

LOW ESR SMD MHz QUARTZ CRYSTAL

SERIES SMD02502 (2.5x2.0mm / 4pads)

FEATURES

- + High reliability for low cost
- + Ultra miniature size and lightweight
- + LRT-TECHNOLOGY Inside ([LRT is Low ESR Resonator-Technology](#))^[1]
- + Our top quality promise / depth of production:
 - Only use of crystal blanks from our in-house production
 - Excellent product features guaranteed by multiple 100% tests
 - 100% quality monitoring from crystal raw material to the end product



PB FREE / ROHS COMPLIANT

GENERAL DATA

PARAMETERS	PRODUCT FEATURES AND CONDITIONS
SMD-CRYSTAL SERIES	SMD02502/4
NUMBER OF SOLDER PADS	4
FREQUENCY RANGE	12.0 ~ 285.0 MHz Fundamental
FREQUENCY TOLERANCES AT 25°C	±10 ppm ~ ±50 ppm
LOAD CAPACITANCE [C _L]	Series or 6 pF ~ 50 pF
WORKING TEMPERATURE RANGES	0/+50°C ~ -40/+125°C
TEMPERATURE STABILITY	±10 ppm ~ ±50 ppm (see FREQUENCY STABILITY VS. TEMPERATURE table)
SHUNT CAPACITANCE [C ₀]	2 pF max.
DRIVE LEVEL	100 µW typ. / 200 µW max.
AGING	±2 ppm per year standard
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%
STORAGE TEMPERATURE	-55°/+125°C
PRODUCT WEIGHT	0.010 g
MSL LEVEL	1
RoHS	Lead free and RoHS compliant
POP (EU)2019/1021)	No POP substances
PFAS	No PFAS present
PROP 65	Compliant to PROP 65
TSCA	Compliant to TSCA
DELIVERY FORM	Tape and Reel (3.000 pcs per reel)
SELECT YOUR REQUIRED CRYSTAL (PRODUCT CONFIGURATOR)	REQUEST CRYSTAL SAMPLES (SAMPLE CONFIGURATOR)

Note:

1. LRT is optimized low ESR resonator design for fast and secure oscillation start-up
2. The reference temperature for all specified values and tests is +25°C.
3. Do not use cleaning baths operating at ultrasonic frequencies or ultrasonic welding processes.

FREQUENCY STABILITY VS. TEMPERATURE

	±10ppm	±15ppm	±20ppm	±30ppm	±50ppm
0°/+50°C	+	+	+	+	+
-10°/+60°C	+	+	+	+	+
0°/+70°C	+	+	+	+	+
-20°/+70°C	+	+	+	+	+
-40°/+85°C		+	+	+	+
-40°/+105°C				+	+
-40°/+125°C					+

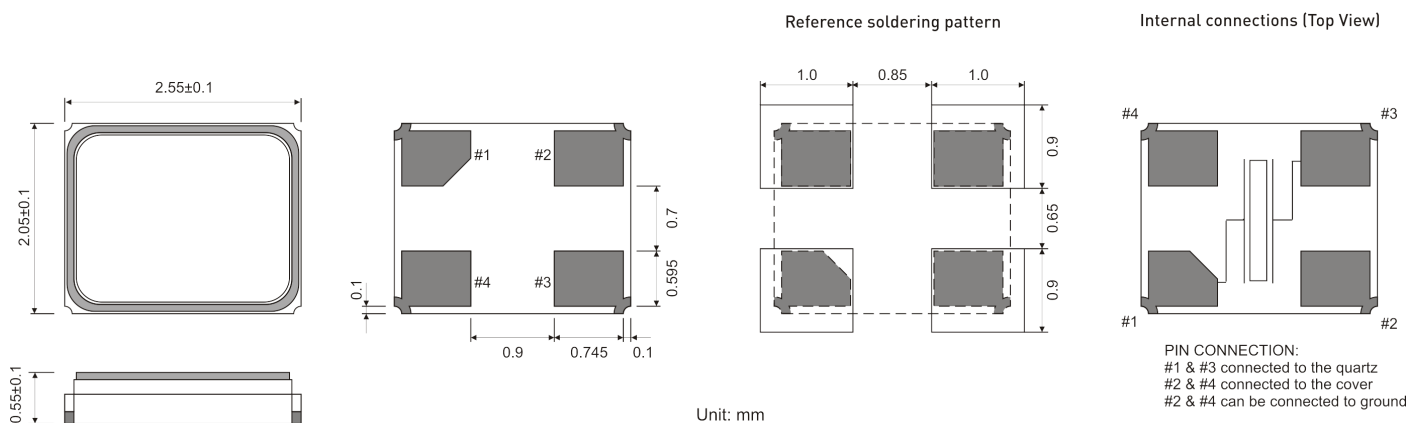
ESR (EQUIVALENT SERIES RESISTANCE)

FREQUENCY IN MHz	VIBRATION MODE	ESR MAX. IN Ω
16.0 ~ 27.0 MHz	Fundamental	60
27.0 ~ 285.0 MHz	Fundamental	40

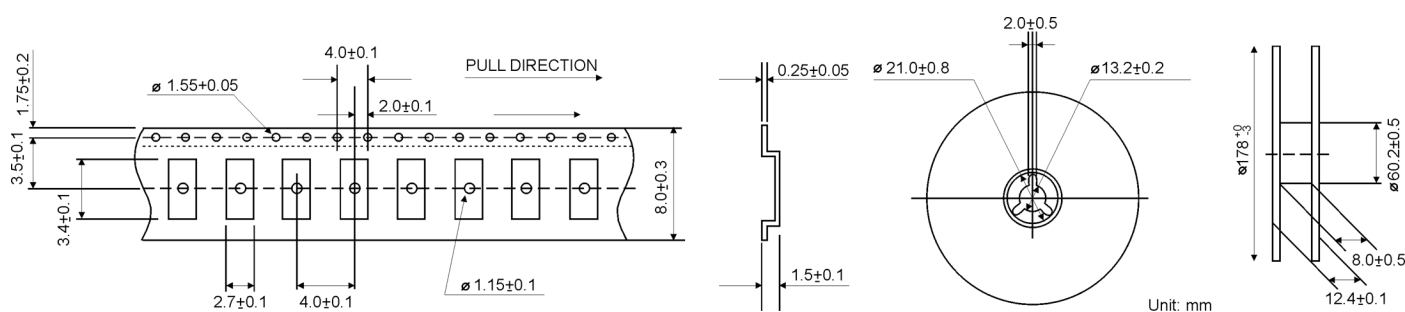
LIST OF STANDARD FREQUENCIES

12.0000 MHz	12.2880 MHz	13.5600 MHz	16.0000 MHz
16.003333 MHz	16.3840 MHz	18.1320 MHz	18.4320 MHz
19.2000 MHz	20.0000 MHz	20.7360 MHz	22.1184 MHz
22.5792 MHz	24.0000 MHz	24.5760 MHz	25.0000 MHz
26.0000 MHz	27.0000 MHz	27.1200 MHz	28.63636 MHz
30.0000 MHz	32.0000 MHz	36.8640 MHz	37.4000 MHz
38.4000 MHz	40.0000 MHz	46.1400 MHz	48.0000 MHz
49.1520 MHz	49.766667 MHz	49.7800 MHz	49.786667 MHz
49.8000 MHz	49.813333 MHz	50.000 MHz	50.033333 MHz
50.0750 MHz	50.1000 MHz	50.1200 MHz	50.2000 MHz
50.5000 MHz	50.63000 MHz	54.0000 MHz	55.4600 MHz

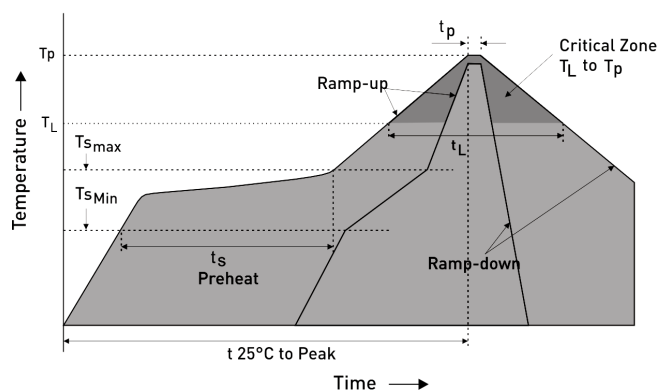
DIMENSIONS



REEL SPECIFICATION

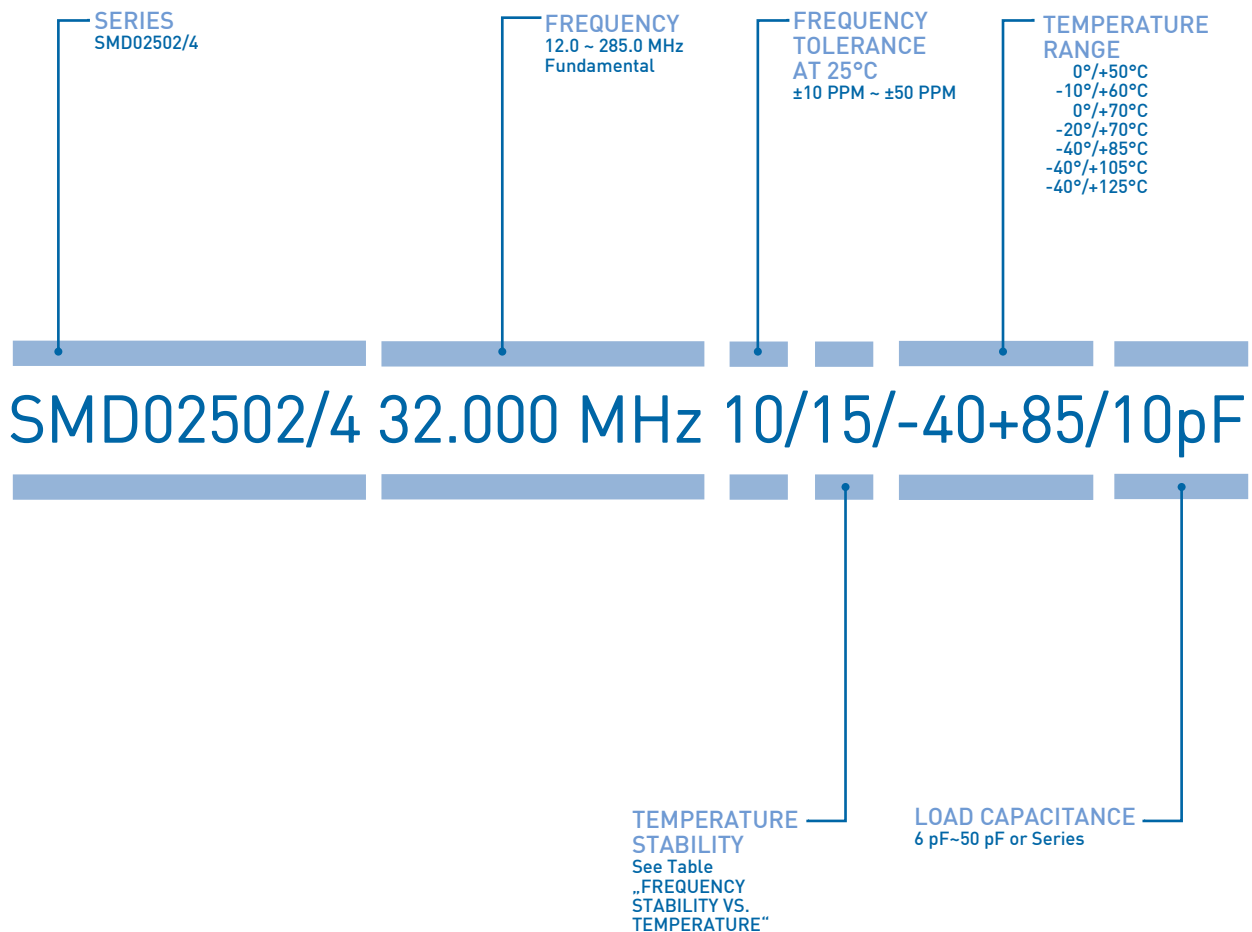


REFLOW SOLDER PROFILE



IPC/JEDEC Standard	IPC/JEDEC J-STD-020
Moisture Sensitivity Level	Level 1
TS MAX to TL (Ramp-up Rate)	3°C/second Maximum
Preheat	
- Temperature Minimum (TS MIN)	150°C
- Temperature Typical (TS TYP)	175°C
- Temperature Maximum (TS MAX)	200°C
- Time (tS)	60 - 180 seconds
Ramp-up Rate (TL to TP)	3°C/second Maximum
Time Maintained Above:	
- Temperature (TL)	217°C
- Time (TL)	60 - 150 seconds
Peak Temperature (TP)	265°C Maximum
Target Peak Temperature (TP Target)	255°C
Time within 5°C of actual peak (tP)	20 - 40 seconds
Max. Number of Reflow Cycles	2
Ramp-down Rate	6°C/second Maximum
Time 25°C to Peak Temperature (t)	8 minutes Maximum

ORDERING INFORMATION



EXAMPLE: SMD02502/4 32.000 MHz 10/15/-40+85/10pF
PLEASE INDICATE YOUR REQUIRED PARAMETERS

REVISION HISTORY

VERSION	RELEASE DATE	AMENDMENTS SUMMARY
00	MARCH 2015	+ Initial Data Sheet (SPEC 01/REV.00)
01	AUGUST 2023	+ Revised Frequency Range + Revised Load Capacitance + Revised Working Temperature Ranges + Revised Shunt Capacitance + Revised Drive Level + Revised Aging + Revised Frequency Stability vs. Temperature + Added Standard Frequencies
02	AUGUST 2026	+ Added New Standard Frequencies



PREMIUM QUALITY BY PETERMANN-TECHNIK



OUR COMPANY IS CERTIFIED ACCORDING TO ISO 9001:2015 AND 14001:2015

THIS IS FOR YOU TO ENSURE THAT THE PRINCIPLES OF QUALITY MANAGEMENT ARE FULLY IMPLEMENTED IN OUR QM-SYSTEM AND QUALITY CONTROL METHODS .

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INDEPENDENT SUPPLY CHAINS AND PARTNERSHIP ON HIGHEST LEVEL.

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