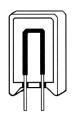
Ceramic Housed Vertical Mount Resistor

Resistive Product Solutions

#### Features:

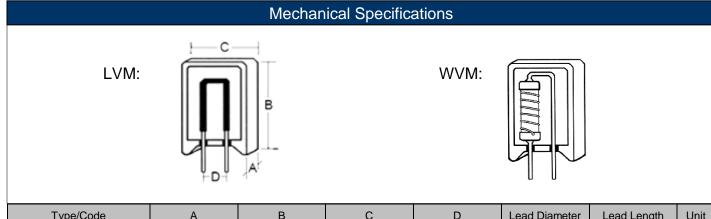
- Flameproof inorganic construction
- High temperature potting compound
- LVM Low resistance wire or ribbon element
- NVM Non-inductively Ayrton Perry winding
- WVM Precision wirewound element
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant



Electrical Specifications								
Type / Code	Power Rating (W)	(W) Voltage Rating	TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance				
	@ 70°C			0.5%	1%	5%	10%	
LVM5	5		± 50 ppm to ± 400 ppm	ı	0.01 - 0.1			
LVM7	7	√P*R		ī		0.02 - 0.15		
LVM10	10		depending on value	-		0.02 - 0.15		
NVM5	5	350	< 1 $\Omega$ = ± 90 ppm		-	0.1 - 2.4 K	-	
NVM7	7	500	1 $\Omega$ to 10 $\Omega$ = ± 50 ppm		-	0.1 - 3.9 K	-	
NVM10	10	700	$> 10 \Omega = \pm 20 \text{ ppm}$		-	0.1 - 3.9 K	-	
WVM5	5	350	$< 1 \Omega = \pm 90 \text{ ppm}$ 0.1 - 5 K		-			
WVM7	7	500	1 Ω to 10 Ω = $\pm$ 50 ppm 0.1 - 8 K		-			
WVM10	10	700	$> 10 \Omega = \pm 20 \text{ ppm}$		0.1 - 8 K		-	

Maximum Working Voltage is limited by  $\sqrt{P^*R}$  unless specified otherwise.

Resistance Temperature Coefficient Standard



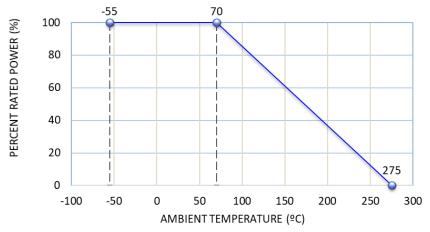
Type/Code	А	В	С	D	Lead Diameter	Lead Length	Unit
LVM5, NVM5, WVM5	0.382 ± 0.039	0.988 ± 0.059	0.520 ± 0.039	0.201 ± 0.059	0.031 ± 0.002	0.138 ± 0.020	inches
	$9.70 \pm 0.99$	25.10 ± 1.50	13.21 ± 0.99	5.11 ± 1.50	$0.79 \pm 0.05$	3.51 ± 0.51	mm
LVM7, NVM7, WVM7	$0.382 \pm 0.039$	1.520 ± 0.059	$0.520 \pm 0.039$	0.201 ± 0.059	$0.036 \pm 0.002$	0.138 ± 0.020	inches
LVIVI7, INVIVI7, VVVIVI7	$9.70 \pm 0.99$	38.61 ± 1.50	13.21 ± 0.99	5.11 ± 1.50	$0.91 \pm 0.05$	3.51 ± 0.51	mm
1.) // // / / / / / / / / / / / / / / / /	$0.480 \pm 0.039$	1.374 ± 0.059	$0.634 \pm 0.039$	0.299 ± 0.059	$0.036 \pm 0.002$	0.138 ± 0.020	inches
LVM10, NVM10, WVM10	12.19 ± 0.99	34.90 ± 1.50	16.10 ± 0.99	7.59 ± 1.50	$0.91 \pm 0.05$	3.51 ± 0.51	mm

Performance Characteristics					
Test	Test Result				
Moisture Resistance	± 5%				
Thermal Shock	± 2%				
Load Life @ 70°C - 1000 hours	± 5%				
Resistance to Soldering Heat	± 2%				
Short Time Overload - 5 X Pn for 5 seconds	± 2%				
Dielectric Withstanding Voltage	± 2%				

Operating temperature range is -55°C to +275°C

Resistive Product Solutions

# Power Derating Curve:



#### Recommended Solder Profile

This information is intended as a reference for solder profiles for Stackpole resistive components. These profiles should be compatible with most soldering processes. These are only recommendations. Actual numbers will depend on board density, geometry, packages used, etc., especially those cells labeled with "\*".

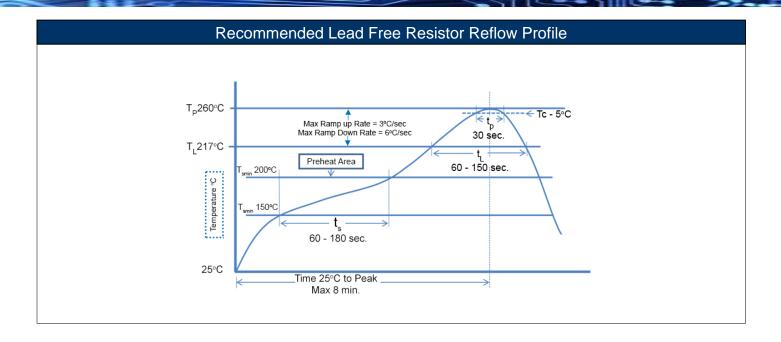
## 100% Matte Tin / RoHS Compliant Terminations

Soldering iron recommended temperatures: 330°C to 350°C with minimum duration. Maximum number of reflow cycles: 3.

Wave Soldering						
Description	Recommended	Minimum				
Preheat Time 80 seconds		70 seconds	60 seconds			
Temperature Diff.	140°C	120°C	100°C			
Solder Temp.	260°C	250°C	240°C			
Dwell Time at Max.	10 seconds	5 seconds	*			
Ramp DN (°C/sec)	N/A	N/A	N/A			

Temperature Diff. = Defference between final preheat stage and soldering stage.

Convection IR Reflow						
Description	Maximum	Recommended	Minimum			
Ramp Up (°C/sec)	3°C/sec	2°C/sec	*			
Dwell Time > 217°C 150 seconds		90 seconds	60 seconds			
Solder Temp.	260°C	245°C	*			
Dwell Time at Max.	30 seconds	15 seconds	10 seconds			
Ramp DN (°C/sec)	6°C/sec	3°C/sec	*			



#### **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)			
LVM	Ceramic Housed Vertical Mount Low Resistance Resistor (Ribbon Element)	Radial	YES	100% Matte SN	Jan-06	06/01			
NVM	Ceramic Housed Vertical Mount Wirewound Resistor (Standard WW)	Radial	YES	100% Matte Sn	Always	Always			
WVM	Ceramic Housed Vertical Mount Wirewound Resistor (Precision Wirewound)	Radial	YES	100% Matte Sn	Jan-06	06/01			

#### "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.

# LVM / NVM / WVM Series

# Stackpole Electronics, Inc.

Ceramic Housed Vertical Mount Resistor

Resistive Product Solutions

### 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.

