

Features:

- Robust metal oxide film element
- Flameproof design
- Compact size
- Useful in circuits where duty cycles require power resistors
- Tin-plated copper leads
- Cut and formed product is available on select sizes; contact factory for details
- RoHS compliant, lead free and halogen free



Electrical Specifications - RSPF

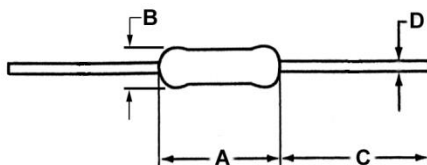
Type / Code	Power Rating (W) @ 70°C	Maximum Working Voltage (1)	Maximum Overload Voltage	TCR	Ohmic Range (Ω) and Tolerance	
					1%, 2%	5%
RSPF14	0.25	250	500	- 200 ppm/°C ~ + 350 ppm/°C	10 - 100 K	2.2 - 1 M
RSPF12	0.5	400	800			
RSPF1	1	500	1000			
RSPF2	2	500	1000			
RSPF3	3	500	1000			

Electrical Specifications - RSPL

Type / Code	Power Rating (W) @ 70°C	Maximum Working Voltage (1)	Maximum Overload Voltage	TCR	Ohmic Range (Ω) and Tolerance	
					1%, 2%	5%
RSPL14	0.25	$\sqrt{\text{PR}}$	$\sqrt{\text{PR}} \times 2.5$	- 200 ppm/°C ~ + 350 ppm/°C	-	0.1 - 2
RSPL12	0.5	$\sqrt{\text{PR}}$	$\sqrt{\text{PR}} \times 2.5$			
RSPL1	1	$\sqrt{\text{PR}}$	$\sqrt{\text{PR}} \times 2.5$			
RSPL2	2	$\sqrt{\text{PR}}$	$\sqrt{\text{PR}} \times 2.5$			
RSPL3	3	$\sqrt{\text{PR}}$	$\sqrt{\text{PR}} \times 2.5$			

(1) Lesser of $\sqrt{\text{PR}}$ or maximum working voltage

Mechanical Specifications

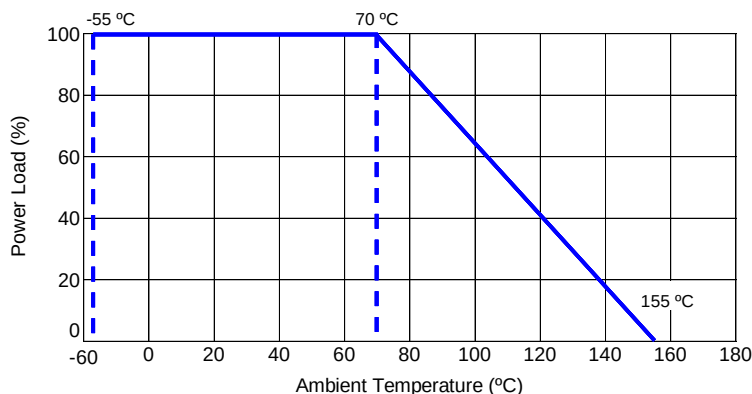


Type / Code	A Body Length	B Body Diameter	C Lead Length (Bulk)	D Lead Diameter	Unit
RSPF14 / RSPL14	0.13 ± 0.008 / - 0	0.07 ± 0.01	1.10 ± 0.12	0.02 ± 0.002	inches
	3.20 ± 0.20 / - 0	1.82 ± 0.20	28.00 ± 3.00	0.45 ± 0.05	mm
RSPF12 / RSPL12	0.24 ± 0.020	0.09 ± 0.01	1.10 ± 0.12	0.02 ± 0.002	inches
	6.00 ± 0.50	2.30 ± 0.20	28.00 ± 3.00	0.55 ± 0.05	mm
RSPF1 / RSPL1	0.35 ± 0.039	0.12 ± 0.02	1.10 ± 0.12	0.03 ± 0.002	inches
	9.00 ± 1.00	3.00 ± 0.50	28.00 ± 3.00	0.70 ± 0.05	mm
RSPF2 / RSPL2	0.43 ± 0.039	0.16 ± 0.02	1.10 ± 0.12	0.03 ± 0.002	inches
	11.00 ± 1.00	4.00 ± 0.50	28.00 ± 3.00	0.80 ± 0.05	mm
RSPF3 / RSPL3	0.59 ± 0.039	0.22 ± 0.04	1.38 ± 0.12	0.03 ± 0.002	inches
	15.00 ± 1.00	5.50 ± 1.00	35.00 ± 3.00	0.80 ± 0.05	mm

Performance Characteristics	
Test	Test Results
Short Time Overload	$\pm (0.75\% + 0.05 \Omega)$
Moisture Resistance	$\pm (5\% + 0.05 \Omega)$
Load Life @ 70 °C - 1000 hours	$\pm (5\% + 0.05 \Omega)$
Dielectric Withstanding Voltage	$\pm (5\% + 0.05 \Omega)$
Resistance to Solvent	Permanent marking no physical damage or deterioration

Operating Temperature Range: -55 °C to +155 °C

Power Derating Curve:

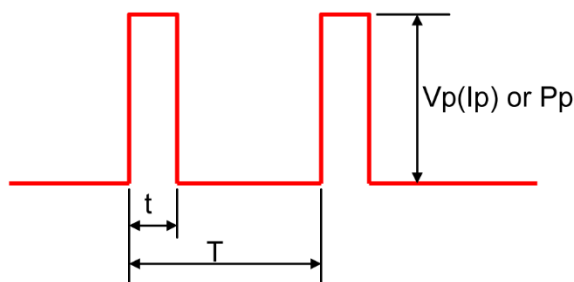


Repetitive Pulse Information:

If repetitive pulses are applied to resistors, pulse wave form must be less than “pulse limiting voltage”, “pulse limiting current” or “pulse limiting wattage” calculated by the formula below.

$$\begin{aligned} V_p &= K \sqrt{P \times R \times T / t} \\ I_p &= K \sqrt{P / R \times T / t} \\ P_p &= K^2 \times P \times T / t \end{aligned}$$

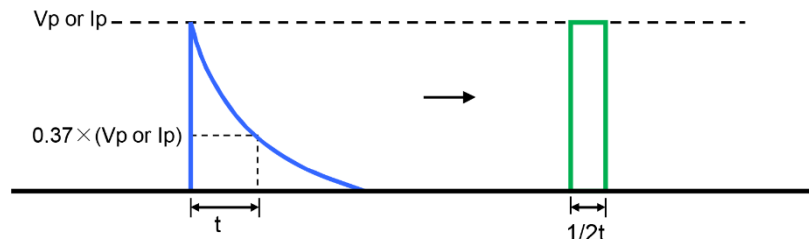
Where: V_p : Pulse limiting voltage (V)
 I_p : Pulse limiting current (A)
 P_p : Pulse limiting wattage (W)
 P : Power rating (W)
 R : Nominal resistance (ohm)
 T : Repetitive period (sec)
 t : Pulse duration (sec)
 K : Coefficient: 0.9
 $[V_r$: Rated Voltage (V), I_r : Rated Current (A)]



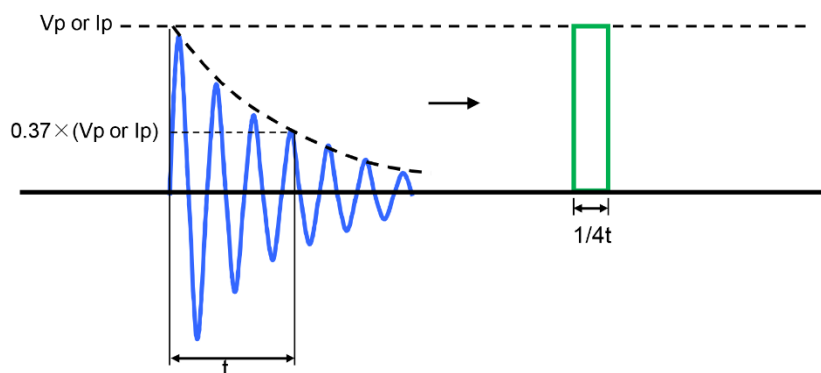
- Note 1: If $T > 10 \rightarrow T = 10$ (sec), $T / t > 1000 \rightarrow T / t = 1000$
 Note 2: If $T > 10$ and $T / t > 1000$, “Pulse Limiting power (Single pulse) is applied
 Note 3: If $V_p < V_r$ ($I_p < I_r$ or $P_p < P$), V_r (I_r , P) is V_p (I_p , P_p)
 Note 4: Pulse limiting voltage (current, wattage) is applied at less than rated ambient temperature.
 If ambient temperature is more than the rated temperature (70 °C), decrease power rating according to “Power Derating Curve”
 Note 5: Assure sufficient margin for use period and conditions for “pulse limiting voltage”
 Note 6: If the pulse waveform is not square wave, judge after transform the waveform into square wave according to the “Waveform Transformation to Square Wave”.

Waveform Transformation to Square Wave

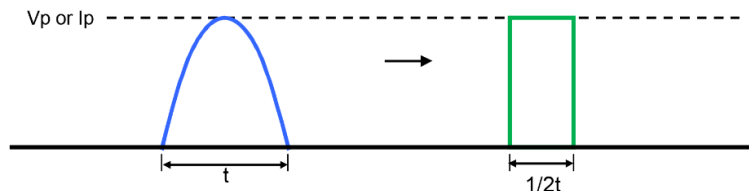
1. Discharge curve wave with time constant "t" → Square wave



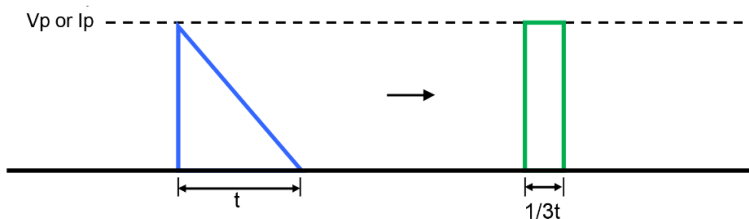
2. Damping oscillation wave with time constant of envelope "t" → Square wave



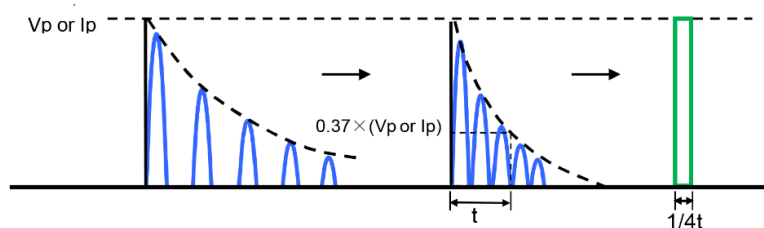
3. Half-wave rectification wave → Square wave



4. Triangular wave → Square wave



5. Special wave → Square wave



RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status						
Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
RSPF	Flameproof Power Leaded Resistor	Axial	YES	99.3/0.7 Sn/Cu	Apr-05	05/14
RSPL	Flameproof Power Leaded Resistor Low Resistance	Axial	YES	99.3/0.7 Sn/Cu	Apr-05	05/14

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the Eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

1	2	3	4	5	6	7	8	9	10	11	12
R	S	P	F	1	2	J	B	1	0	R	0

Product Series		Size	Power Rating
RSPF	Flameproof	14	0.25 W
RSPL	Low values	12	0.5 W
		1	1 W
		2	2 W
		3	3 W

Tolerance		
Code	Tol	Value
F	1%	E96, E24
G	2%	E24
J	5%	E24

Packaging			
Code	Description	Size	Quantity
T	Tape and Reel	RSPF14, RSPL14 RSPF12, RSPL12	5000
		RSPF1, RSPL1 RSPF2, RSPL2	2500
		RSPF3, RSPL3	1000
B	Bulk	RSPF14, RSPL14 RSPF12, RSPL12	1000
		RSPF1, RSPL1 RSPF2, RSPL2	1000
		RSPF3, RSPL3	1000
A	Ammo	RSPF14, RSPL14 RSPF12, RSPL12	5000
		RSPF1, RSPL1	2000
		RSPF2, RSPL2 RSPF3, RSPL3	1000

Resistance Value
Four characters with the multiplier used as the decimal holder.
2.2 ohm = 2R20
10 Kohm = 10K0
1 Mohm = 1M00