PETERMANN TECHNIK
FREQUENCY CONTROLLED PRODUCTS
CRAFTED FOR EXCELLENCE

PETERMANN-TECHNIK GmbH
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SMD MHz QUARTZ CRYSTAL

SERIES „SMD02016/4“ (4 pad ceramic housing 2.0 x 1.6 mm)

FEATURES

+ Low cost ceramic packaged low ESR MHz quartz crystal
+ Standard operating temperature range of -40/+85°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	SMD02016/4
NUMBER OF SOLDER PADS	4
FREQUENCY RANGE	16.0 ~ 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)	1.5 pF max.
DRIVE LEVEL	100 µW typ. / 200 µW max. (400 µW available on request)
AGING	±2 ppm per year standard (±10 ppm max. after 10 years available on request)
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%
STORAGE TEMPERATURE	-55°/+125°C
PRODUCT WEIGHT	0.006 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.
4. Do not solder by hot air gun.

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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					+

RESONANCE RESISTANCE

FREQUENCY IN MHz	VIBRATION MODE	ESR MAX. IN Ω
16.0 ~ 20.0 MHz	Fundamental	100
20.0 ~ 32.0 MHz	Fundamental	60
32.0 ~ 285.0 MHz	Fundamental	50

LIST OF STANDARD FREQUENCIES

16.000 MHz	20.000 MHz	24.000 MHz	24.576 MHz
25.000 MHz	26.000 MHz	27.000 MHz	27.120 MHz
30.000 MHz	32.000 MHz	37.400 MHz	38.400 MHz
39.000 MHz	40.000 MHz	48.000 MHz	50.000 MHz
52.000 MHz	76.800 MHz	80.000 MHz	96.000 MHz

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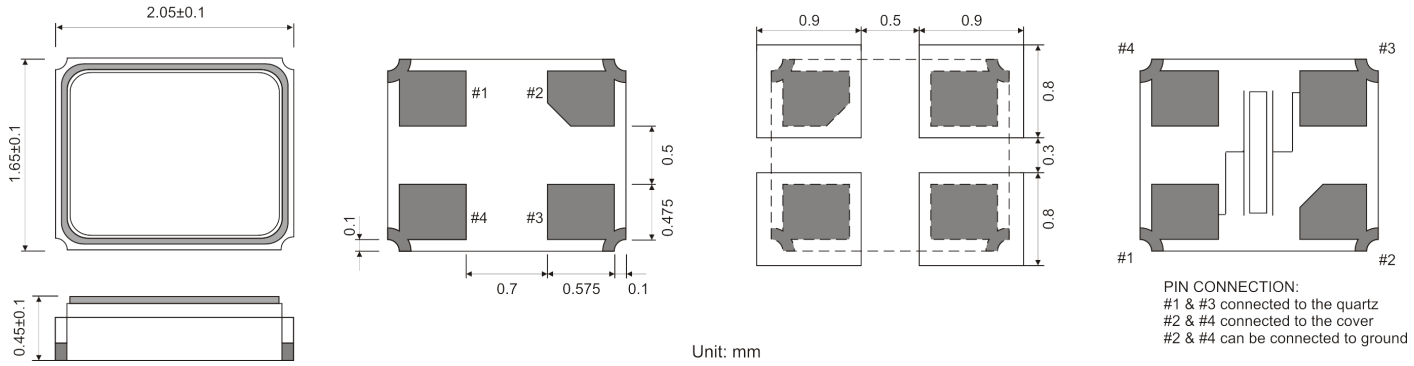
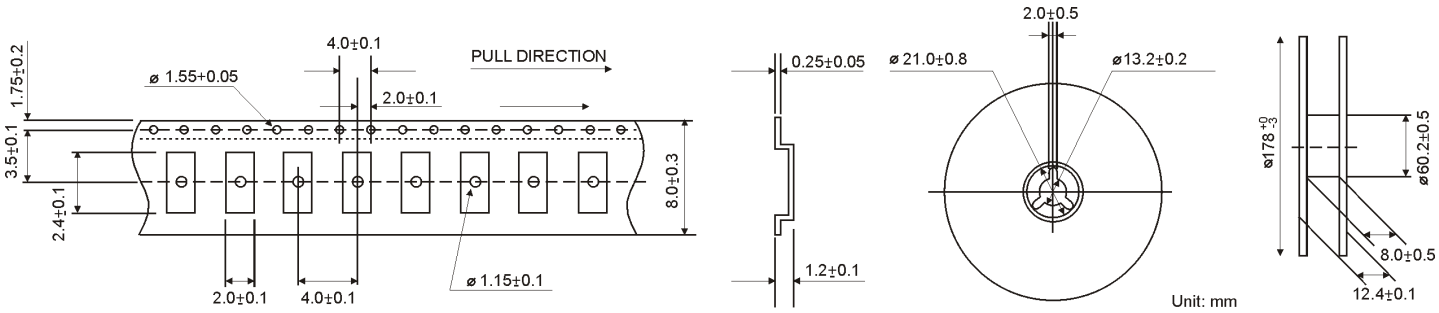
DIMENSIONS



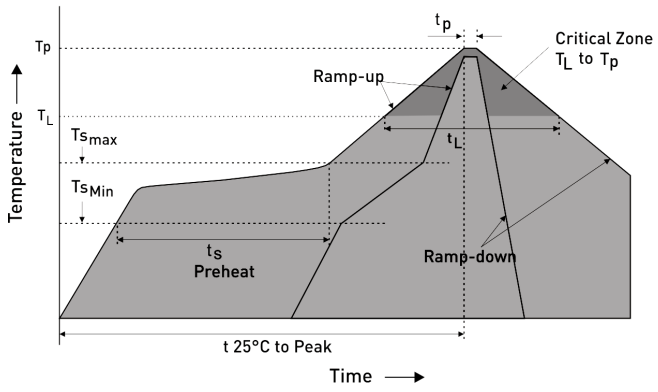
Unit: mm

REEL SPECIFICATION



Unit: mm

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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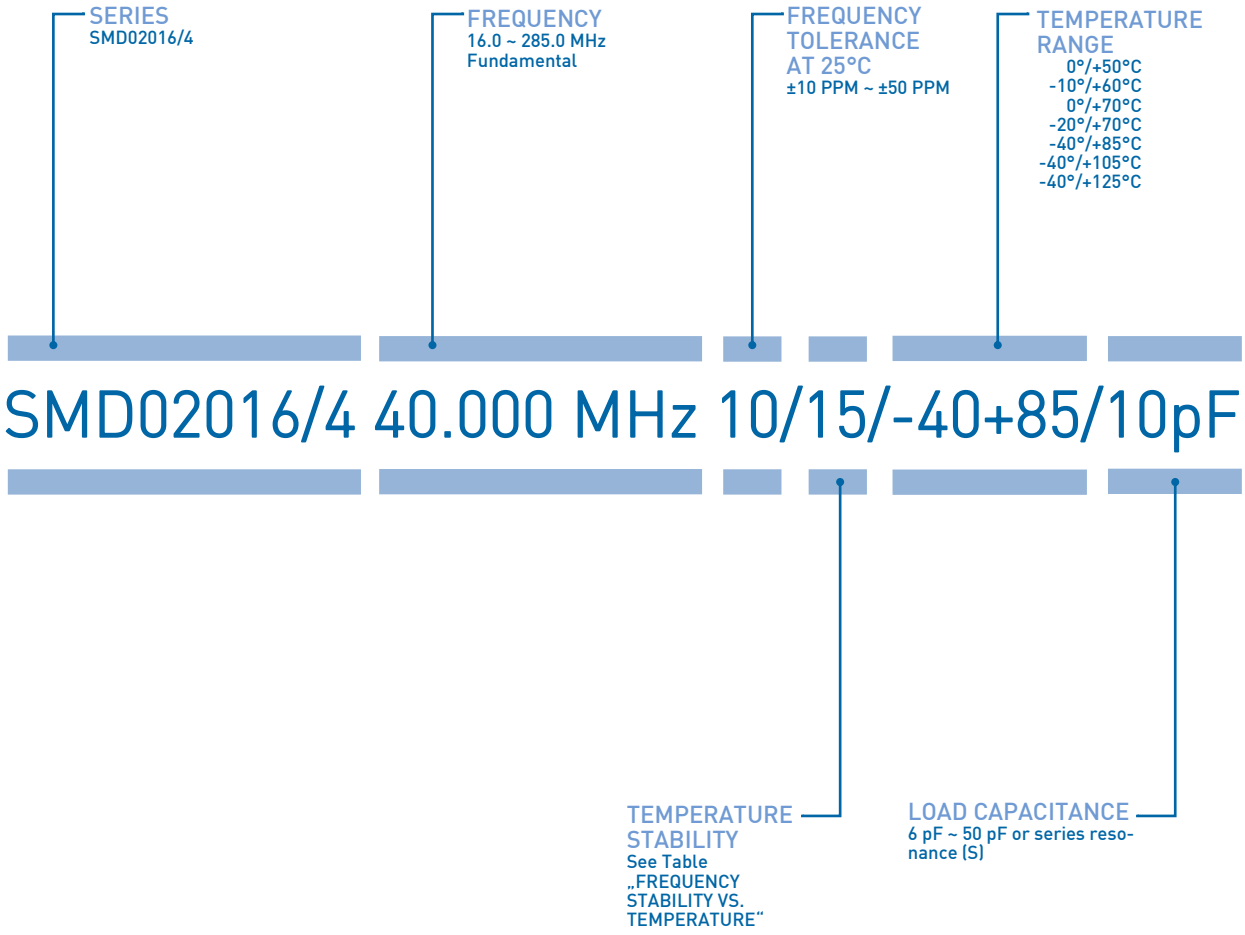
ORDERING INFORMATION



EXAMPLE: SMD02016/4 40.000 MHz 10/15/-40+85/10pF

PLEASE INDICATE YOUR REQUIRED PARAMETERS

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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 + Frequency Stability vs. Temperature + Added Standard Frequencies
02	DECEMBER 2025	+ Material Declaration added + Data Sheet updated to new design

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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