

## Transformers for IGBT/FET

# VGT series

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**VGT10SEE-200S2A5**

**VGT12EEM-200S1A4**

**VGT15EFD-200S3A6**

**VGT15SEFD-200S1A4**

**VGT15SEFD-250S4A7**

**VGT22EPC-200S6A12**

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## 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.

# Transformers for IGBT/FET

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

## Overview of VGT series

### FEATURES

- A transformer for Intelligent Power Module drive power supply of an inverter motor
- Realized smaller case size design by employing high saturation flux density ferrite core.
- Dielectric strength voltage is 2.6kV

### APPLICATION

For Intelligent Power Module drive power supply of an inverter motor

### PART NUMBER CONSTRUCTION

VGT	10SEE	-	200	S2A5
Series name	Core shape		Type name	Internal code

### OPERATING TEMPERATURE RANGE, PACKAGE QUANTITY, PRODUCT WEIGHT


Part number	Temperature range		Package quantity (pieces/reel)	Individual weight (g)
	Operating temperature*	Storage temperature**		
	(°C)	(°C)		
VGT10SEE-200S2A5	-40 to +130	-40 to +130	250	1.9
VGT12EEM-200S1A4	-40 to +130	-40 to +130	250	1.9
VGT15EFD-200S3A6	-40 to +130	-40 to +130	180	4.1
VGT15SEFD-200S1A4	-40 to +130	-40 to +130	200	3.9
VGT15SEFD-250S4A7	-40 to +130	-40 to +130	150	4.6
VGT22EPC-200S6A12	-40 to +130	-40 to +130	60	10.8

\* Operating temperature range includes self-temperature rise.

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

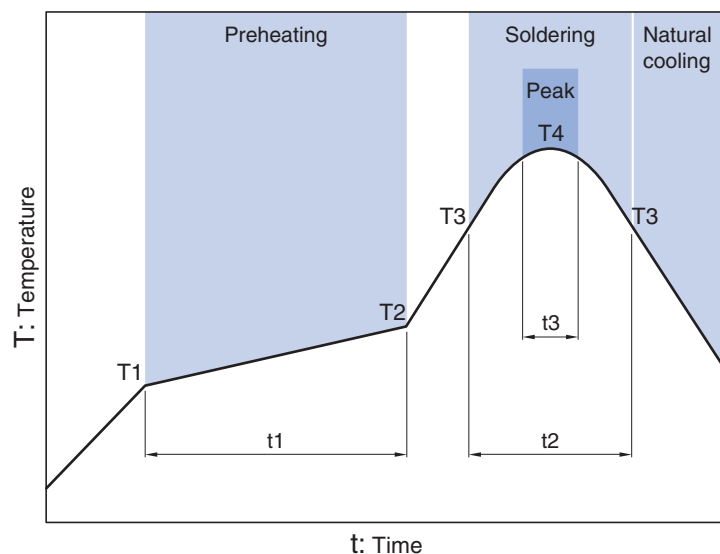
○ RoHS Directive Compliant Product: See the following for more details. <https://product.tdk.com/info/en/environment/rohs/index.html>

○ 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.

# Overview of VGT series

## RECOMMENDED REFLOW PROFILE

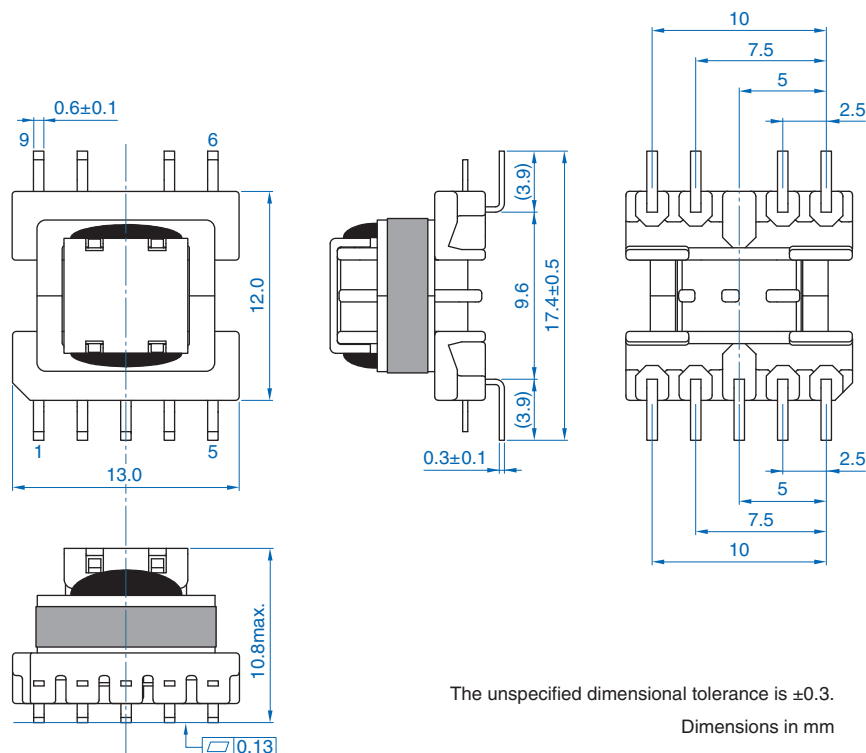


Preheating			Soldering		Peak	
Temp.		Time	Temp.	Time	Temp.	Time
T1	T2	t1	T3	t2	T4	t3
150°C	180°C	60 to 120s	230°C	60s	245°C	10s max.

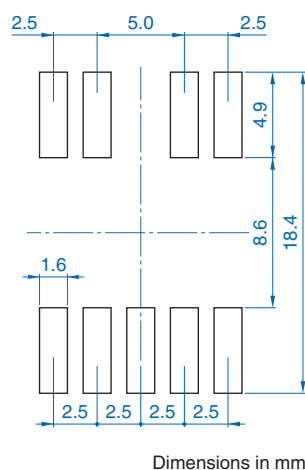
VGT series

## VGT10SEE-200S2A5

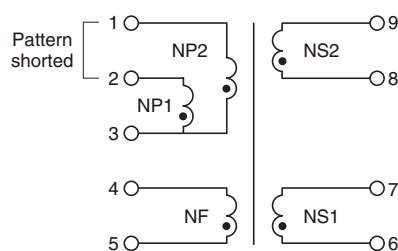
## ■ SHAPE &amp; DIMENSIONS



## ■ RECOMMENDED LAND PATTERN



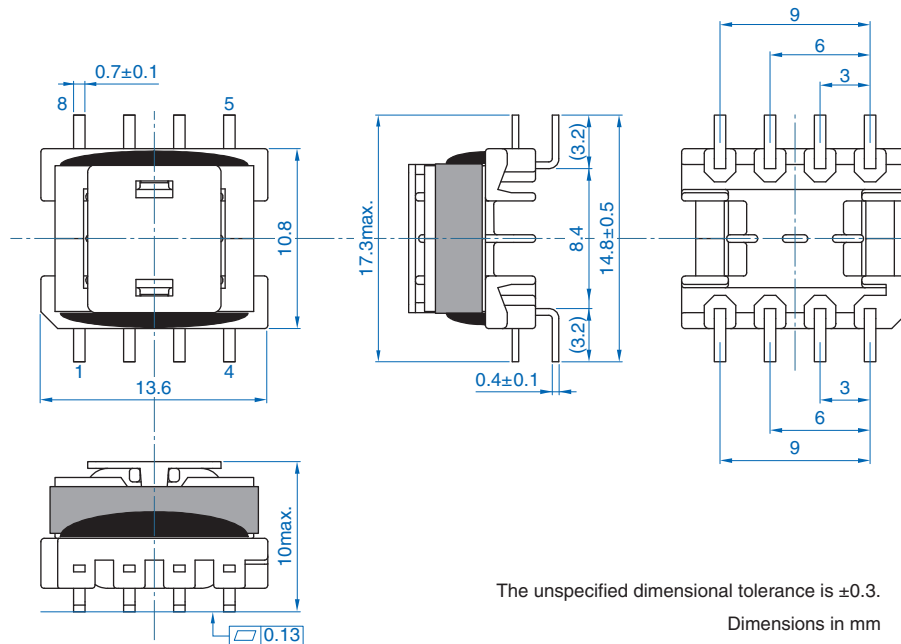
## ■ CIRCUIT DIAGRAM



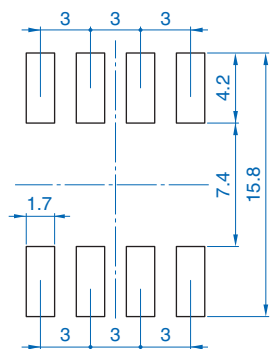
VGT series

# VGT12EEM-200S1A4

## ■ SHAPE & DIMENSIONS

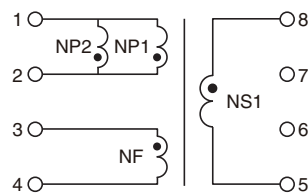


## ■ RECOMMENDED LAND PATTERN



Dimensions in mm

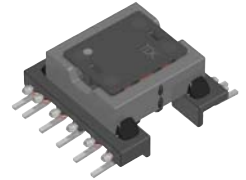
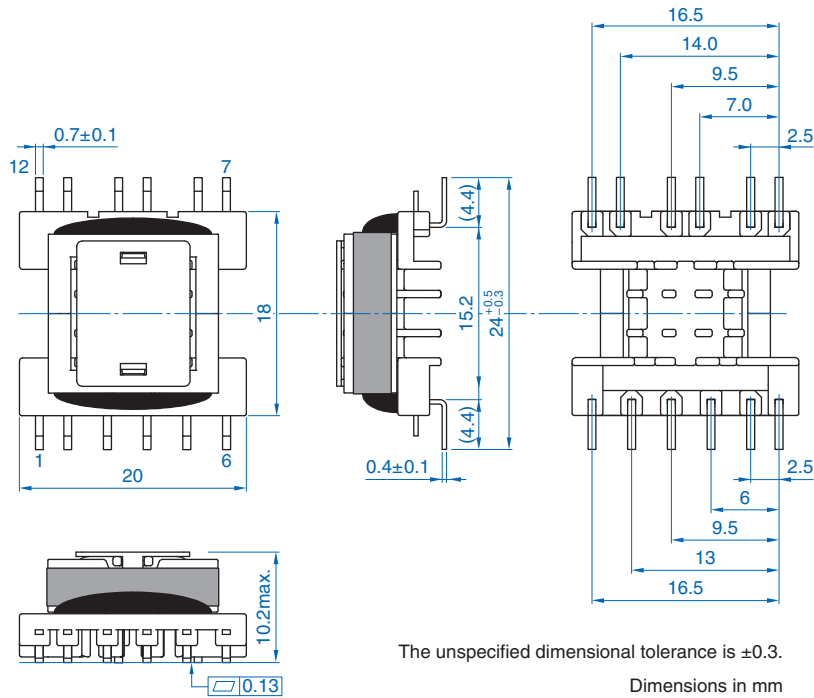
## ■ CIRCUIT DIAGRAM



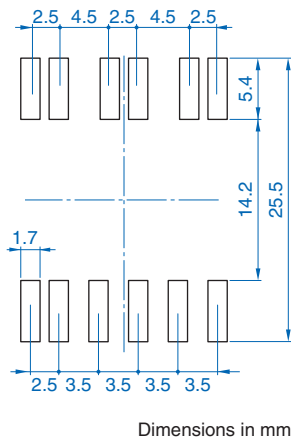
VGT series

## VGT15EFD-200S3A6

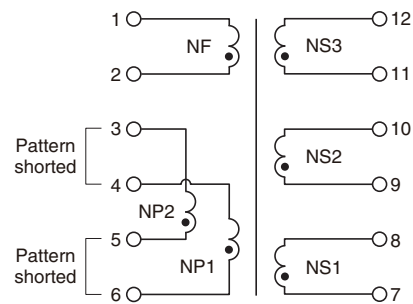
## ■ SHAPE &amp; DIMENSIONS



## ■ RECOMMENDED LAND PATTERN



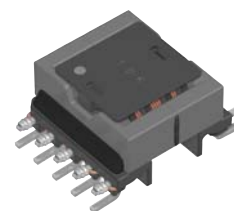
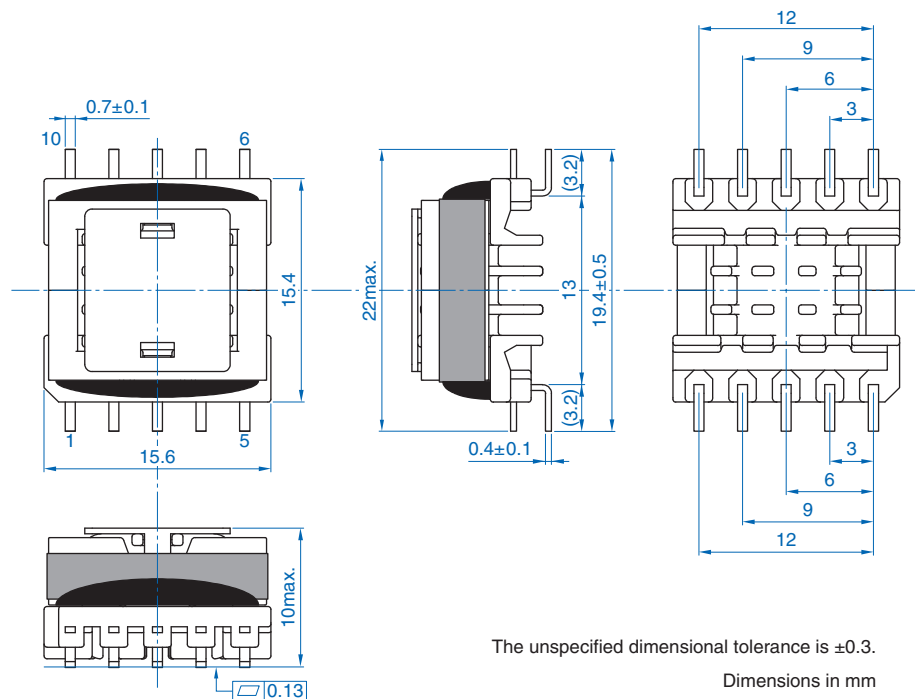
## ■ CIRCUIT DIAGRAM



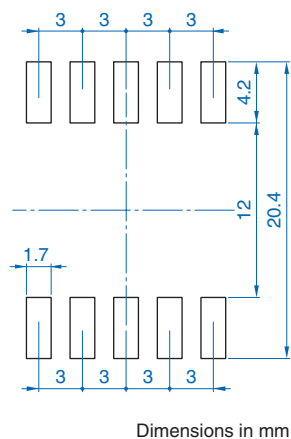
VGT series

## VGT15SEFD-200S1A4

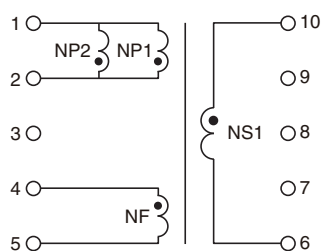
## ■ SHAPE &amp; DIMENSIONS



## ■ RECOMMENDED LAND PATTERN



## ■ CIRCUIT DIAGRAM

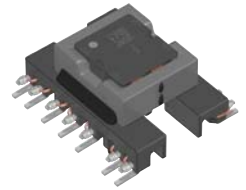
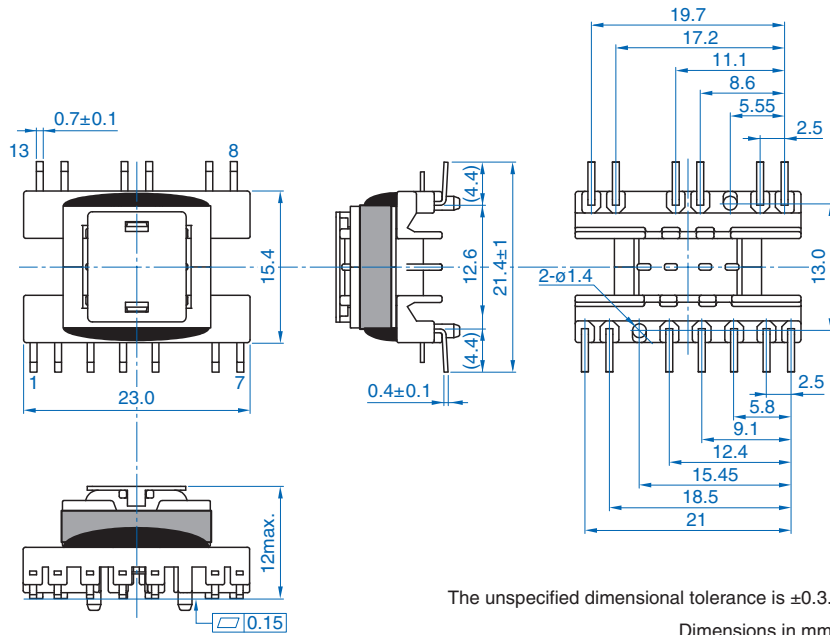




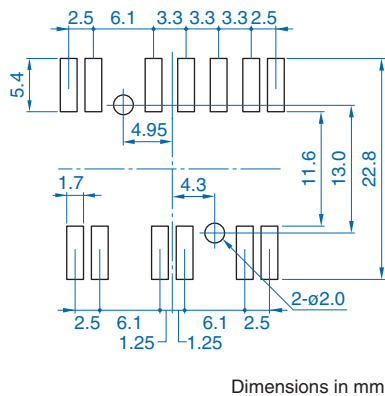
VGT series

## VGT15SEFD-250S4A7

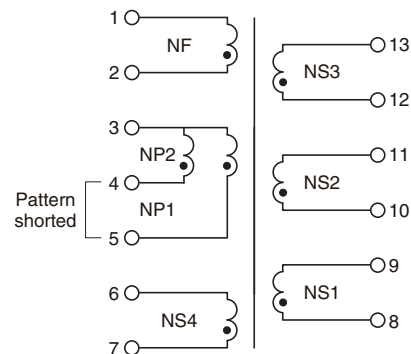
## ■ SHAPE &amp; DIMENSIONS



## ■ RECOMMENDED LAND PATTERN



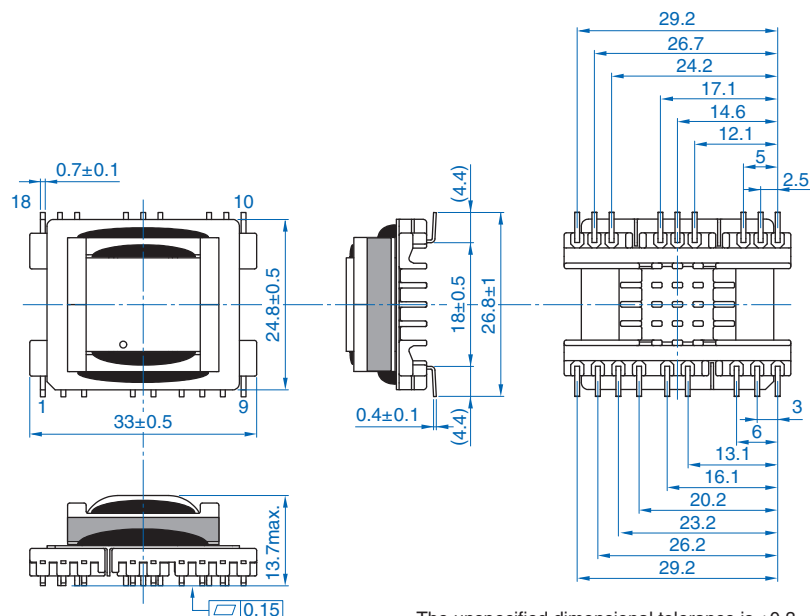
## ■ CIRCUIT DIAGRAM



VGT series

# VGT22EPC-200S6A12

## SHAPE & DIMENSIONS

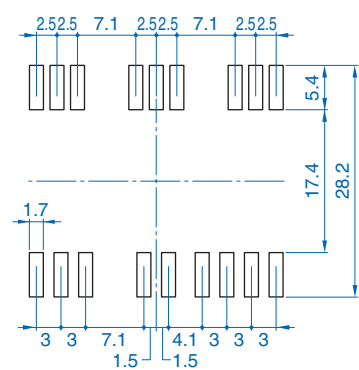


The unspecified dimensional tolerance is ±0.3.

Dimensions in mm

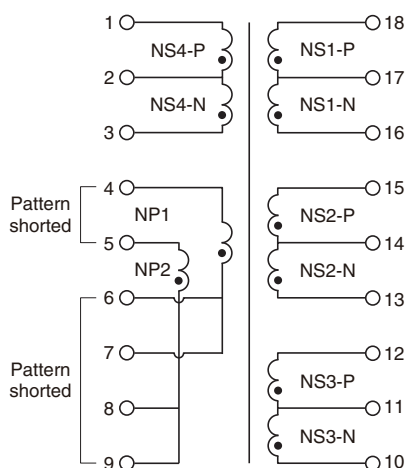


## RECOMMENDED LAND PATTERN



Dimensions in mm

## CIRCUIT DIAGRAM



## VGT series

### ELECTRICAL CHARACTERISTICS

#### CHARACTERISTICS SPECIFICATION TABLE

Part number	Inductance*		Leakage inductance*	Withstand voltage		Turn ratio
	NP ( $\mu$ H)	Tolerance	NP(NS all shorted) ( $\mu$ H)max.	NP, NF-NS Sense: 1mA	Coil-Core Sense: 1mA	
VGT10SEE-200S2A5	20	$\pm 25\%$	0.5	2.6kVrms/1min	1.3kVrms/1min	NP:NF:NS1:NS2 =1:1:1:1
VGT12EEM-200S1A4	10	$\pm 20\%$	0.2	2.6kVrms/1min	1.3kVrms/1min	NP:NF:NS =1:1.6:2.9
VGT15EFD-200S3A6	8.0	$\pm 20\%$	0.2	2.6kVrms/1min	1.3kVrms/1min	NP:NF:NS1:NS2:NS3 =1:2.8:2.8:2.8:2.8
VGT15SEFD-200S1A4	10	$\pm 20\%$	0.2	2.6kVrms/1min	1.3kVrms/1min	NP:NF:NS =1:1.8:3.3
VGT15SEFD-250S4A7	2.6	$\pm 20\%$	0.2	2.6kVrms/1min	1.3kVrms/1min	NP:NF:NS1:NS2:NS3:NS4 =1:3:3:3:3:3
VGT22EPC-200S6A12	2.5	$\pm 15\%$	0.3	2.6kVrms/1min	1.3kVrms/1min	NP:NS1-P:NS1-N:NS2-P:NS2-N: NS3-P:NS3-N:NS4-P:NS4-N =1:1.2:0.7:1.2:0.7:1.2:0.7:1.2:0.7

\* Measuring conditions: 100kHz/1V

## REEL DIMENSIONS



- These values are typical.

Technical drawing of a metal plate with three square holes. The drawing includes a top view with dimensions: overall width  $W$ , hole spacing  $P1$  and  $P2$ , hole diameter  $\phi D0$ , hole depth  $E$ , hole width  $F$ , hole offset  $S0$ , and a detail view of a long hole showing a radius  $R0.75$  and a vertical offset of  $0.2 \pm 0.05$ . A side view shows the plate thickness  $t$  and a detail of the hole edge with dimensions  $K$  and  $B$ . The caption reads "Dimensions in mm".

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