

LOW ESR SMD MHz QUARTZ CRYSTAL

SERIES „SMD0603/4“ (6.0x3.5mm / 4pads)

FEATURES

- + High reliability for low cost
- + Standard operating temperature range of 0/+50°C to -40/+125°C
- + Excellent clock generator for CPU´s, Wireless, Mobile Comm., IoT, IIoT, WIFI Industrial, Telecom, Automotive, 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% test and 100% end-test
 - 100% quality monitoring from crystal raw material to the end product
 - Excellent quality, performance and reliability ist guaranteed



GENERAL DATA

PB FREE / ROHS COMPLIANT

PARAMETERS	PRODUCT FEATURES AND CONDITIONS
SMD-CRYSTAL SERIES	SMD0603/4
NUMBER OF SOLDER PADS	4
FREQUENCY RANGE	8.0 ~ 50.0 MHz AT-Fundamental 40.0 ~ 80.0 MHz 3rd Overtone
FREQUENCY TOLERANCES AT 25°C	±5 ppm ~ ±50 ppm
LOAD CAPACITANCE (C _L)	6 pF ~ 50 pF or Series
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)	7 pF max.
DRIVE LEVEL	100 µW typ. / 200 µW max. (500 µW available on request)
AGING	±2 ppm per year standard (±1 ppm available as option)
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%
STORAGE TEMPERATURE	-55°/+125°C
DELIVERY FORM	Tape and Reel (1.000 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
REQUEST CRYSTAL SAMPLES [SAMPLE 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.

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					+

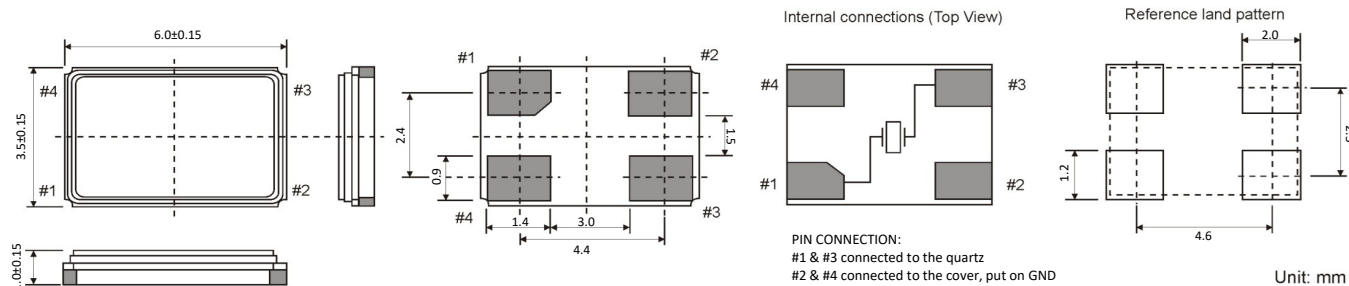
ESR (EQUIVALENT SERIES RESISTANCE)

FREQUENCY IN MHz	VIBRATION MODE	ESR MAX. IN Ω
8.0 ~ 80.0 MHz	AT Fund.	40 ~ 80 max.
40.0 ~ 90.0 MHz	3rd OT AT	60 max.

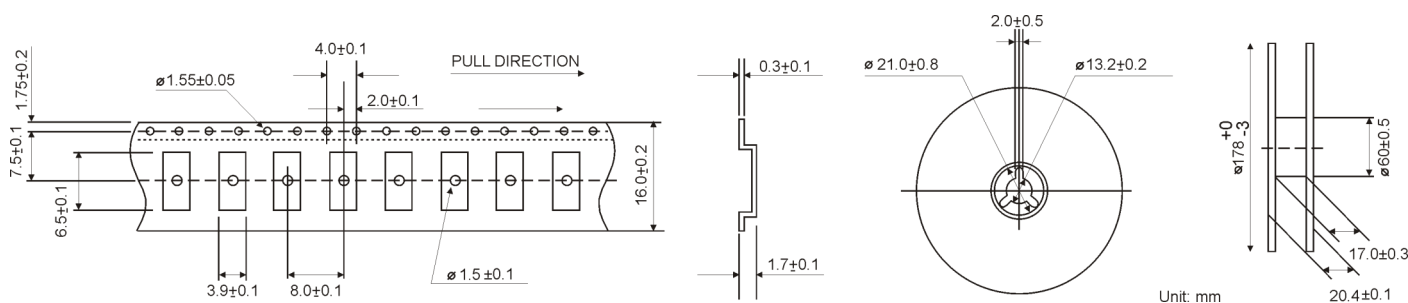
LIST OF STANDARD FREQUENCIES

8.0000 MHz	8.9120 MHz	9.509375 MHz	9.8304 MHz	9.984375 MHz	10.0000 MHz	10.2400 MHz	10.2450 MHz
10.3680 MHz	10.7000 MHz	10.7675 MHz	11.0000 MHz	11.0592 MHz	11.2896 MHz	12.0000 MHz	12.2880 MHz
12.6285 MHz	12.0000 MHz	12.728125 MHz	12.8000 MHz	13.0000 MHz	13.0625 MHz	13.1250 MHz	13.2256 MHz
13.22653 MHz	13.5000 MHz	13.5400 MHz	13.5600 MHz	13.56797 MHz	13.56875 MHz	13.581445 MHz	13.8240 MHz
14.0000 MHz	14.31818 MHz	14.4000 MHz	14.4150 MHz	14.7456 MHz	14.8000 MHz	14.8500 MHz	15.0000 MHz
15.3600 MHz	15.9950 MHz	16.0000 MHz	16.1280 MHz	16.3680 MHz	16.3840 MHz	16.6000 MHz	16.6660 MHz
16.6667 MHz	16.8000 MHz	16.8960 MHz	16.9344 MHz	17.4840 MHz	18.0000 MHz	18.078333 MHz	18.081042 MHz
18.089583 MHz	18.0910 MHz	18.1151 MHz	18.121875 MHz	18.2000 MHz	18.4320 MHz	18.6900 MHz	19.2000 MHz
19.4400 MHz	19.6608 MHz	20.0000 MHz	20.1646 MHz	20.4800 MHz	20.9500 MHz	21.0010 MHz	22.0000 MHz
22.1184 MHz	24.0000 MHz	24.5760 MHz	25.0000 MHz	26.0000 MHz	27.0000 MHz	27.1200 MHz	27.13438 MHz
27.13594 MHz	27.1727 MHz	28.2240 MHz	28.4500 MHz	28.5938 MHz	28.636363 MHz	29.4912 MHz	30.0000 MHz
31.2500 MHz	31.3344 MHz	32.0000 MHz	32.7680 MHz	35.3280 MHz	36.0000 MHz	37.5000 MHz	38.4000 MHz
39.0000 MHz	40.0000 MHz	40.6850 MHz	44.5450 MHz	48.0000 MHz	50.0000 MHz	80.0000 MHz	82.7020 MHz

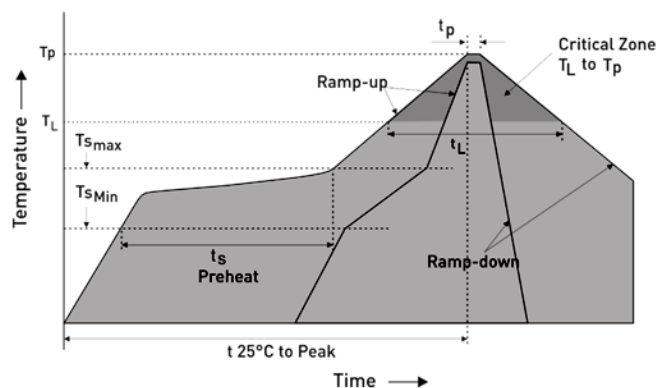
DIMENSIONS



REEL SPECIFICATION

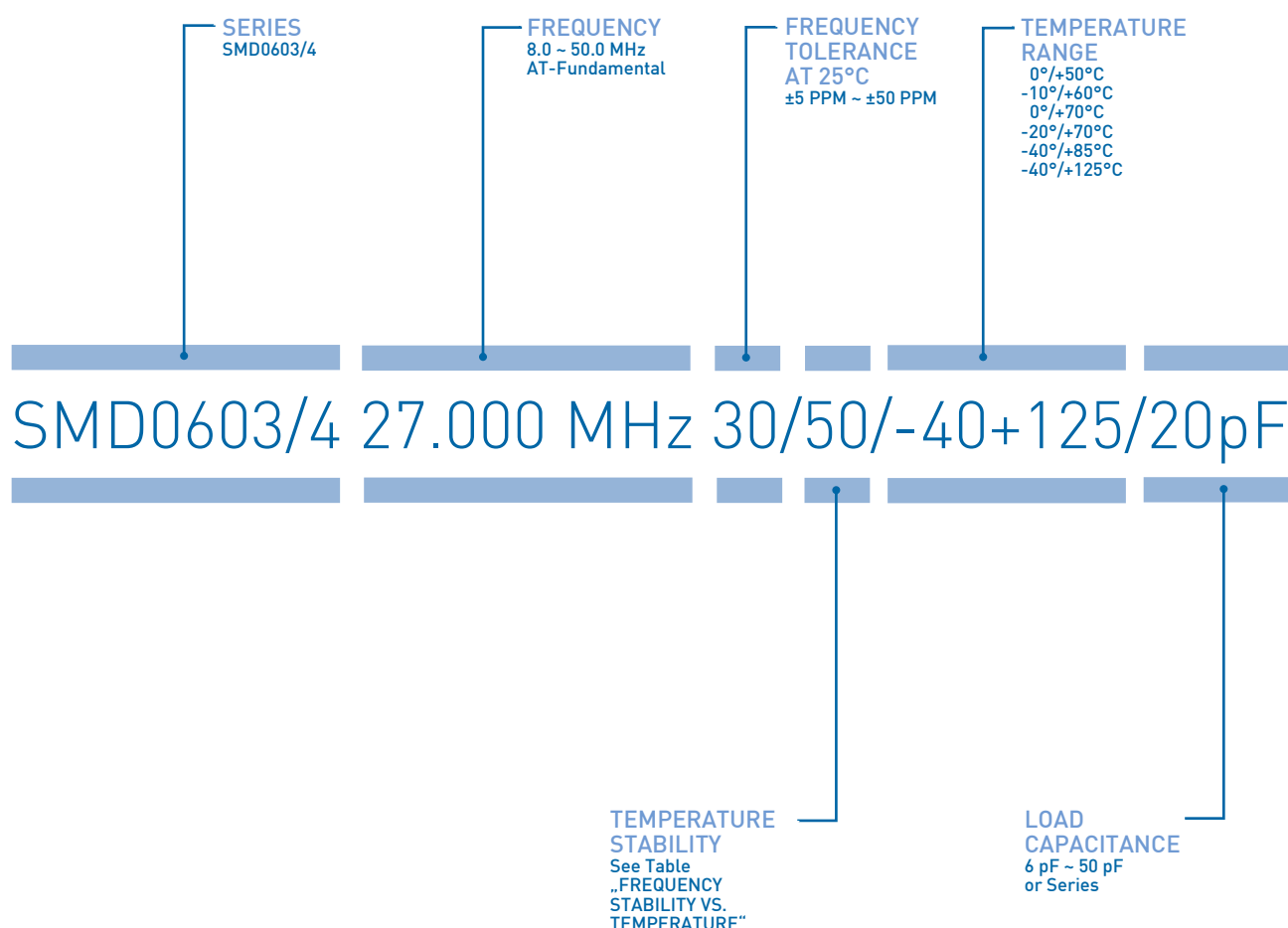


REFLOW SOLDER PROFILE



IPC/JEDEC Standard	IPC/JEDEC J-STD-020
Moisture Sensitivity Level	Level 1
TS MAX to T_L (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 (T_L to T_P)	3°C/second Maximum
Time Maintained Above:	
- Temperature (T_L)	217°C
- Time (T_L)	60 - 150 Seconds
Peak Temperature (T_P)	260°C Maximum
Target Peak Temperature (T_P Target)	255°C
Time within 5°C of actual peak (t_P)	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: SMD0603/4 27.000 MHz 30/50/-40+125/20pF
PLEASE INDICATE YOUR REQUIRED PARAMETERS

REVISION HISTORY

REVISION	RELEASE DATE	AMENDMENTS SUMMARY
00	MAY 2015	+ Initial Data Sheet (SPEC 01/REV.00)
01	JANUARY 2017	+ Revised drive level
02	AUGUST 2026	+ Added New Standard Frequencies



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

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