

3CN Series 3.2 x 2.5 mm SMD Crystal Oscillator

3 : 3.2×2.5×0.95 mm | SMD3225-4P

CN : Low Phase Noise Crystal Oscillator

Feature

- Ceramic surface mount with Metal Lid
- CMOS compatible logic levels
- Tri-state function available
- RMS Phase Jitter: 0.3pSec max.
- RoHS Compliant / Pb Free

Applications

- Wireless Devices
- Internet of Things (IoT) devices
- Fibre Channel
- Ethernet/Gigabit Ethernet
- Portable Electronics



Electrical Specifications

Item	Symb.	Min.	Typ.	Max.	Unit	Notes
Frequency Range	Freq.	1.000		54.000	MHz	
Operating Temperature	T _{use}	-20		+70	°C	
		-40		+85	°C	
Storage Temperature Range	T _{stg}	-55		+125	°C	
Supply Voltage	V _{dd}	1.8		3.3	V	
Output Load	L _{CMOS}		15		pF	
Current Consumption	I _{cc}			10	mA	1MHz ≤ Freq. < 40MHz
				20		40MHz ≤ Freq. ≤ 54MHz
Duty Cycle	SYM	45		55	%	50 % V _{dd} level, L _{CMOS} ≤ 15 pF
Rise / Fall Time	T _R / T _F			5	nS	10% V _{dd} to 90% Level
Start-up Time	T _{str}			5	mS	To 90% of Final Amplitude
High output voltage	V _{OH}	0.9V _{dd}			V	
Low output voltage	V _{OL}			0.1V _{dd}	V	
Enable Voltage High (Logic 1)	V _{IH}	0.7V _{dd}			V	Output will be disable if OE is Logic 0 Output will be enable if OE is Logic 1 or open
Enable Voltage Low (Logic 0)	V _{IL}			0.3V _{dd}	V	
Enable Time	T _{PLZ}			150	uS	
RMS Phase Jitter	T _{RPJ}			0.3	pSec	Integrated 12KHz to 20MHz
Phase Noise @27MHz 3.3V	10 Hz	T _{PN}		-100		dBc/Hz
				-125		dBc/Hz
				-150		dBc/Hz
				-160		dBc/Hz
Aging	f _{age}			3	ppm	1st. Year at 25°C

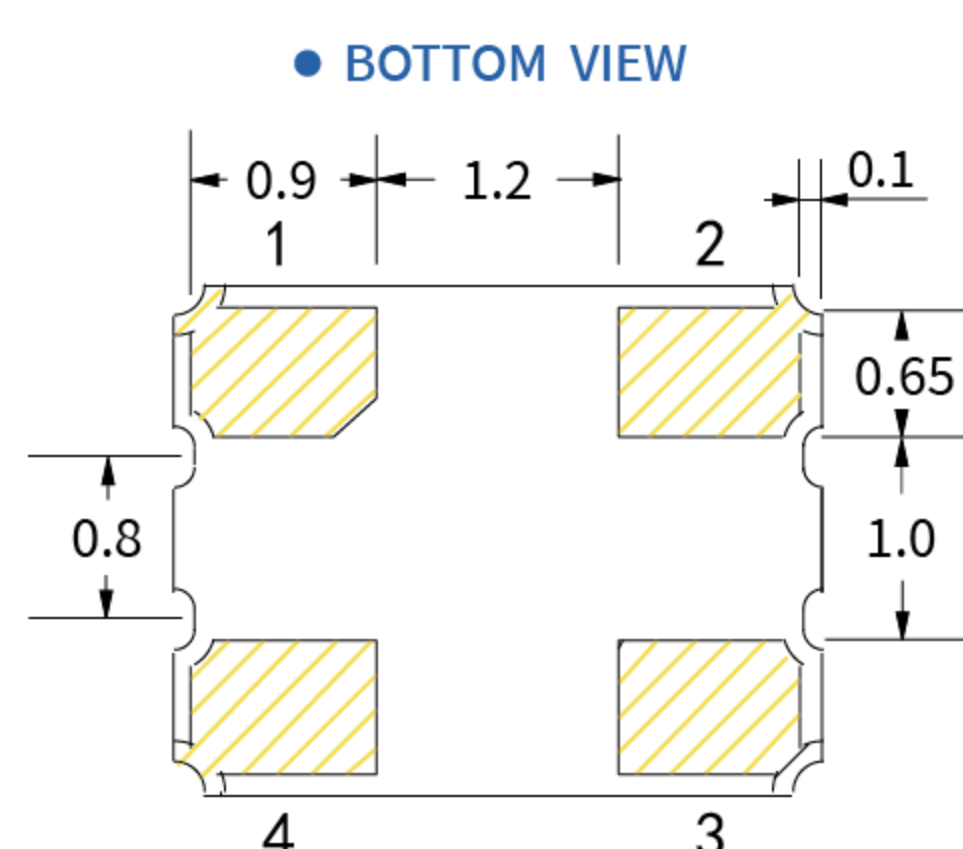
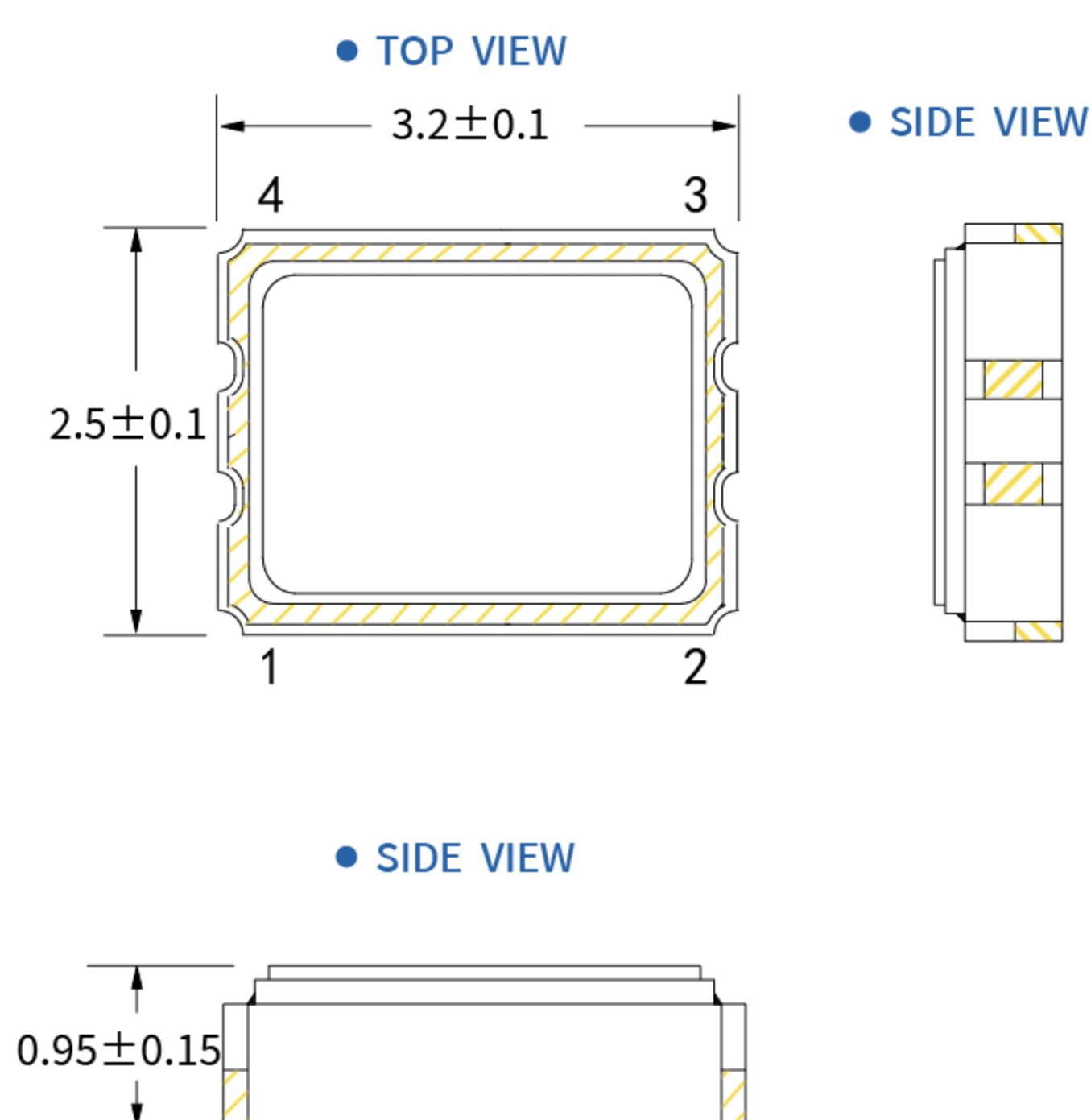
Frequency Stability & Operating Temperature Range

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

★: Available △: Conditional

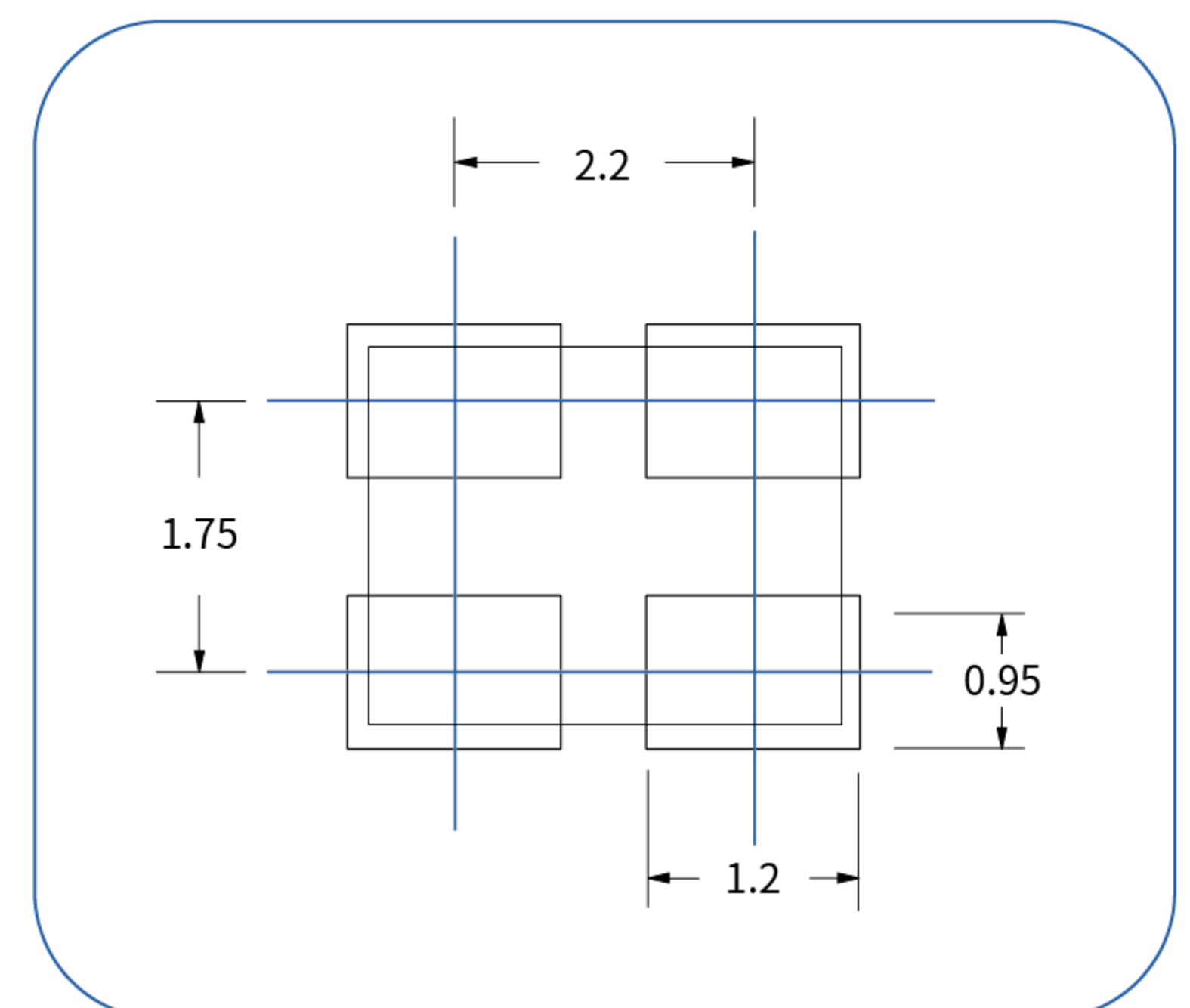
All condition: Include 25°C tolerance, operating temperature range, input voltage change, aging, load change.

Dimensions (UNIT:mm)



Pin	Function
1	Tri-State
2	GND
3	Output
4	V _{dd}

Solder pad layout (UNIT:mm)

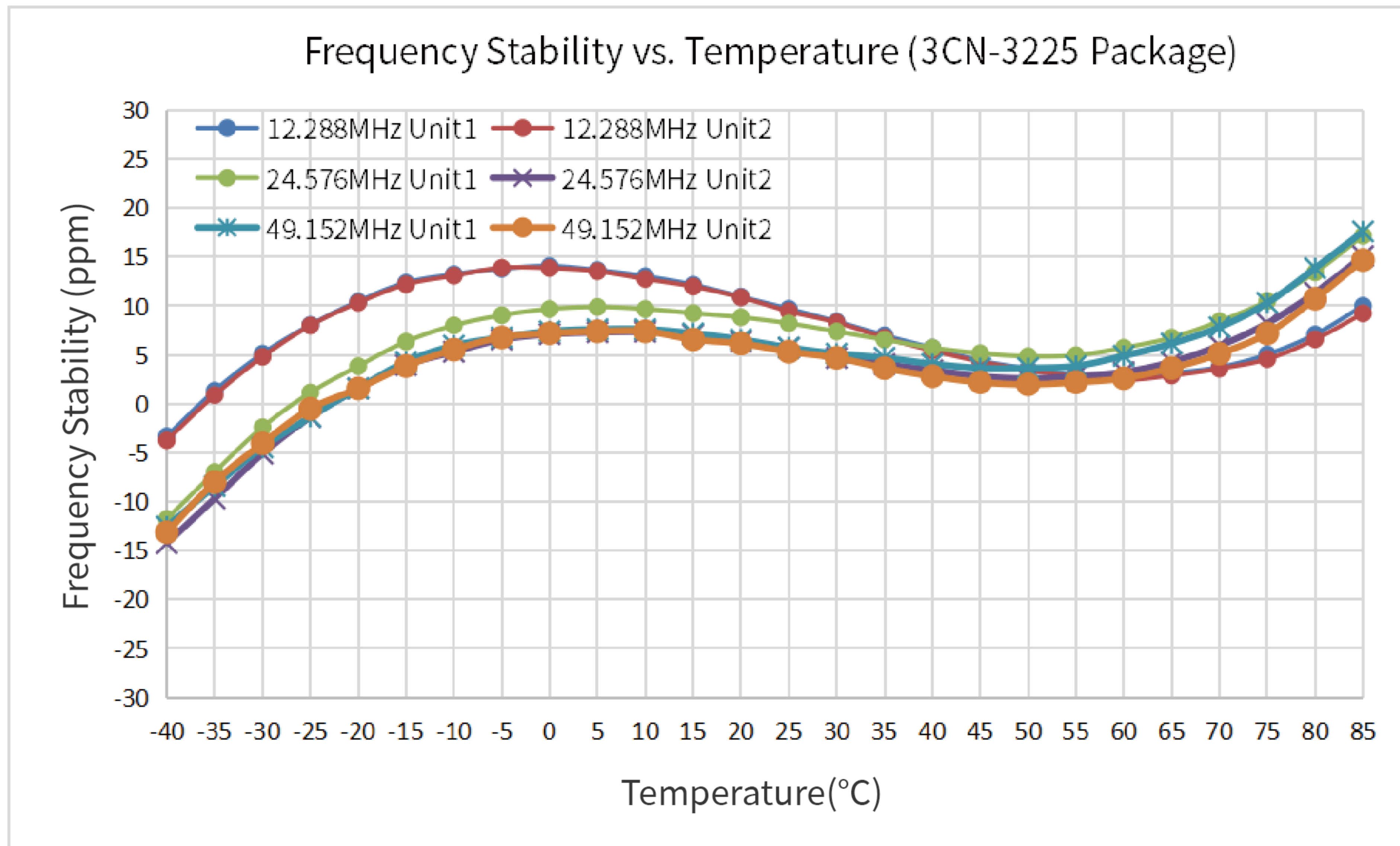


3CN Series 3.2 x 2.5 mm SMD Crystal Oscillator

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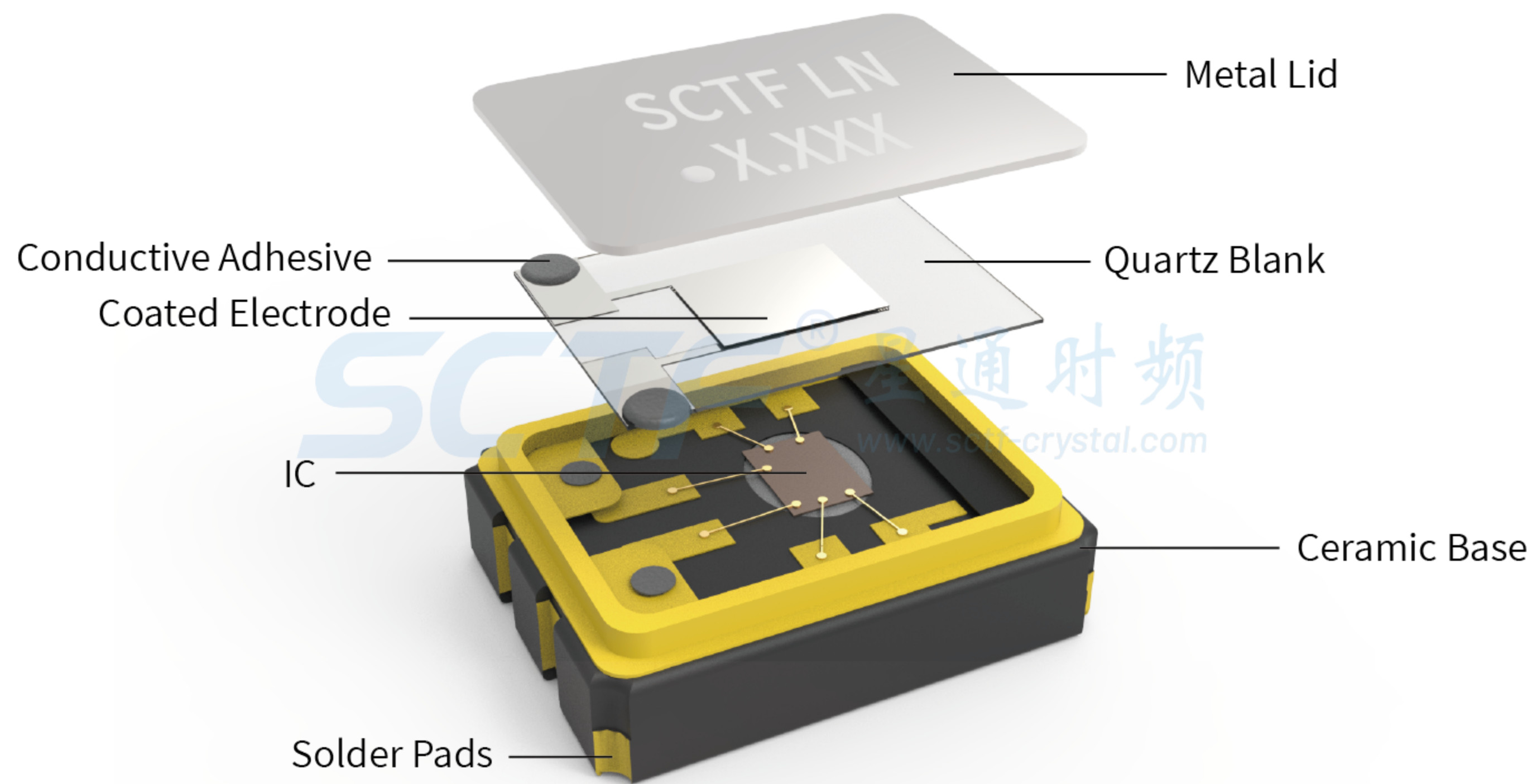
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Frequency Temperature Characteristics

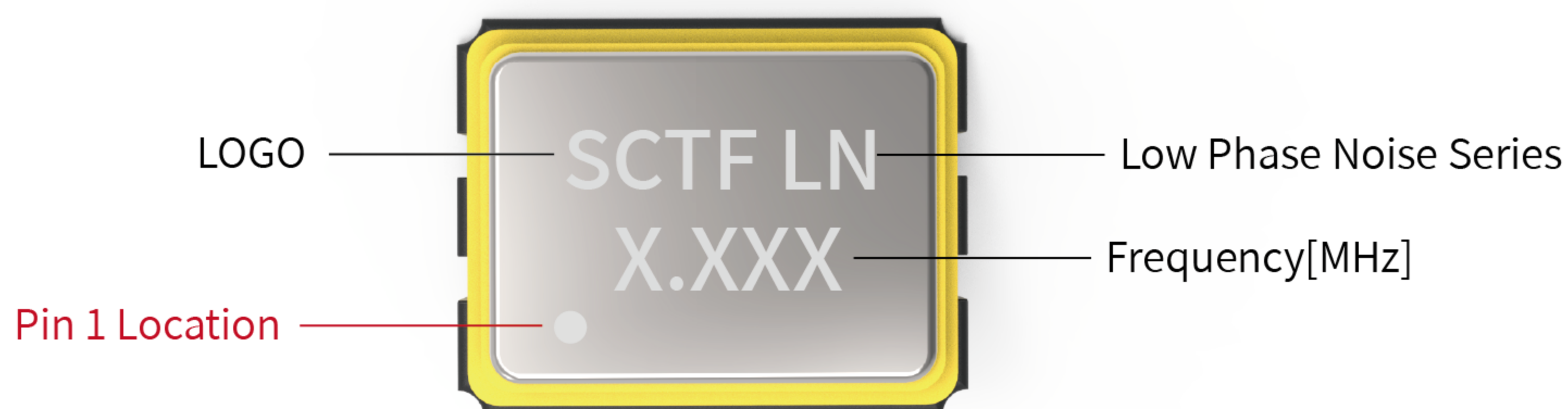


Product Structure & Marking Information

Product Structure



Marking Information

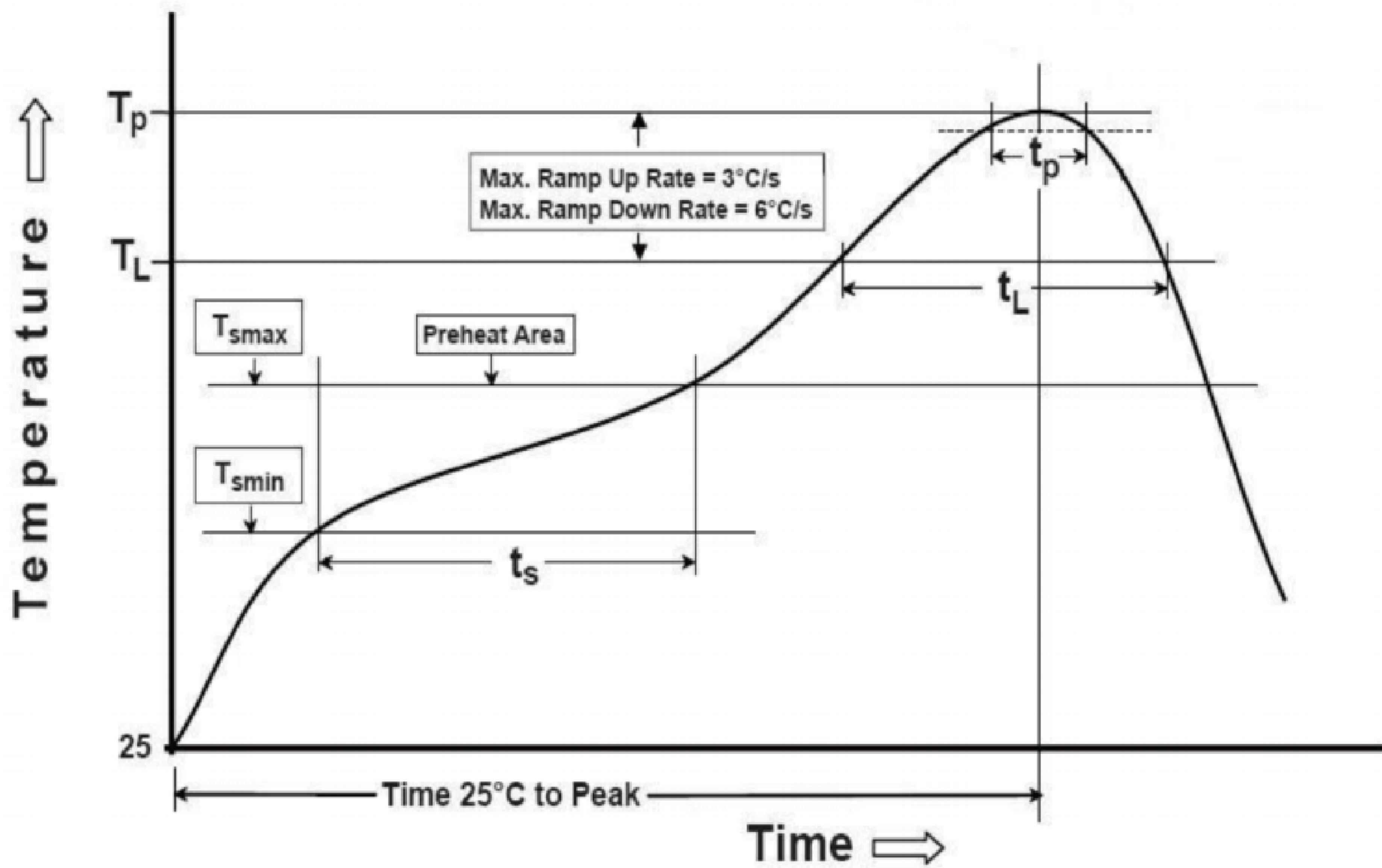


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Suggested Reflow Profile



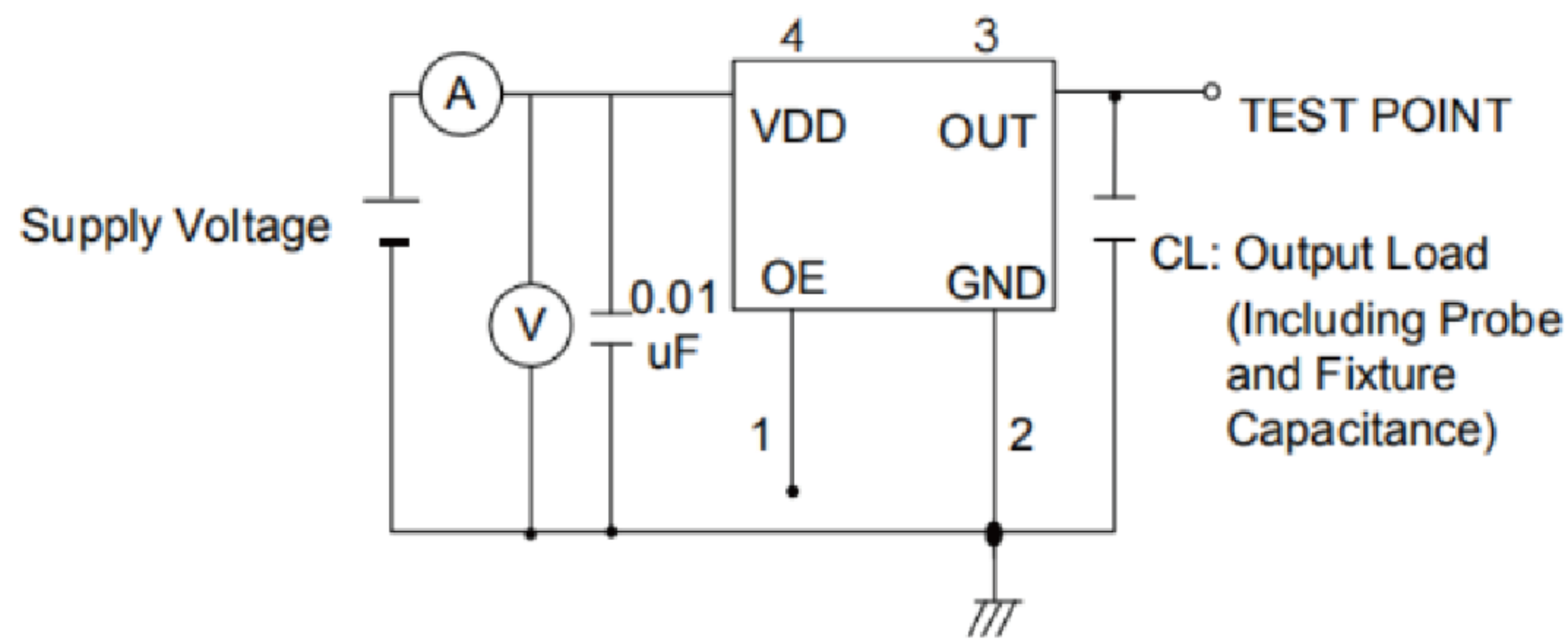
Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak <ul style="list-style-type: none"> ● Temperature Min (T_s min) ● Temperature Max (T_s max) ● Time (T_s min to T_s max) 	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate (T _L to T _p)	3°C/ second max.	3°C/ second max.
Time maintained above <ul style="list-style-type: none"> ● 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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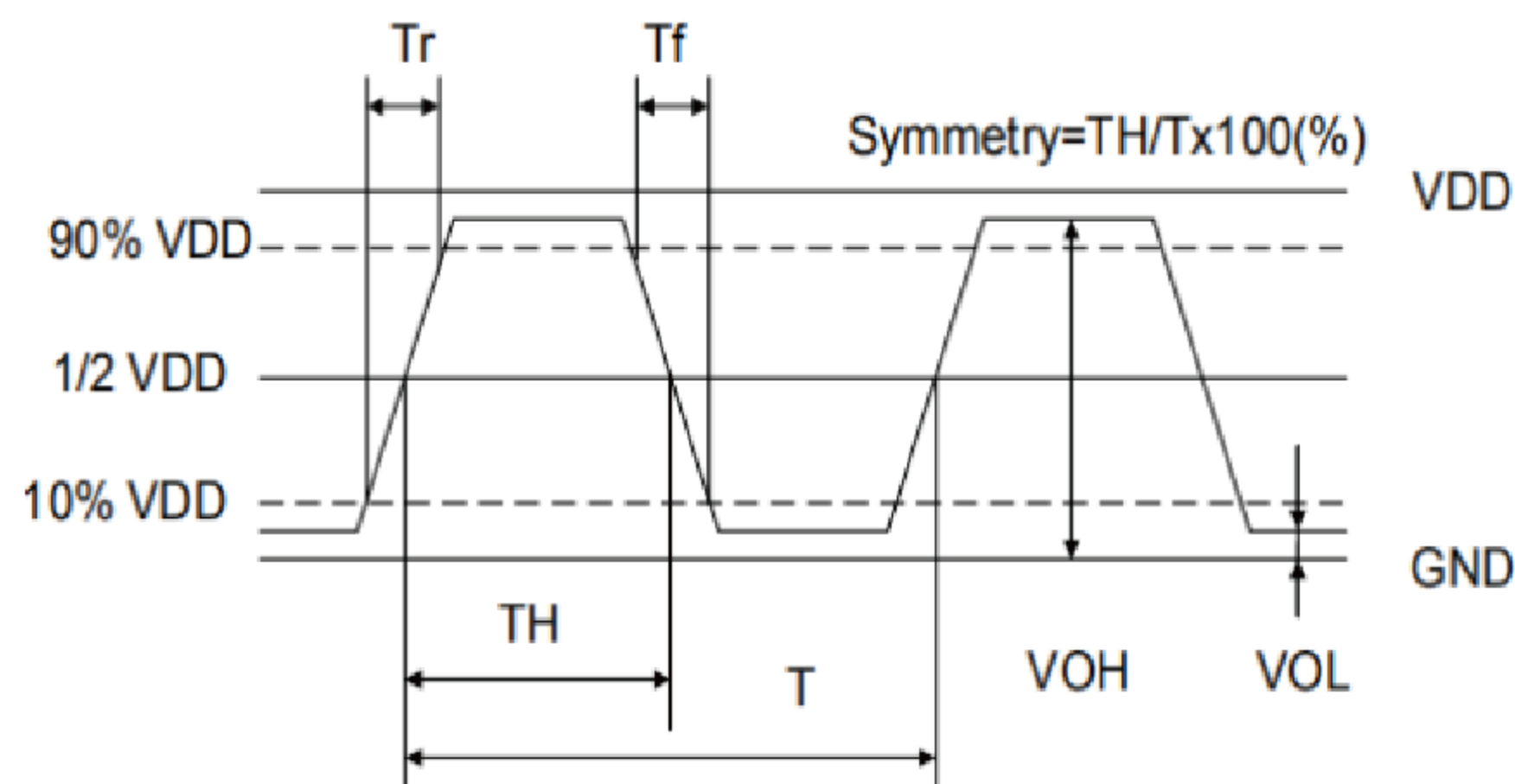
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Testing Circuit



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

Waveform Conditions



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

Options and Part Identification : Example SX3M11.2896B20F30TNF

Company	Ceramic Package	Frequency Code [MHZ]	Supply Voltage	Frequency Tolerance	Operating Temperature	Frequency Drift	Output	Current Consumption	Phase Noise
SX	3M	X.XXX	B	20	F	30	T	N	F
Code Company		Frequency		Code Frequency Tolerance		Code Frequency Drift		Code Current	
SX SCTF		11.2896		10 ±10ppm		15 ±15ppm		N Standard	
		19.200		20 ±20ppm		20 ±20ppm			
		25.000				30 ±30ppm			
		49.152							
	Code Ceramic Package		Code Voltage		Code Frequency Tolerance		Code Output		Code Phase Noise
	7M 7.0×5.0×1.3mm		D 1.8V		E -20°C ~ +70°C		T Squarewave		F -145dBc/Hz 1KHz offset
	5M 5.0×3.2×1.2mm		H 2.5V		F -40°C ~ +85°C				G -150dBc/Hz 1KHz offset
	3M 3.2×2.5×0.95mm		B 3.3V						H -155dBc/Hz 1KHz offset
	2M 2.5×2.0×0.81mm								
	1M 2.0×1.6×0.75mm								

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

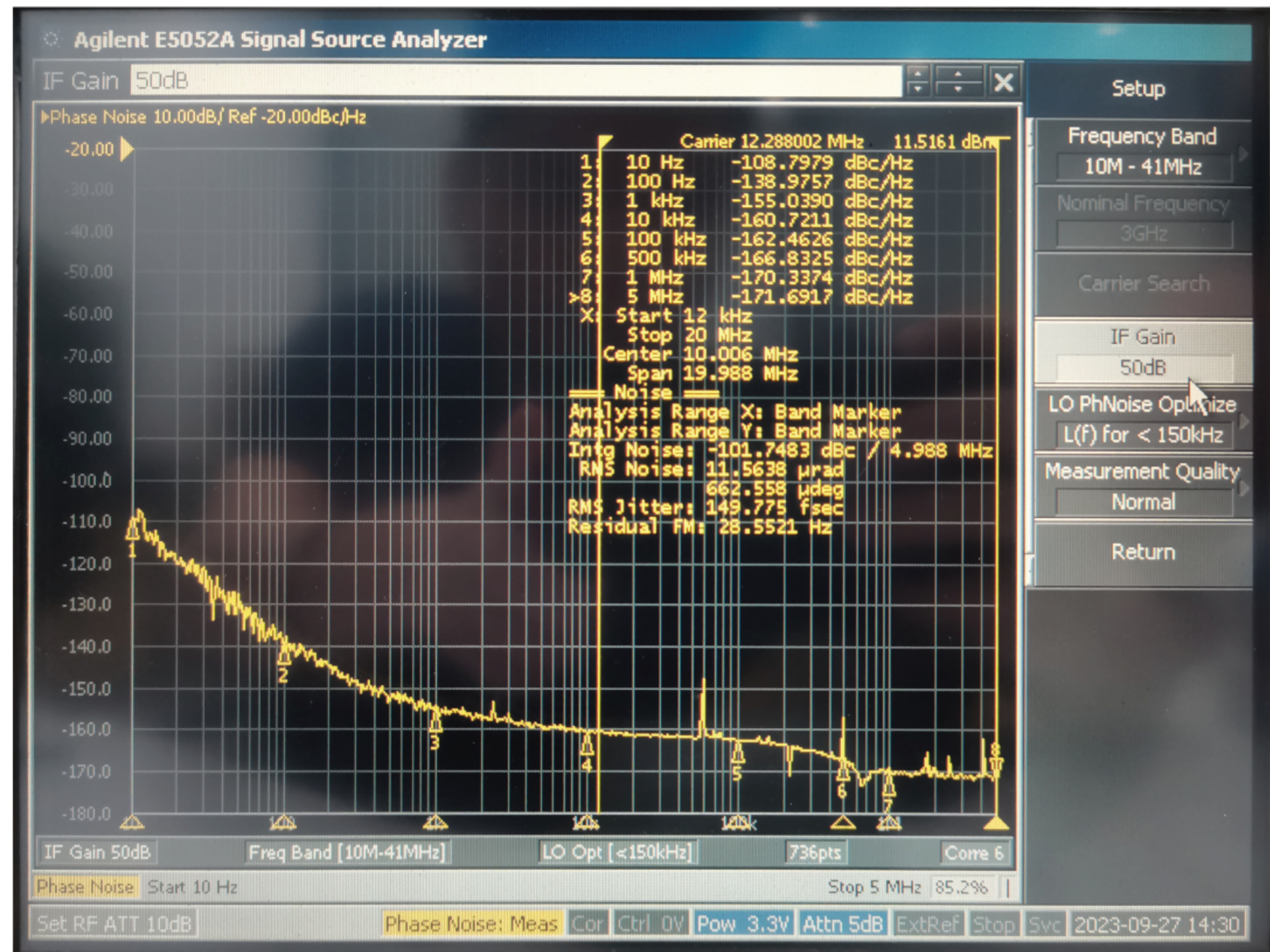
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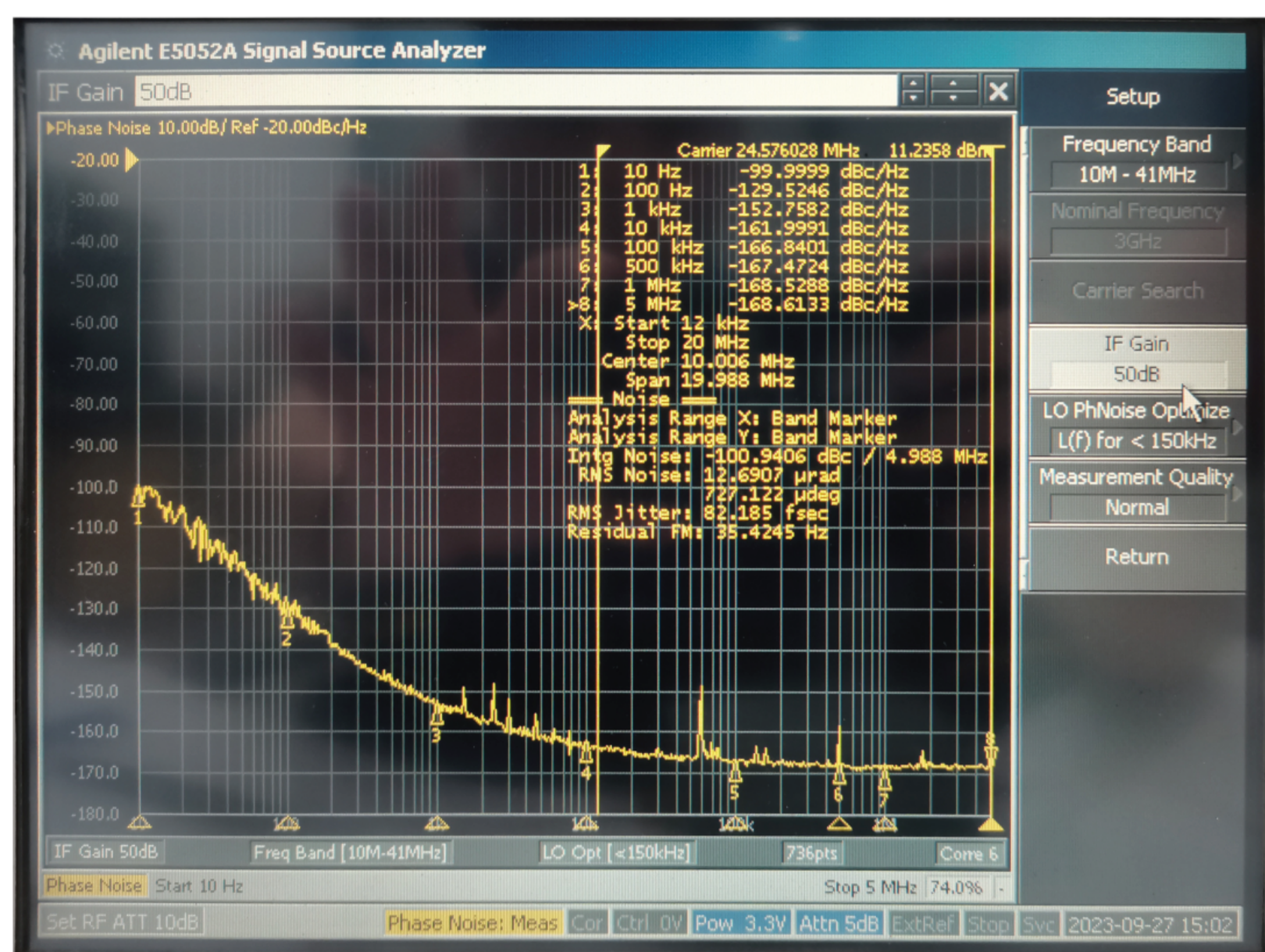
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Representative Phase Noise Plots @ +25°C

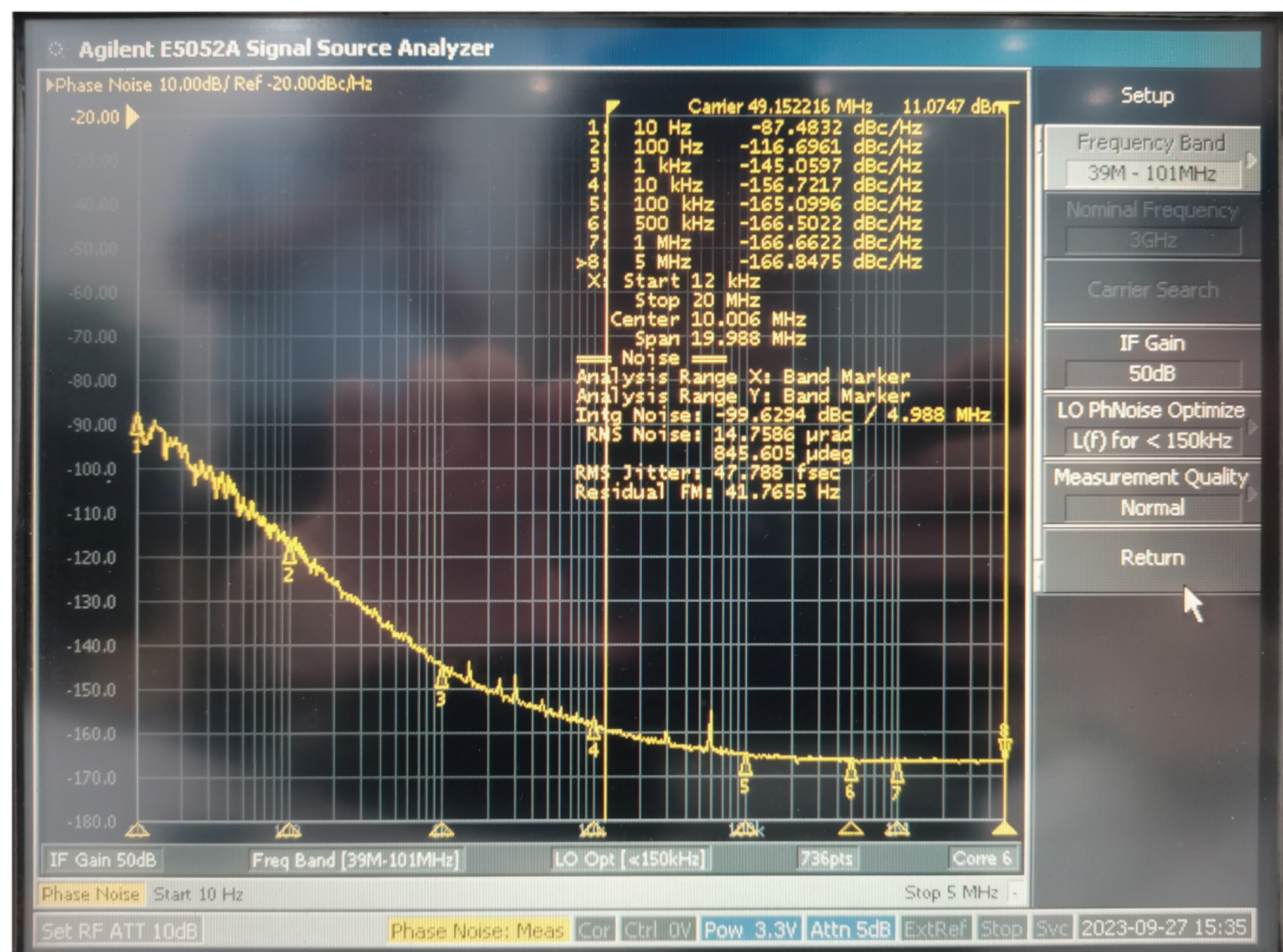
- F=12.288 MHz Vdd=3.3V CMOS Output RMS Phase Jitter=149.775 fsec



- F=24.576 MHz Vdd=3.3V CMOS Output RMS Phase Jitter=82.185 fsec



- F=49.152 MHz Vdd=3.3V CMOS Output RMS Phase Jitter=47.788 fsec



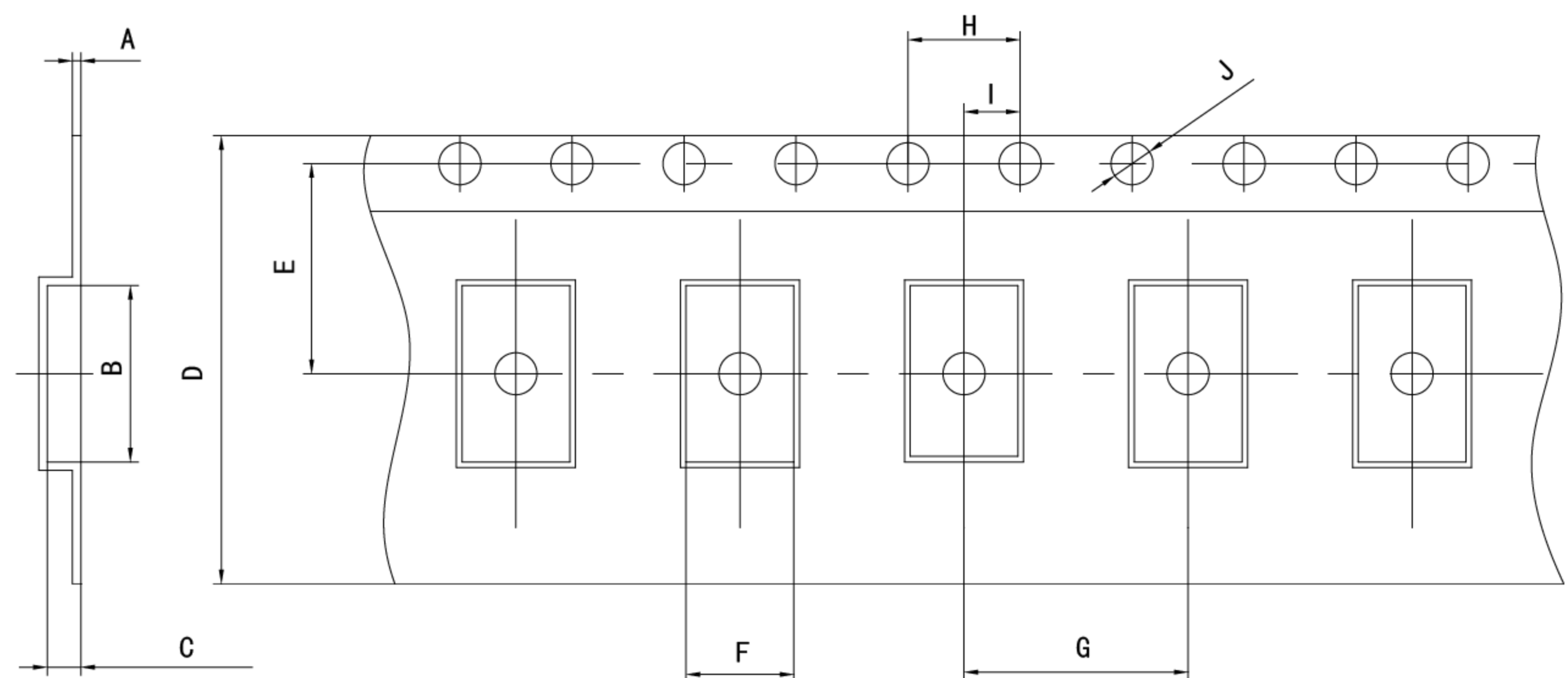
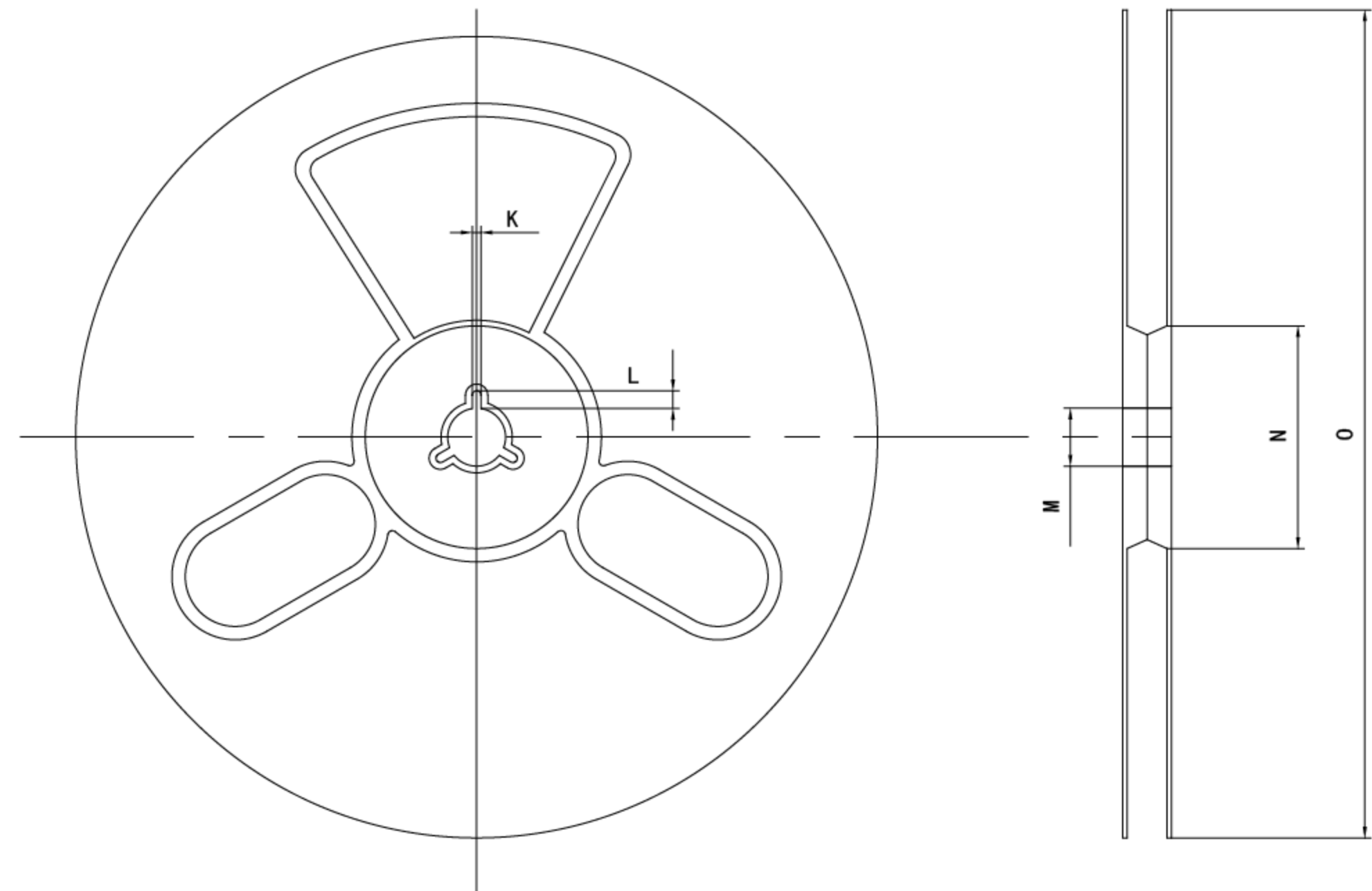
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Packaging Information

T=Tape and reel (3,000pcs/reel)



Pocket Tape Dimensions(mm)

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
3CN	0.25±0.05	3.5±0.1	1.4±0.1	8.0±0.1	3.5±0.1	2.70±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

Common Frequencies – MHz

3CN Series				
1.000	1.024	1.8432	2.000	2.048
3.6864	4.000	4.096	4.9152	6.144
7.3728	8.0000	8.192	10.000	11.0592
11.2896	12.000	12.288	13.000	14.31818
14.7456	16.000	16.384	18.432	20.000
22.5792	24.000	24.576	25.000	26.000
27.000	30.000	32.000	32.768	33.000
33.333	33.3333	40.000	45.1584	48.000
49.152	50.000			

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