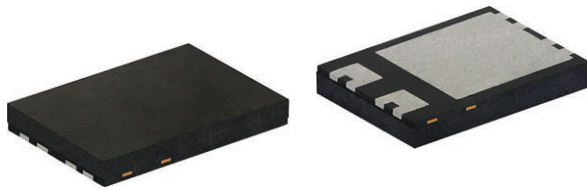


Surface Mount TRANSZORB[®] Transient Voltage Suppressors


DFN6546A

LINKS TO ADDITIONAL RESOURCES


PRIMARY CHARACTERISTICS	
V_{BR}	12 V to 100 V
V_{WM}	10.2 V to 85.5 V
P_{PPM} (10 x 1000 μ s)	2000 W
T_J max.	175 °C
Polarity	Bidirectional
Package	DFN6546A
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
- Bidirectional
- Excellent clamping capability
- Peak pulse power: 2000 W (10/1000 μ s)
- 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


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: 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 μ s waveform (fig. 1) ⁽¹⁾	P_{PPM}	2000	W
Peak pulse current with a 10/1000 μ s 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 _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⁾ α _T (%/°C)
		MIN.	NOM.	MAX.							
2KDFN12CA	2KNA	11.4	12.0	12.6	1.0	10.2	5.0	50	120	16.7	0.070
2KDFN13CA	2KNB	12.4	13.0	13.7	1.0	11.1	5.0	50	110	18.2	0.072
2KDFN15CA	2KNC	14.3	15.0	15.8	1.0	12.8	2.0	20	94.3	21.2	0.076
2KDFN16CA	2KND	15.2	16.0	16.8	1.0	13.6	2.0	20	88.9	22.5	0.078
2KDFN18CA	2KNE	17.1	18.0	18.9	1.0	15.3	1.0	10	78.4	25.5	0.080
2KDFN20CA	2KNF	19.0	20.0	21.0	1.0	17.1	1.0	10	72.2	27.7	0.082
2KDFN22CA	2KNG	20.9	22.0	23.1	1.0	18.8	1.0	10	65.4	30.6	0.084
2KDFN24CA	2KNH	22.8	24.0	25.2	1.0	20.5	1.0	10	60.2	33.2	0.085
2KDFN27CA	2KNJ	25.7	27.0	28.4	1.0	23.1	1.0	10	53.3	37.5	0.087
2KDFN30CA	2KNK	28.5	30.0	31.5	1.0	25.6	1.0	10	48.3	41.4	0.088
2KDFN33CA	2KNL	31.4	33.0	34.7	1.0	28.2	1.0	10	43.8	45.7	0.089
2KDFN36CA	2KNM	34.2	36.0	37.8	1.0	30.8	1.0	10	40.1	49.9	0.090
2KDFN39CA	2KNN	37.1	39.0	41.0	1.0	33.3	1.0	10	37.1	53.9	0.091
2KDFN43CA	2KNP	40.9	43.0	45.2	1.0	36.8	1.0	10	33.7	59.3	0.092
2KDFN47CA	2KNQ	44.7	47.0	49.4	1.0	40.2	1.0	10	30.9	64.8	0.092
2KDFN51CA	2KNR	48.5	51.0	53.6	1.0	43.6	1.0	10	28.5	70.1	0.093
2KDFN56CA	2KNS	53.2	56.0	58.8	1.0	47.8	1.0	10	26.0	77.0	0.093
2KDFN62CA	2KNT	58.9	62.0	65.1	1.0	53.0	1.0	10	23.5	85.0	0.094
2KDFN68CA	2KNU	64.6	68.0	71.4	1.0	58.1	1.0	10	21.7	92.0	0.095
2KDFN75CA	2KNV	71.3	75.0	78.8	1.0	64.1	1.0	10	19.2	104	0.095
2KDFN82CA	2KNW	77.9	82.0	86.1	1.0	70.1	1.0	10	17.7	113	0.095
2KDFN91CA	2KNX	86.5	91.0	95.5	1.0	77.8	1.0	10	16.0	125	0.096
2KDFN100CA	2KNY	95.0	100	105	1.0	85.5	1.0	10	14.6	137	0.096

Notes

- (1) Pulse test: t_p ≤ 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 + α_T 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 _{θJA} ⁽¹⁾	76	95	°C/W
	R _{θJM} ⁽²⁾	1.2	1.5	°C/W

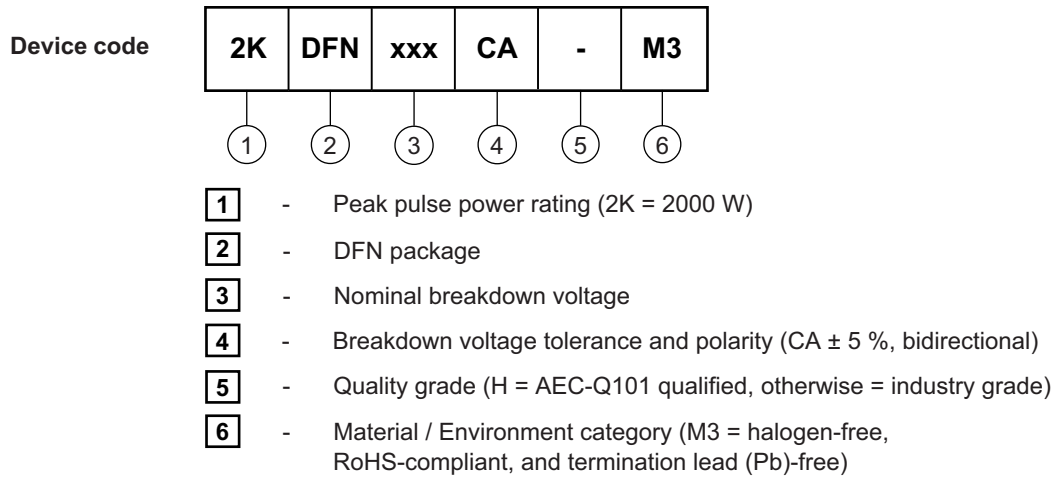
Notes

- (5) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., 4.8 mm x 4.72 mm
- (6) 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



ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
2KDFN12CA-M3/H	0.094	H	1500	7" diameter plastic tape and reel
2KDFN12CA-M3/I	0.094	I	6000	13" diameter plastic tape and reel



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

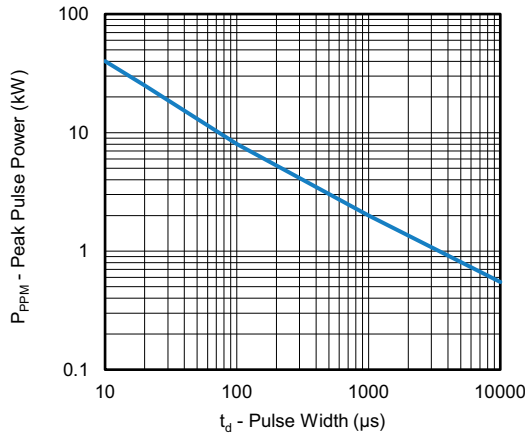


Fig. 1 - Peak Pulse Power Rating Curve

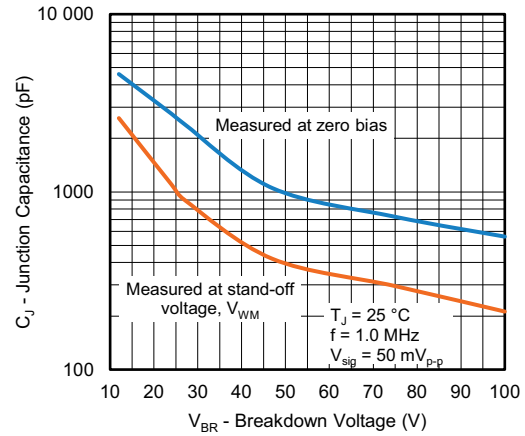


Fig. 4 - Typical Junction Capacitance

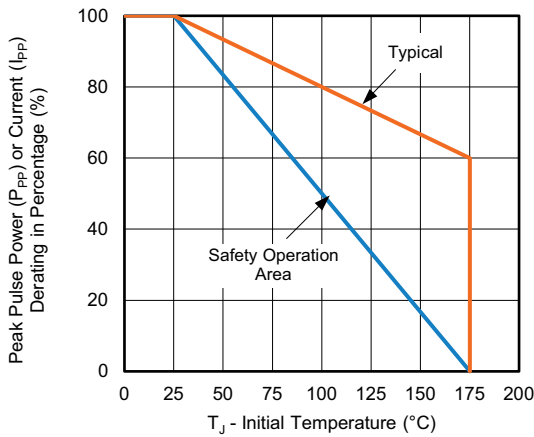


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

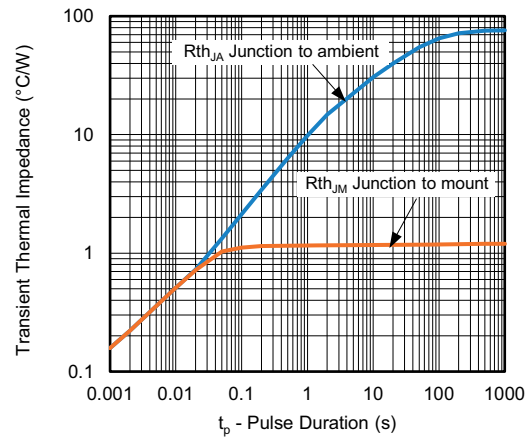


Fig. 5 - Typical Transient Thermal Impedance

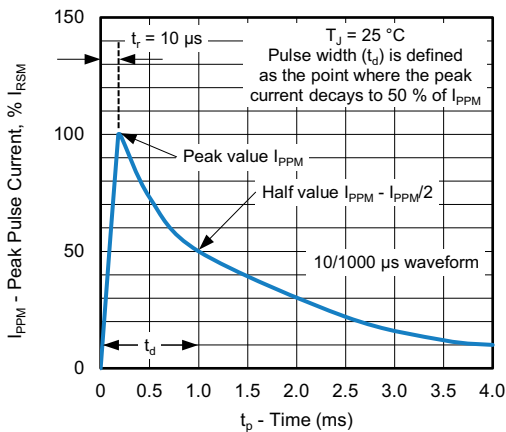


Fig. 3 - Pulse Waveform

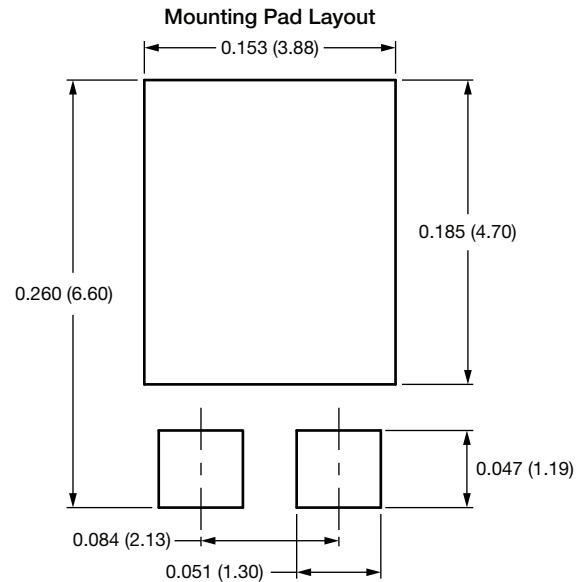
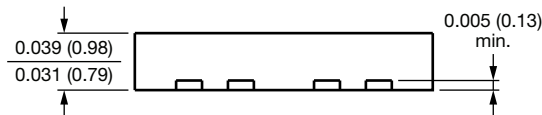
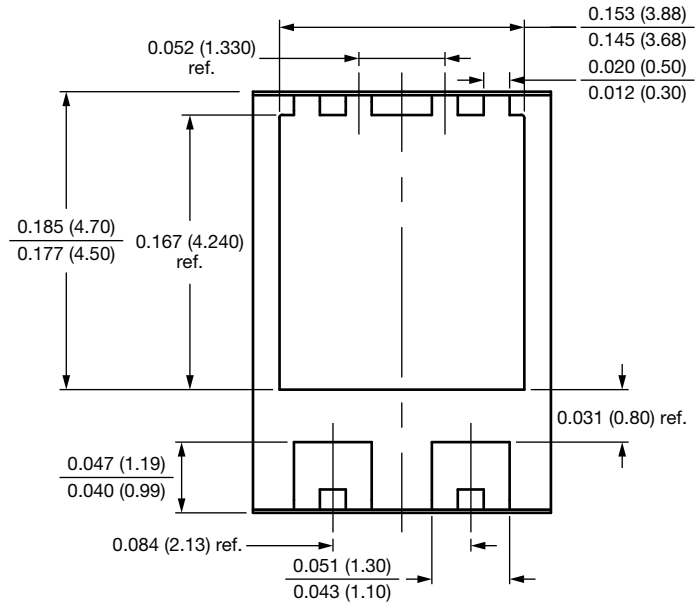
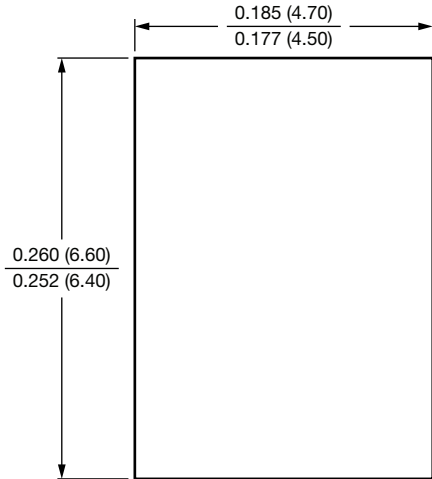
Note

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



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DFN6546A





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