10	39.0	77.0	0.093
3KDFN62CA	3KNT	58.9	62.0	65.1	1.0	53.0	1.0	10	35.3	85.0	0.094
3KDFN68CA	3KNU	64.6	68.0	71.4	1.0	58.1	1.0	10	32.6	92.0	0.095
3KDFN75CA	3KNV	71.3	75.0	78.8	1.0	64.1	1.0	10	28.8	104	0.095
3KDFN82CA	3KNW	77.9	82.0	86.1	1.0	70.1	1.0	10	26.5	113	0.095
3KDFN91CA	3KNX	86.5	91.0	95.5	1.0	77.8	1.0	10	24.0	125	0.096
3KDFN100CA	3KNY	95.0	100	105	1.0	85.5	1.0	10	21.9	137	0.096

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)	105	132	°C/W
	$R_{\theta JM}$ (2)	0.95	1.19	°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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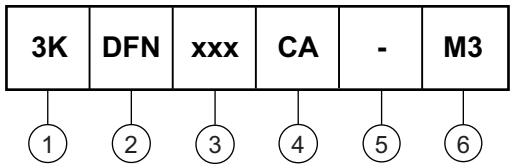
ORDERING INFORMATION TABLE

Device code



1 - Peak pulse power rating (3K = 3000 W)

2 - DFN package

3 - Nominal breakdown voltage

4 - Breakdown voltage tolerance and polarity (CA ± 5 %, bidirectional)

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
3KDFN12CA-M3/H	0.094	H	1500	7" diameter plastic tape and reel
3KDFN12CA-M3/I	0.094	I	6000	13" diameter plastic tape and reel

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

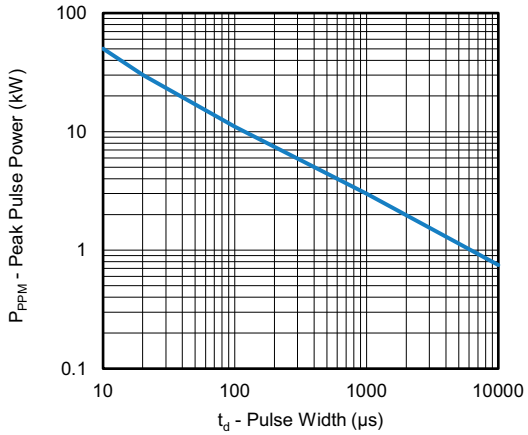

Fig. 1 - Peak Pulse Power Rating Curve

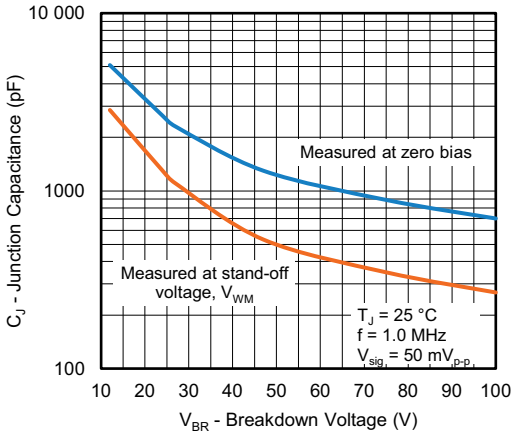

Fig. 4 - Typical Junction Capacitance

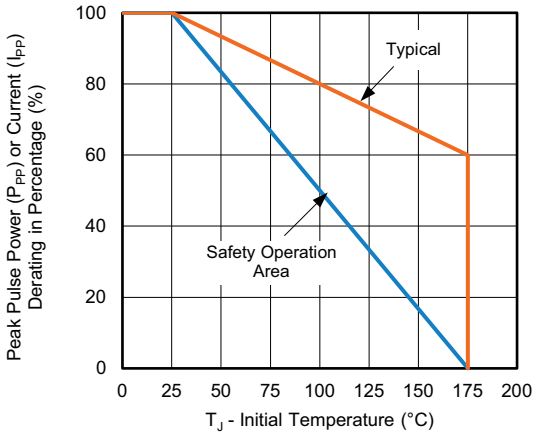

Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

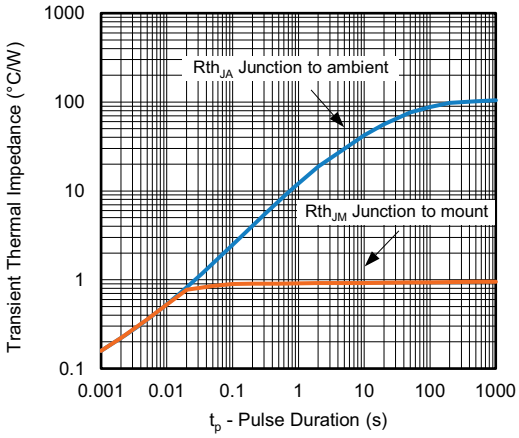

Fig. 5 - Typical Transient Thermal Impedance

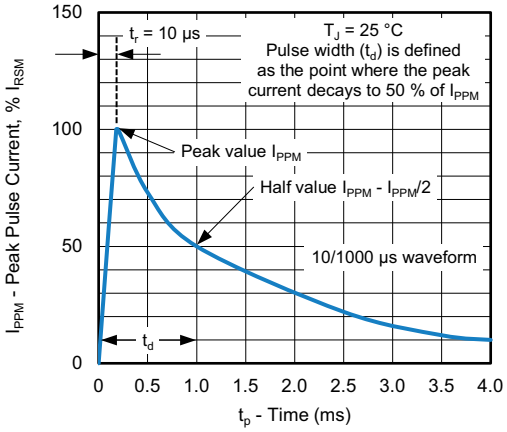

Fig. 3 - Pulse Waveform

Note

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

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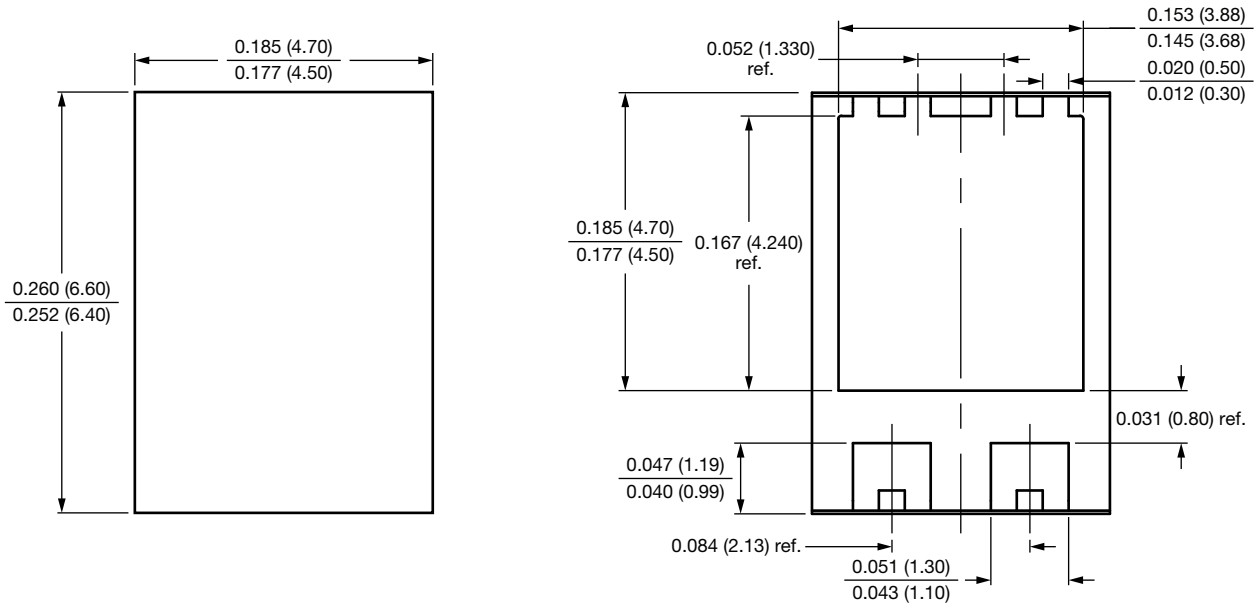
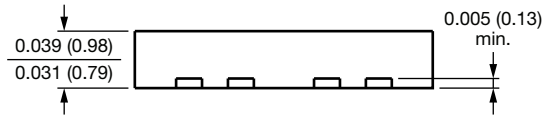
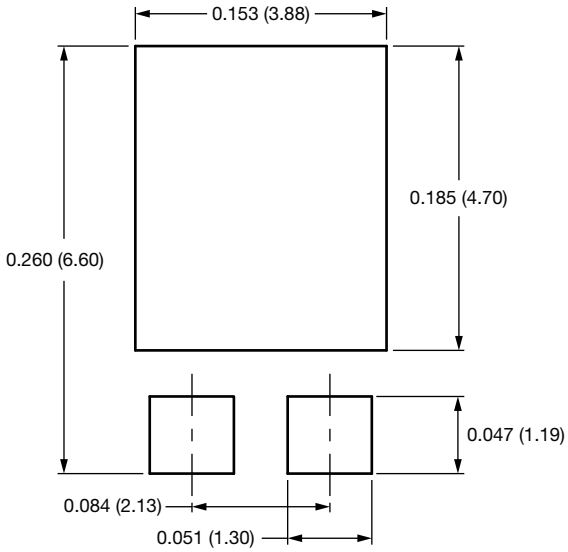
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN6546A





Mounting Pad Layout



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