



Agency Approvals

AGENCY AGENCY FILE NUMBER



E183209



R50082521

Description

The new VT 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
 - Mobile phones
 - Laptop computers

Electrical Characteristics

Part Number	I_{hold} (A)	I_{trip} (A)	V_{max} (Vdc)	I_{max} (A)	P_d max. (W)	Maximum Time To Trip		Resistance			Agency Approvals	
						Current (A)	Time (Sec.)	R_{min} (Ω)	R_{typ} (Ω)	R_{1max} (Ω)		
16VT170	1.70	3.40	16	100	1.4	8.50	3.00	0.030	0.052	0.105	X	X
16VT170XS	1.70	3.40	16	100	1.4	8.50	3.00	0.030	0.052	0.105	X	X
16VT175	1.75	3.80	16	100	1.4	9.00	3.00	0.025	0.045	0.090	X	X
16VT175S	1.75	3.80	16	100	1.4	9.00	3.00	0.025	0.045	0.090	X	X
16VT175L	1.75	3.80	16	100	1.4	9.00	3.00	0.025	0.045	0.090	X	X
16VT175XL	1.75	3.80	16	100	1.4	8.75	5.00	0.029	0.051	0.102	X	X
16VT175EL	1.75	3.60	16	100	1.4	8.75	5.00	0.029	0.051	0.102	X	X
16VT175NEL	1.75	3.60	16	100	1.4	8.75	5.00	0.029	0.051	0.102	X	X
16VT200	2.00	4.50	16	100	1.5	10.00	4.00	0.021	0.039	0.080	X	X
16VT200S	2.00	4.50	16	100	1.5	10.00	4.00	0.021	0.039	0.080	X	X
16VT200UL	2.00	4.70	16	100	1.5	10.00	5.00	0.022	0.039	0.076	X	X
16VT210	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.030	0.060	X	X
16VT210S	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.030	0.060	X	X
16VT210SS	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.030	0.060	X	X
16VT210L	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.030	0.060	X	X
16VT210NL	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.035	0.065	X	X
16VT210UL	2.10	4.70	16	100	1.5	10.00	5.00	0.018	0.035	0.065	X	X
16VT240	2.40	5.40	16	100	1.5	12.00	4.00	0.015	0.026	0.052	X	X

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

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

 V_{max} = Maximum voltage device can withstand without damage at rated current (I_{max})

 I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max})

 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.

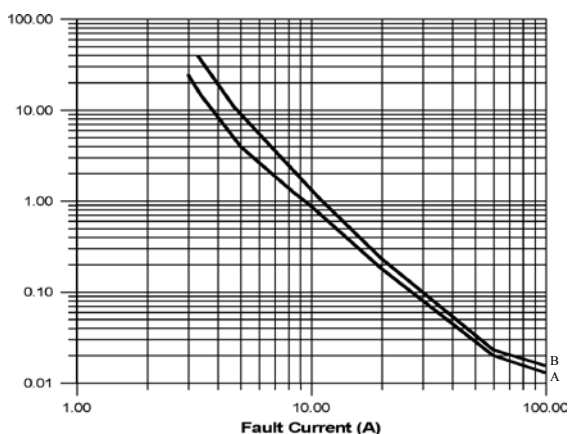
 R_{typ} = Typical resistance of device in initial (un-soldered) state.

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

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

Temperature Derating

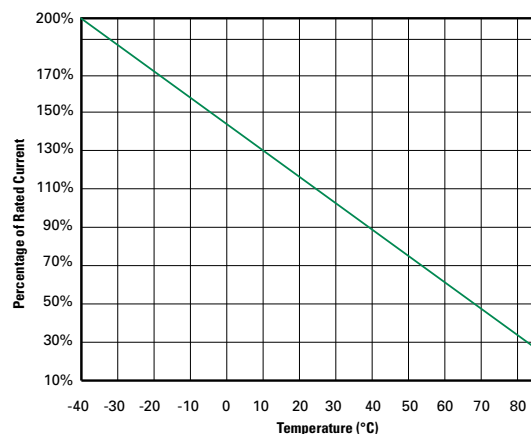
Part Number	Ambient Operation Temperature								
	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C	85°C
Hold Current (A)									
16VT170	3.20	2.70	2.20	1.70	1.30	1.00	0.80	0.50	0.10
16VT170XS	3.20	2.70	2.20	1.70	1.30	1.00	0.80	0.50	0.10
16VT175	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT175S	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT175L	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT175XL	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT175EL	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT175NEL	3.20	2.70	2.20	1.75	1.30	1.00	0.80	0.50	0.10
16VT200	3.70	3.20	2.60	2.00	1.50	1.20	0.90	0.50	0.10
16VT200S	3.70	3.20	2.60	2.00	1.50	1.20	0.90	0.50	0.10
16VT200UL	3.70	3.20	2.60	2.00	1.50	1.20	0.90	0.50	0.10
16VT210	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT210S	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT210SS	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT210L	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT210NL	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT210UL	4.10	3.50	2.90	2.10	1.60	1.30	1.00	0.70	0.10
16VT240	4.40	3.70	3.10	2.40	1.80	1.50	1.20	0.90	0.10

Average Time Current Curves


A: 16VT170XS

B: 16VT210S

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

Temperature Derating 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	+70°C, 1000 hours ±10% typical resistance change
Humidity Aging	+85°C, 85% R.H. 70days ±5% typical resistance change
Thermal Shock	MIL-STD-202 Method 107G +85°C/-40°C 20 times -30% typical resistance change
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

Dimensions

Figure 1

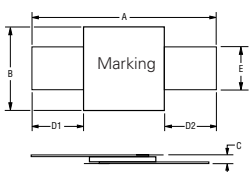


Figure 2

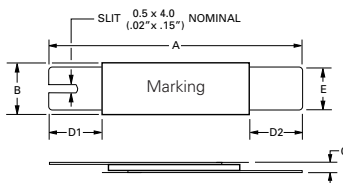


Figure 3

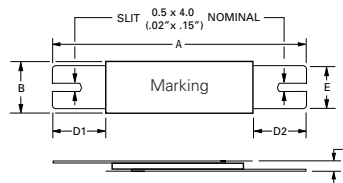


Figure 4

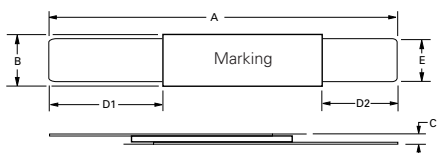


Figure 5

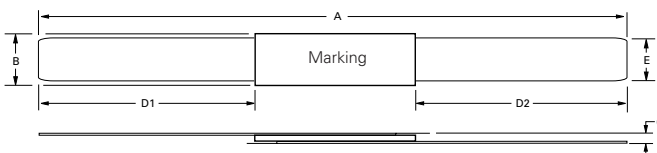
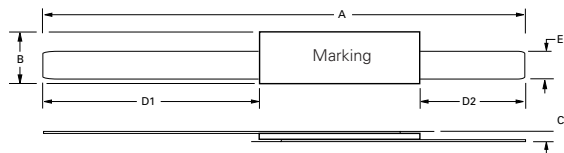
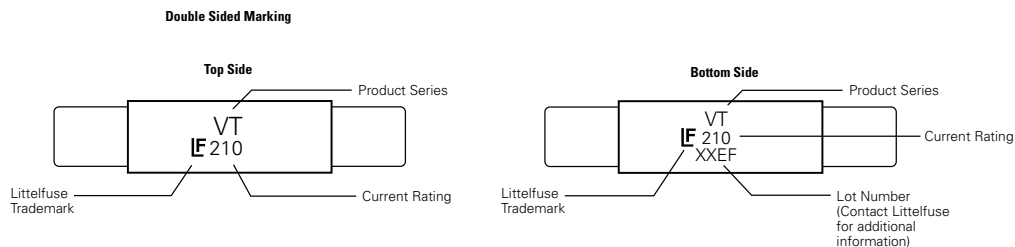


Figure 6

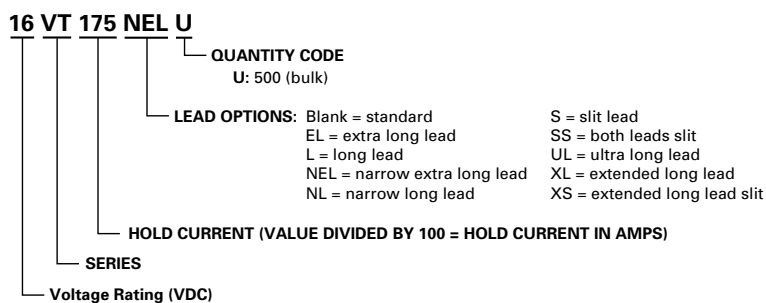


Part Number	A				B				C				D1				D2				E				Figure
	Inches		mm		Inches		mm		Inches		mm		Inches		mm		Inches		mm		Inches		mm		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
16VT170	0.61	0.69	15.40	17.50	0.28	0.29	7.00	7.40	0.02	0.03	0.50	0.80	0.16	-	4.00	-	0.16	-	4.00	-	0.15	0.16	3.90	4.10	1
16VT170XS	0.82	0.90	20.90	22.90	0.19	0.21	4.90	5.30	0.02	0.03	0.50	0.80	0.16	-	4.00	-	0.16	-	4.00	-	0.15	0.16	3.90	4.10	2
16VT175	0.82	0.87	20.90	22.20	0.14	0.15	3.50	3.80	0.02	0.03	0.50	0.70	0.16	-	4.00	-	0.16	-	4.00	-	0.11	0.12	2.90	3.10	1
16VT175S	0.82	0.87	20.90	22.20	0.14	0.15	3.50	3.80	0.02	0.03	0.50	0.70	0.16	-	4.00	-	0.16	-	4.00	-	0.11	0.12	2.90	3.10	2
16VT175L	1.02	1.10	26.00	28.00	0.14	0.15	3.50	3.80	0.02	0.03	0.50	0.80	0.24	-	6.00	-	0.24	-	6.00	-	0.11	0.12	2.90	3.10	1
16VT175XL	1.00	1.11	25.50	28.20	0.14	0.15	3.50	3.90	0.02	0.03	0.50	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	4
16VT175EL	1.53	1.62	38.80	41.20	0.14	0.15	3.50	3.90	0.02	0.03	0.60	0.80	0.74	0.80	18.70	20.30	0.34	0.41	8.70	10.30	0.09	0.10	2.40	2.60	6
16VT175NEL	1.53	1.62	38.80	41.20	0.11	0.13	2.90	3.30	0.02	0.03	0.60	0.80	0.79	0.87	20.00	22.00	0.20	0.27	5.20	6.80	0.09	0.10	2.40	2.60	6
16VT200	0.82	0.91	20.90	23.10	0.15	0.17	3.80	4.30	0.02	0.03	0.60	0.70	0.16	-	4.00	-	0.16	-	4.00	-	0.11	0.12	2.90	3.10	1
16VT200S	0.82	0.91	20.90	23.10	0.15	0.17	3.80	4.30	0.02	0.03	0.60	0.70	0.16	-	4.00	-	0.16	-	4.00	-	0.11	0.12	2.90	3.10	2
16VT200UL	1.42	1.54	36.00	39.00	0.16	0.17	4.10	4.30	0.02	0.03	0.50	0.80	0.15	0.21	3.90	5.30	0.78	0.85	19.70	21.50	0.11	0.12	2.90	3.10	4
16VT210	0.82	0.91	20.90	23.10	0.19	0.21	4.90	5.30	0.02	0.03	0.60	0.80	0.16	-	4.10	-	0.16	-	4.10	-	0.15	0.16	3.90	4.10	1
16VT210S	0.82	0.91	20.90	23.10	0.19	0.21	4.90	5.30	0.02	0.03	0.60	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	2
16VT210SS	0.82	0.91	20.90	23.10	0.19	0.21	4.90	5.30	0.02	0.03	0.60	0.80	0.16	-	4.10	-	0.16	-	4.10	-	0.15	0.16	3.90	4.10	3
16VT210L	0.94	1.02	24.00	26.00	0.19	0.21	4.90	5.30	0.02	0.03	0.60	0.80	0.20	-	5.00	-	0.20	-	5.00	-	0.15	0.16	3.90	4.10	1
16VT210NL	2.78	2.81	70.50	71.50	0.15	0.17	3.80	4.30	0.02	0.03	0.60	0.80	0.98	-	25.00	-	0.98	-	25.00	-	0.11	0.12	2.90	3.10	5
16VT210UL	2.78	2.81	70.50	71.50	0.19	0.21	4.90	5.30	0.02	0.03	0.60	0.80	1.12	-	28.50	-	1.12	-	28.50	-	0.15	0.16	3.90	4.10	5
16VT240	0.95	1.03	24.20	26.20	0.19	0.21	4.90	5.30	0.02	0.03	0.60	0.80	0.20	-	5.00	-	0.20	-	5.00	-	0.15	0.16	3.90	4.10	1

Part Marking System



Part Numbering System



Packaging

I_{hold} (A)	Packaging Option	Quantity	Quantity & Packaging Codes
All Ratings	Bulk	500	U