





## **VL Series**







## **Description**

The new VL Series device provides reliable, noncycling protection against overcharging and short circuits events for rechargeable battery cells where resettable protection is desired.

#### **Features**

- RoHS compliant and lead-free
- Weldable Nickel terminals
- Slim, low profile design
- Compact design saves board space
- Low resistance

### **Applications**

• Rechargeable battery cell protection

#### R50119583 ΤÜV

AGENCY FILE NUMBER

#### **Electrical Characteristics**

E183209

**Agency Approvals** 

AGENCY

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Part Number	I hold I trip V max I r		l max	Pd		ım Time Trip		Resistance	Agency Approvals			
rait Number	(A)	(A)	(Vdc)	(A)	max. (W)	Current (A)	Time (Sec.)	R <sub>min</sub> (Ω)	R <sub>typ</sub> (Ω)	R $_{1max}$ $(\Omega)$	c <b>711</b> °us	<u>Α</u> τüν
12VL170	1.70	4.10	12	100	1.4	8.50	5.00	0.018	0.032	0.064	Х	Х
12VL175L	1.75	4.20	12	100	1.4	8.75	5.00	0.017	0.031	0.062	х	Х
12VL175XL	1.75	4.20	12	100	1.4	8.75	5.00	0.017	0.031	0.062	Х	Х
12VL230	2.30	5.00	12	100	1.5	10.00	5.00	0.012	0.018	0.036	Х	Х

 $I_{hold}$  = Hold current: maximum current device will pass without tripping in 20°C still air.

Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

I trip = Trip current: minimum current at which the device will trip in 20°C still air.

V \_\_\_ = Maximum voltage device can withstand without damage at rated current (I max)

I may = Maximum fault current device can withstand without damage at rated voltage (Vmay)

 $P_d$  = Power dissipated from device when in the tripped state at 20°C still air.

R  $_{\min}$  = Minimum resistance of device in initial (un-soldered) state.

R  $_{\text{tvo}}$  = Typical resistance of device in initial (un-soldered) state.

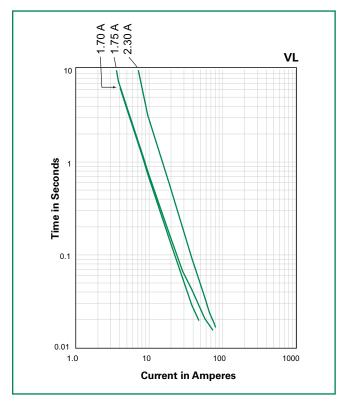
R  $_{\mathrm{1max}}$  = Maximum resistance of device at 20°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.



## **Temperature Rerating**

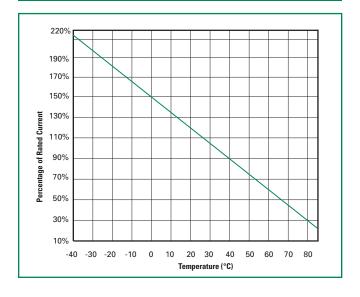
Ambient Operation Temperature													
	-40°C -20°C 0°C 25°C 40°C 50°C 60°C 7												
Part Number	Hold Current (A)												
12VL170	3.5	2.9	2.4	1.70	1.2	1.0	0.7	0.3					
12VL175L	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3					
12VL175XL	3.5	2.9	2.4	1.75	1.3	1.0	0.8	0.3					
12VL230	5.0	4.2	3.4	2.30	1.7	1.3	0.9	0.4					

## **Average Time Current Curves**



The average time current curves and Temperature Rerating curve performance is affected by a number or variables, and these curves provided as guidance only. Customer must verify the performance in their application.

### **Temperature Rerating Curve**





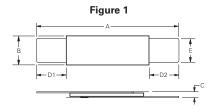
## **Physical Specifications**

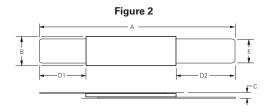
Terminal Material	0.13mm nominal thickness, quarter-hard Nickel
Insulating Material	Polyester tape

## **Environmental Specifications**

Operating/Storage Temperature	-40°C to +85°C
Passive Aging	+60°C, 1000 hours -/+20% typical resistance change -40°C, 1000 hours -/+5% typical resistance change
Humidity Aging	+60°C, 95% R.H.,1000 hours, -/+10% typical resistance change
Thermal Shock	MIL-STD-202F, Method 107G, +85°C to -40°C 10 times -/+5% typical resistance change
Vibration	MIL-STD-883C, Method 2026, No change

## **Dimensions**

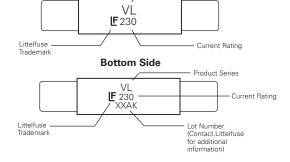




		А			В				С			D1				D2				E					
Part Number Figu	Figure	Inc	hes	m	m	Inc	hes	m	m	Inc	hes	m	ım	Inc	hes	m	m	Inc	hes	m	m	Inc	hes	m	m
rtambor		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max	Min	Max	Min	Max	Min	Max	Min	Max.	Min.	Max.
12VL170	1	0.82	0.91	20.80	23.20	0.14	0.15	3.50	3.90		0.03		0.80	0.18	0.26	4.50	6.50	0.18	0.26	4.50	6.50	0.09	0.10	2.40	2.60
12VL175L	2	1.15	1.25	29.30	31.70	0.11	0.13	2.90	3.30		0.03		0.80	0.20	0.27	5.20	6.80	0.39	0.49	10.00	12.50	0.09	0.10	2.40	2.60
12VL175XL	2	1.00	1.11	25.50	28.20	0.14	0.15	3.50	3.90		0.03		0.80	0.34	0.41	8.70	10.30	0.22	0.29	5.70	7.30	0.09	0.10	2.40	2.60
12VL230	1	0.82	0.91	20.90	23.10	0.19	0.21	4.90	5.30		0.03		0.80	0.16	0.23	4.10	5.80	0.16	0.23	4.10	5.80	0.15	0.16	3.90	4.10

## **Part Marking System**

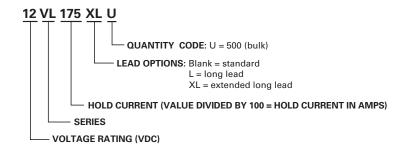
## Double Sided Marking Top Side



Product Series



## **Part Ordering Number System**



### **Packaging**

Part Number	Ordering Number	I I I I I I I I I I I I I I I I I I I		Packaging Option	Quantity	Quantity & Packaging Codes
12VL170	12VL170U	1.70	170	Bulk	500	U
12VL175L	12VL175LU	1.75	175	Bulk	500	U
12VL175XL	12VL175XLU	1.75	175	Bulk	500	U
12VL230	12VL230U	2.30	230	Bulk	500	U

## **Mouser Electronics**

**Authorized Distributor** 

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