

7ZQ Series Programmable Differential Output Crystal Oscillator

7 : 7.0×5.0×1.6 mm | SMD7050-6P

ZQ : Differential Output Crystal Oscillator(Programmable)

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

Temp. \ FT	±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	
Storage Temperature Range	T _{stg}	-55		+125	°C	
Supply Voltage	V _{dd}	1.8 / 2.5 / 3.3			V	±5% max.
Output Load	L _{PECL}		50		Ω	V _{dd} - 2.0 V
Current Consumption	I _{cc}			50	mA	
Duty Cycle	SYM	45		55	%	
Rise / Fall Time	T _R / T _F			1	nS	20% V _{dd} to 80% Level
Start-up Time	T _{str}			10	mS	To 90% of Final Amplitude
High output voltage	V _{OH}	V _{dd} -1.025			V	
Low output voltage	V _{OL}			V _{dd} -1.62	V	
Enable Voltage High (Logic 1)	V _{IH}	0.7V _{dd}			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}			0.3V _{dd}	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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Output		LVDS				
Operating Temperature	T _{use}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{stg}	-55		+125	°C	
Supply Voltage	V _{dd}	1.8 / 2.5 / 3.3			V	± 5% max.
Output Load	L _{LVDS}		100		Ω	
Current Consumption	I _{cc}			50	mA	
Duty Cycle	SYM	45		55	%	
Rise / Fall Time	T _R / T _F			1	nS	20% V _{dd} 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}	0.7V _{dd}			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.
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Output		HCSL				
Operating Temperature	T _{use}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{stg}	-55		+125	°C	
Supply Voltage	V _{dd}	1.8 / 2.5 / 3.3			V	± 5% max.
Output Load	L _{HCSL}	R _s =33 , R _L =50			Ω	
Current Consumption	I _{cc}			50	mA	
Duty Cycle	SYM	45		55	%	
Rise / Fall Time	T _R / T _F			1	nS	20% V _{dd} 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}	0.7V _{dd}			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.
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	1 KHz		-100		dBc/Hz	
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Aging	f _{age}			3	ppm	1st. Year at 25°C

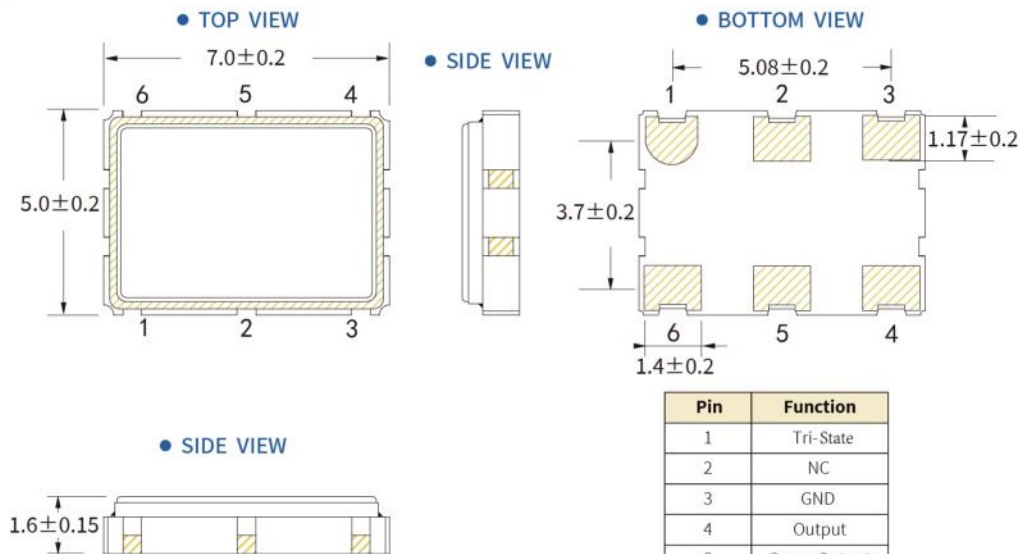
更新日期：2025年3月13日

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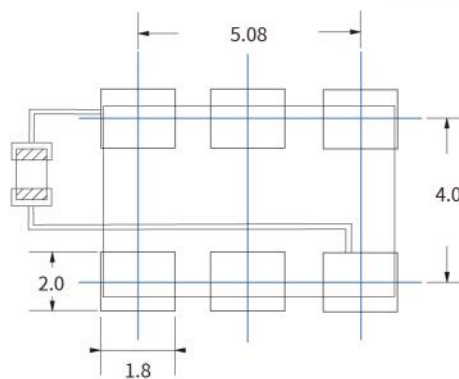
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Dimensions (UNIT:mm)



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 SXQP7DF100.000B20F30DNN

Company	Technology	Ceramic Package	Frequency Code [MHZ]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise
SX	QP	7DF	X.XXX	B	20	F	30	D	N	N
Code Company			Frequency		Code Frequency Tolerance		Code Frequency Drift		Code Current	
SX SCTF			100.000		10 ±10ppm 20 ±20ppm		15 ±15ppm 20 ±20ppm 30 ±30ppm		N Standard	
	Code Technology									
	QP Q-MEMS									
		Code Ceramic Package		Code Voltage		Code Operating Temperature		Code Output		Code Phase Noise
		7DF 7.0×5.0×1.6mm		D 1.8V		E -20°C ~ +70°C		P LVPECL		N Standard
		5DF 5.0×3.2×1.25mm		H 2.5V		F -40°C ~ +85°C		D LVDS		
		3DF 3.2×2.5×0.9mm		B 3.3V				H HCSL		

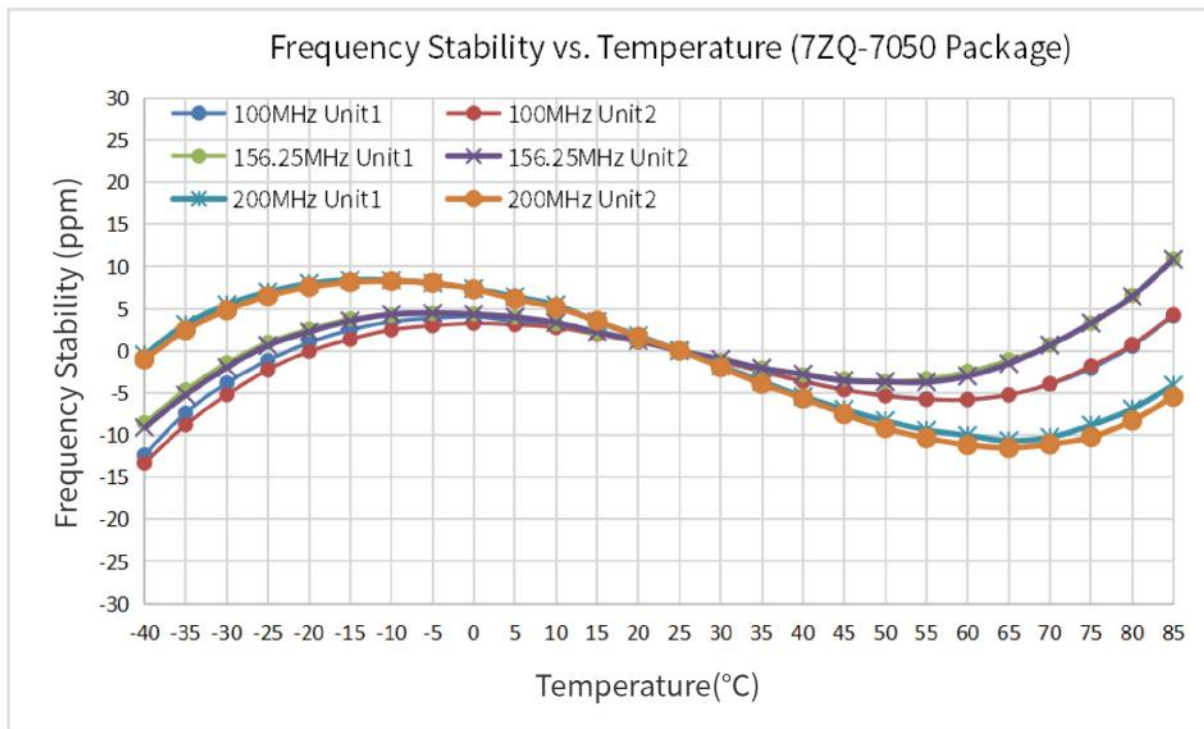
If you have other parameter requirements, you can contact **SCTF** at any time.

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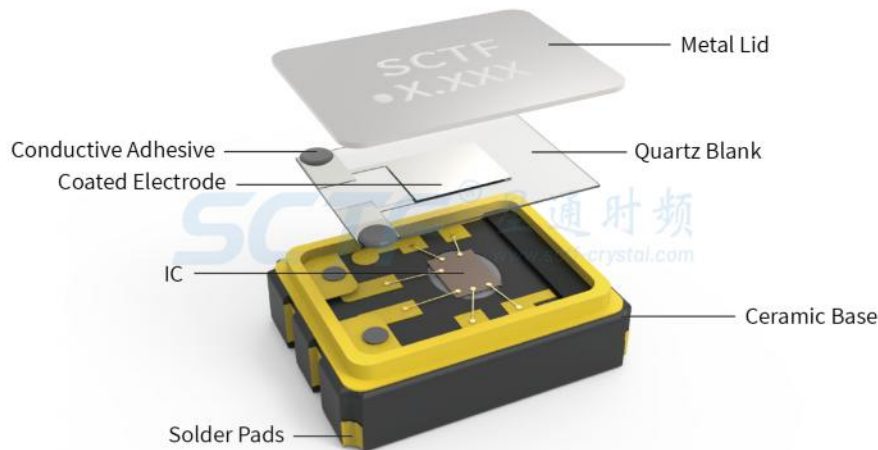
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Frequency Temperature Characteristics

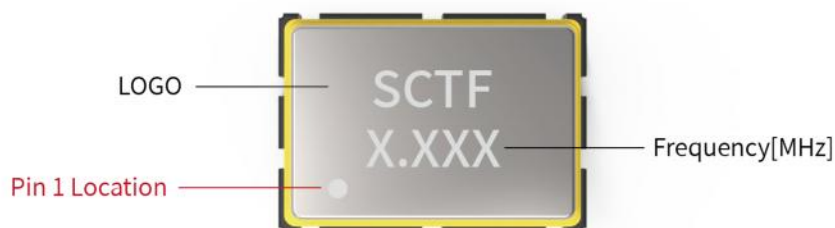


Product Structure&Marking Information

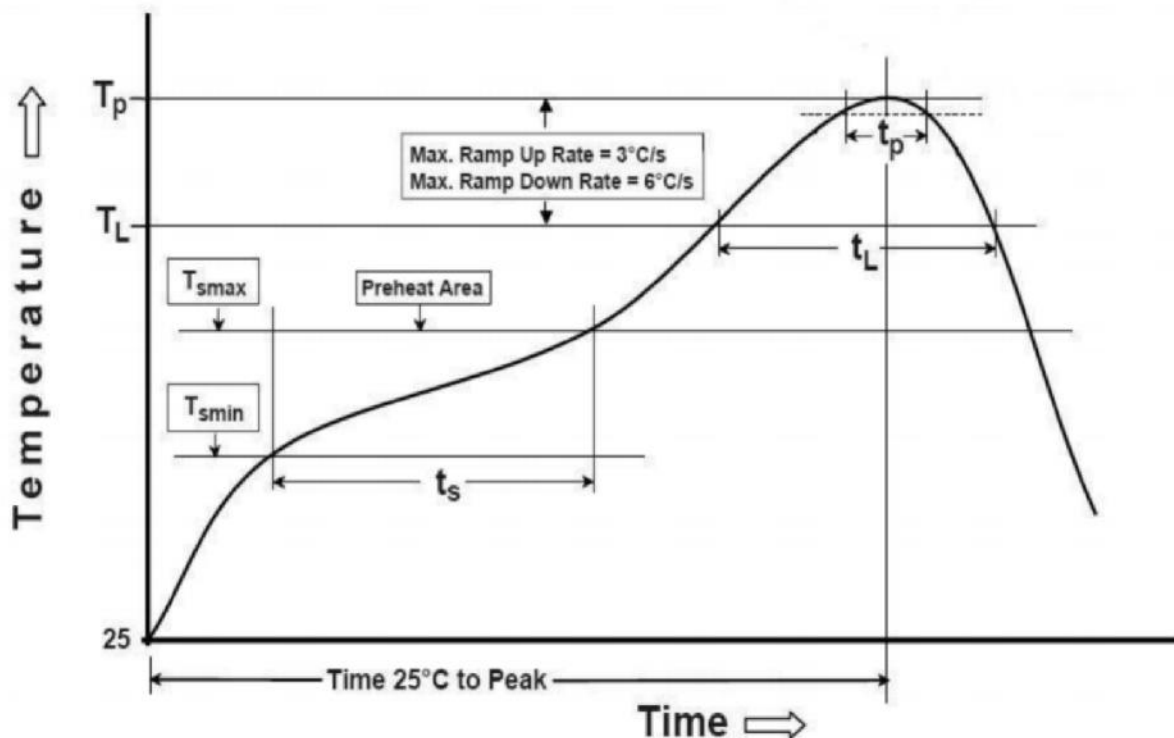
• Product Structure



• Marking Information



Suggested Reflow Profile



Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min (T_s min) ● Temperature Max (T_s max) ● Time (T_s min to T_s max)	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (T _L to T _p)	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature (T_L) ● Time (t_L) maintained above T_L	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature (T _p)	235°C	260°C
Time within 5° C of the specified classification temperature (T _p)	20 seconds	30 seconds
Ramp - down rate (T _p to T _L)	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.	

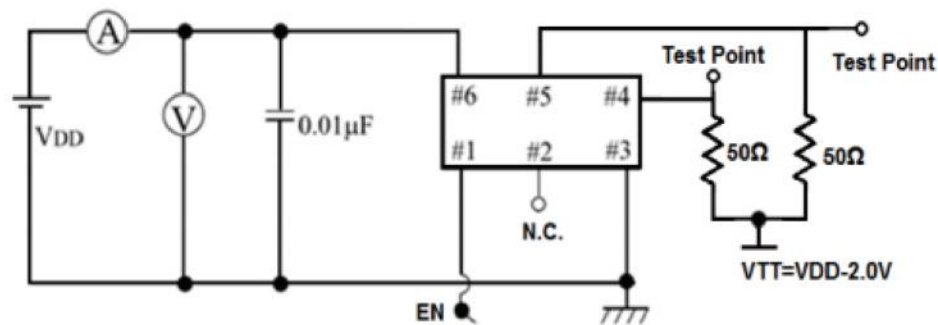
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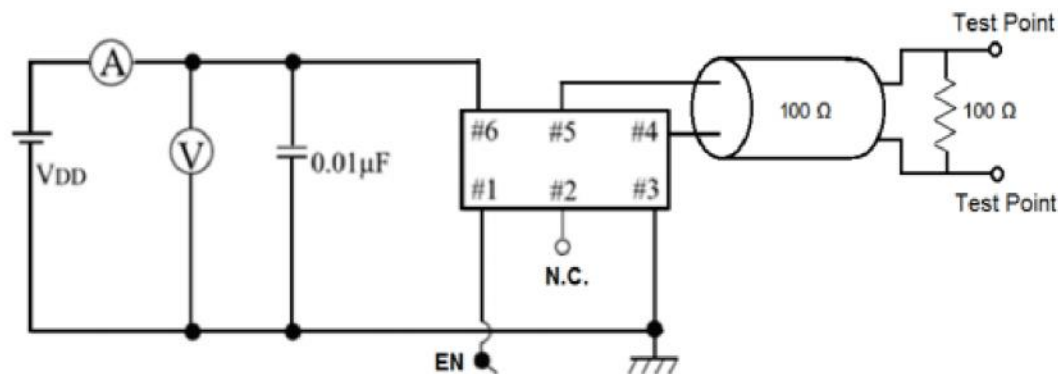
Testing Circuit

• LVPECL



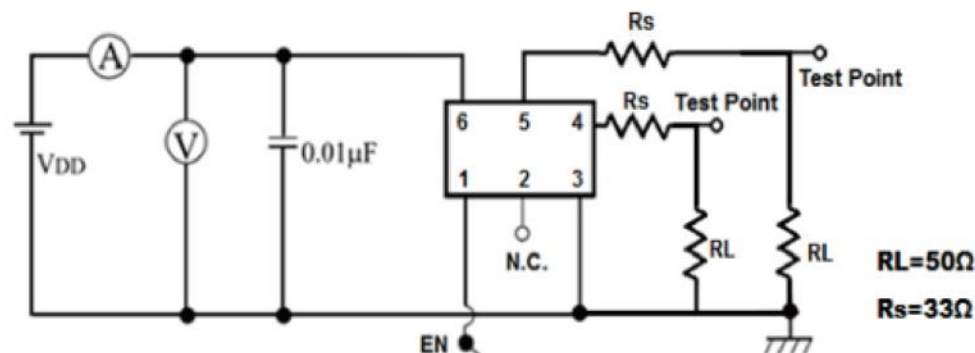
※ Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

• LVDS



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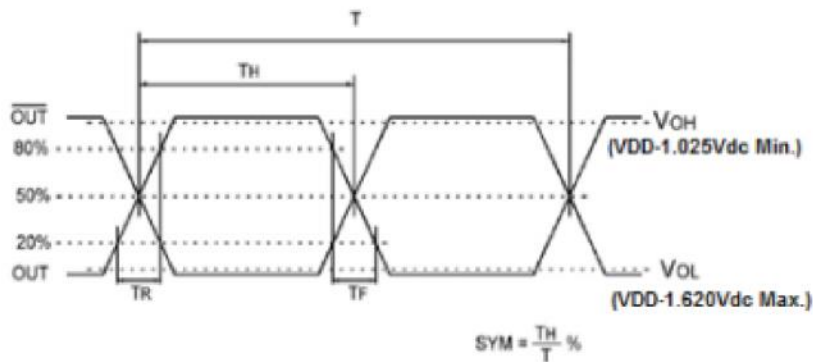
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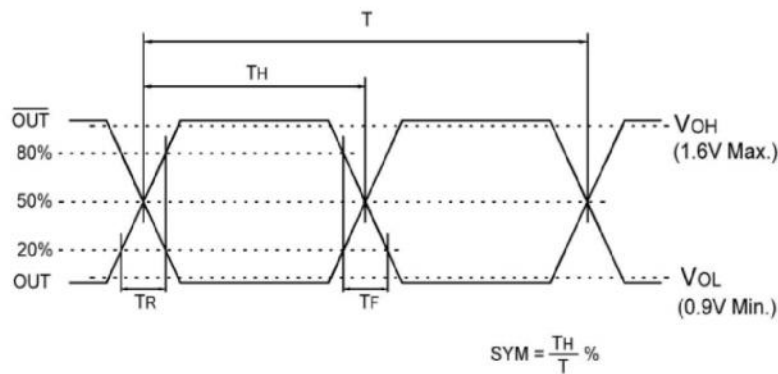
Waveform Conditions

- LVPECL



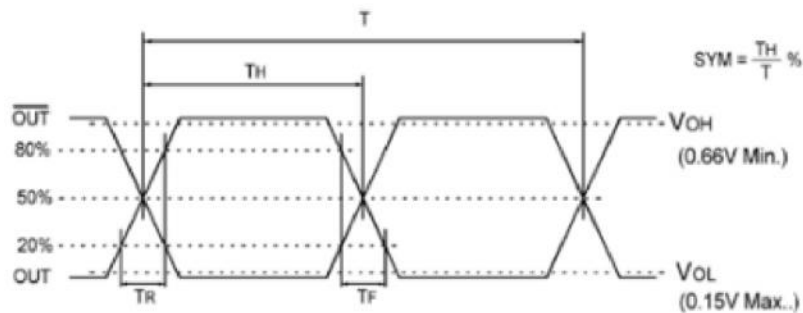
Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

- LVDS



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

- HCSL



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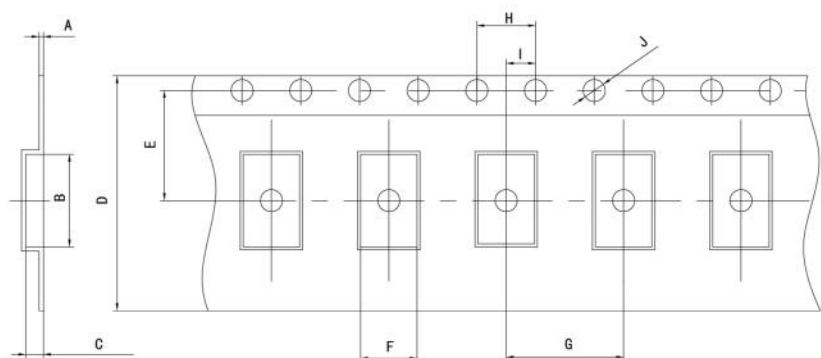
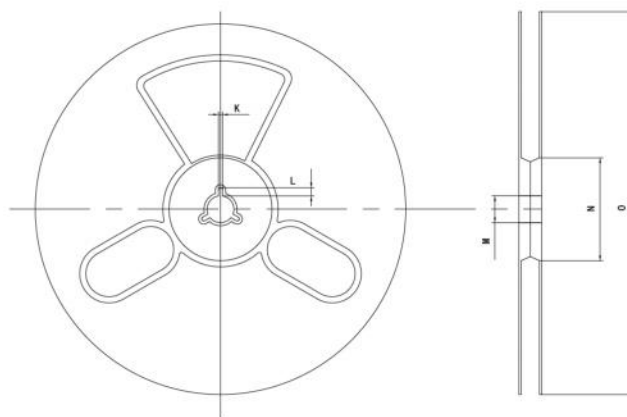
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Packaging Information

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
7ZQ	0.3±0.05	7.6±0.1	2.0±0.1	16±0.3	7.5±0.1	5.4±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

7ZQ 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		