PETERMANN TECHNIK
FREQUENCY CONTROLLED PRODUCTS
ENGINEERED FOR RELIABILITY

PETERMANN-TECHNIK GmbH
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LOW ESR SMD MHz QUARTZ CRYSTAL

SERIES "SMD01612/4" (1.6x1.2mm / 4pads)

FEATURES

+ Low cost miniature ceramic packaged low ESR MHz quartz crystal
+ Ultra low profile
+ Standard operating temperature range of -10/+60°C to –40/+125°C
+ Excellent clock generator for CPU's, Wireless, Mobile Comm., IoT, IoTT, WIFI, Industrial, etc.
+ LRT-TECHNOLOGY Inside (LRT is our unique Low ESR Resonator-Technology)
+ Our top quality promise / depth of production:
  - Only use of crystal blanks from our in-house production, based on our unique LRT-Technology
  - Excellent product features guaranteed by multiple 100% tests and 100% end-test
  - 100% quality monitoring from crystal raw material to the end product
  - Excellent quality, performance and reliability is guaranteed.

GENERAL DATA

PARAMETERS	PRODUCT FEATURES AND CONDITIONS
SMD-CRYSTAL SERIES	SMD01612/4
NUMBER OF SOLDER PADS	4
FREQUENCY RANGE	24.0 ~ 285.0 MHz Fundamental AT-CUT
FREQUENCY TOLERANCES AT 25°C	±10 ppm ~ ±50 ppm
LOAD CAPACITANCE (C_L)	8 pF standard (6 pF ~ 50 pF or series resonance available on request)
WORKING TEMPERATURE RANGES	-10/+60°C ~ -40/+125°C
TEMPERATURE STABILITY	±10 ppm ~ ±100 ppm (see FREQUENCY STABILITY VS. TEMPERATURE table)
SHUNT CAPACITANCE (C_0)	1,5 pF max.
DRIVE LEVEL	100 µW typ. / 200 µW max.
AGING	±1 ppm ~ ±3 ppm max. per year
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%
STORAGE TEMPERATURE	-55°+125°C
PRODUCT WEIGHT	0.003 g
MSL LEVEL	1
DELIVERY FORM	Tape and Reel (3.000 pcs per reel)
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
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 under all circumstances.
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.
4. Do not solder with hot air gun.

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FREQUENCY STABILITY VS. TEMPERATURE

	±10ppm	±15ppm	±20ppm	±30ppm	±50ppm	±100ppm
-10°/+60°C	+	+	+	+	+	+
-20°/+70°C	+	+	+	+	+	+
-40°/+85°C		+	+	+	+	+
-40°/+105°C				+	+	+
-40°/+125°C						+

ESR (EQUIVALENT SERIES RESISTANCE)

FREQUENCY	VIBRATION MODE	ESR MAX.
24.0 ~ 32.0 MHz	Fundamental	70 Ω
32.0 ~ 38.0 MHz	Fundamental	60 Ω
38.0 ~ 80.0 MHz	Fundamental	50 Ω
80.0 ~ 285.0 MHz	Fundamental	45 Ω

LIST OF STANDARD FREQUENCIES

24.0 MHz	25.0 MHz	26.0 MHz	27.0 MHz
27.120 MHz	30.0 MHz	32.0 MHz	37,4 MHz
38.4 MHz	40.0 MHz	48.0 MHz	50.0 MHz
52,0 MHz			

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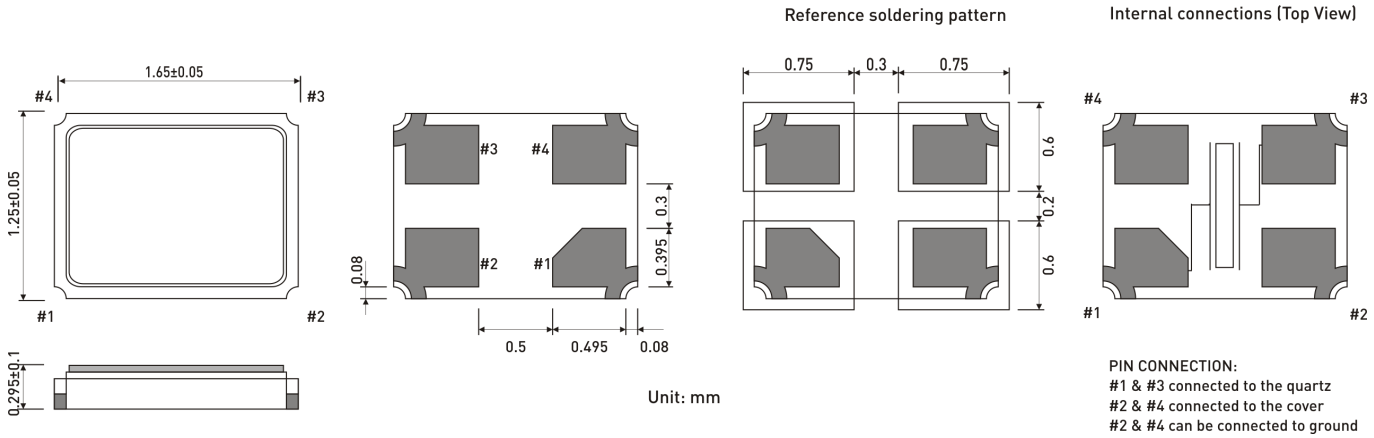
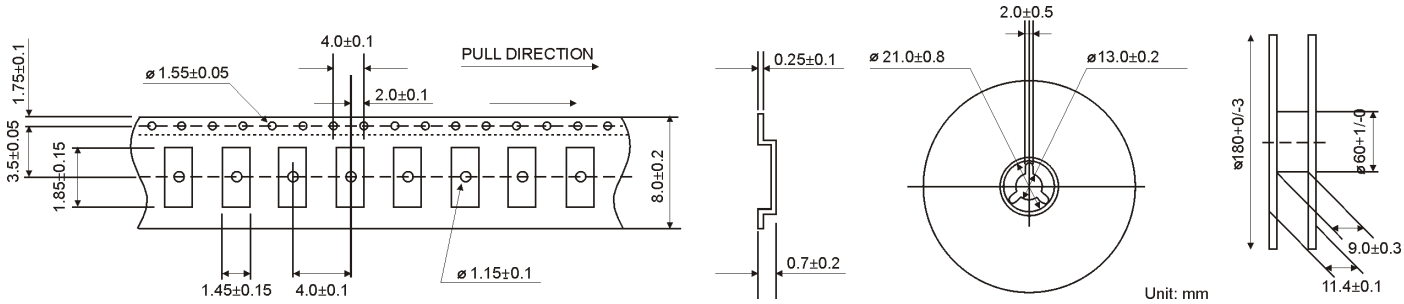
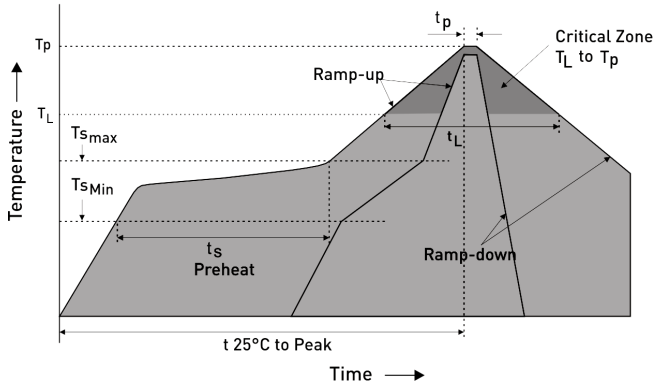
DIMENSIONS



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

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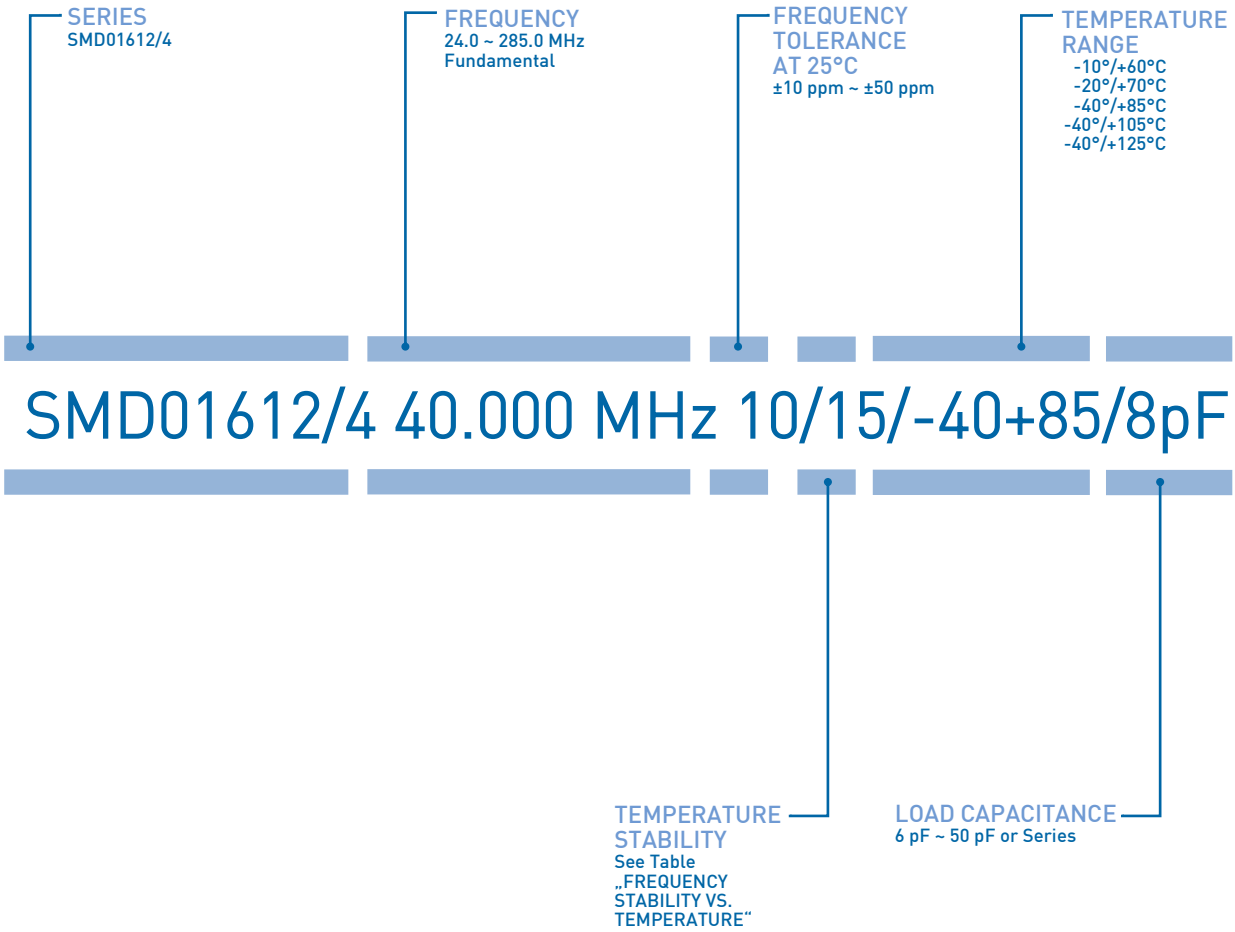
ORDERING INFORMATION



EXAMPLE: SMD01612/4 40.000 MHz 10/15/-40+85/8pF

PLEASE INDICATE YOUR REQUIRED PARAMETERS

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REVISION HISTORY

VERSION	RELEASE DATE	AMENDMENTS SUMMARY
00	APRIL 2015	+ Initial Data Sheet (SPEC 01/REV.00)
01	AUGUST 2023	+ Revised Frequency Range + Revised Load Capacitance + Revised Working Temperature ranges + Revised Drive Level + Revised Aging + Revised ESR + Revised Storage Temperature + Revised Frequency stability vs. Temperature + Added Standard Frequencies
02	December 2025	+ Added New Standard Frequencies (27.0 MHz + 27.120 MHz) + Data Sheet Design updated according to our new standard

PREMIUM QUALITY BY PETERMANN-TECHNIK

DMSZ certified according to ISO 9001 QM 00886

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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