

1. NOMINAL AND MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Nominal frequency	F_N	28.636363			MHz	--
2	Crystal cut	---	AT-cut			---	--
3	Vibration mode	---	FUNDAMENTAL			---	--
4	Load capacitance	CL		30.0		pF	--
5	Drive level	DL	0.1	100	2000	μ W	--
6	Operating temperature range	T_{OP}	-40	+25	+85	$^{\circ}$ C	Note 1
7	Operable temperature range	T_{OPAB}	-40	+25	+105	$^{\circ}$ C	Note 2
8	Storage Temperature Range	T_{ST}	-55		+125	$^{\circ}$ C	--

Note 1: Unit stays within all relevant parameter limits as specified under point 2 over the specified operating temperature range.
 Note 2: Unit can operate over the operable temperature range but may exceed one or more of the specified parameters limits.

2. ELECTRICAL PARAMETER LIMITS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Frequency tolerance	$\Delta f/F_N$	-20		+20	ppm	Offset from F_N at +25 $^{\circ}$ C
2	Frequency stability	$\Delta f/f$	-30		+30	ppm	Note 1
3	Aging per year	$(\Delta f/f)/y$	-5.0		+5.0	ppm	at +25 $^{\circ}$ C and 100 μ W
4	Shunt capacitance	C0			7.0	pF	at +25 $^{\circ}$ C and 100 μ W
5	Equivalent series resistance	ESR			20	Ω	at +25 $^{\circ}$ C / 100 μ W / @Series
6	Insulation resistance	IR	500			M Ω	at 100 \pm 15V $_{DC}$

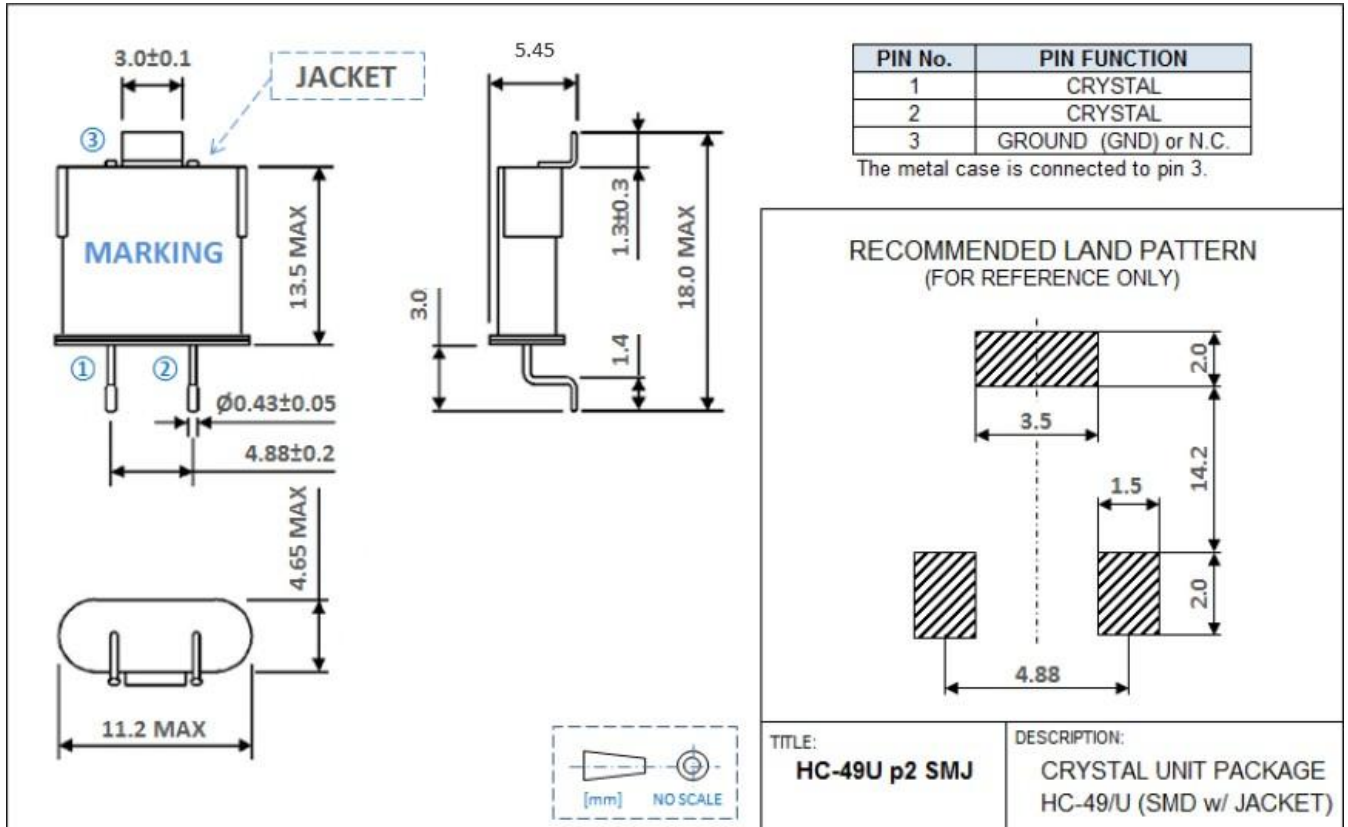
Note 1: Frequency stability is the frequency deviation over operating temperature range T_{OP} in reference to the frequency reading at +25 $^{\circ}$ C.

3. PRODUCT MARKING

TBA

4. OUTLINE DRAWING

Package description	Model	Remarks
1 Metal can HC-49/U thru-hole package 11x4.6x13.5mm with 2 leads	HC49Up2h135	Height 13.5mm



5. RELIABILITY TEST INFORMATION

Test item	Test conditions	Criteria
1 Tensile Strength Termination 引出端强度	The unit's lead wire should withstand a tensile force applied to the termination in the direction of its draw-out axis of up to 900g maintained as is for 30±5s . 在引线端垂直的方向施加 900g 力, 时间为 30±5s.	There should be no abnormalities detected on the unit 产品外观无异常
2 Vibration 振动	Endurance condition by a frequency sweep shall be made. the entire frequency range from 10HZ to 55HZ and return to 10HZ, shall be transversed in 1min. Amplitude (total excursion): 1.5mm This motion shall be applied for a period of 2h each of 3 mutually perpendicular axes(a total of 6h) 振动频率: 从 10HZ 到 55HZ, 再回到 10HZ 1 倍频程/min 幅度为 1.5mm 3 个相互垂直的方向各 2 小时	After the test, the parameters of table must be satisfied 满足表中的参数要求
3 Drop 跌落	From 750mm height 3 times on 30mm hard wooden floor 振荡器从 750 毫米高处跌落到 30 毫米厚的硬质木板上, 重复 3 次	Δf<±5ppm ΩR<5Ω
4 Shock 冲击	Peak acceleration:981m/s ² Duration of the pulse :6ms	Δf<±5ppm ΩR<5Ω

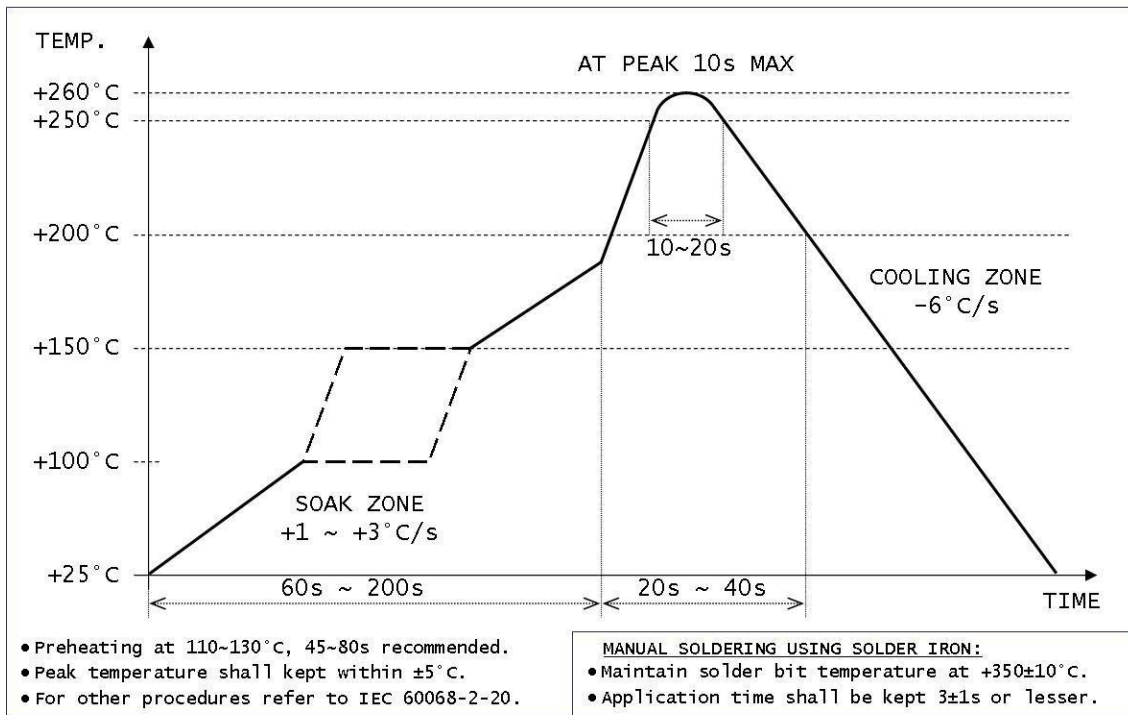
Test item	Test conditions	Criteria															
	Three successive shocks shall be applied in both direction of 3 mutually perpendicular axes(a total of 18 shocks) 加速度: 981m/s ² 时间 : 6ms 作用在 3 个相互垂直的方向																
5 Damp heat, constant 恒定湿热	The unit shall be stored at a temperature of 40°C±2°C with relative humidity of 90% to 95% for 56d, then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made. 在温度: 40°C±2°C、湿度: 90% to 95%条件下存放 56 天, 然后在标准大气压下放置 1 小时后测试	Δf<±5ppm ΩR<5Ω															
6 Cold 低温存储	The unit shall be stored at a temperature of -55±3°C for 2h , then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made. 在-55°C±3°C下存放 2 小时, 然后在标准大气压下放置 1 小时后测试	Δf<±5ppm ΩR<5Ω															
7 Dry heat 高温存储	The unit shall be stored at a temperature of 125±3°C for 16h , then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made. 在 125°C±3°C下存放 16 小时, 然后在标准大气压下放置 1 小时后测试	Δf<±5ppm ΩR<5Ω															
8 Aging 老化	The unit shall be stored at a temperature of 85±2°C for 30d , then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made. 在 85±2°C下放置 30 天, 然后在标准大气压下放置 1 小时后测试	Δf<±5ppm ΩR<5Ω															
9 Temperature cycling 温度循环	The unit shall be subjected to 10 successive change of temperature cycles, each as shown in table below, then it shall be subjected to standard atmospheric conditions for 1h after which measurement shall be made. 在下表给定温度和时间参数的条件下循环 10 次, 标准大气压下放置 1 小时后测试 <table border="1" data-bbox="679 1144 970 1375"> <thead> <tr> <th data-bbox="679 1144 699 1167"></th> <th data-bbox="699 1144 970 1167">Temperature 温度</th> <th data-bbox="970 1144 1310 1167">Duration 放置时间</th> </tr> </thead> <tbody> <tr> <td data-bbox="679 1167 699 1200">1</td> <td data-bbox="699 1167 970 1200">-40°C±3°C</td> <td data-bbox="970 1167 1310 1200">30min (30 分钟)</td> </tr> <tr> <td data-bbox="679 1200 699 1267">2</td> <td data-bbox="699 1200 970 1267">standard atmospheric conditions 标准大气压</td> <td data-bbox="970 1200 1310 1267">within 30S 30 秒内</td> </tr> <tr> <td data-bbox="679 1267 699 1301">3</td> <td data-bbox="699 1267 970 1301">85°C±3°C</td> <td data-bbox="970 1267 1310 1301">30min (30 分钟)</td> </tr> <tr> <td data-bbox="679 1301 699 1375">4</td> <td data-bbox="699 1301 970 1375">standard atmospheric conditions 标准大气压</td> <td data-bbox="970 1301 1310 1375">within 30S 30 秒内</td> </tr> </tbody> </table>		Temperature 温度	Duration 放置时间	1	-40°C±3°C	30min (30 分钟)	2	standard atmospheric conditions 标准大气压	within 30S 30 秒内	3	85°C±3°C	30min (30 分钟)	4	standard atmospheric conditions 标准大气压	within 30S 30 秒内	After the test, the parameters of table must be satisfied 满足表中的参数要求
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3	85°C±3°C	30min (30 分钟)															
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10 Resistance to soldering heat 耐焊接热	Reflow at Preheat to 150°C±5°C for 60 to 120sec and peak 260°C±5°C for 10s±3sec, Tested after 24±2h at room temp.	After the test, the parameters of table must be satisfied 满足表中的参数要求															

6. ENVIRONMENTAL COMPLIANCE INFORMATION

		Compliance information
1	RoHS	This product is fully RoHS compliant, 6/6 compliant per DIRECTIVE 2011/65/EU. The product is considered LEAD-FREE, Pb contamination guaranteed <100ppm.
2	RoHS 2 and 3	This product is RoHS compliant per DIRECTIVE 2015/863 (also called RoHS10).
3	Halogen-Free	This product is compliant to IEC 61249-2-21:2003 (Br<800ppm / Cl<800ppm).
4	REACH (SVHC)	This product does not contain substances (SVHC) listed by REACH, we continuously monitor updates of the list of SVHC's
5	PFOS / PFOA Free	This product is free of any PFOS / PFOA.
6	Electrostatic Discharge (ESD) sensitivity	This product is not ESD sensitive and does therefore not require precautions for handling and storage. Follow JEITA EIAJ ED-4701 or JSD22 or ANSI-ESD-S20-20 or IEC 61000-4-2.
7	Moisture Sensitivity	This product is hermetically sealed and does NOT fall under the classification of moisture sensitivity per J-STD-020C (Standard is for non-hermetically sealed components). If required we suggest to use LEVEL 1

7. RECOMMENDED SOLDERING INFORMATION

RECOMMENDED WAVE SOLDER PROFILE – PEAK TEMPERATURE UP TO +260°C



DWG_WaveProfile_260

HCI QE 2014/10

NO SCALE

Rev.: 1

8. PACKAGING

	Packaging description	QTY	Remarks
1	Units packed into vinyl bag (zip lock type)	100pcs	--
2	Bags with units packaged into a box (cardboard)	10 or 20 bags	Maximum 1k or 2k pcs per box