

VC-TCXO Crystal Oscillator



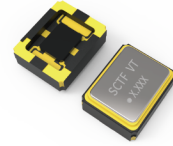
1VTH / 2VTH / 3VTA

Feature

- Ceramic Surface Mount Package
- Output Type: Clipped Shine Wave
- Voltage Control Function Available
- Fundamental Crystal Design
- RoHS Compliant / Pb Free

Applications

- GPS
- Wireless Communications
- Test Equipment
- Networking systems
- Industrial control & automation



Electrical Specifications

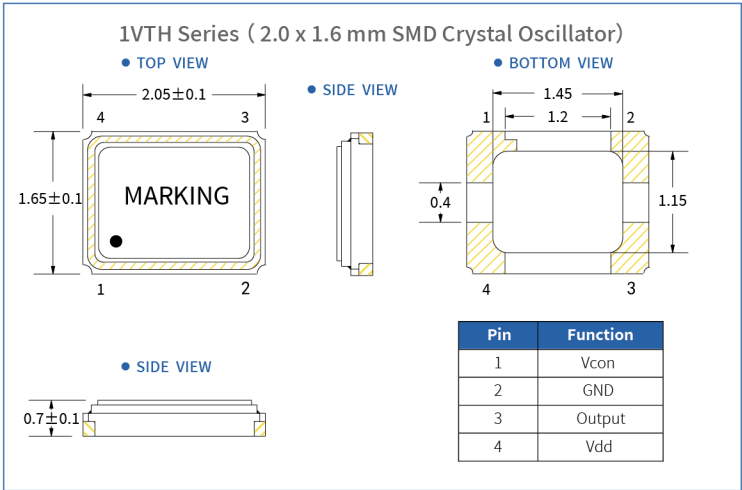
Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	10	—	52	MHz	
Operating Temperature	T _{use}	-30	—	+85	°C	
		-40	—	+85	°C	
Storage Temperature Range	T _{stg}	-55	—	+125	°C	
Supply Voltage	V _{dd}	3.135	3.3	3.465	V	
		2.375	2.5	2.625	V	
		1.710	1.8	1.890	V	
Output Waveform		Clipped Sine Wave				
Frequency Tolerance	Fo _{tol}	—	—	±2	ppm	T _{use} =25±2 °C, After 2times Reflow
Frequency vs Temperature Change	Fo _{Tc}	±0.5	—	±2.5	ppm	T _{use} = -40°C~+85 °C Based on frequency at +25°C
Frequency vs Load Change	Fo _{Load}	—	—	±0.2	ppm	±10% load change
Frequency vs Voltage Change	Fo _{Vdd}	—	—	±0.2	ppm	Voltage varied ±5% at 25°C
Current Consumption	I _{cc}	—	—	2	mA	
Control Voltage Range	V _c	0.30	0.90	1.50	V	V _{dd} =1.8V
		0.40	1.40	2.40	V	V _{dd} =2.5V
		0.65	1.65	2.65	V	V _{dd} =3.3V
Frequency Pulling Range	PR	±5	—	±15	ppm	
Linearity	L	—	—	10	%	
Duty Cycle	SYM	40	—	60	%	Ground level
Output Level	V _{p-p}	0.8	—	—	V	
Harmonics		—	—	-5.0	dBc	
Output load	Load	10KΩ//10pF				
Start-up time	T _{str}	—	—	2	mS	
Phase Noise@26MHz	T _{PN}	-130			dBc/Hz	Offset:1kHz
		-152			dBc/Hz	Offset:100kHz
Aging	f _{age}	—	—	±1	ppm	1st. Year at 25°C

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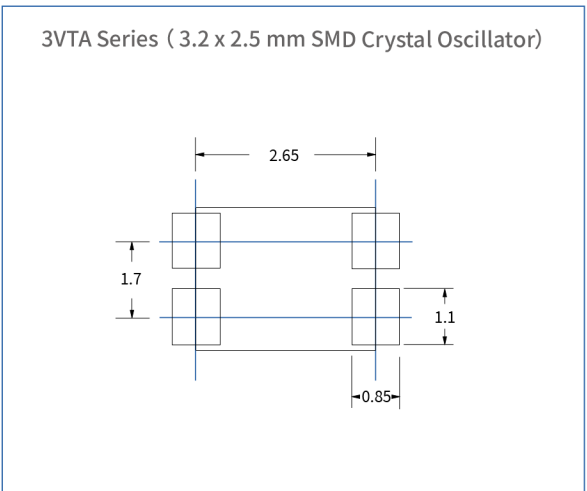
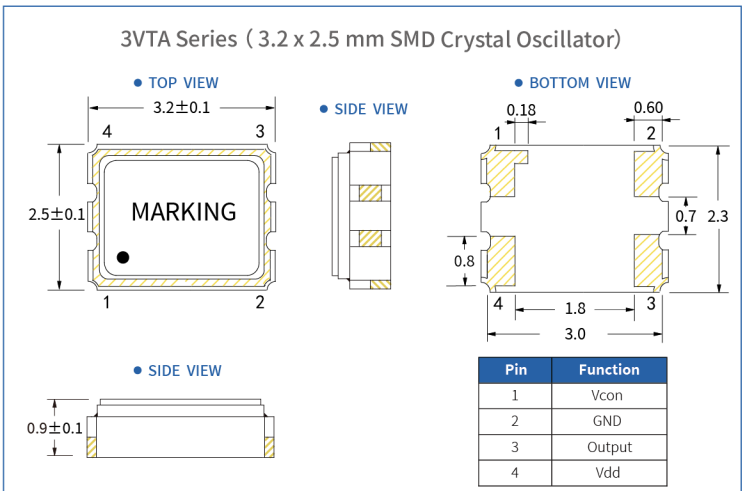
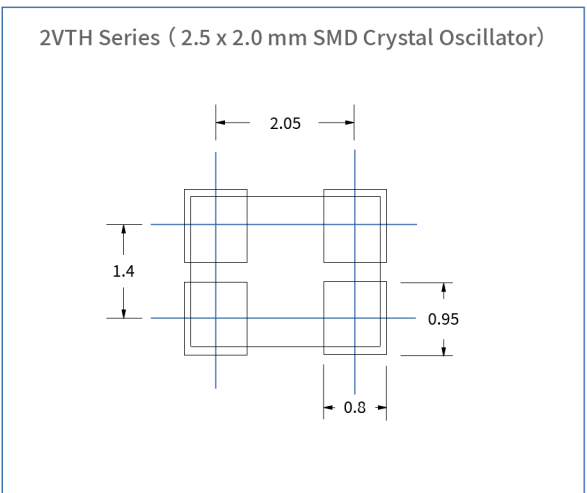
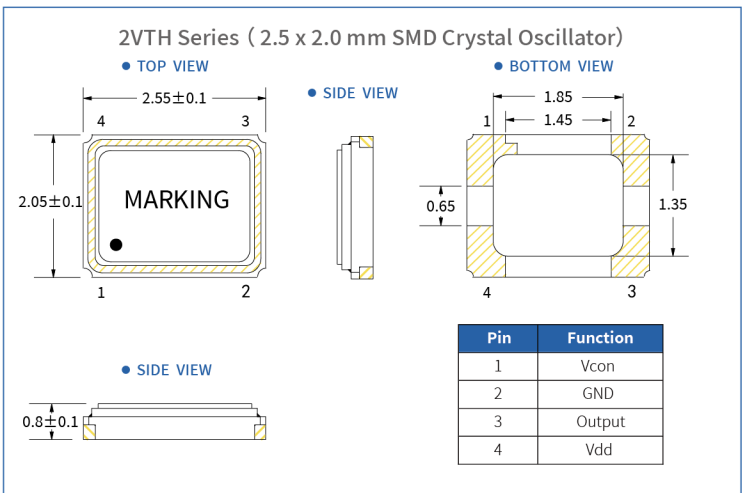
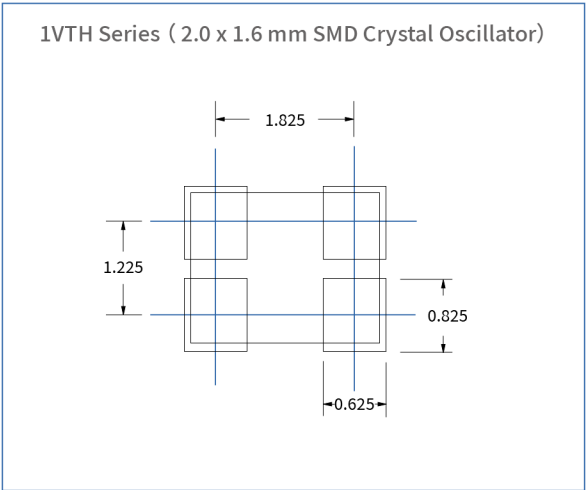


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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)

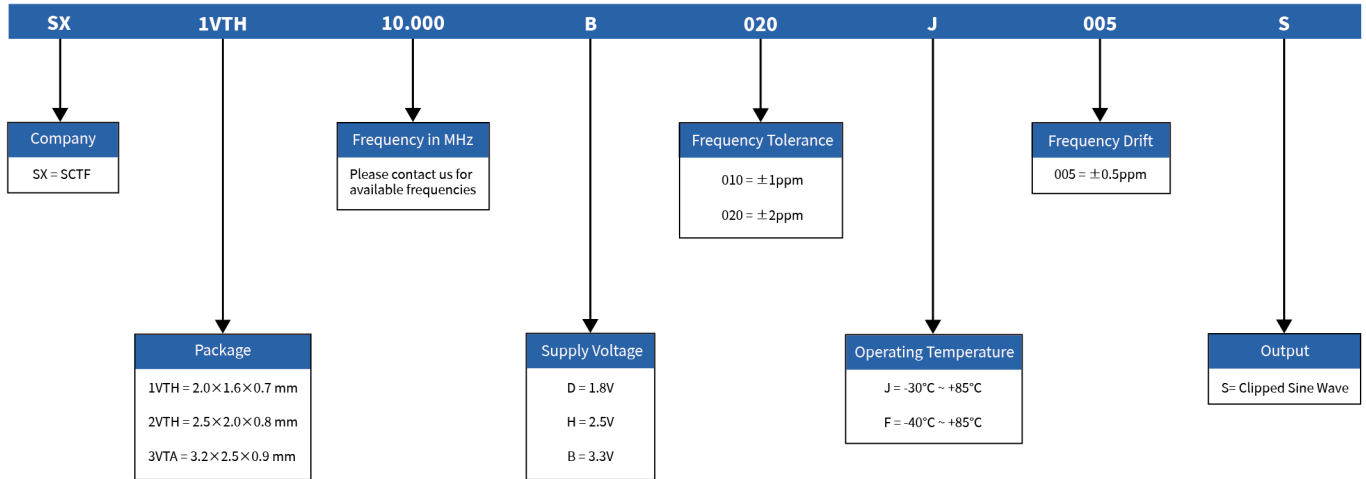


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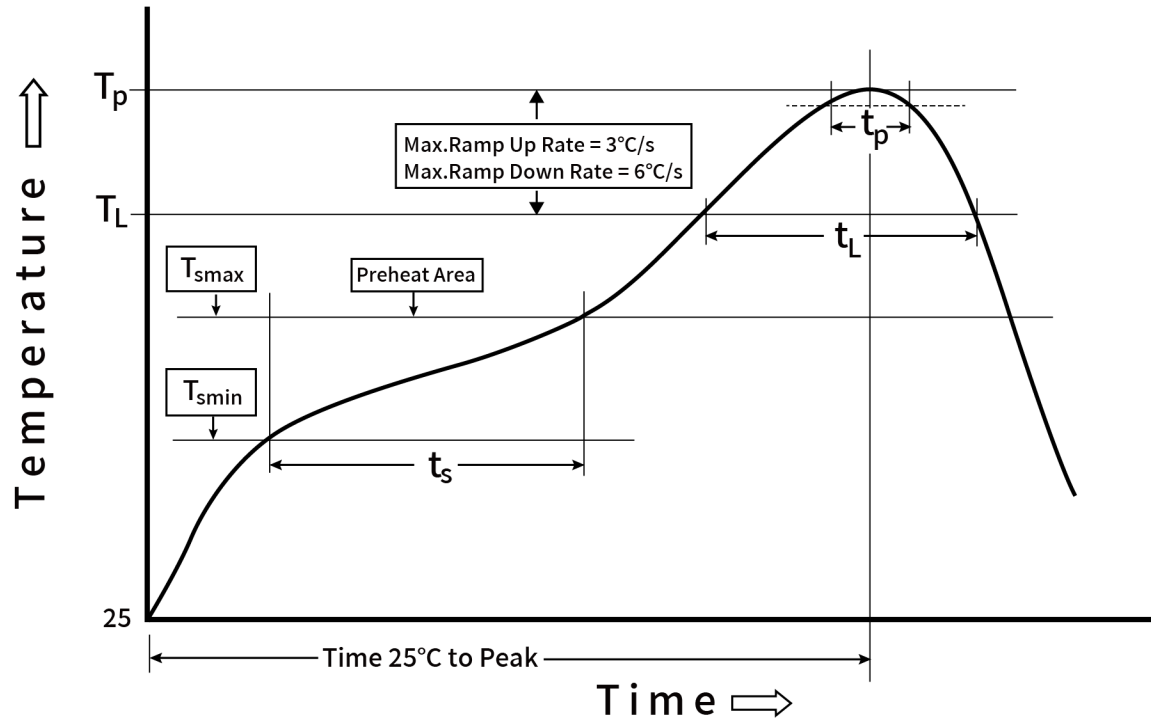
Options and Part Identification



List of available part numbers

Part NO#			
SX1VTH10.000B020J005S	SX1VTH12.000B020J005S	SX1VTH16.000B020J005S	SX1VTH19.200B020J005S
SX1VTH20.000B020J005S	SX1VTH24.000B020J005S	SX1VTH25.000B020J005S	SX1VTH26.000B020J005S
SX1VTH30.000B020J005S	SX1VTH32.000B020J005S	SX1VTH38.400B020J005S	SX1VTH40.000B020J005S
SX1VTH48.000B020J005S	SX1VTH52.000B020J005S		
SX2VTH10.000B020J005S	SX2VTH12.000B020J005S	SX2VTH16.000B020J005S	SX2VTH19.200B020J005S
SX2VTH20.000B020J005S	SX2VTH24.000B020J005S	SX2VTH25.000B020J005S	SX2VTH26.000B020J005S
SX2VTH30.000B020J005S	SX2VTH32.000B020J005S	SX2VTH38.400B020J005S	SX2VTH40.000B020J005S
SX2VTH48.000B020J005S	SX2VTH52.000B020J005S		
SX3VTA10.000B020J005S	SX3VTA12.000B020J005S	SX3VTA16.000B020J005S	SX3VTA19.200B020J005S
SX3VTA20.000B020J005S	SX3VTA24.000B020J005S	SX3VTA25.000B020J005S	SX3VTA26.000B020J005S
SX3VTA30.000B020J005S	SX3VTA32.000B020J005S	SX3VTA38.400B020J005S	SX3VTA40.000B020J005S
SX3VTA48.000B020J005S	SX3VTA52.000B020J005S		

Reflow Profile

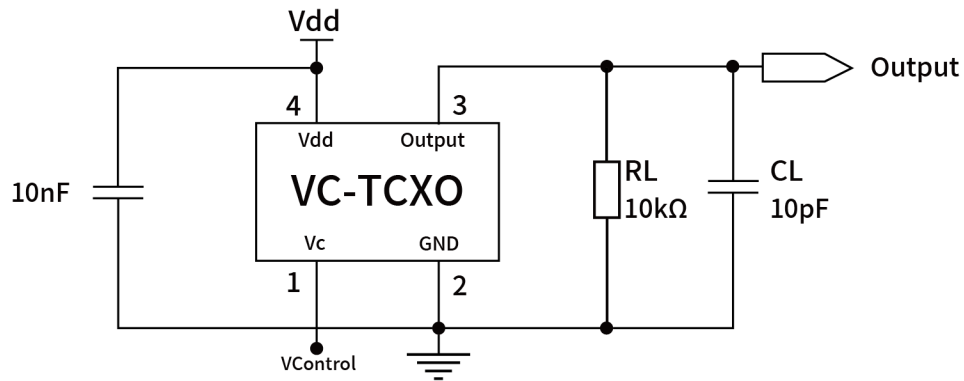


Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (Ts min) ● Temperature Max (Ts max) ● Time (Ts min to Ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (TL to Tp)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (TL) ● Time (tL) maintained above TL	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time within 5° C of the specified classification temperature (Tp)	20 seconds	30 seconds
Ramp - down rate (Tp to TL)	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
Suggest reflow times	2 Times max.	

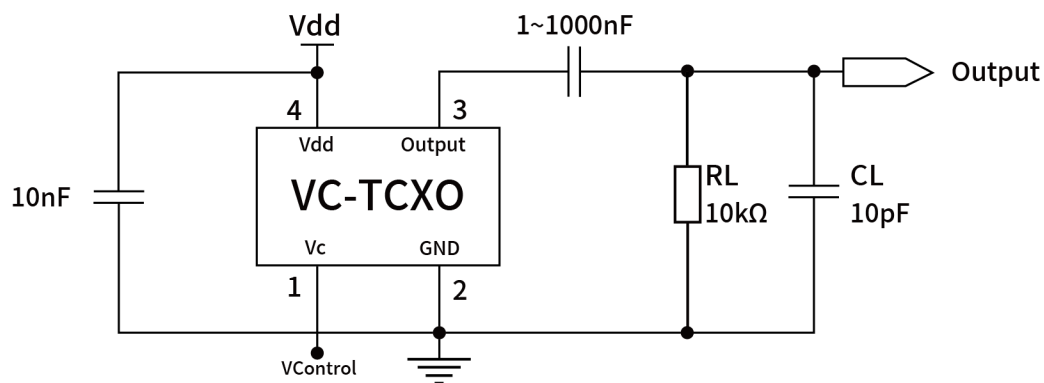
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Testing Circuit

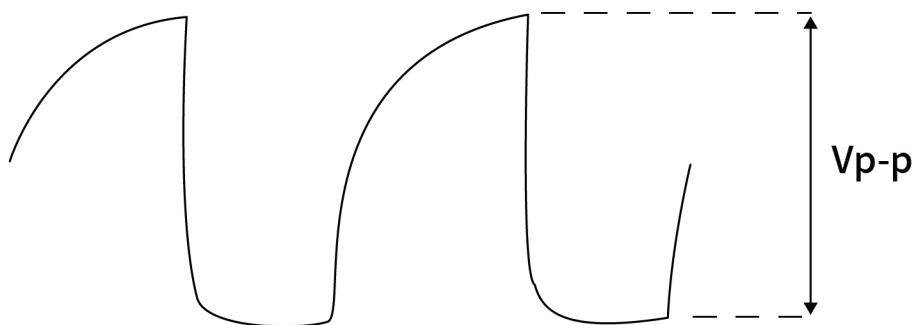


DC Coupled Application



AC Coupled Application

Waveform Conditions



Reliability Specification

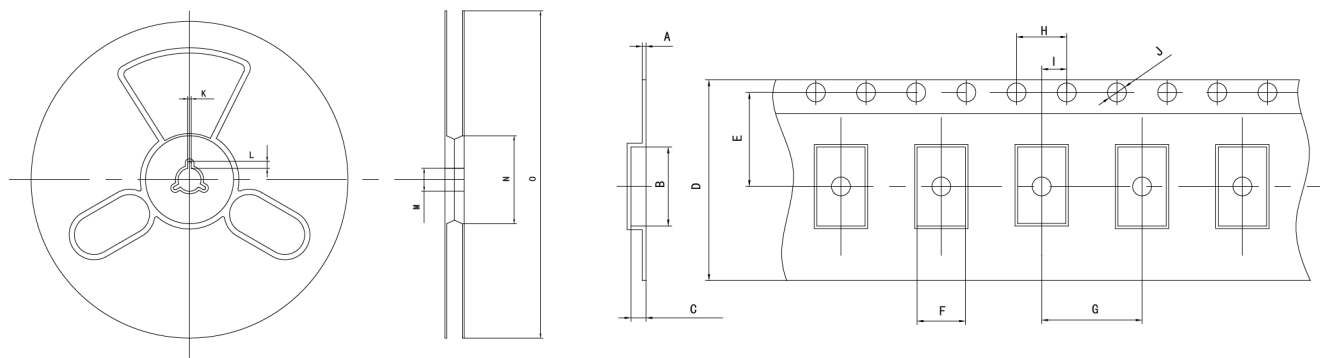
NO.	Item	Conditions	Basis of Verdict
1	Drop	High:100cm;Thickness:3cm;3 times.	$\triangle FL \leq \pm 1\text{ppm}$
2	Vibration	Frequency:10~500HZ speed:11min/cycle Amplitude:1.5mm(10~55Hz) acceleration rate:200m/s ² (55~500Hz) Direction:X,Y,Z	$\triangle FL \leq \pm 1\text{ppm}$
3	Low Temperature Storage	Temp:-40°C $\pm$ 2°C;Times:96h	$\triangle FL \leq \pm 1\text{ppm}$
4	High Temperature Storage	Temp:125°C $\pm$ 2°C;Times:96h	$\triangle FL \leq \pm 1\text{ppm}$
5	High Temp.&Humidity	Temp:80°C $\pm$ 2°C; Humidity:85% $\pm$ 5%;Times:1000h	$\triangle FL \leq \pm 1\text{ppm}$
6	Thermal Shock	-40°C $\pm$ 2°C (30min) $\longleftrightarrow$ 85°C $\pm$ 2°C (30min) ; For 100 cycles	$\triangle FL \leq \pm 1\text{ppm}$
7	Resistance to Soldering Heat	Keep 150 °C $\pm$ 5 °C 120s and then rose to 265 °C $\pm$ 5 °C for 10s,warming and holding time is less than the 200s, placed at room temperature 1 ~ 2h after test	$\triangle FL \leq \pm 1\text{ppm}$
8	Aging	Temp:85°C;Times:30days	$\triangle FL \leq \pm 1\text{ppm}$
9	Soldering Test	Dipping in solder bath at 245deg.C $\pm$ 5deg.C for 3 $\pm$ 0.5 sec.	Soldering tin rate greater than 95%

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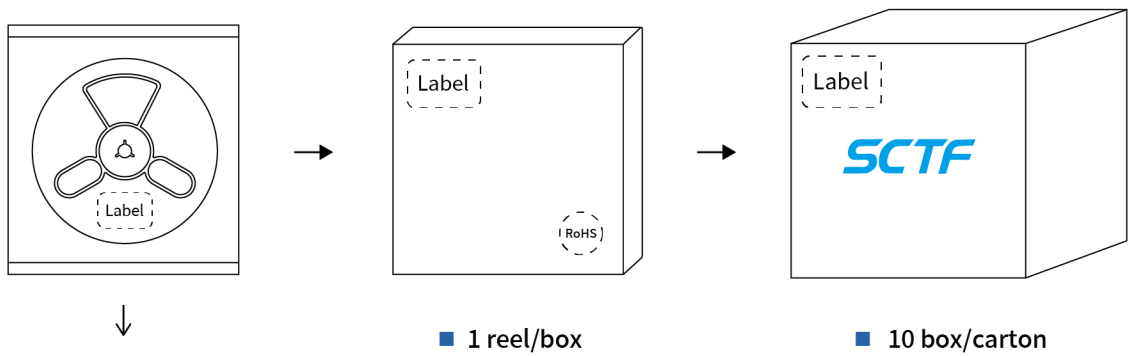
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Taping Specifications



Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1VTH	0.25±0.05	2.3±0.1	0.7±0.1	8.0±0.1	3.5±0.1	1.9±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ50±1	φ180±1
2VTH	0.25±0.05	2.8±0.1	1.15±0.1	8.0±0.1	3.5±0.1	2.3±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ60±1	φ180±1
3VTA	0.25±0.05	3.6±0.1	1.3±0.1	8.0±0.1	3.5±0.1	2.9±0.1	4.0±0.1	4.0±0.1	2.0±0.1	φ1.5±0.1	2.0±0.2	4.0±1.0	φ13±0.5	φ50±1	φ180±1

Packaging specifications



Series	Packaging
1VTH	3,000 pcs/reel
2VTH	3,000 pcs/reel
3VTA	3,000 pcs/reel