



March 2018

SMD transformers for automotive grade

Transformers for BMS

VST series

VST10/9EE-202S2P4

An attention matter on use

Please read this specifications before using this product by all means.

An attention matter on security

I undertake use with this product, and it is paid attention enough, and please design an attention matter safely.

⚠ Attention on a design

- When you designs a base of an electric circuit.
Please use size of the hole or pad which we recommend.
- Magnetic flux to leak out occurs. Please confirm it about influence of magnetic flux beforehand.
There is fear to cause false movement of machinery.

⚠ Attention on the handling

- Please do not use it when you let a product drop.
The product produces possibility to lose a function
- Please pay attention to the pin which had it pointed keenly.
There is danger to injure.
- Please avoid the next place. The place that receives a drop of water, trash, the dust, foggy influence. The place where direct rays of the sun hits. There is fear to cause false movement of machinery.
- Please prohibit safekeeping and use at the next place. Environment to be accompanied with gas corrosion, salt, acid, alkali. There is fear to lose a function.
- When you carry the product on a base of an electric circuit.
Please do not use a metal tool. Because impossible power is added to a product.
There is fear to lose a function.

⚠ Attention on the handling

- I considered the next matter, and we designed a product.
Safe standard and power supply voltage and circuit drive condition, drive frequency and Duty ON-TIME.
By those conditions, we decided structure and the turns number.
Please avoid use in designed condition outside.
There are destruction of a circuit part and fear of ignition.
- This product considered a characteristic of a component and a self temperature rise, and it was made.
We select range of humidity as use temperature already.
Please avoid use by range more than this.
There are the damage and fear of ignition.
- Please avoid use in the environment next.
The environment that trash and the dust stick to a product. There is fear to cause a fire.
- The products listed on this specification sheet are intended for use in general electronic equipment and transportation equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots, cars, electric trains, ships, etc.) under a normal operation and use condition.
- The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.
- If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in this catalog, please contact us.

- (1) Aerospace/Aviation equipment
- (2) Medical equipment
- (3) Power-generation control equipment
- (4) Atomic energy-related equipment
- (5) Seabed equipment/applications
- (6) Transportation control equipment
- (7) Public information-processing equipment

- (8) Military equipment
- (9) Electric heating apparatus, burning equipment
- (10) Disaster prevention/crime prevention equipment
- (11) Safety equipment
- (12) Other applications that are not considered general-purpose applications

When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.

SMD transformers for automotive grade Transformers for BMS

Product compatible with RoHS directive
Halogen-free
Compatible with lead-free solders

Overview of transformers for VST series

■ FEATURES

- A pulse transformer of SMD type high withstand voltage.
- Realized improvement of anti-vibration performance and high level coplanarity by its unique structure.
- Possible to keep steady performance and stable supply of this products by fully automated production lines.

■ APPLICATION

Lithium-ion battery voltage monitoring system for xEV

■ PART NUMBER CONSTRUCTION

VST	10/9EE	-	202	S2P4
Series name	Core shape	Type name	Internal code	

■ OPERATING TEMPERATURE RANGE, PACKAGE QUANTITY, PRODUCT WEIGHT

Part number	Temperature range Operating temperature*	Temperature range Storage temperature**	Package quantity (pieces/reel)	Individual weight (g)
VST10/9EE-202S2P4	-40 to +130	-40 to +130	600	1.5

* Operating temperature range includes self-temperature rise.

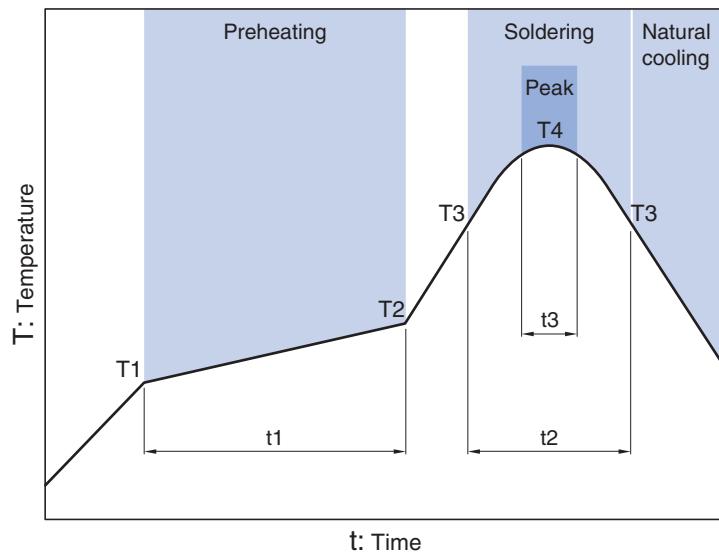
** The storage temperature range indicates a condition after mounted onto the circuit board.

- RoHS Directive Compliant Product: See the following for more details.<https://product.tdk.com/info/en/environment/rohs/index.html>
- Halogen-free: Indicates that Cl content is less than 900ppm, Br content is less than 900ppm, and that the total Cl and Br content is less than 1500ppm.

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use.
Please note that the contents may change without any prior notice due to reasons such as upgrading.

VST series

■ RECOMMENDED REFLOW PROFILE



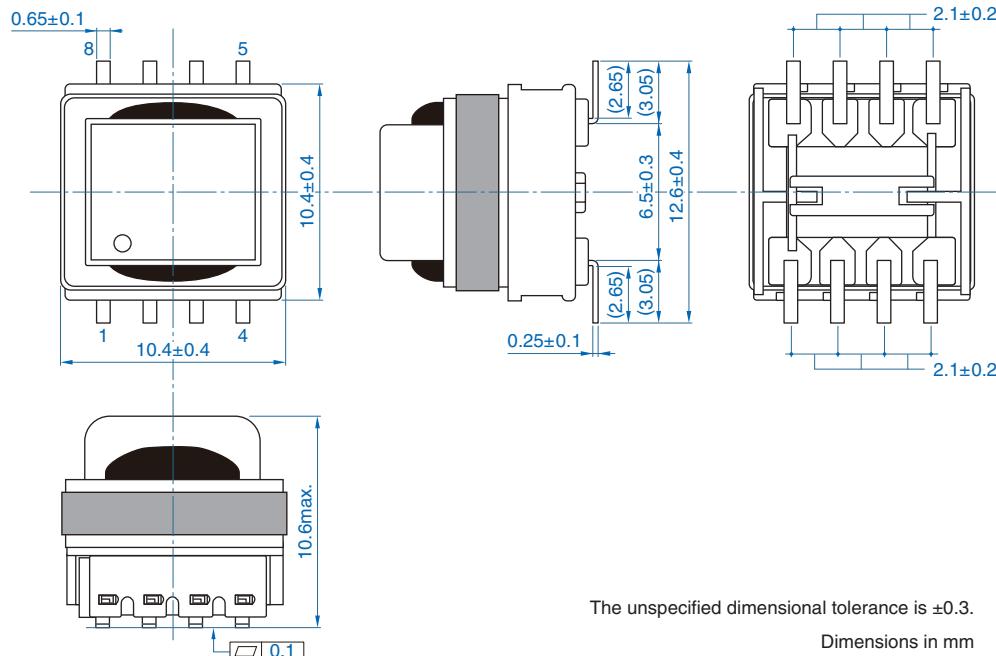
Preheating			Soldering		Peak	
Temp.	Time		Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3
150°C	180°C	60 to 120s	230°C	30s max.	245°C	10s max.

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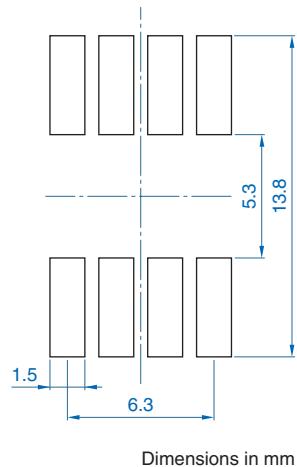
Transformers for BMS VST series

VST10/9EE-202S2P4

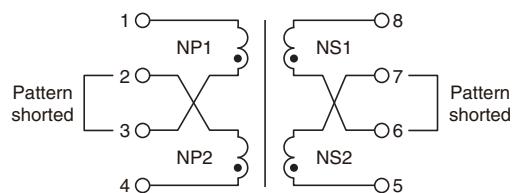
■ SHAPE & DIMENSIONS



■ RECOMMENDED LAND PATTERN



■ CIRCUIT DIAGRAM



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Transformers for BMS VST series

■ ELECTRICAL CHARACTERISTICS

□ CHARACTERISTICS SPECIFICATION TABLE

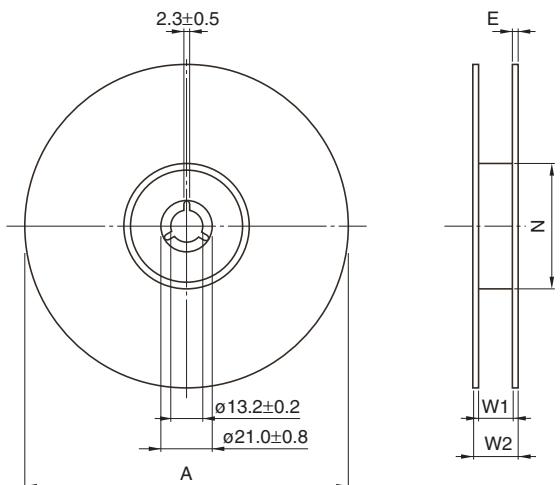
Part number	Inductance *	Leakage inductance*	DC resistance		Withstanding voltage		Turn ratio
	NP (μ H)	NP(NS all shorted) (μ H)max.	NP1, NP2 (Ω)	NS1, NS2 (Ω)	NP-NS Sense: 1mA	Coil-Core Sense: 1mA	
VST10/9EE-202S2P4	350 to 895	27	0.49±30%	0.47±30%	2.8kVrms/1min	1.4kVrms/1min	1:1:1:1

* Measuring conditions: 100kHz/0.1V

Transformers for BMS VST series

■ PACKAGING STYLE

□ REEL DIMENSIONS

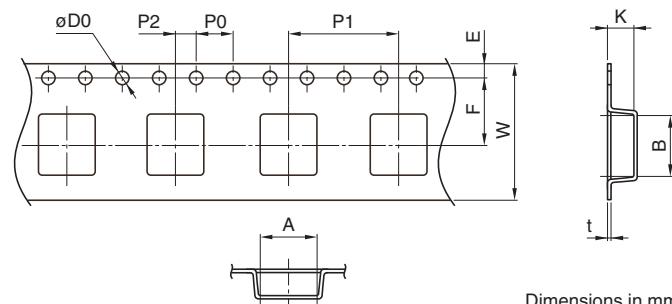


Part number	A	W1	W2	N	E
VST10/9EE-202S2P4	ø480	24.5	28.9	ø115	2.2

• These values are typical.

Dimensions in mm

□ TAPE DIMENSIONS



Dimensions in mm

Part number	A	B	øD0	E	F	P0	P1	P2	W	K	t
VST10/9EE-202S2P4	10.6	13.2	1.5+0.1/-0	1.75±0.1	11.5±0.1	4.0±0.1	20±0.1	2±0.15	24±0.3	10.9	0.5

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Mouser Electronics

Authorized Distributor

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