Metal Film Resistors, Pulse Withstanding Protective

FEATURES

- Special Vishay Dale design provides lightning withstand characteristics along with resistor functionality
- A thicker tin oxide power film system provides lightning surge absorption capabilities
- Higher turns ratio and glass substrate provide sharper fusing characteristic than the standard flameproof product line
- Protect against a variety of electrical hazards which can change or destroy sensitive electronic equipment including high energy voltage surges caused by power line anomalies (direct power crosses or inductively coupled effects) and other momentary overvoltages
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free Available

e3

RoHS* COMPLIANT

Note

* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{70\,°C}$ W	RESISTANCE RANGE (2) Ω	TOLERANCE ± %	CUTOFF VALUE (1)
FP1/2P	FP1/2P	0.5	10 to 1M	1, 2, 5	2K00
FP001P	FP1P	1	10 to 1M	1, 2, 5	1K00
FP002P	FP2P	2	355 to 125K	1, 2, 5	355R
FP003P	FP3P	3	46.4 to 125K	1, 2, 5	250R
FP069P	FP69P	2	25 to 126K	1, 2, 5	400R

Notes

(1) Pulse withstanding capabilities are value dependent. Values above the cutoff value will meet all of the surge test requirements shown on the following pages.

(2) Contact factory for values outside these published ranges.

MARKING

- DALE
- Value
- Tolerance
- Style and case size
- Date code (year/week)

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: FP002P1K00F9256B8 (preferred part numbering format)

F	P	0	0	2	P	1	K	0	0	F	9	2	5	6	B	8

GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	SPEC CODES	PACKAGING (3)
(See Standard Electrical Specifications table)	**R** = Ω **K** = kΩ **M** = MΩ **10R0** = 10 Ω **1K30** = 1.3 kΩ **1M00** = 1.0 MΩ	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 %	**5555** = FP1/2P **6206** = FP001P **9256** = FP002P **9303** = FP003P **7532** = FP069P	**EK** = Lead (Pb)-free, strip **EA** = Lead (Pb)-free, T/R **B8** = Tin/lead, strip **CH** = Tin/lead, T/R (750 pieces) **CJ** = Tin/lead, T/R (1000 pieces)

Historical Part Number: FP2P 1K00 1 % B8 (will continue to be accepted)

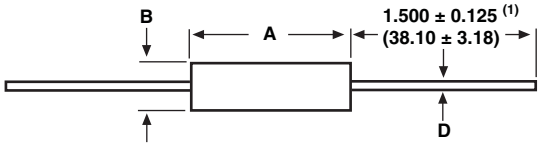
FP2P	1K00	1 %	B8
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

Notes

(3) Some packaging codes are model specific.

(4) For additional information on packaging, refer to the Through Hole Resistor Packaging document (www.vishay.com/doc?31544).

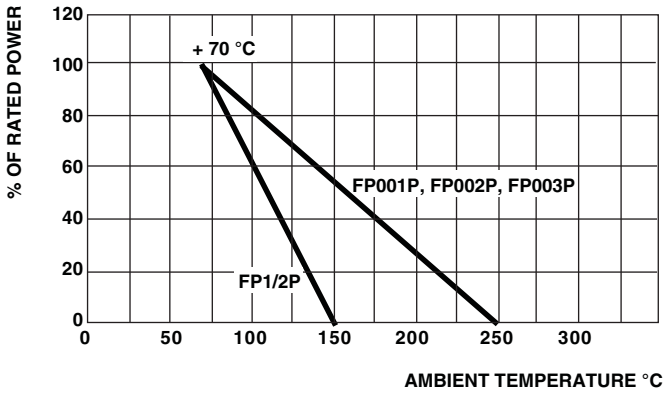
DIMENSIONS in inches (millimeters)



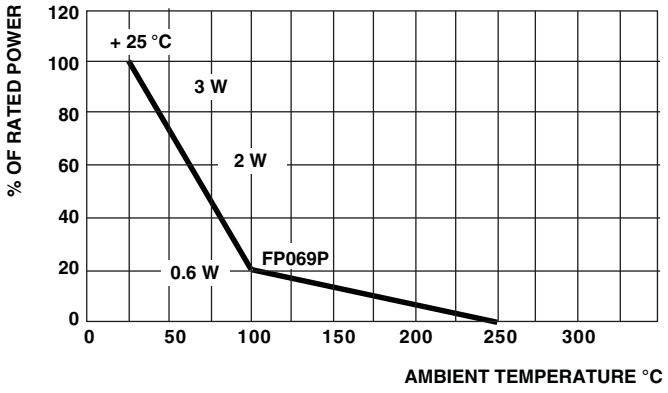
GLOBAL MODEL	A	B	D
FP1/2P	0.360 ± 0.020 (9.14 ± 0.51)	0.138 + 0.012 - 0.023 (3.51 + 0.31 - 0.58)	0.032 ± 0.002 (0.81 ± 0.05)
FP001P	0.560 ± 0.031 (14.22 ± 0.79)	0.190 + 0.005 - 0.030 (4.83 + 0.13 - 0.76)	0.032 ± 0.002 (0.81 ± 0.05)
FP002P	0.687 ± 0.031 (17.45 ± 0.79)	0.300 ± 0.020 (7.62 ± 0.51)	0.032 ± 0.002 (0.81 ± 0.05)
FP003P	0.900 ± 0.055 (22.86 ± 1.40)	0.300 ± 0.020 (7.62 ± 0.51)	0.032 ± 0.002 (0.81 ± 0.05)
FP069P	0.516 ± 0.021 (13.11 ± 0.53)	0.225 ± 0.012 (5.72 ± 0.31)	0.032 ± 0.002 (0.81 ± 0.05)

Note

(1) Lead length for product in strip pack. For product supplied in Tape and Reel, the actual lead length would be based on the body size, tape spacing and lead trim.



DERATING



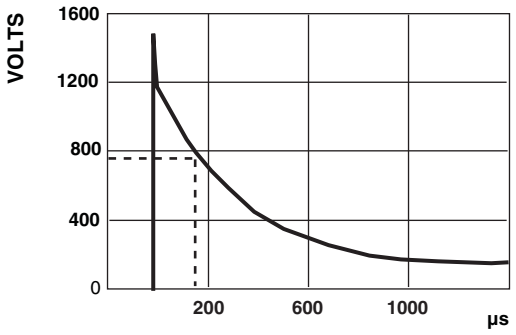
DERATING

LIGHTNING PULSE WAVE FORMS

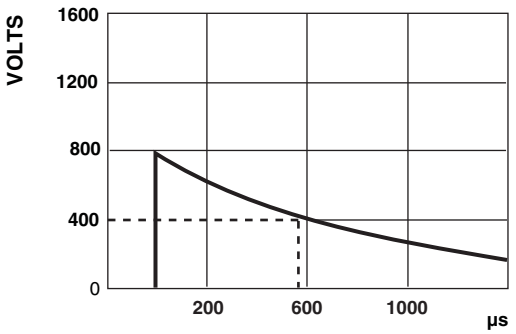
Lightning pulse wave forms are defined by three numbers:

- Maximum time to reach peak voltage level (typically 10 µs)
- Minimum time for voltage to decrease to half value
- The peak voltage level

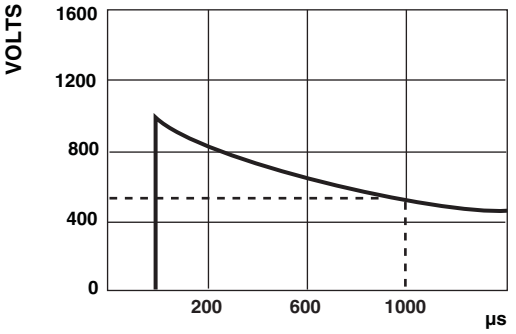
Three examples are shown below.



10 by 160 µs up to 1500 V **FCC - Longitudinal Surge**

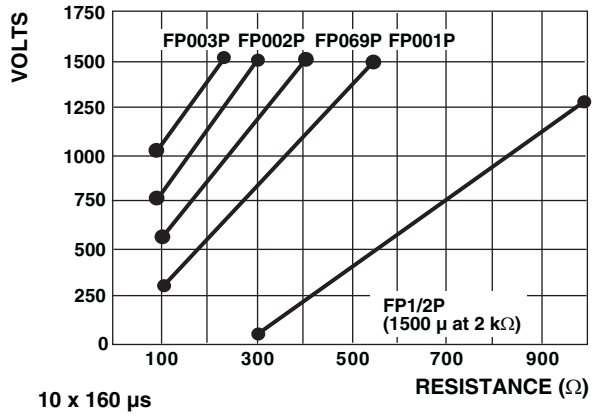


10 by 560 µs up to 800 V **FCC - Metallic Surge**

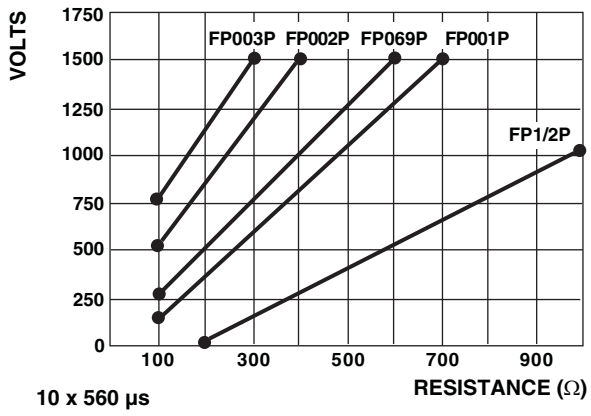


10 by 1000 µs up to 1000 V **REA - Current Surge**

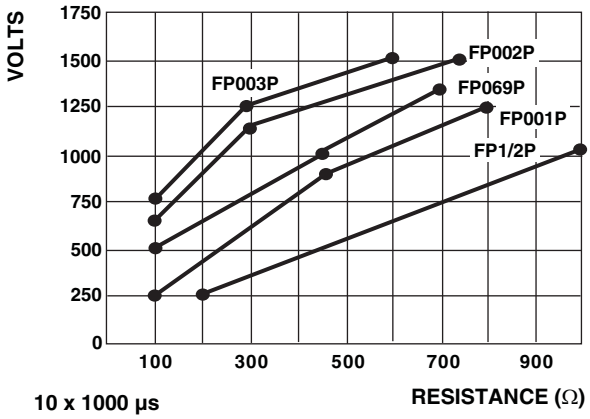
These graphs show the relationship value and pulse withstanding voltage for FP1/2P thru FP003P using a 1.0 % resistance shift after 10 pulses as the figure of merit. The stable operating region of each package is on the right side of the appropriate line.



10 x 160 µs



10 x 560 µs



10 x 1000 µs

PACKAGING			
GLOBAL MODEL	PACKAGING TYPE	PACKAGING CODE	
		LEAD (Pb)-BEARING	LEAD (Pb)-FREE
FP1/2P, FP001P, FP069P	Strip	B8	EK
	Tape/reel	CJ	EA
FP002P, FP003P	Strip	B8	EK
	Tape/reel	CH	EA

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FP069P220KF7532B8 FP002P448RD9256B8 FP002P402RD9256B8 FP001P1K80G6206KR FP002P470RD9256B8 FP1\2P15K0F5555A5 FP002P360RD9256B8 FP069P100KJ7532B8 FP002P10K0J9256B8 FP1\2P30K1F5555BF FP002P2K20J9256B8 FP002P825RF9256B8 FP002P10R0G9256B8 FP002P680RJ9256B8 FP1\2P56R2F5555BF FP002P200RD9256B8 FP002P100RF9256B8 FP002P137RD9256CH FP002P180RD9256B8 FP002P464RF9256B8 FP002P5K60G9256B8 FP002P10K0G9256B8 FP1\2P5K62F5555BF FP2P-432K-1% FP002P240RJ9256B8 FP1/2P1K00F5555B8 FP002P390KF9256B8 FP2P 210K 5% FP002P390KJ9256B8 FP001P10R0J6206B8 FP002P820RG9256CF FP2P 51 5% FP001P100RF6206C3 FP2P 2.74K 1% FP2P 210K 1% FP69P 499 5%TR FP001P100RF6206CF FP1/2P100RJ5555B8 FP002P2K22J9256B8 FP2P-301K-1% FP002P200KF9256B8 FP002P750KF9256B8 FP003P390KF9303B8 FP1\2P34K0F5555BF FP1\2P49R9F5555BF FP069P5K00J7532B8 FP002P2K00G9256B8 FP069P499RJ7532B8 FP069P270KJ7532B8 FP002P1K20G9256B8 FP002P200KJ9256B8 FP069P1K30F7532B8 FP069P1K50F7532B8 FP002P680KJ9256B8 FP002P68K0J9256B8 FP002P47R0J9256B8 FP069P20R0J7532B8 FP003P200KF9303B8 FP069P51R1F7532B8 FP002P2K40F9256B8 FP002P130RF9256B8 FP069P100RJ7532B8 FP002P1M00J9256B8 FP1\2P10K0F5555BF FP002P47R0G9256B8 FP002P750RJ9256B8 FP001P47R0F6204B8 FP1\2P39K2F5555BF FP002P10R0J9256B8 FP001P18R0J6204B8 FP1\2P100KJ5555BF FP069P1K00F7532B8 FP1/2P 150 1% FP2P 2.4K 1%TR5 FP2P 2.7K 5% FP3P 2K 5% FP69P 200 1% FP69P 5.1K 1%TR FP1P 100 1% FP2P 1M 5% FP1/2P2K20J5555B8 FP2P 470 5% FP002P750RJ9256CF FP002P22R0J9256EK FP1/2P150RF5555B8 FP002P39R0J9256EK FP069P200RF7532B8