



AT QUARTZ CRYSTALS - 1 TO 150 MHz FOR FUNDAMENTAL & OVERTONE MODES

MILITARY CRYSTALS

ALL BREL MILITARY CRYSTALS meet the Environmental Tests of Table III, MIL-C-3098 Fin the tests of shock, vibration, insulation resistance, leakage, immersion, salt spray, and moisture resistance.

Frequency Range	Crystal Unit Type	Military Holder	Frequency Tolerance (Percent)	Operating Temperature Range °C	Rated Drive Level mW	Crystal Shunt Cap pF Max	Load Cap pF	Mode of Oscillator
2.75-16KHz	CR-88A/U	HC-13 Mod	±0.005	0 to +65	0.1	*	Series	Fund.
16-100KHz	CR-38A/U	HC-13/U	±0.012	-40 to +70	0.1	*	20.0	Fund.
16-100KHz	CR-50A/U	HC-13/U	±0.012	-40 to +70	0.1	*	Series	Fund.
90-250KHz	CR-37A/U	HC-13/U	±0.02	-40 to +70	2.0		20.0	Fund.
90-250KHz	CR-42A/U	HC-13/U	±0.003	+70 to +80	2.0		32.0	Fund.
165-360KHz	CR-138/U	HC-6/U	±0.003 ±0.024	-40 to +85	0.5		Series	Fund.
190-500KHz	CR-47A/U	HC-6/U	±0.002	+70 to +80	2.0		20.0	Fund.
200-500KHz	CR-147/U	HC-33/U	±0.01	0 to +60	2.0		20.0	Fund.
200-550KHz	CR-46B/U	HC-6/U	±0.01	-40 to +85	2.0		20.0	Fund.
200-555KHz	CR-25B/U	HC-6/U	±0.01	-40 to +85	2.0		Series	Fund.
200-555KHz	CR-26A/U	HC-6/U	±0.002	+70 to +80	2.0		Series	Fund.
200-555KHz	CR-63B/U	HC-6/U	±0.01	-40 to +70	2.0		20.0	Fund.
200-580KHz	CR-104/U	HC-33/U	±0.002	+70 to +80	2.0		21.5	Fund.
455KHz	CR-45U	HC-6/U	±0.02	-40 to +70	2.0	5±2.5	Series	Fund.
500KHz	CR-57/U	HC-6/U	±0.001	+80 to +90	0.5	7	32.0	Fund.
833.333KHz	CR-142/U	HC-6/U	±0.001	+70 to +80	5.0	7	32.0	Fund.
8-20MHz	CR-18A/U	HC-6/U	±0.005	-55 to +105	10/5	7	32.0	Fund.
8-20MHz	CR-19A/U	HC-6/U	±0.005	-55 to +105	14	7	Series	Fund.
8-20MHz	CR-27A/U	HC-6/U	±0.002	+70 to +80	5/2.5	7	32.0	Fund.
8-20MHz	CR-28A/U	HC-6/U	±0.002	-70 to +80	5/2.5	7	Series	Fund.
8-20MHz	CR-35A/U	HC-6/U	±0.002	+80 to +90	5/2.5	7	Series	Fund.
8-20MHz	CR-36A/U	HC-6/U	±0.002	+80 to +105	5/2.5	7	32.0	Fund.
8-20MHz	CR-58A/U	HC-17/U	±0.005	-55 to +105	10/5	7	32.0	Fund.
8-20MHz	CR-62/U	HC-6/U	±0.001	+70 to +80	5/2.5	7	32.0	Fund.
8-20MHz	CR-85/U	HC-6/U	±0.002	-40 to +90	10/5	7	Series	Fund.
8-20MHz	CR-119/U	HC-6/U	±0.005	-55 to +105	10/5	7	30.0	Fund.
8-20MHz	CR-130/U	HC-6/U	±0.002	-40 to +90	10/5	7	30.0	Fund.
8-20MHz	CR-131/U	HC-6/U	±0.002	+70 to +80	5/2.5	7	30.0	Fund.
8-20MHz	CR-132/U	HC-6/U	±0.002	+80 to +90	5/2.5	7	30.0	Fund.
8-20MHz	CR-157/U	HC-33/U	±0.005	-55 to +105	10/5	7	Series	Fund.
1-10MHz	CR-8A/U	HC-17/U	±0.005	-40 to +70	4.0	7	Series	Fund.
1.75-3.5MHz	CR-100/U	HC-6/U	±0.005	-55 to +90	10.0	7	32.0	Fund.
1.85-3.05MHz	CR-125/U	HC-6/U	±0.005	-55 to +105	10.0	7	32.0	Fund.
2.0-9.25MHz	CR-95/U	HC-11A/U	±0.005	-35 to +75			91.0	Fund.
2.0-9.25MHz	CR-96/U	HC-11A/U	±0.005	-35 to +75	10.0		35.0	Fund.
2.0-10MHz	CR-5A/U	HC-17/U	±0.005	-55 to +90	30.0		25.0	Fund.
2.0-10MHz	CR-6A/U	HC-17/U	±0.005	-40 to +70	30.0		13.0	Fund.
2.12-6.2MHz	CR-89/U	HC-32/U	±0.005	-55 to +90	10.0	7	30.0	Fund.
2.2-20MHz	CR-78A/U	HC-25/U	±0.005	-55 to +105	5.0	7	30.0	Fund.
2.3-3.5MHz	CR-146/U	HC-33/U	±0.002	+70 to +80	0.5	7	32.0	Fund.
2.9-3.8MHz	CR-124/U	HC-18/U	±0.005	-55 to +100	1.0	7	32.0	Fund.
2.9-3.85MHz	CR-114/U	HC-25/U	±0.005	-55 to +105	1.0	7	32.0	Fund.
2.9-20MHz	CR-64/U	HC-18/U	±0.005	-55 to +105	5.0	7	30.0	Fund.
2.9-20MHz	CR-79/U	HC-25/U	±0.005	-55 to +105	5.0	7	Series	Fund.
2.9-25MHz	CR-59A/U	HC-18/U	±0.002	-40 to +90	5.0	7	30.0	Fund.
3-20MHz	CR-66/U	HC-6/U	±0.002	-40 to +90	14	7	30.0	Fund.
3-20MHz	CR-68/U	HC-6/U	±0.002	+70 to +80	5.0	7	32.0	Fund.
3.6-10MHz	CR-1D/U	HC-11A/U	±0.005	-55 to +90	30.0		35.0	Fund.
5-20MHz	CR-60A/U	HC-18/U	±0.005	-55 to +105	5.0	7	Series	Fund.
5-20MHz	CR-112/U	HC-18/U	±0.0025	-55 to +105	5.0	7	Series	Fund.
7-20MHz	CR-101/U	HC-35/U	±0.005	-55 to +105	5.0	7	30.0	Fund.
7-25MHz	CR-118/U	HC-25/U	±0.0015	-55 to +85	5/2.5	7	32.0	Fund.
8-10MHz	CR-97/U	HC-18/U	±0.005	-40 to +85	10.0	7	32.0	Fund.
8-10MHz	CR-136/U	HC-18/U	±0.0025	+10 to +80	10.00	6±5 1.0	32.0	Fund.

All shunt Capacitances are maximum unless otherwise noted.

*SPECIAL-See military Specification



BREL INTERNATIONAL COMPONENTS

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Frequency Range	Crystal Unit Type	Military Holder	Frequency Tolerance (Percent)	Operating Temperature Range °C	Rated Drive Level mW	Crystal Shunt Cap pF Max	Load Cap pF	Mode of Oscillator
8.5-19.0MHz	CR-137/U	HC-18/U	±0.0025	+20 to +80	2.5	7	32.0	Fund.
9-12MHz	CR-129/U	HC-18/U	±0.0035	-55 to +90	5.0	7	32.0	Fund.
9.5-12.5MHz	CR-91/U	HC-11A/U	±0.005	-55 to +90	25.0	10	55.0	Fund.
0.5-12.5MHz	CR-140/U	HC-6/U	±0.005	-55 to +90	25.0	10	60.0	Fund.
10-11.5MHz	CR-109/U	HC-25/U	±0.002	+80 to +90	2.5	7	32.0	Fund.
10-12MHz	CR-135/U	HC-25/U	±0.002	+80 to +90	2.5	7	32.0	Fund.
10-30MHz	CR-33A/U	HC-6/U	±0.005	-55 to +105	2.5	12	32.0	3rd
10-61MHz	CR-51A/U	HC-6/U	±0.005	-55 to +105	20.0	7	Series	3rd
10-61MHz	CR-52A/U	HC-6/U	±0.005	-55 to +105	2.0	7	Series	3rd
10-61MHz	CR-65/U	HC-6/U	±0.001	+70 to +80	1.0	7	Series	3rd
10-61MHz	CR-113/U	HC-18/U	±0.001	+70 to +80	1.0	7	Series	3rd
10-61MHz	CR-127/U	HC-6/U	±0.0025	-55 to +90	2.0	7	Series	3rd
10-61MHz	CR-148/U	HC-6/U	±0.005	-55 to +105	2.0	7	Series	3rd
10.5-11.5MHz	CR-106/U	HC-18/U	±0.005	-55 to +105	5.0	7	32.0	Fund.
16-61MHz	CR-76/AU	HC-18/U	±0.002	-40 to +90	2.0	3.5	Series	3rd
16-61MHz	CR-152/U	HC-18/U	±0.002	-40 to +90	2.0	3.5	Series	3rd
17-61MHz	CR-61/U	HC-18/U	±0.002	+80 to +90	1.0	7	Series	3rd
17-61MHz	CR-72/U	HC-25/U Mod	±0.005	-55 to +105	2.0	7	Series	3rd
17-61MHz	CR-84/U	HC-25/U	±0.002	+80 to +90	1.0	7	Series	3rd
17-61MHz	CR-103/U	HC-35/U	±0.0025	-55 to +105	2.0	7	Series	3rd
17-61MHz	CR-128/U	HC-18/U	±0.005	-55 to +105	2.0	7	Series	3rd
17-61MHz	CR-154/U	HC-18/U	±0.002	+80 to +90	1.0	4	Series	3rd
17-62MHz	CR-55A/U	HC-18/U	±0.005	-55 to +105	2.0	7	Series	3rd
17-62MHz	CR-67A/U	HC-18/U	±0.0025	-55 to +1.5	2.0	7	Series	3rd
17-62MHz	CR-77/U	HC-25/U	±0.002	-40 to +90	2.0	7	Series	3rd
17-62MHz	CR-111/U	HC-18/U	±0.005	-55 to +105	2.0	4	Series	3rd
17-65MHz	CR-81/U	HC-25/U	±0.005	-55 to +105	2.0	7	Series	3rd
18-21MHz	CR-134/U	HC-81/U	±0.0025	+10 to +80	5.0	6+5 -1.0	32.0	Fund.
20-22MHz	CR-139/U	HC-18/U	±0.005	-55 to +105	2.5	12	30.0	Fund.
30-63MHz	CR-117/U	HC-25/U	±0.001	-40 to +65	2.0	7	Series	3rd
35.0004MHz	CR-156/U	HC-43/U	±0.001	+80 to +90	2.0	7	Series	5th
44-69MHz	CR-99A/U	HC-6/U	±0.005	-55 to +105	2.0	7	32.0	3rd
45-125MHz	CR-133/U	HC-25/U	±0.006	-55 to +150	2.0	6.5±1	Series	5th
46-100MHz	CR-149/U	HC-18/U	±0.0025	+10 to +80	2.0	6+5 -1.0	Series	5th
48-90MHz	CR-141/U	HC-18/U Mod	±0.0025	-30 to +55	3.0	7	Series	5th
48-125MHz	CR-105/U	HC-18/U	±0.001	-40 to +90	2.1	4	Series	5th
50-87MHz	CR-53A/U	HC-6/U	±0.005	-55 to +105	20.0	7	Series	5th
50-100MHz	CR-151/U	HC-18/U	±0.0035	-30 to +70	2.0	6+5 -1.0	Series	5th
50-125MHz	CR-54A/U	HC-6/U	±0.005	-55 to +105	2.0	7	Series	5th
50-125MHz	CR-56A/U	HC-18/U	±0.005	-55 to +105	2.0	7	Series	5th
50-125MHz	CR-59A/U	HC-18/U	±0.002	+80 to +90	1.0	7	Series	5th
50-125MHz	CR-75/U	HC-6/U	±0.001	+70 to +80	1.0	7	Series	5th
50-125MHz	CR-80/U	HC-18/U	±0.002	-40 to +90	2.0	7	Series	5th
50-125MHz	CR-82/U	HC-25/U	±0.005	-55 to +105	2.0	7	Series	5th
50-125MHz	CR-83/U	HC-25/U	±0.002	-40 to +90	2.0	7	Series	5th
50-125MHz	CR-102/U	HC-35/U	±0.0025	-55 to +105	2.0	7	Series	5th
50-125MHz	CR-107/U	HC-18/U	±0.005	-55 to +105	2.0	6±.5	Series	5th
50-125MHz	CR-116	HC-18/U	±0.0025	-55 to +105	2.0	4.5	Series	5th
50-125MHz	CR-122/U	HC-18/U	±0.001	+80 to +90	1.0	7	Series	5th
50-125MHz	CR-123/U	HC-18/U	±0.001	+80 to +90	2.0	4.5	Series	5th
50-134MHz	CR-98/U	HC-25/U	±0.0015	-30 to +71	2.0	7	Series	5th
56-100MHz	CR-144/U	HC-36/U	±0.00025	+70 to +80	1.0	7	Series	5th
62.5-75MHz	CR-110A/U	HC-18/U	±0.003	-40 to +85	2.0	4	Series	5th
200-220MHz	CR-158/U	HC-35/U	±0.003	+80 to +90	0.1	4.5	Series	7th