

LOW ESR SMD QUARTZ CRYSTAL

SERIES „HC-49/US-SMD“ AND „HC-49/US-GSMD“ (METALL PACKAGE)

FEATURES

- + High reliability for low cost
- + 3 pad package for grounding
- + Low profile - 3.2 package heights available
- + Standard operating temperature range of 0/+50°C to -40/+125°C
- + Excellent clock generator for CPU's, Wireless, Mobile Comm., IoT, IoT, 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	HC-49/US-SMD	(without grounding pin)
	HC-49/US-GSMD	(with grounding pin)
NUMBER OF SOLDER PADS	HC-49/US-SMD	= 2 (standard)
	HC-49/US-GSMD	= 3 (middle pin for grounding)
FREQUENCY RANGE	3.4875 ~ 41.0 MHz AT-Fundamental 24.0 ~ 44.0 MHz BT-Fundamental 24.576 ~ 75.0 MHz 3rd Overtone	
FREQUENCY TOLERANCES AT 25°C	±10 ppm ~ ±50 ppm	
LOAD CAPACITANCE (C _L)	3 pF ~ 50 pF or Series	
WORKING TEMPERATURE RANGES	0/+50°C ~ -40/+125°C	
SHUNT CAPACITANCE (C ₀)	7 pF max.	
DRIVE LEVEL	100 µW typ. / 200 µW max. (1 mW available on request)	
AGING	±3 ~ ±5 ppm per year standard (±2 ppm available as option)	
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%	
STORAGE TEMPERATURE	-55°/+125°C	
PRODUCT WEIGHT	670.120 mg	
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	
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.

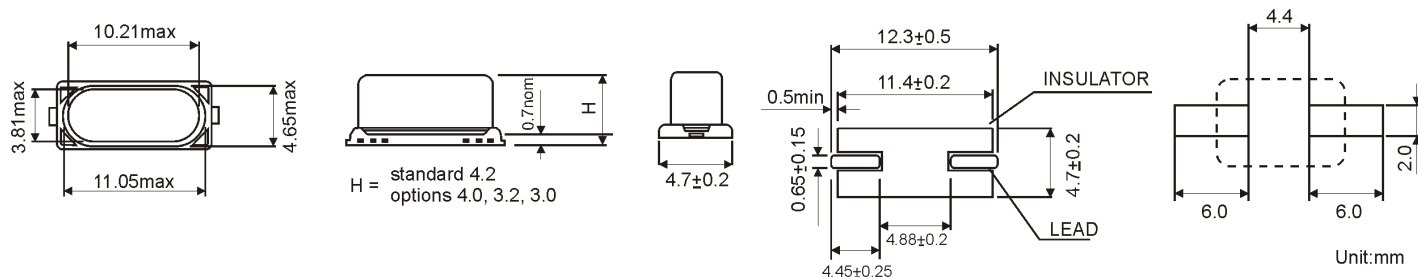
FREQUENCY STABILITY VS. TEMPERATURE

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

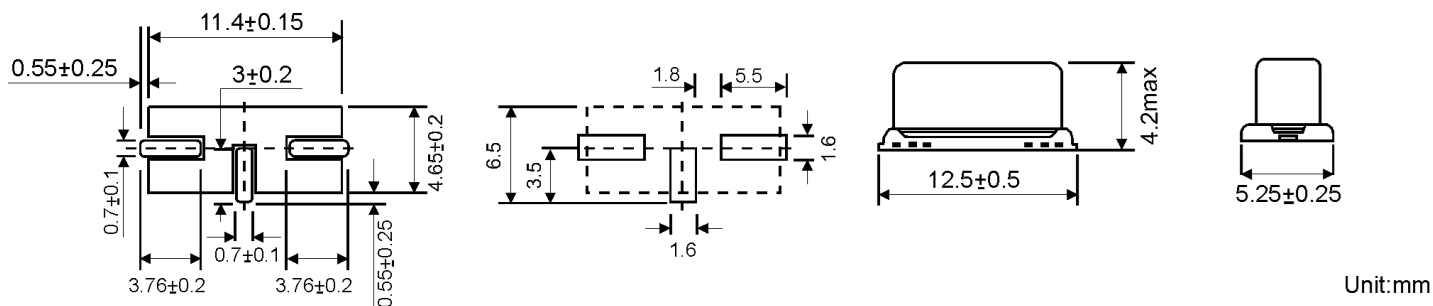
ESR (EQUIVALENT SERIES RESISTANCE)

FREQUENCY IN MHz	VIBRATION MODE	ESR MAX. IN Ω
3.5 ~ 3.79 MHz	AT Fund.	120
3.9 ~ 4.99 MHz	AT Fund.	100
4.5 ~ 5.99 MHz	AT Fund.	90
6.0 ~ 6.99 MHz	AT Fund.	70
7.0 ~ 7.99 MHz	AT Fund.	70
8.0 ~ 8.99 MHz	AT Fund.	60
9.0 ~ 9.99 MHz	AT Fund.	60
10.0 ~ 11.99 MHz	AT Fund.	50
12.0 ~ 19.99 MHz	AT Fund.	40
20.0 ~ 26.99 MHz	AT Fund.	30
27.0 ~ 40.00 MHz	AT Fund.	25
27.0 ~ 40.00 MHz	3rd OT AT	100
40.0 ~ 80.00 MHz	3rd OT AT	60

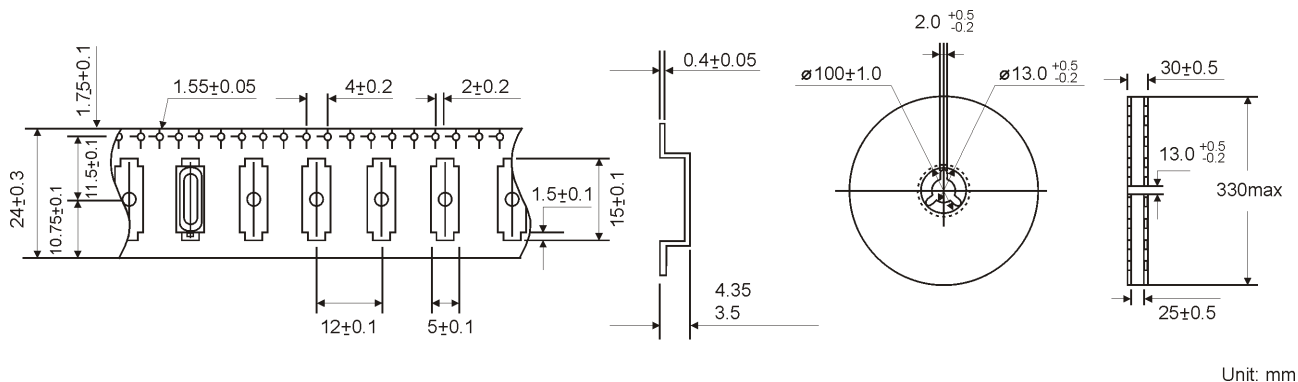
DIMENSIONS OF HC-49/US-SMD



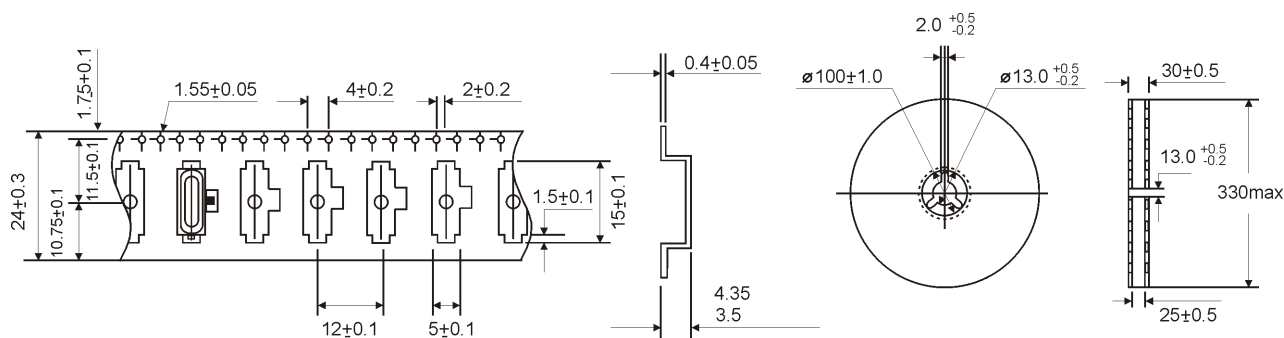
DIMENSIONS OF HC-49/US-GSMD



REEL SPECIFICATION OF HC-49/US-SMD

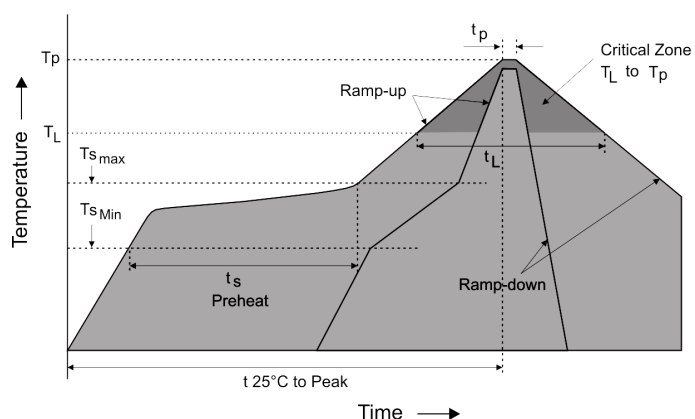


REEL SPECIFICATION OF HC-49/US-GSMD



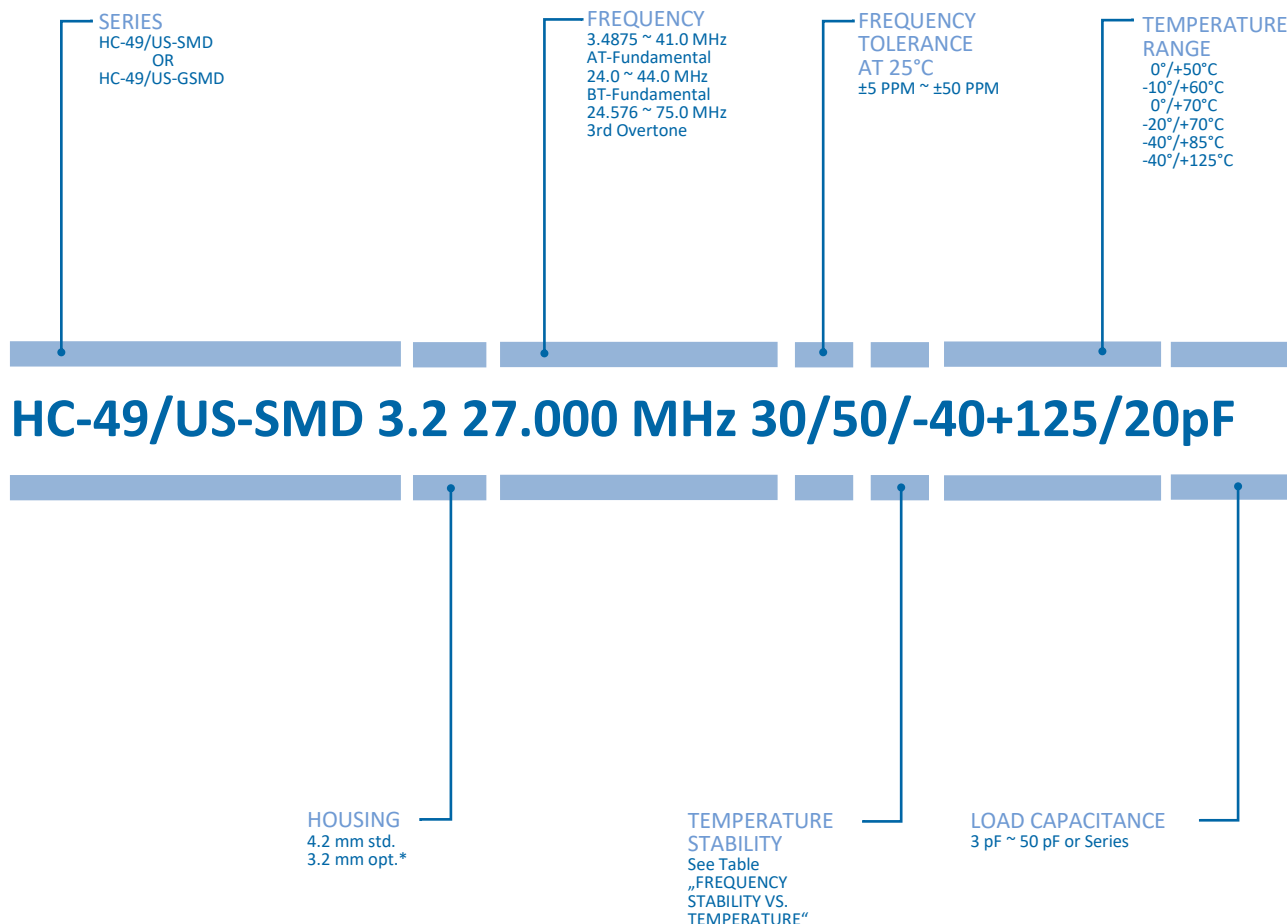
Unit: mm

REEL SOLDER PROFILE



Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat:	
Temperature Min (Tsmin)	150°C
Temperature Max (Tsmax)	200°C
Time (min to max) (ts)	60-180 seconds
Time maintained above:	
Temperature (TL)	217°C
Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

ORDERING INFORMATION



* Note: For HC-49/US-GSMD is the housing height of 4.2 mm standard. 3.2 mm housing height is not possible for HC-49/US-GSMD (with grounding function).

EXAMPLE: HC-49/US-SMD 3.2 27.000 MHz 30/50/-40+125/20pF
PLEASE INDICATE YOUR REQUIRED PARAMETERS

REVISION HISTORY

REVISION	RELEASE DATE	AMENDMENTS SUMMARY
01	DECEMBER 2018	Options for lower housings of HC-49/US-GSMD (3.2 mm) is deleted.
02	OCTOBER 2026	Options for lower housings of HC-49/US-GSMD (4.0, 3.0 mm) are deleted.



PREMIUM QUALITY BY PETERMANN-TECHNIK



OUR COMPANY IS CERTIFIED ACCORDING TO ISO 9001:2015 IN OCTOBER 2016 BY THE DMSZ CERTIFIKATION GMBH.

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

THE HEARTBEAT OF YOUR INNOVATION!

RELIABLE · COST-EFFECTIVE · COMPETENT

DESIGN SMARTER – WE MAKE GREAT IDEAS REALITY

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YOU DEVELOP WITH THE HIGHEST STANDARDS – WE DELIVER THE COMPONENTS TO MATCH: INNOVATIVE, RELIABLE, AND COST-EFFICIENT.

CHOOSE OUR PRODUCTS AND BENEFIT FROM TOP-TIER QUALITY, INNOVATION, STABLE AND INDEPENDENT SUPPLY CHAINS AND PARTNERSHIP ON HIGHEST LEVEL.

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