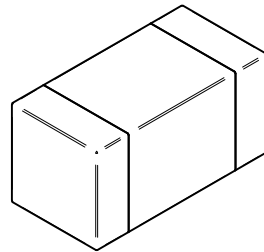
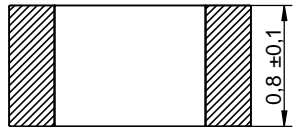
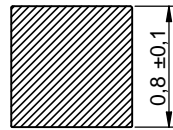
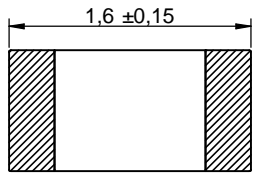
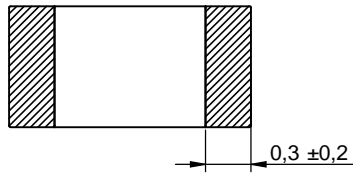
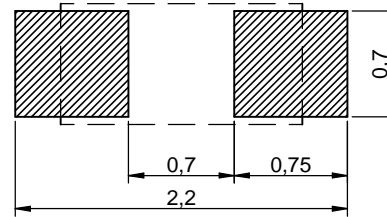


Dimensions: [mm]



Scale - 20:1

Recommended Land Pattern: [mm]



Scale - 20:1

Schematic:



Electrical Properties:

Properties	Test conditions	Value	Unit	Tol.
AC Operating Voltage	V_{RMS}	2.5	V	max.
DC Operating Voltage	V_{DC}	3.3	V	max.
Clamping Voltage	V_{Clamp} 1.0 A @ 8/20 μ s	13	V	max.
(Reverse) Peak Pulse Current	I_{Peak} 8/20 μ s	30	A	max.
Energy Absorption	W_{max} 10/1000 μ s	0.1	J	max.
(Reverse) Breakdown Voltage	V_{BR} 1 mA	5.5	V	\pm 25%
(Channel) Input Capacitance	C_{Ch} 1000 kHz	180	pF	typ.

Certification:

RoHS Approval	Compliant [2011/65/EU&2015/863]
REACH Approval	Conform or declared [(EC)1907/2006]
Halogen Free	Conform [JEDEC JS709B]
Halogen Free	Conform [IEC 61249-2-21]

General Properties:

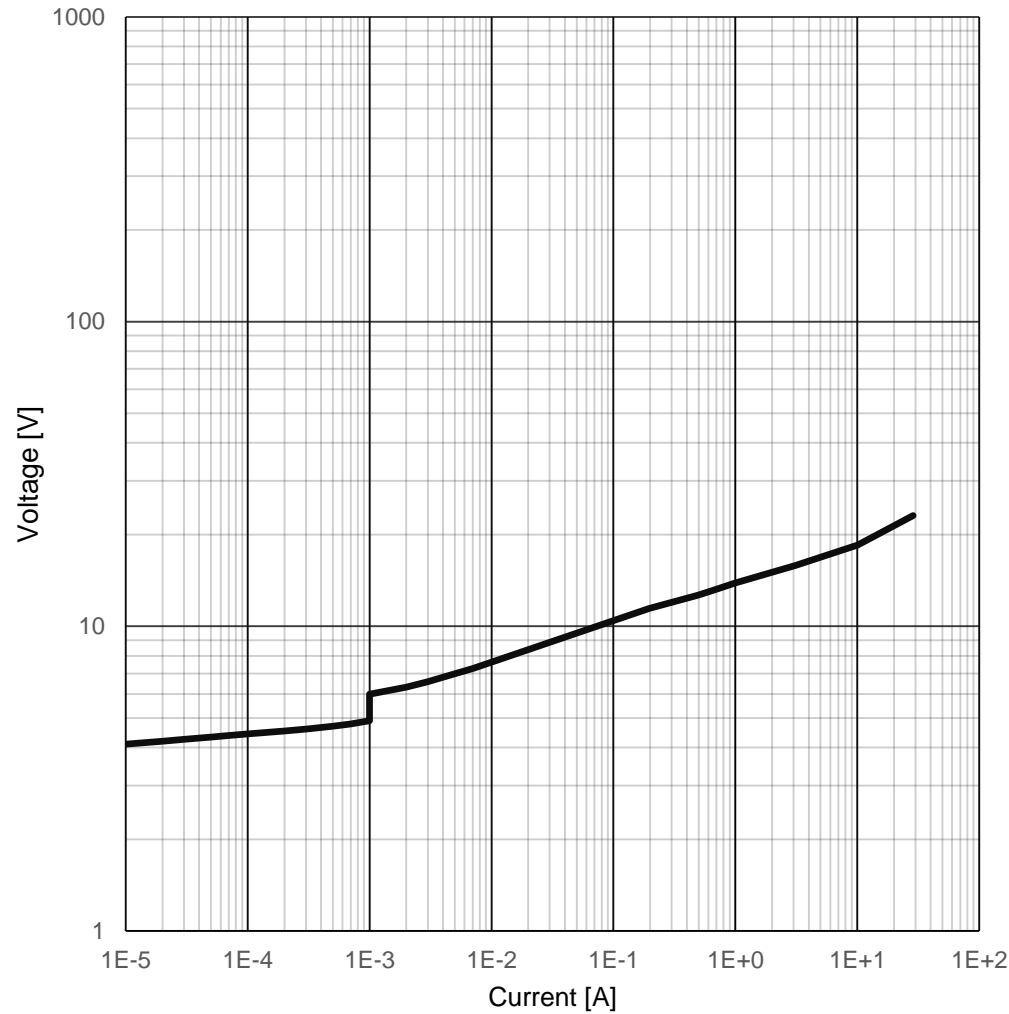
It is recommended that the temperature of the component does not exceed +85°C under worst case conditions	
Operating Temperature	-40 up to +85 °C
Storage Conditions (in original packaging)	< 40 °C ; < 75 % RH
Moisture Sensitivity Level (MSL)	1



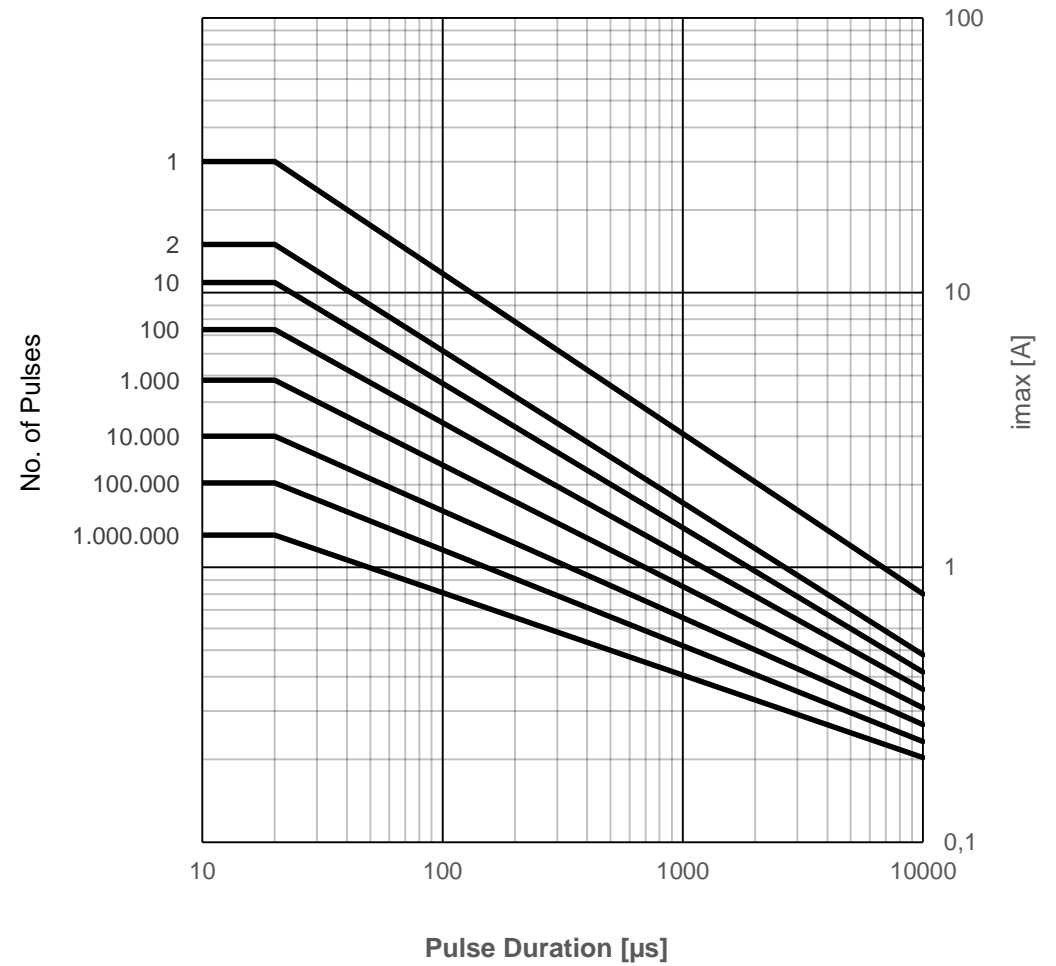
Würth Elektronik eiSos GmbH & Co. KG
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Germany
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SIZE/TYPE 0603	BUSINESS UNIT eiSos	STATUS Valid	PAGE 1/7	

Rated Current vs. Voltage:



Pulse Lifetime Derating:

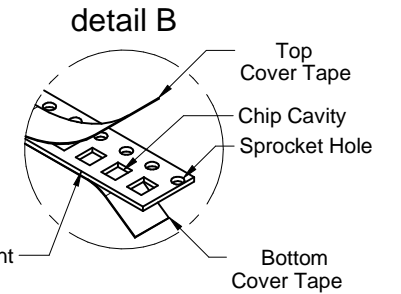
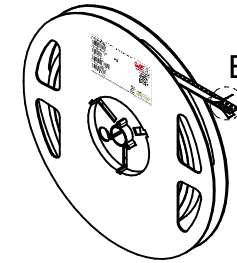
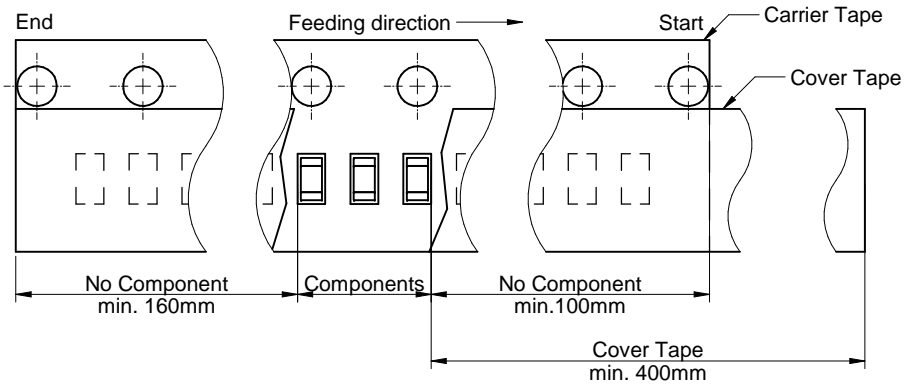
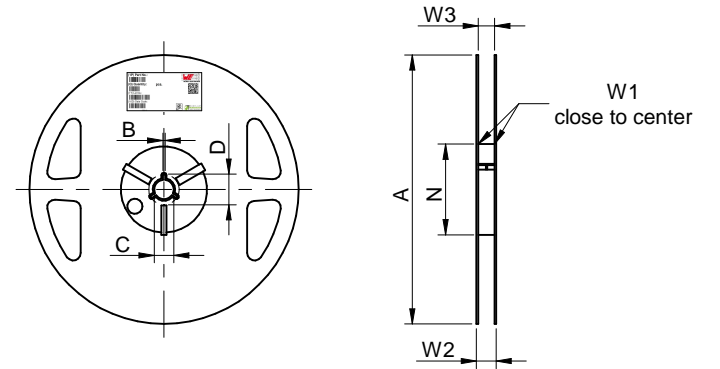
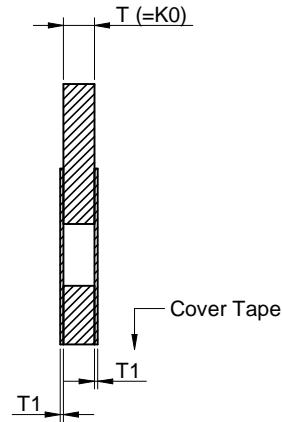
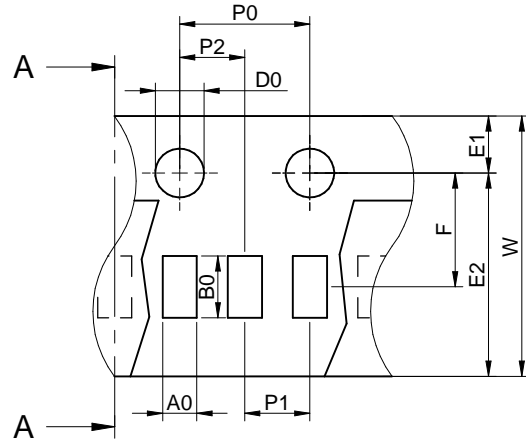


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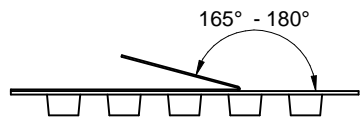
This electronic component has been designed and developed for usage in general electronic equipment only. This product is not authorized for use in equipment where a higher safety standard and reliability standard is especially required or where a failure of the product is reasonably expected to cause severe personal injury or death, unless the parties have executed an agreement specifically governing such use. Moreover Würth Elektronik eiSos GmbH & Co KG products are neither designed nor intended for use in areas such as military, aerospace, aviation, nuclear control, submarine, transportation, transportation signal, disaster prevention, medical, public information network etc.. Würth Elektronik eiSos GmbH & Co KG must be informed about the intent of such usage before the design-in stage. In addition, sufficient reliability evaluation checks for safety must be performed on every electronic component which is used in electrical circuits that require high safety and reliability functions or performance.

Packaging Specification - Tape and Reel: [mm]



Tape Type	A0 (mm)	B0 (mm)	W (mm)	T (mm)	T1 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	D0 (mm)	E1 (mm)	E2 (mm)	F (mm)	Material	Qty. (pcs.)
	±0,15	±0,15	±0,3	±0,05	ref.	±0,1	±0,05	+0,05	+0,1 / -0,0	±0,1	min.	±0,05		
1a	1,05	1,90	8,00	0,95	0,10	4,00	4,00	2,00	1,50	1,75	6,25	3,50	Paper	4.000

A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	W1 (mm)	W2 (mm)	W3 (mm)	W3 (mm)	Material
± 2,0	±0,5	±0,5	±0,8	1,5	+1,5	± 1,0	min.	max.	
178	2	13	21	62	8,4	13	8,5	9,5	Polystyrene



Pull-off force	0,1 N - 1,0 N
Tape width	8 mm



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Classification Reflow Profile for SMT components:



Classification Reflow Soldering Profile:

Profile Feature		Value
Preheat Temperature Min	$T_{s \text{ min}}$	150 °C
Preheat Temperature Max	$T_{s \text{ max}}$	200 °C
Preheat Time t_s from $T_{s \text{ min}}$ to $T_{s \text{ max}}$	t_s	60 - 120 seconds
Ramp-up Rate (T_L to T_p)		3 °C/ second max.
Liquidous Temperature	T_L	217 °C
Time t_L maintained above T_L	t_L	60 - 150 seconds
Peak package body temperature	T_p	$T_p \leq T_c$, see Table below
Time within 5°C of actual peak temperature	t_p	20 - 30 seconds
Ramp-down Rate (T_p to T_L)		6 °C/ second max.
Time 25°C to peak temperature		8 minutes max.

refer to IPC/ JEDEC J-STD-020E

Package Classification Reflow Temperature (T_c):

Properties	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly Package Thickness < 1.6 mm	260 °C	260 °C	260 °C
PB-Free Assembly Package Thickness 1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
PB-Free Assembly Package Thickness > 2.5 mm	250 °C	245 °C	245 °C

refer to IPC/ JEDEC J-STD-020E



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Further information

Component Libraries:



[Altium_WE-VS \(22b\)](#)



[Downloads_CADENCE_WE-VS \(21a\)](#)



[Cadstar_WE-VS \(20b\)](#)



[Eagle_WE-VS \(22a\)](#)



[Download_IGS_WE-VS_0603_VS](#)



[Download_STP_WE-VS-0603](#)

Free Sample Order:






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Tutorials:

- [Applications of EMC Components \(PDF\)](#)
- [ESD and Surge Protection \(PDF\)](#)

REDEXPERT:

[Calculate losses for 82536259 in REDEXPERT](#)

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 WÜRTH ELEKTRONIK MORE THAN YOU EXPECT	Würth Elektronik eiSos GmbH & Co. KG EMC & Inductive Solutions Max-Eyth-Str. 1 74638 Waldenburg Germany Tel. +49 (0) 79 42 945 - 0 www.we-online.com eiSos@we-online.com			BUSINESS UNIT eiSos	STATUS Valid	PAGE 5/7
	SIZE/TYPE 0603					

Cautions and Warnings:

The following conditions apply to all goods within the product series of WE-VS of Würth Elektronik eiSos GmbH & Co. KG:

General:

- This electronic component is designed and manufactured for use in general electronic equipment
- Würth Elektronik must be asked for written approval (following the PPAP procedure) before incorporating the components into any equipment in fields such as military, aerospace, aviation, nuclear control, submarine, transportation (automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network, etc. where higher safety and reliability are especially required and/or if there is the possibility of direct damage or human injury.
- Electronic components that will be used in safety-critical or high-reliability applications, should be pre-evaluated by the customer.
- The component is designed and manufactured to be used within the datasheet specified values. If the usage and operation conditions specified in the datasheet are not met, the wire insulation may be damaged or dissolved.
- Do not drop or impact the components, the component may be damaged
- Würth Elektronik products are qualified according to international standards, which are listed in each product reliability report. Würth Elektronik does not warrant any customer qualified product characteristics beyond Würth Elektronik's specifications, for its validity and sustainability over time.
- The responsibility for the applicability of the customer specific products and use in a particular customer design is always within the authority of the customer. All technical specifications for standard products also apply to customer specific products.

Product specific:

Soldering:

- The solder profile must comply with the technical product specifications. All other profiles will void the warranty.
- All other soldering methods are at the customers' own risk.

Cleaning and Washing:

- Washing agents used during the production to clean the customer application might damage or change the characteristics of the coating insulation, marking or plating. Washing agents may have a negative effect on the long-term functionality of the product.

Potting:

- If the product is potted in the customer application, the potting material might shrink or expand during and after hardening. Shrinking could lead to an incomplete seal, allowing contaminants into the component body, pins or termination. Expansion could damage the components. We recommend a manual inspection after potting to avoid these effects

Storage Conditions:

- A storage of Würth Elektronik products for longer than 12 months is not recommended. Within other effects, the terminals may suffer degradation, resulting in bad solderability. Therefore, all products shall be used within the period of 12 months based on the day of shipment.
- Do not expose the components to direct sunlight.
- The storage conditions in the original packaging are defined according to DIN EN 61760-2.
- The storage conditions stated in the original packaging apply to the storage time and not to the transportation time of the components.


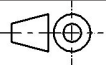

Packaging:

- The packaging specifications apply only to purchase orders comprising whole packaging units. If the ordered quantity exceeds or is lower than the specified packaging unit, packaging in accordance with the packaging specifications cannot be ensured.

Handling:

- Violation of the technical product specifications such as exceeding the nominal rated voltage will void the warranty.
- The varistor is not designed for voltage stabilization with continuous power dissipation.
- The exposure of steam, saline spray, atmosphere with reduced oxygen content, corrosive gases, rain or condensation and direct sunlight shall be prohibited.
- Signals operated continuously with a high ratio of direct-current voltage might have an influence on the product lifetime.
- The temperature rise of the component must be taken into consideration. The operating temperature is comprised of ambient temperature and temperature rise of the component. The operating temperature of the component shall not exceed the maximum temperature specified.

These cautions and warnings comply with the state of the scientific and technical knowledge and are believed to be accurate and reliable. However, no responsibility is assumed for inaccuracies or incompleteness.

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