5ZQ Series Programmbale Differential Output Crystal Oscillator

5：5.0×3.2×1.25 mm | SMD5032-6P　　ZQ：Differential Output Crystal Oscillator(Programmbale)

Feature

- PLL technology to enable setting any output frequency
- Output Types：LVPECL/LVDS/HCSL
- Tri-state function available
- RMS Phase Jitter：1.5pSec max.
- Pb-free/RoHS Compliant

Applications

- Networking and communications
- Gigabit Ethernet
- Fibre Channel
- SONET/SDH
- RF systems, base stations (BTS)

Frequency Stability & Operating Temperature Range

FT / Temp.	±20ppm	±25ppm	±30ppm	±50ppm
-20°C to +70°C	△	★	★	★
-40°C to +85°C		△	★	★

★：Available　△：Conditional

All condition：Include 25°C tolerance, operating temperature range , input voltage change, aging, load change.

Electrical Specifications

Item		Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range		Freq.	90.000		200.000	MHz	
Standard Frequency		Freq.	100.000 ,106.250 ,125.000 148.500 ,150.000 ,155.520 156.250 ,200.000			MHz	Contact SCTF for frequencies not listed
Output			LVPECL				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_PECL		50		Ω	Vdd - 2.0 V
Current Consumption		Icc			50	mA	
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}	Vdd-1.025			V	
Low output voltage		V_{OL}			Vdd-1.62	V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			1.5	pSec	Period Jitter(12KHz-20MHz)
Phase Noise@156.25MHz	100 Hz		-80			dBc/Hz	
	1 KHz		-100			dBc/Hz	
	10 KHz		-110			dBc/Hz	
Aging		f_age			3	ppm	1st. Year at 25°C

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Standard Frequency		Freq.	100.000 ,106.250 ,125.000 148.500 ,150.000 ,155.520 156.250 ,200.000			MHz	Contact SCTF for frequencies not listed
Output			LVDS				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_LVDS		100		Ω	
Current Consumption		Icc			50	mA	
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}			1.6	V	
Low output voltage		V_{OL}	0.9			V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			1.5	pSec	Period Jitter(12KHz-20MHz)
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Standard Frequency		Freq.	100.000 ,106.250 ,125.000 148.500 ,150.000 ,155.520 156.250 ,200.000			MHz	Contact SCTF for frequencies not listed
Output			HCSL				
Operating Temperature		T_use	-20		+70	°C	
			-40		+85	°C	
StorageTemperature Range		T_stg	-55		+125	°C	
Supply Voltage		Vdd	1.8 / 2.5 / 3.3			V	±5% max.
Output Load		L_HCSL		R_S=33 , R_L=50		Ω	
Current Consumption		Icc			50	mA	
Duty Cycle		SYM	45		55	%	
Rise / Fall Time		T_R / T_F			1	nS	20% Vdd to 80% Level
Start-up Time		T_str			10	mS	To 90% of Final Amplitude
High output voltage		V_{OH}	0.66			V	
Low output voltage		V_{OL}			0.15	V	
Enable Voltage High (Logic 1)		V_{IH}	0.7Vdd			V	Pin 1 Tri-state Outputs will be enable if OE is Logic 1 or open; Outputs will be disable if OE is Logic 0.
Enable Voltage Low (Logic 0)		V_{IL}			0.3Vdd	V	
RMS Phase Jitter		T_{RPJ}			1.5	pSec	Period Jitter(12KHz-20MHz)
Phase Noise@156.25MHz	100 Hz		-80			dBc/Hz	
	1 KHz		-100			dBc/Hz	
	10 KHz		-110			dBc/Hz	
Aging		f_age			3	ppm	1st. Year at 25°C

5ZQ Series Programmbale Differential Output Crystal Oscillator

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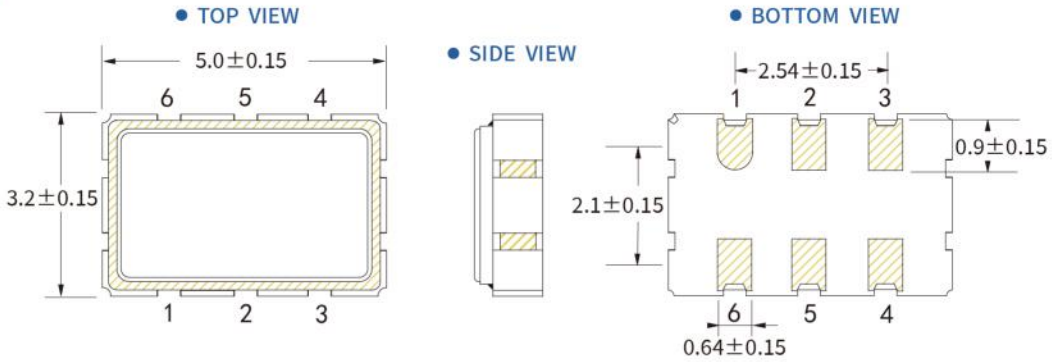
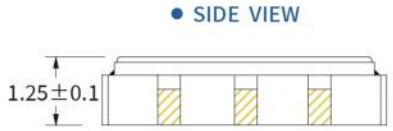
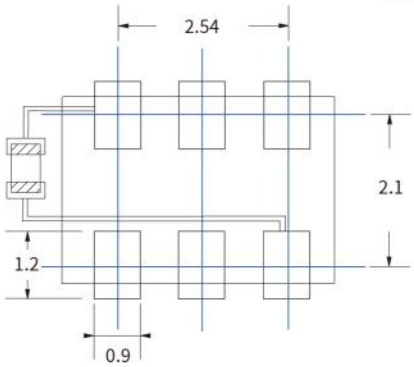
Dimensions (UNIT:mm)





Pin	Function
1	Tri-State
2	NC
3	GND
4	Output
5	Comp.Output
6	Vdd

Solder pad layout (UNIT:mm)



To ensure optimal oscillator performance,place a by-pass capacitor of 0.1μF as close to the part as possible between Vdd and GND pads.

Options and Part Identification : Example SXQP5DF100.000B20F30DNN

Company	Technology	Ceramic Package	Frequency Code [MHZ]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise
SX	QP	5DF	X.XXX	B	20	F	30	D	N	N

Code	Company
SX	SCTF

Code	Technology
QP	Q-MEMS

Code	Ceramic Package
7DF	7.0×5.0×1.6mm
5DF	5.0×3.2×1.25mm
3DF	3.2×2.5×0.9mm

Frequency
100.000

Code	Voltage
D	1.8V
H	2.5V
B	3.3V

Code	Frequency Tolerance
10	±10ppm
20	±20ppm

Code	Operating Temperature
E	-20°C ~ +70°C
F	-40°C ~ +85°C

Code	Frequency Drift
15	±15ppm
20	±20ppm
30	±30ppm

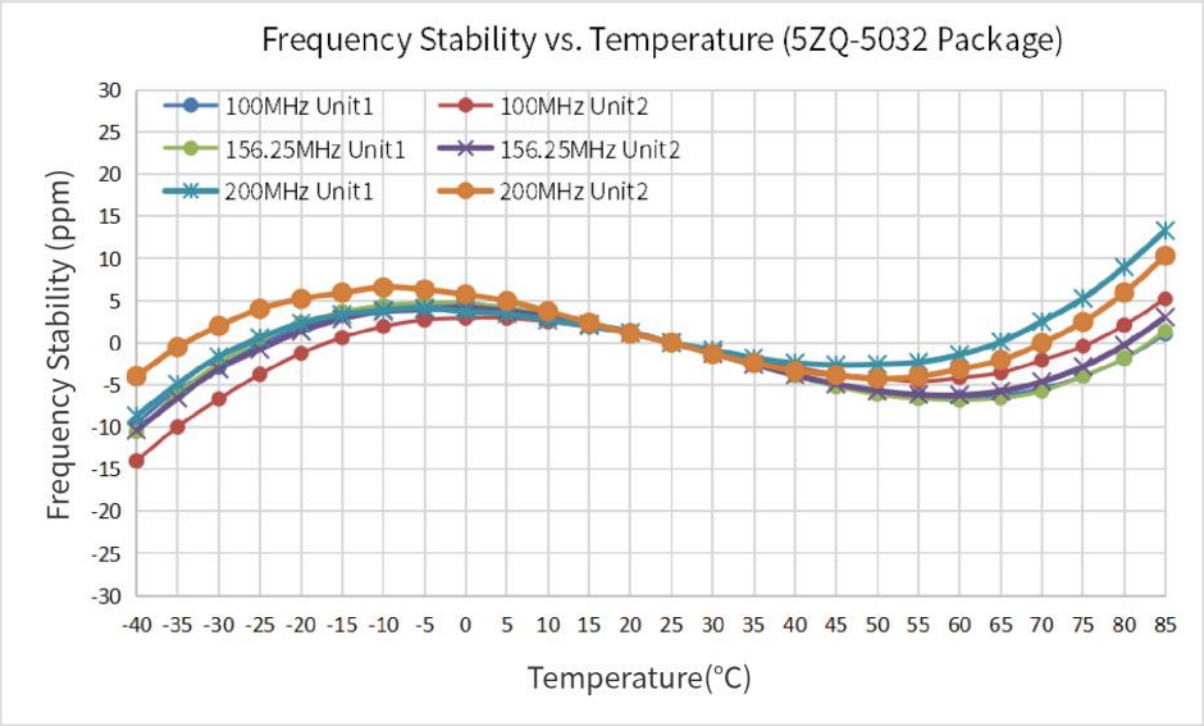
Code	Output
P	LVPECL
D	LVDS
H	HCSL

Code	Current
N	Standard

Code	Phase Noise
N	Standard

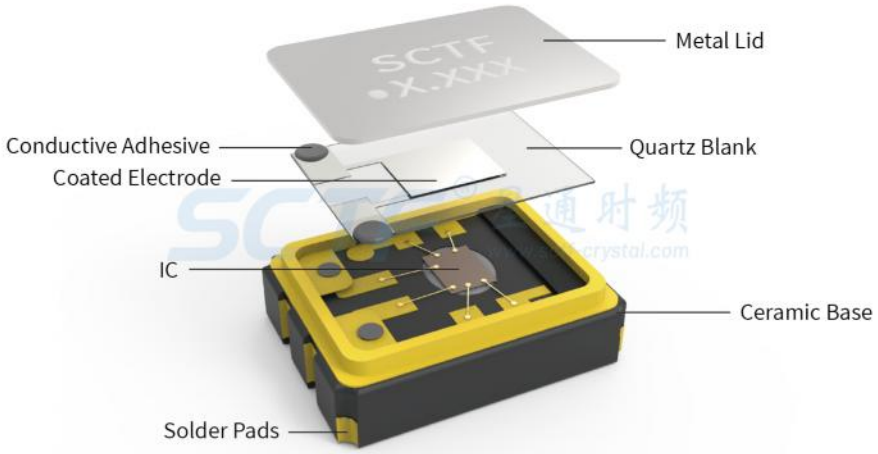
If you have other parameter requirements, you can contact **SCTF** at any time.

Frequency Temperature Characteristics

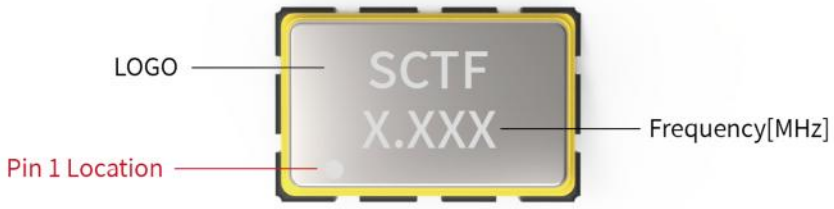


Product Structure&Marking Information

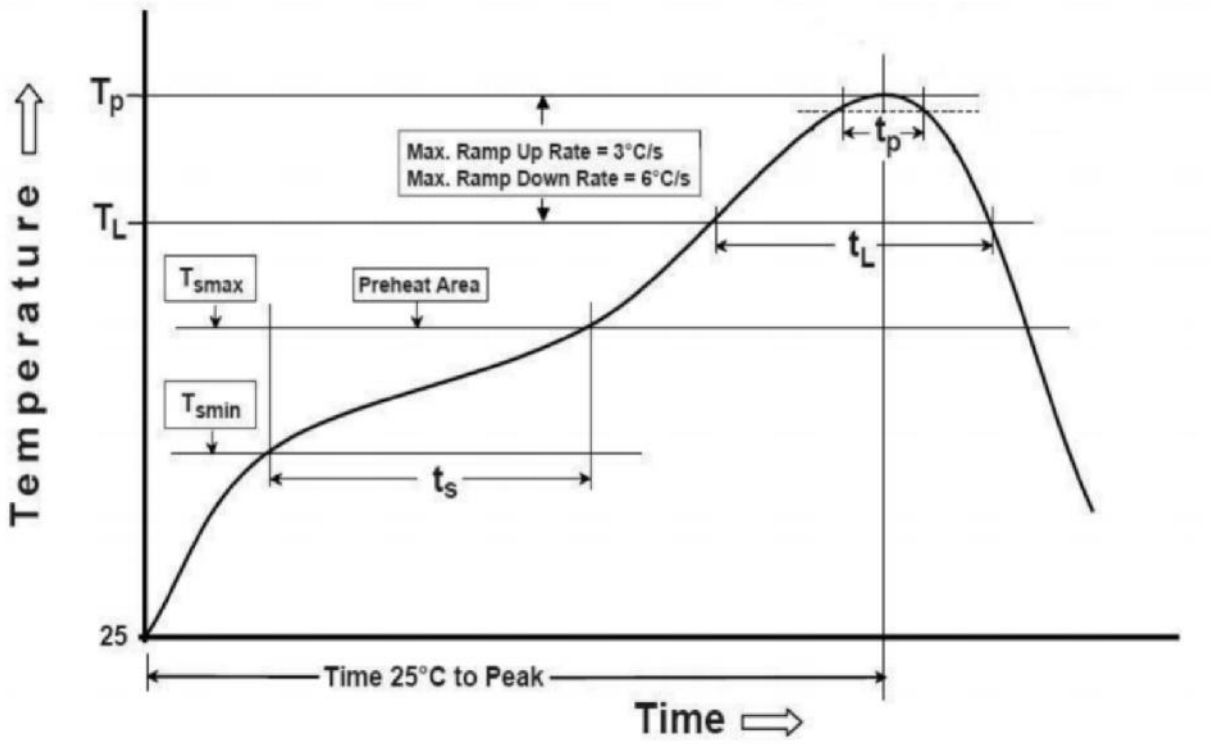
- Product Structure



- Marking Information



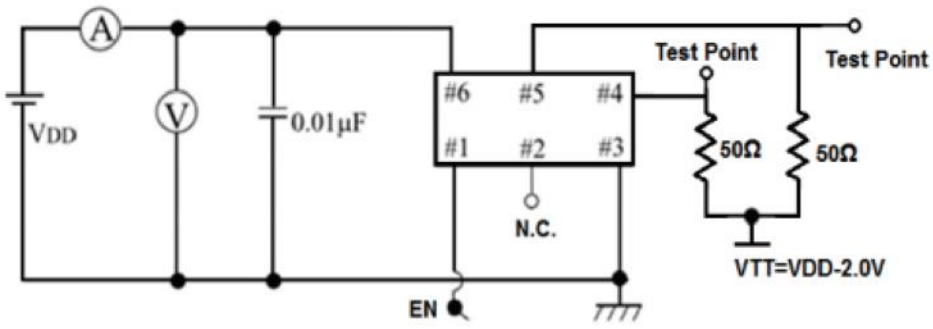
Suggested Reflow Profile



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.
Suggust reflow times	**2 Times max.**	

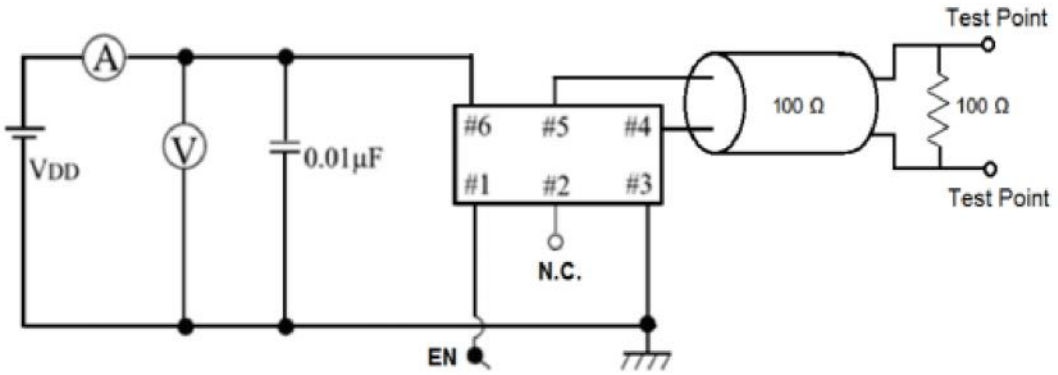
Testing Circuit

- LVPECL



※ Notes: PIN 1 connected to Vdd or floating, the product is working properly;connected to GND,stops working.

- LVDS



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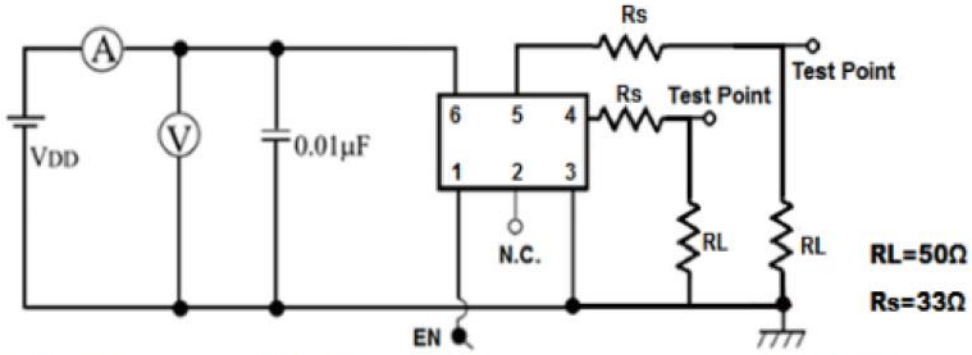
- HCSL



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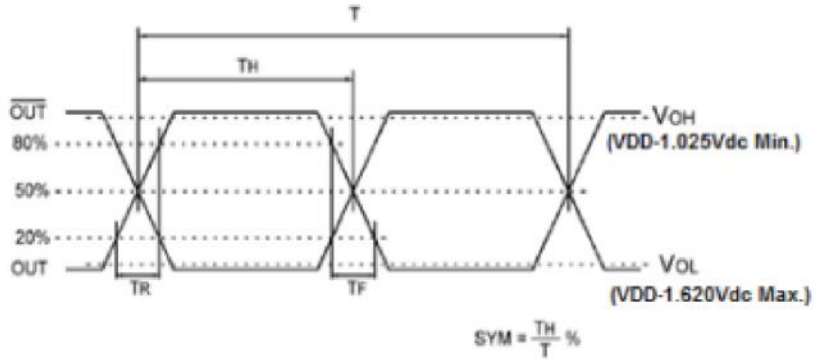
Waveform Conditions

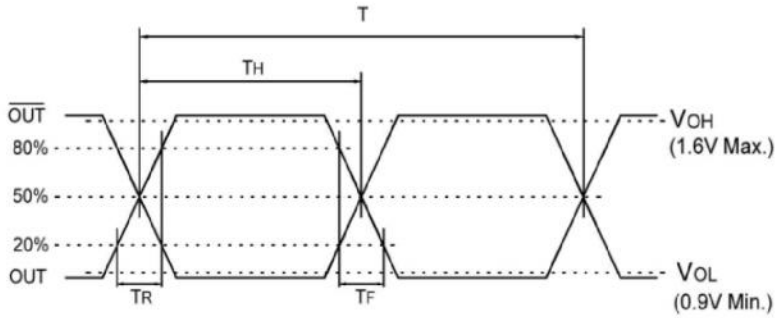
- LVPECL



$SYM = \frac{TH}{T}\ \%$

Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

- LVDS



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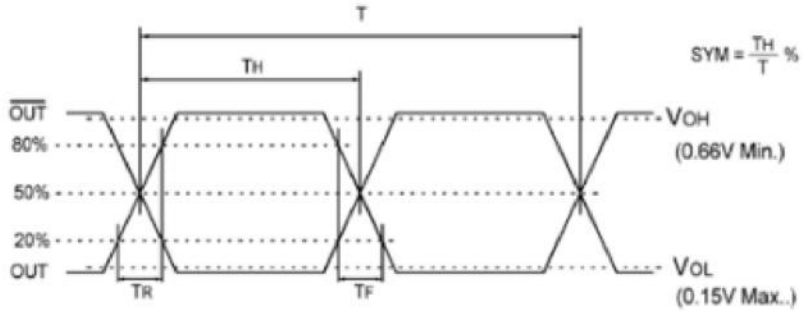
- HCSL



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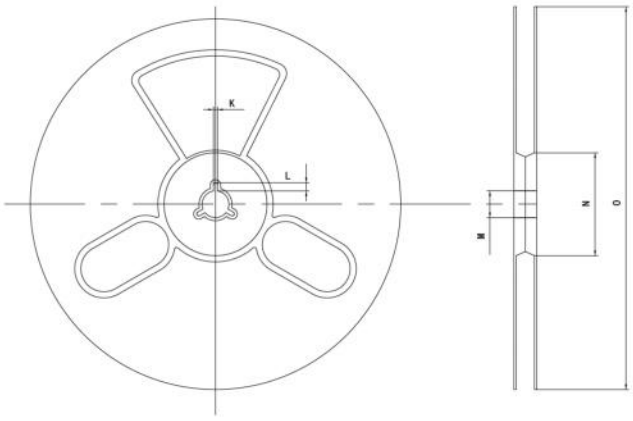
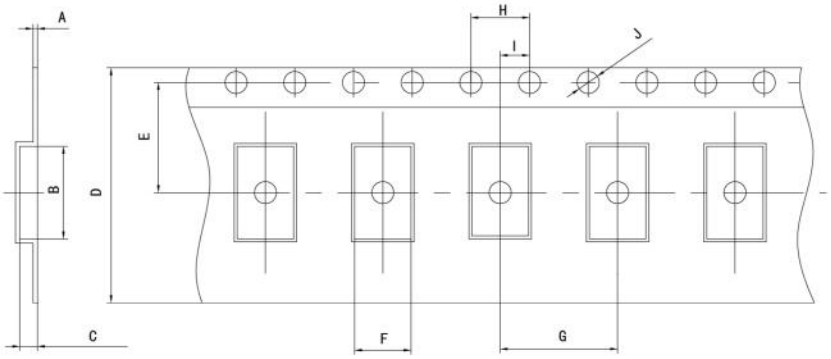
Packaging Information

T=Tape and reel (1,000pcs/reel)





Pocket Tape Dimensions(mm)

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5ZQ	0.3±0.05	5.5±0.1	1.25±0.1	12±0.1	5.5±0.1	3.6±0.1	8.0±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

Common Frequencies – MHz

5ZQ Series				
100.000	106.250	108.000	114.000	114.285
120.000	122.880	125.000	128.000	133.000
135.000	148.350	148.500	149.875	150.000
153.600	155.520	156.250	160.000	166.000
175.000	187.500	200.000		