

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

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	POWER RATING P _{70°C} W	RESISTANCE RANGE Ω	TOLERANCE	CUT-OFF VALUE
FP1/2P	1/2	10R - 1M	± 1%, ± 2%, ± 5%	2k00
FP1P	1	10R - 1M	± 1%, ± 2%, ± 5%	1k00
FP2P	2	10R - 1.5M	± 1%, ± 2%, ± 5%	300R
FP3P	3	10R - 1M	± 1%, ± 2%, ± 5%	250R
FP69P	2	10R - 1M	± 1%, ± 2%, ± 5%	400R

Note: Pulse withstanding capabilities are value dependent.

Value above the cutoff value, shown above, will meet all the surge test requirements shown on next page.

MARKING

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

ORDERING INFORMATION

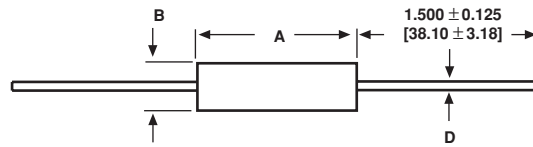
FP2P
MODEL
FP1/2P
FP1P
FP2P
FP3P
FP69P

1k00
VALUE
1k00 = 1000 ohm

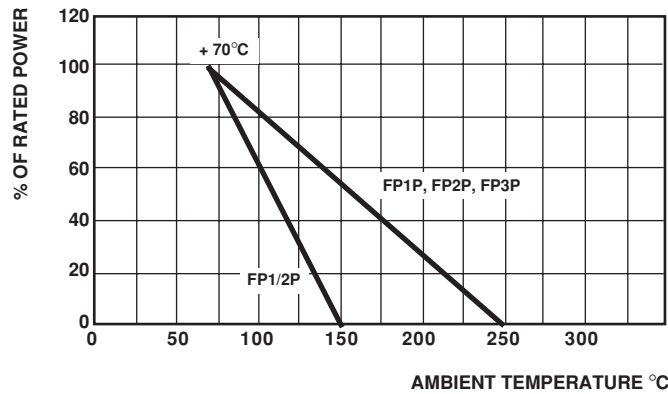
± 1%
TOLERANCE
± 1%
± 2%
± 5%



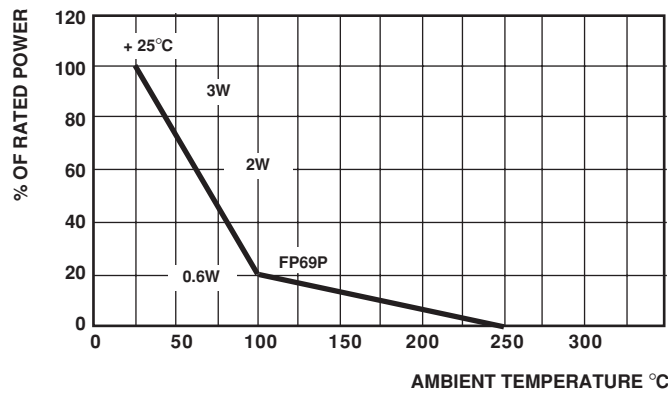
DIMENSIONS in inches [millimeters]



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]
FP1P	0.560 ± 0.031 [14.22 ± 0.79]	0.190 + 0.007 - 0.015 [4.83 + 0.18 - 0.38]	0.032 ± 0.002 [0.81 ± 0.05]
FP2P	0.687 ± 0.031 [17.45 ± 0.79]	0.300 ± 0.020 [7.62 ± 0.51]	0.032 ± 0.002 [0.81 ± 0.05]
FP3P	0.900 ± 0.055 [22.86 ± 1.40]	0.300 ± 0.020 [7.62 ± 0.51]	0.032 ± 0.002 [0.81 ± 0.05]
FP69P	0.516 ± 0.021 [13.11 ± 0.53]	0.225 ± 0.012 [5.72 ± 0.31]	0.032 ± 0.002 [0.81 ± 0.05]



DERATING



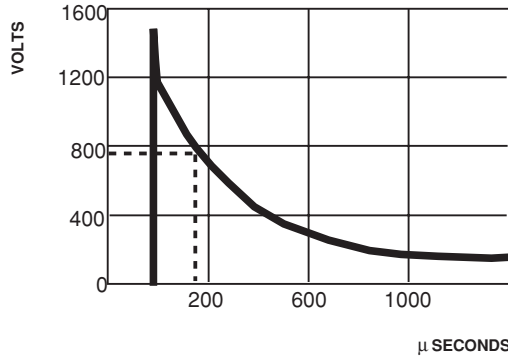
DERATING

LIGHTNING PULSE WAVE FORMS

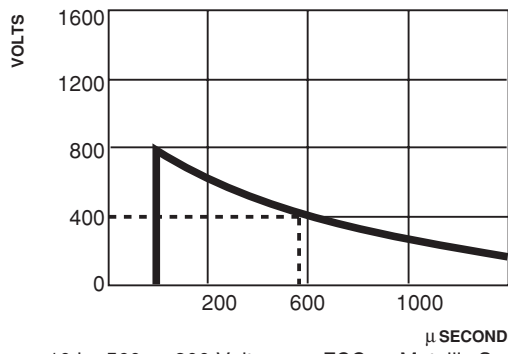
Lightning pulse wave forms are defined by three numbers:

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

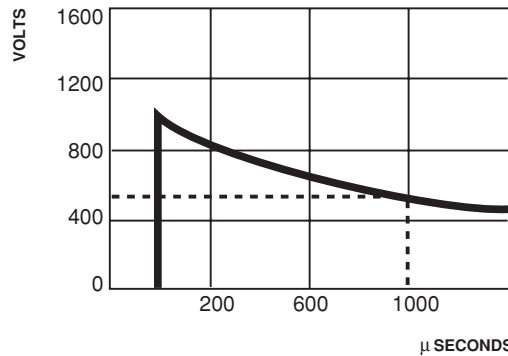
Three examples are shown below.



10 by 160 — 1500 Volts FCC — Longitudinal Surge



10 by 560 — 800 Volts FCC — Metallic Surge



10 by 1000 — 1000 Volts REA — Current Surge



These graphs show the relationship between resistance value and pulse withstanding voltage for FP1/2P thru FP3P 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.

