



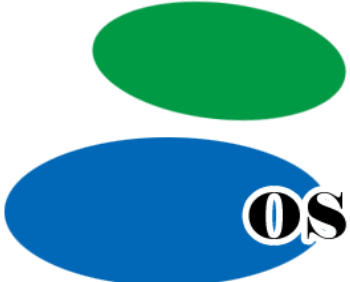
QUARTZ CRYSTAL PRODUCTS



FILTERS



CRYSTALS



OSCILLATORS



SORACHI QUARTZ CO., LTD.

株式会社 ソラチ・クォーツ

I . SQC Crystal Directory		Directly1 ~ 2
II . Product		
A . Monolithic Crystal Filter モノリシッククリスタルフィルター	1. Thru Hole Type 2. SMD Type	A1-1 ~ A1-8 A2-1 ~ A2-5
B . Crystal Filter クリスタルフィルター	1. Low Frequency Type	B1-1 ~ B1-3
C . Crystals Unit 水晶振動子	1. Low Frequency Type 2. HC-49S Type 3. Cylinder Type 4. Thru Hole Type 5. SMD Type	C1-1 C2-1 ~ C2-5 C3-1 ~ C3-3 C4-1 ~ C4-6 C5-1 ~ C5-10
D . Crystal Oscillator (XO)	1. 5×7mm SMD Type	D1-1 ~ D1-4
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G . Temperature Compensated Voltage Control Crystal Oscillator (TCVCXO) 電圧制御温度補償型水晶発振器	1. 14Pin DIP 2. 9.6×11.4mm SMD Type 3. 20×20mm Type 4. SMD Taping 5. SMD Type	G1-1 G2-1 G3-1 G4-1 G5-1 ~ G5-4
H. Voltage Control Crystal Oscillator (VCO) 電圧制御型発振器	1. RX 11.9×10.5mm SMD Type 2. TX 9.0×7.0mm SMD Type	H1-1 H1-2



A . MONOLITHIC CRYSTAL FILTER

モノリシッククリスタルフィルター

Part	Type	Frequency	Case	Remark	Page
MCF	Thru Hole	10.7MHz	HC-49 , SC	FUND	A1-1
MCF	Thru Hole	16.9MHz	UM , HC-49, SC	FUND	A1-2
MCF	Thru Hole	21.4MHz	UM , SC	FUND	A1-3
MCF	Thru Hole	45MHz	UM , SC	FUND , 3rd	A1-4
MCF	Thru Hole	70MHz	UM	3rd	A1-5
MCF	Thru Hole	90MHz	UM	3rd	
MCF	Thru Hole	100MHz - 150MHz	UM	3rd	A1-6
MCF	Thru Hole		UM , HC	MJ & LF Dimension	A1-7
MCF	Thru Hole		UM , HC	Taping Dimension	A1-8
MCF	SMD	21.4MHz	7050M	FUND	A2-1
MCF	SMD	21.7MHz	7050M	FUND	
MCF	SMD	45MHz	7050M , 6035M , 3838M	FUND	
MCF	SMD	29MHz - 130MHz	7050M , 6035M , 3838M	FUND , 3rd	A2-2
MCF	SMD		7050M , 6035M	Taping Dimension	A2-3
MCF	SMD	45MHz	7050M4	FUND , 3rd	A2-4
MCF	SMD		3838M , 7050M4	Taping Dimension	A2-5

B . CRYSTAL FILTER

クリスタルフィルター

Part	Type	Frequency	Case	Remark	Page
Crystal Filter	Thru Hole	450KHz	YC	FUND	B1-1
Crystal Filter	Thru Hole	7MHz - 8MHz	YC	FUND	
Crystal Filter	Thru Hole	9MHz	YC	FUND	B1-2
Crystal Filter	Thru Hole	10MHz - 20MHz	YC	FUND	
Crystal Filter	Thru Hole		YC	YC Dimension	B1-3

C . CRYSTALS Unit

水晶振動子

Part	Type	Frequency	Case	Remark	Page
Crystal	Thru Hole	900KHz - 1.1MHz	UM-1	FUND(SL)	C1-1
Crystal	Thru Hole	3.5MHz - 40MHz	HC-49S	FUND(AT),3rd	C2-1
Crystal	Thru Hole	27MHz - 40MHz	HC-49S	FUND(BT)	C2-2
Crystal	SMD	3.5MHz - 40MHz	HC-49S	FUND(AT),3rd	C2-3
Crystal	SMD	27MHz - 40MHz	HC-49S	FUND(BT)	C2-4
Crystal	SMD		HC-49S	Taping Dimension	C2-5
Crystal	Cylinder	3.5MHz - 20MHz		FUND(AT)	C3-1
Crystal	Cylinder	32.768KHz		FUND(X)	C3-2
Crystal	Cylinder	32.768KHz	2 × 6mm	FUND(X)	C3-3
Crystal	Thru Hole	4MHz - 200MHz	HC-49UL , HC-49UT	FUND , 3rd , 5th	C4-1
Crystal	Thru Hole	6MHz - 200MHz	UM-1 , UM-1S	FUND , 3rd , 5th	C4-2
Crystal	Thru Hole	10MHz - 200MHz	UM-5 , UM-5S	FUND , 3rd , 5th	C4-3
Crystal	Thru Hole	10MHz - 200MHz	UM-4 , UM-4S	FUND , 3rd , 5th	C4-4
Crystal	Thru Hole		UM , HC	MJ & LF Dimension	C4-5
Crystal	Thru Hole		UM , HC	Taping Dimension	C4-6
Crystal	SMD	16MHz - 55MHz	HS-3225A	FUND	C5-1
Crystal	SMD	10MHz - 160MHz	HS-5032A	FUND , 3rd , 5th	C5-2
Crystal	SMD	10MHz - 160MHz	HS-5	FUND , 3rd , 5th	C5-3
Crystal	SMD	10MHz - 200MHz	HS-1	FUND , 3rd , 5th	C5-4
Crystal	SMD		HS-1,HS-5	Taping Dimension	C5-5



C . CRYSTALS Unit

水晶振動子

Part	Type	Frequency	Case	Remark	Page
Crystal	SMD	32.768KHz	4.1×1.5mm(SCM415)	FUND(X)	C5-6
Crystal	SMD	32.768KHz	4.9×1.8mm(SCM519)	FUND(X)	C5-7
Crystal	SMD	32.768KHz	6.9×1.4mm(SCM130)	FUND(X)	C5-8
Crystal	SMD	32.768KHz	8×3.8mm(SCM200S)	FUND(X)	C5-9
Crystal	SMD			Taping Dimension	C5-10

D . CRYSTALS OSCILLATORS

水晶発振器

Part	Type	Frequency	Case	Remark	Page
XO SX-100	CMOS	80MHz - 125MHz	7×5mm	3.3V	D1-1
XO SX-100	CMOS	80MHz - 106.25MHz	7×5mm	5V	D1-2
XO SX-150	CMOS	1MHz - 133MHz	7×5mm	3.3V , 5V	D1-3
XO SX-200	LV-PECL	100MHz - 161.2MHz	7×5mm	3.3V	D1-4

E . VOLTAGE CONTROLLED CRYSTAL OSCILLATOR

電圧制御水晶発振器

Part	Type	Frequency	Case	Remark	Page
VCXO VX-200	CMOS	8MHz - 40MHz	7×5mm	3.3V	E1-1
VCXO VX-200	CMOS	8MHz - 40MHz	7×5mm	5V	E1-2
VCXO VX-200	LV-PECL	130MHz - 170MHz	7×5mm	3.3V	E1-3

F . TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

温度補償型水晶発振器

Part	Type	Frequency	Case	Remark	Page
TCXO TX-100	Clipped	10MHz - 50MHz	14Pin DIP	5V	F1-1
TCXO TX-100	TTL/CMOS	10MHz - 50MHz	14Pin DIP	5V	
TCXO TX-200	Clipped	10MHz - 50MHz	11.4×9.6mm	3V , 5V	F2-1
TCXO TX-500	Clipped	10MHz - 60MHz	20×20mm	5V	F3-1
TCXO			11.4×9.6mm	Taping Dimension	F4-1

G . TEMPERATURE COMPENSATED

VOLTAGE CONTROLLED CRYSTAL OSCILLATOR

温度補償電圧制御水晶発振器

Part	Type	Frequency	Case	Remark	Page
TCVCXO TVX-10	Clipped	10MHz - 50MHz	14Pin DIP	5V	G1-1
TCVCXO TVX-10	TTL/CMOS	10MHz - 50MHz	14Pin DIP	5V	
TCVCXO TVX-200	Clipped	10MHz - 50MHz	11.4×9.6mm	3V , 5V	G2-1
TCVCXO TVX-500	Clipped	10MHz - 60MHz	20×20mm	5V	G3-1
TCVCXO			9.6×11.4mm,5×7mm	Taping Dimension	G4-1
CO-TS3225	Clipped	13MHz - 26MHz	3.2×2.5mm	2.7V to 5V	G5-1
CO-TS5032	Clipped	10MHz - 26MHz	5×3.2mm	2.7V to 5V	G5-2
CO-TS7050	Clipped	10MHz - 26MHz	7×5mm	2.7V to 5V	G5-3
CO-TS7050	TTL/CMOS	13MHz - 26MHz	7×5mm	3V to 5V	G5-4

H . VOLTAGE CONTROLLED OSCILLATOR

電圧制御型発振器

Part	Type	Frequency	Case	Remark	Page
RX-VCO		500MHz - 1000MHz	11.9×10.5mm	5V	H1-1
TX-VCO		500MHz - 1000MHz	9×7mm	5V	H1-2



MONOLITHIC CRYSTAL FILTER Thru Hole Type

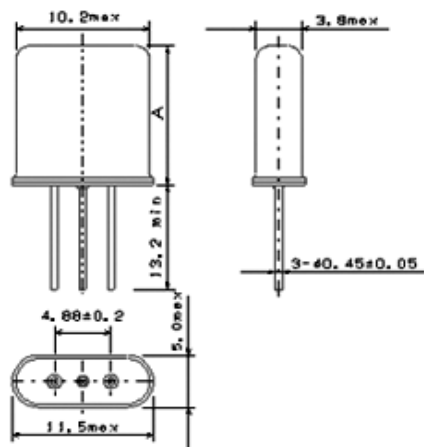
10.7MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
10M7.5A	2	3	±3.75	20	±18	0.5	1.5	35 50	+300~+1000 -200~-1000	1800//5	—	HC-ab
10M7.5B	4	3	±3.75	40	±14	1.0	2.5	65 80	+300~+1000 -200~-1000	1800//4.5	12	HC-ab × 2
10M7.5C	6	3	±3.75	45	±8.75	2.0	3.5	65	±12.5~±300	1800//3.5	—	SC-3
10M7.5D	8	3	±3.75	65	±8.75	2.0	4.0	90	±12.5~±300	1800//3.5	—	SC-4
10M12A	2	3	±6.0	20	±25	0.5	1.5	35 40	+300~+1000 -200~-1000	2500//2.5	—	HC-ab
10M12B	4	3	±6.0	40	±20	1.0	2.5	65 80	+300~+1000 -200~-1000	1800//2.5	7	HC-ab × 2
10M12C	6	3	±6.0	45	±14	2.0	3.0	65	±20.0~±300	2800//1	—	SC-3
10M12D	8	6	±6.0	65	±14	2.0	4.0	90	±20.0~±300	2800//1	—	SC-4
10M15A	2	3	±7.5	18	±25	0.5	1.5	35 40	+300~+1000 -200~-1000	3000//2	—	HC-ab
10M15B	4	3	±7.5	40	±25	1.0	2.5	65 80	+300~+1000 -200~-1000	3000//1.5	5	HC-ab × 2
10M15C	6	3	±7.5	45	±17.5	2.0	3.0	65	±25.0~±300	2800//1	—	SC-3
10M15D	8	6	±7.5	60	±15	2.0	3.5	90	±25.0~±300	2800//1	—	SC-4
10M20A	2	3	±10.0	15	±30	0.5	1.5	35 40	+300~+1000 -200~-1000	3900//0.5	—	HC-ab
10M20B	4	3	±10.0	40	±34	1.0	2.5	65 80	+300~+1000 -200~-1000	3900//0.4	3.5	HC-ab × 2
10M20C	6	3	±10.0	60	±34	2.0	3.0	60	±34.0~±300	3900//1	—	SC-3
10M20D	8	6	±10.0	80	±30	2.0	3.5	80	±34.0~±300	3900//1	—	SC-4
10M30A	2	3	±15.0	15	±50	0.5	1.5	30 40	+300~+1000 -200~-1000	5000//0	—	HC-ab
10M30B	4	3	±15.0	30	±40	1.0	2.5	65 80	+300~+1000 -200~-1000	5500//1	0	HC-ab × 2
10M30C	6	3	±15.0	60	±45	2.0	3.0	60	±45.0~±300	5500//1	—	SC-3
10M30D	8	6	±15.0	60	±30	2.0	3.5	80	±45.0~±300	5500//1	—	SC-4

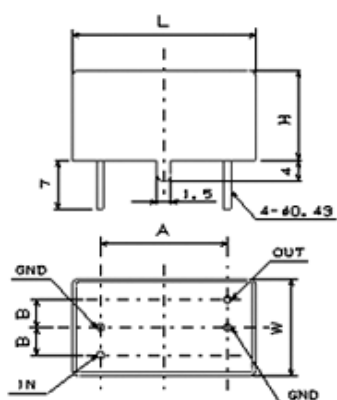
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A1-7のMJタイプも対応可能です。

Only the specification considered for correspondence to be possible is indicated. Please consult about things other than the above individually. what can be manufactured — a design — it sample-manufactures and mass-produces.
Even the MJ type of A1-7 is possible correspond.

Dimensions(Unit:mm)



Code	Case	A
HC-a	HC-49/UL	13.5max
HC-b	HC-49/UT	11.2max



Code	L	W	H	A	B
SC-3	15.0	12.0	15.0	9.0	2.5
SC-4	18.5	12.0	15.0	13.4	2.5



MONOLITHIC CRYSTAL FILTER Thru Hole Type

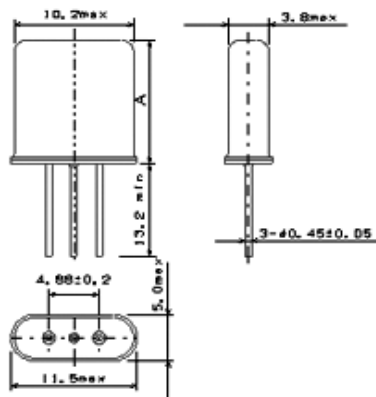
16.9MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
16.9M7.5A	2	3	±3.75	20	±18	0.5	1.5	35 50	+350~+1000 -200~-1000	850//5	—	HC-ab
16.9M7.5A2	2	3	±3.75	20	±18	0.5	1.5	35 50	+350~+1000 -200~-1000	1000//7	—	UM-ab
16.9M7.5B	4	3	±3.75	40	±14	1.0	2.5	65 80	+350~+1000 -200~-1000	850//5	20	HC-ab × 2
16.9M7.5B2	4	3	±3.75	30	±12.5	1.0	2.5	65 80	+350~+1000 -200~-1000	1000//4	18	UM-ab × 2
16.9M7.5C	6	3	±3.75	65	±12.5	2.0	3.0	65	±12.5~±300	850//5	—	SC-3
16.9M7.5C2	6	3	±3.75	65	±12.5	2.0	3.0	65	±12.5~±300	1000//5	—	SC-1
16.9M7.5D	8	3	±3.75	90	±12.5	2.0	4.0	90	±12.5~±300	850//5	—	SC-4
16.9M7.5D2	8	3	±3.75	90	±12.5	2.0	4.0	90	±12.5~±300	1000//5	—	SC-1
16.9M12A	2	3	±6.0	20	±25	0.5	1.5	35 50	+300~+1000 -200~-1000	1500//2.5	—	HC-ab
16.9M12A2	2	3	±6.0	20	±25	0.5	1.5	35 50	+300~+1000 -200~-1000	1500//3.5	—	UM-ab
16.9M12B	4	3	±6.0	40	±20	1.0	2.5	65 80	+300~+1000 -200~-1000	1500//2	9	HC-ab × 2
16.9M12B2	4	3	±6.0	40	±20	1.0	2.5	65 80	+300~+1000 -200~-1000	1500//3	8	UM-ab × 2
16.9M12C	6	3	±6.0	65	±20	2.0	3.0	65	±20~±300	1500//2	—	SC-3
16.9M12C2	6	3	±6.0	65	±20	2.0	3.0	65	±20~±300	1500//2	—	SC-1
16.9M12D	8	3	±7.5	90	±20	2.0	3.5	90	±20~±300	1500//2	—	SC-4
16.9M12D2	8	3	±7.5	90	±20	2.0	3.5	90	±20~±300	1500//2	—	SC-1
16.9M15A	2	3	±7.5	18	±25	0.5	1.5	35 50	+300~+1000 -200~-1000	1500//2	—	HC-ab
16.9M15A2	2	3	±7.5	18	±25	0.5	1.5	35 50	+300~+1000 -200~-1000	1500//2	—	UM-ab
16.9M15B	4	3	±7.5	40	±25	1.0	2.5	65 80	+300~+1000 -200~-1000	1800//1.5	7.5	HC-ab × 2
16.9M15B2	4	3	±7.5	40	±25	1.0	2.5	65 80	+300~+1000 -200~-1000	1800//1.5	7.5	UM-ab × 2
16.9M15C	6	3	±7.5	65	±25	2.0	3.0	65	±20~±300	1800//1.5	—	SC-3
16.9M15C2	6	3	±7.5	65	±25	2.0	3.0	65	±20~±300	1800//1.5	—	SC-1
16.9M15D	8	3	±7.5	90	±25	2.0	3.5	90	±25~±300	1800//1.5	—	SC-4
16.9M15D2	8	3	±7.5	90	±25	2.0	3.5	90	±20~±300	1800//1.5	—	SC-1

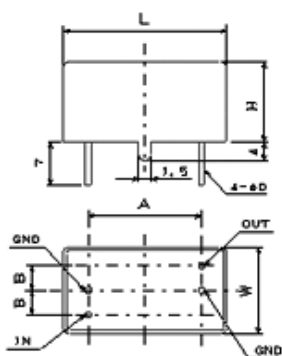
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Even the MJ type of A1-7 is possible correspond.

Dimensions(Unit:mm)



Code	Case	A
HC-a	HC-49/UL	13.5max
HC-b	HC-49/UT	11.2max



Code	L	W	H	A	B	D
SC-1	11.0	8.5	11.5	7.4	2.0	0.30
SC-3	15.0	12.0	15.0	9.0	2.5	0.43
SC-4	18.5	12.0	15.0	13.4	2.5	0.43



M ONOLITHIC CRYSTAL FILTER Thru Hole Type

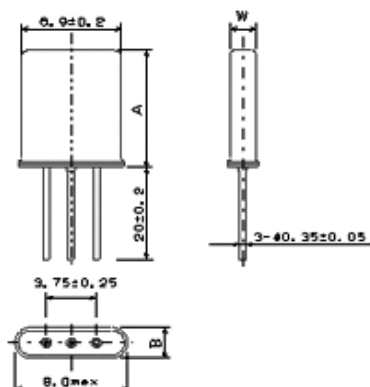
21.4MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
21M7.5A	2	3	±3.75	20	±18	0.5	1.5	35 50	+350~+1000 -200~-1000	850//6	—	UM-abcd
21M7.5A2	2	3	±3.75	20	±18	0.5	2.0	35 50	+350~+1000 -200~-1000	850//5.5	—	UM-ef
21M7.5B	4	3	±3.75	40	±14	1.0	2.5	65 80	+350~+1000 -200~-1000	850//5	16	UM-abcd
21M7.5B2	4	3	±3.75	40	±14	1.0	3.0	65 80	+350~+1000 -200~-1000	1000//4.5	12	UM-ef
21M7.5C	6	3	±3.75	45	±8.75	2.0	3.0	65	±12.5~±300	850//5.0	—	SC-13
21M7.5D	8	3	±3.75	65	±9.0	2.0	4.0	90	±12.5~±300	850//5.0	—	SC-14
21M12A	2	3	±6.0	20	±25	0.5	1.5	35 50	+350~+1000 -200~-1000	1200//3	—	UM-abcd
21M12A2	2	3	±6.0	20	±25	0.5	2.0	35 50	+350~+1000 -200~-1000	1200//3	—	UM-ef
21M12B	4	3	±6.0	40	±20	1.0	2.0	65 80	+350~+1000 -200~-1000	1200//2.5	10.5	UM-abcd
21M12B2	4	3	±6.0	40	±20	1.0	3.0	65 80	+350~+1000 -200~-1000	1600//2.5	7	UM-ef
21M12C	6	3	±6.0	45	±14	2.0	2.5	65	±20~±300	1200//2.5	—	SC-13
21M12D	8	3	±6.0	65	±14	2.0	3.0	90	±20~±300	1200//2.5	—	SC-14
21M15A	2	3	±7.5	18	±25	0.5	1.5	35 50	+350~+1000 -200~-1000	1500//2.5	—	UM-abcd
21M15A2	2	3	±7.5	15	±25	0.5	2.0	35 50	+350~+1000 -200~-1000	1500//2	—	UM-ef
21M15B	4	3	±7.5	40	±25	1.0	2.0	65 80	+350~+1000 -200~-1000	1500//2	8	UM-abcd
21M15B2	4	3	±7.5	40	±25	1.0	4.0	65 80	+350~+1000 -200~-1000	1900//2	5	UM-ef
21M15C	6	3	±7.5	45	±17.5	2.0	2.5	65	±25~±300	1500//2	—	SC-13
21M15D	8	3	±7.5	65	±17.5	2.0	3.0	90	±25~±300	1500//2	—	SC-14
21M20A	2	3	±10	15	±30	0.5	2.0	35 50	+350~+1000 -350~-1000	1800//2.5	—	UM-abcd
21M20B	4	3	±10	45	±35	1.0	2.0	65 80	+350~+1000 -200~-1000	1800//1.5	5	UM-abcd
21M20C	6	3	±10	60	±34	2.0	2.5	60	±34~±300	1800//1.5	—	SC-13
21M20D	8	3	±10	80	±30	2.0	3.0	80	±34~±300	1800//1.5	—	SC-14
21M30A	2	3	±15	15	±45	0.5	1.5	35 45	+350~+1000 -350~-1000	1500//1	—	UM-abcd
21M30B	4	3	±15	40	±50	1.0	2.0	65 80	+350~+1000 -250~-1000	2000//0.5	3	UM-abcd
21M30C	6	3	±15	65	±50	2.0	2.5	65	±50~±300	2200//0.5	—	SC-13
21M30D	8	3	±15	80	±50	2.0	3.0	80	±50~±300	2200//0.5	—	SC-14

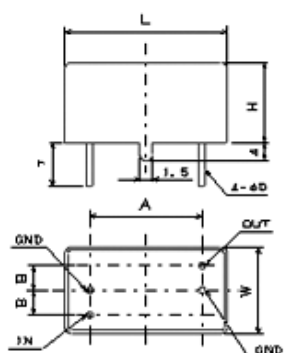
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検討後可能なものは設計、サンプル製作、量産対応致します。
A1-7のMJタイプも対応可能です。

Only the specification considered for correspondence to be possible is indicated. Please consult about things other than the above individually. what can be manufactured -- a design -- it sample-manufactures and mass-produces.
Even the MJ type of A1-7 is possible correspond.

Dimensions(Unit:mm)



Code	Case	A	B	W
UM-a	UM-1	8.0max	3.0 ± 0.2	2.2 ± 0.2
UM-b	UM-1S	8.0max	2.5 ± 0.2	1.8 ± 0.2
UM-c	UM-5	6.0max	3.0 ± 0.2	2.2 ± 0.2
UM-d	UM-5S	6.0max	2.5 ± 0.2	1.8 ± 0.2
UM-e	UM-4	4.5max	3.0 ± 0.2	2.2 ± 0.2
UM-f	UM-4S	4.5max	2.5 ± 0.2	1.8 ± 0.2



Code	L	W	H	A	B	D
SC-1	11.0	8.5	11.5	7.4	2.0	0.30
SC-3	15.0	12.0	15.0	9.0	2.5	0.43
SC-4	18.5	12.0	15.0	13.4	2.5	0.43



M ONOLITHIC CRYSTAL FILTER Thru Hole Type

45MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
45M7.5AF	2	3	±3.75	10	±12.5	1.0	2.0	65	-910	200//4	—	UM-a~f
45M7.5BF	4	3	±3.75	30	±12.5	1.0	4.0	90	±900~±1000	350//6.5	18	UM-a~f
45M7.5CF	6	3	±3.75	50	±12.5	2.0	6.0	80	±900	350//5	—	SC-1
45M7.5DF	8	3	±3.75	70	±12.5	2.0	7.0	80	±900	350//5	—	SC-1
45M12AF	2	3	±6	15	±22	1.0	2.0	65	-910	650//5	—	UM-a~f
45M12BF	4	3	±6	30	±20	1.0	3.0	90	±900~±1000	500//4	12	UM-a~f
45M12CF	6	3	±6	50	±20	2.0	6.0	80	±900	600//3	—	SC-1
45M12DF	8	3	±6	70	±20	2.0	7.0	80	±900	600//3	—	SC-1
45M15AF	2	3	±7.5	15	±25	1.0	2.0	35 65	+900~+1000 -900~-1000	650//3	—	UM-a~f
45M15BF	4	3	±7.5	30	±25	1.0	3.0	90	±900~±1000	650//3	9	UM-a~f
45M15CF	6	3	±7.5	60	±25	2.0	5.0	80	±900	650//1.5	—	SC-1
45M15DF	8	3	±7.5	80	±25	2.0	6.0	80	±900	650//1.5	—	SC-1
45M20AF	2	3	±10	15	±35	1.0	2.0	35 65	+900~+1000 -900~-1000	800//3	—	UM-a~f
45M20BF	4	3	±10	30	±40	1.0	3.0	90	±900~±1000	800//2	6.5	UM-a~f
45M30AF	2	3	±15	15	±60	1.0	2.0	35 65	+900~+1000 -900~-1000	1200//0	—	UM-a~f
45M30BF	4	3	±15	30	±50	1.0	3.0	90	±900~±1000	1200//0.7	3.5	UM-a~f
45M30CF	6	3	±15	60	±50	2.0	5.0	80	±900	1500//0.3	—	SC-1
45M30DF	8	3	±15	80	±50	2.0	6.0	80	±900	1500//0.3	—	SC-1

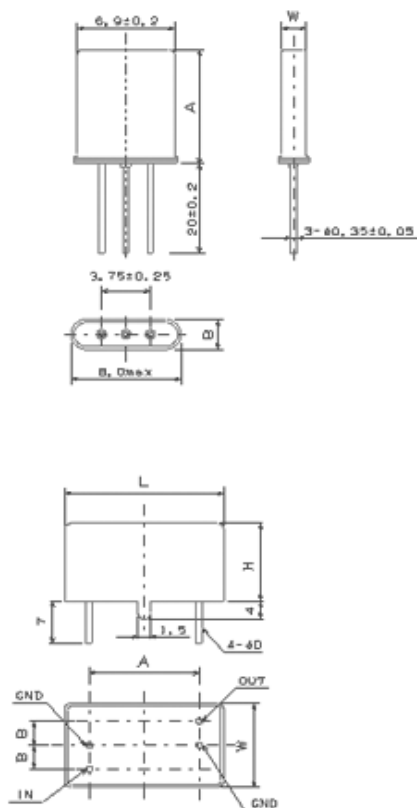
45MHz 3rd Overtone series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
45M7.5A	2	3	±3.75	10	±12.5	1.0	2.0	35	±900	2000//0.4	—	UM-ab
45M7.5B	4	3	±3.75	30	±12.5	1.0	4.0	75	±900	3000//0.3	-0.1	UM-ab
45M12A	2	3	±6	15	±22	1.0	2.0	35	±900	3000//0.1	—	UM-ab
45M12B	4	3	±6	30	±22	1.0	4.0	75	±900	3600//0.7	-1	UM-ab
45M15A	2	3	±7.5	15	±28	1.0	2.0	35	±900	4000//0.7	—	UM-ab
45M15B	4	3	±7.5	30	±28	1.0	4.0	75	±900	4000//0.8	-1	UM-ab
45M20A	2	3	±10	15	±35	1.0	2.0	35	±900	4000//0.1	—	UM-ab
45M20B	4	3	±10	30	±35	1.0	4.0	75	±900	4000//0.7	-1.2	UM-ab

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A1-7のMJタイプも対応可能です。

Only the specification considered for correspondence to be possible is indicated. Please consult about things other than the above individually. what can be manufactured -- a design -- it sample-manufactures and mass-produces.
Even the MJ type of A1-7 is possible correspond.

Dimensions(Unit:mm)



Code	Case	A	B	W
UM-a	UM-1	8.0max	3.0±0.2	2.2±0.2
UM-b	UM-1S	8.0max	2.5±0.2	1.8±0.2
UM-c	UM-5	6.0max	3.0±0.2	2.2±0.2
UM-d	UM-5S	6.0max	2.5±0.2	1.8±0.2
UM-e	UM-4	4.5max	3.0±0.2	2.2±0.2
UM-f	UM-4S	4.5max	2.5±0.2	1.8±0.2

Code	L	W	H	A	B	D
SC-1	11.0	8.5	11.5	7.4	2.0	0.30



M ONOLITHIC CRYSTAL FILTER Thru Hole Type

70MHz 3rd Overtone series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
70M7.5A	2	3	±3.75	10	±12.5	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0	—	UM-a~f
70M7.5B	4	3	±3.75	30	±12.5	1.0	4.0	70 75	+500~-+1000 -200~-1000	1800//0	0.5	UM-a~f
70M12A	2	3	±6	15	±25	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0.4	—	UM-a~f
70M12B	4	3	±6	30	±25	1.0	3.0	70 75	+500~-+1000 -200~-1000	2000//0.2	0	UM-a~f
70M15A	2	3	±7.5	15	±30	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0.9	—	UM-a~f
70M15B	4	3	±7.5	25	±25	1.0	3.0	70 75	+500~-+1000 -200~-1000	2000//0.4	-0.5	UM-a~f
70M20A	2	3	±10	15	±40	1.0	2.0	35 35	+500~-+1000 -200~-1000	2500//1	—	UM-a~f
70M20B	4	3	±10	35	±40	1.0	3.0	70 75	+500~-+1000 -200~-1000	2500//0.8	-1.0	UM-a~f
70M30A	2	3	±15	15	±60	1.0	2.0	35 35	+500~-+1000 -200~-1000	4000//0.7	—	UM-a~f
70M30B	4	3	±15	30	±60	1.0	3.0	70 75	+500~-+1000 -200~-1000	4000//0.8	-1.1	UM-a~f

90MHz 3rd Overtone series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
90M7.5A	2	3	±3.75	10	±12.5	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0.3	—	UM-a~f
90M7.5B	4	3	±3.75	30	±12.5	1.0	4.0	70 75	+500~-+1000 -200~-1000	1200//0.1	0.7	UM-a~f
90M12A	2	3	±6	15	±25	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0	—	UM-a~f
90M12B	4	3	±6	30	±25	1.0	3.0	70 75	+500~-+1000 -200~-1000	1800//0.3	-0.2	UM-a~f
90M15A	2	3	±7.5	15	±30	1.0	2.0	35 35	+500~-+1000 -200~-1000	2000//0.1	—	UM-a~f
90M15B	4	3	±7.5	25	±25	1.0	3.0	70 75	+500~-+1000 -200~-1000	2000//0.5	-0.5	UM-a~f
90M20A	2	3	±10	15	±40	1.0	2.0	35 35	+500~-+1000 -200~-1000	2500//0.4	—	UM-a~f
90M20B	4	3	±10	35	±40	1.0	3.0	70 75	+500~-+1000 -200~-1000	2500//0.6	-0.8	UM-a~f
90M30A	2	3	±15	15	±60	1.0	2.0	35 35	+500~-+1000 -200~-1000	4000//0.7	—	UM-a~f
90M30B	4	3	±15	30	±60	1.0	3.0	70 75	+500~-+1000 -200~-1000	4000//0.7	-1.3	UM-a~f

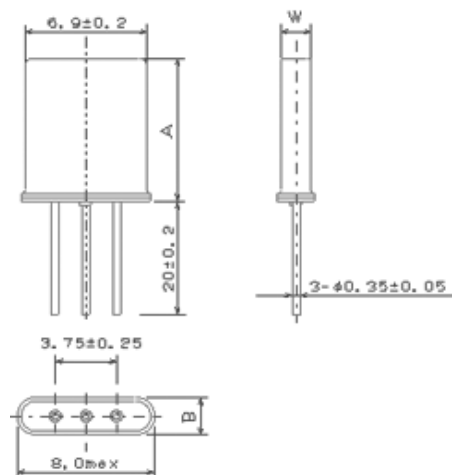
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A1-7のMJタイプも対応可能です。

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Even the MJ type of A1-7 is possible correspond.



***M** ONOLITHIC CRYSTAL FILTER Thru Hole Type*

Dimensions(Unit:mm)



Code	Case	A	B	W
UM-a	UM-1	8.0max	3.0±0.2	2.2±0.2
UM-b	UM-1S	8.0max	2.5±0.2	1.8±0.2
UM-c	UM-5	6.0max	3.0±0.2	2.2±0.2
UM-d	UM-5S	6.0max	2.5±0.2	1.8±0.2
UM-e	UM-4	4.5max	3.0±0.2	2.2±0.2
UM-f	UM-4S	4.5max	2.5±0.2	1.8±0.2



*M*ONOLITHIC CRYSTAL FILTER Thru Hole Type

High frequency series

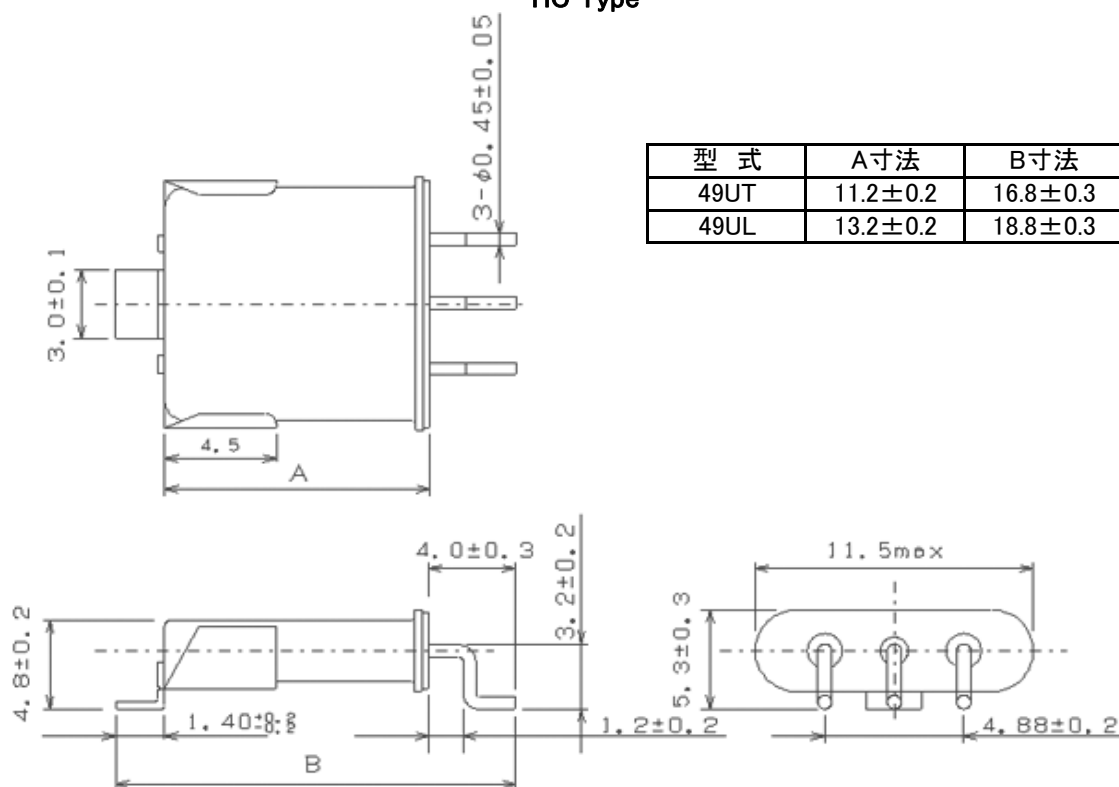
Center Frequency Range	中心周波数範囲	100MHz ~ 150MHz
Pole	次数	2pole and 4pole
Mode of Oscillation	振動モード	3rd
Pass Bandwidth	通過帯域幅	±3.75kHz ~ ±7.50kHz min at 3dB
Stop Bandwidth	減衰帯域幅	±12.5kHz ~ ±25.0kHz max at 30dB
Insertion Loss	挿入損失	3.0dB max
Ripple	リップル	1.0dB max
Guaranteed Attenuation	保証減退量	35 or 75dB min at F0-1000kHz ~ -200kHz 35 or 70dB min at F0+500kHz ~ 1000kHz
Terminating Impedance	終端インピーダンス	TBD
Operating Temp. Range	動作温度範囲	-20°C ~ +70°C

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パッケージはUMタイプとなります。

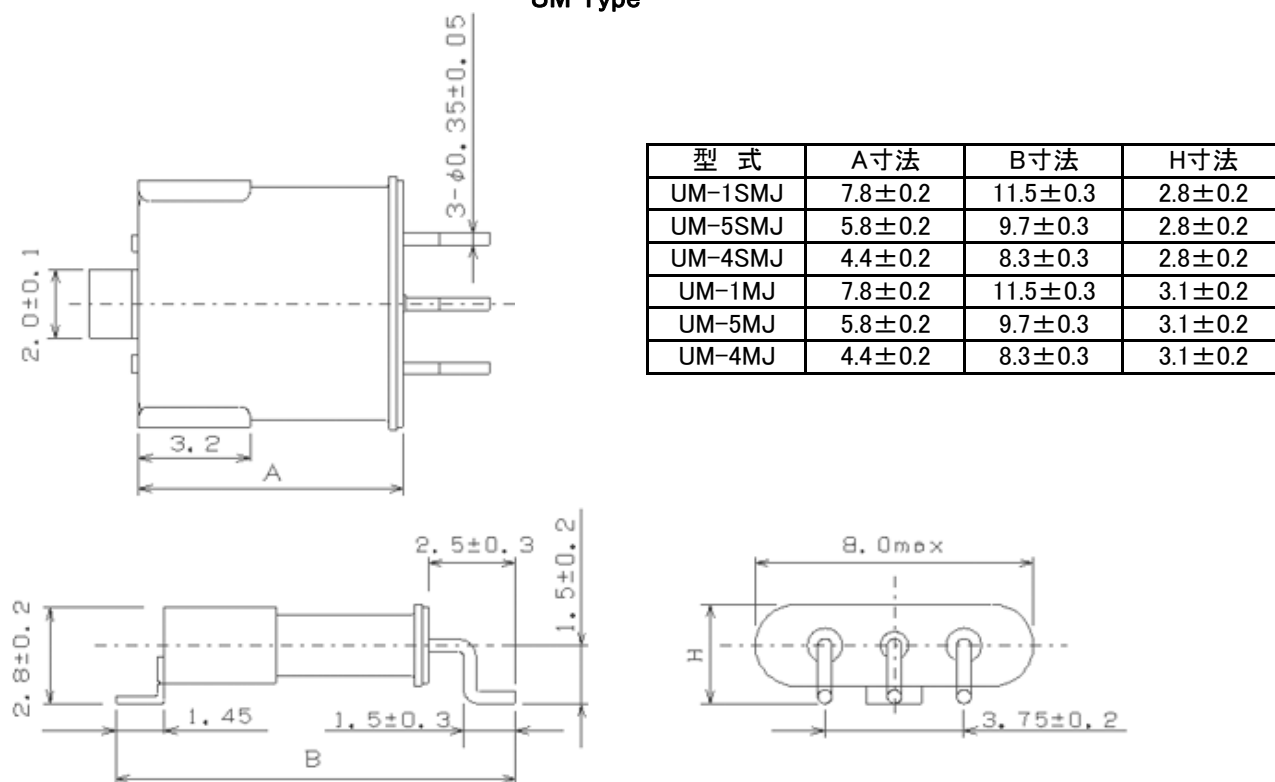
Only the specification considered for correspondence to be possible is indicated. Please consult about things other than the above individually. what can be manufactured -- a design -- it sample-manufactures and mass-produces.
A/the package becomes an UM type.

Dimensions(Unit:mm)

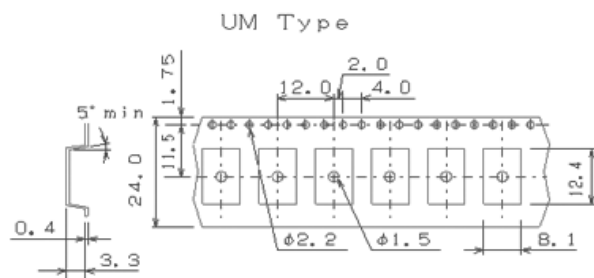
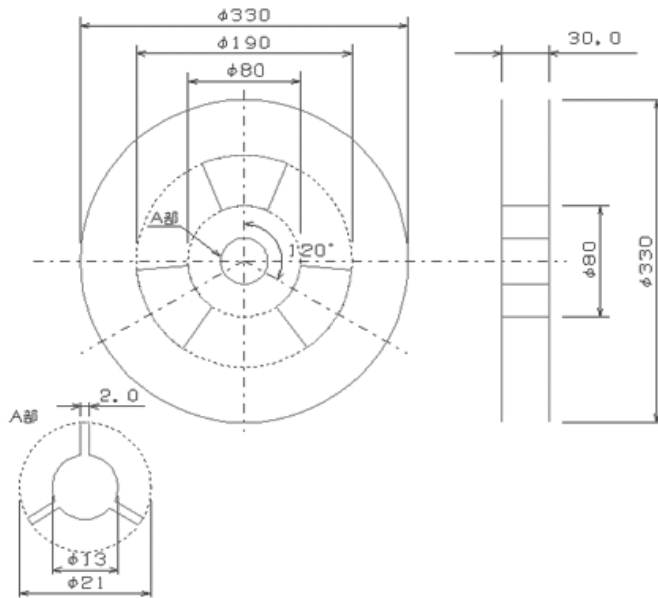
HC Type



UM Type



Dimensions(Unit:mm)



21.4MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
21S7.5A	2	3	±3.75	20	±18	1.0	2.0	70	-910	850//6	—	7050M
21S15A	2	3	±7.0	18	±25	1.0	2.0	70	-910	1500//1.5	—	7050M
21S20A	2	3	±10	10	±30	1.0	2.0	70	-910	1800//1	—	7050M
21S30A	2	3	±15	15	±45	1.0	2.0	70	-910	2000//1.5	—	7050M

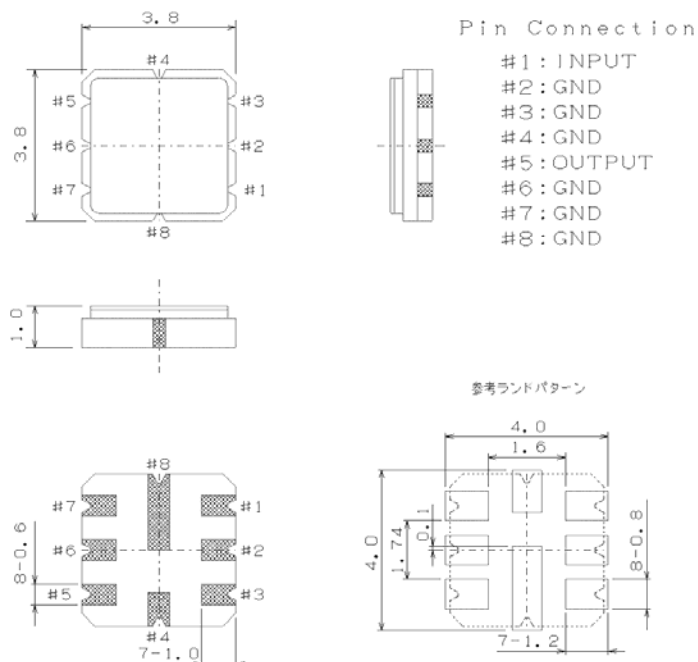
21.7MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
21.7S7.5A	2	3	±3.75	15	±12.5	1.0	2.0	70	-910	1200//5	—	7050M
21.7S15A	2	3	±7.5	15	±25	1.0	2.0	70	-910	1500//1	—	7050M

45MHz FUND series

Model 品名	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
		(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
45S7.5A	2	3	±3.75	20	±25	1.0	2.0	70	-910	650//3.5	—	7050M, 6035M
45S7.5A2	2	3	±3.5	10	±12.5	1.0	5.0	70	-910	510//5.5	—	3838M
45S12A	2	3	±6	15	±20	1.0	2.0	70	-910	650//5	—	7050M, 6035M
45S15A	2	3	±7.5	15	±25	1.0	2.0	70	-910	650//3.5	—	7050M, 6035M
45S30A	2	3	±15	15	±60	1.0	2.0	70	-910	1200//3	—	7050M, 6035M

Code 3838M

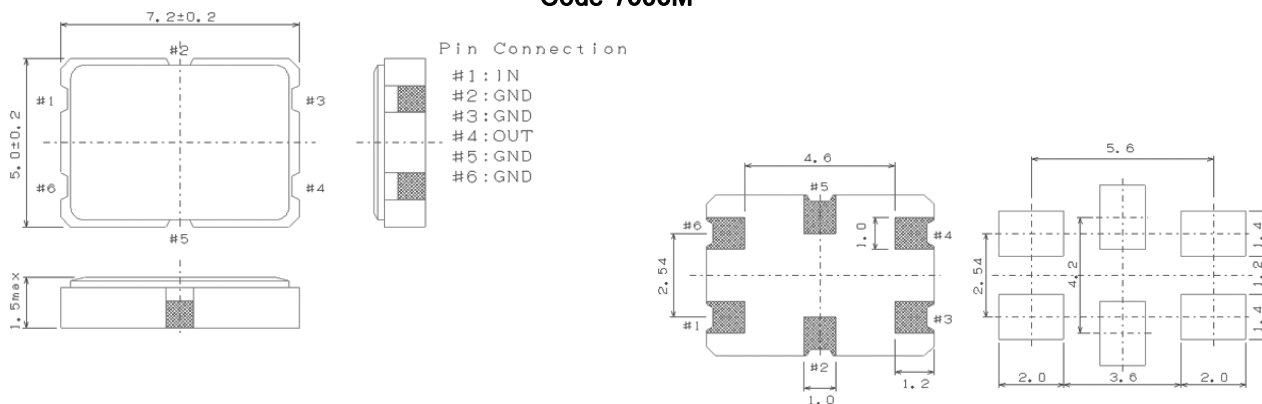


Others

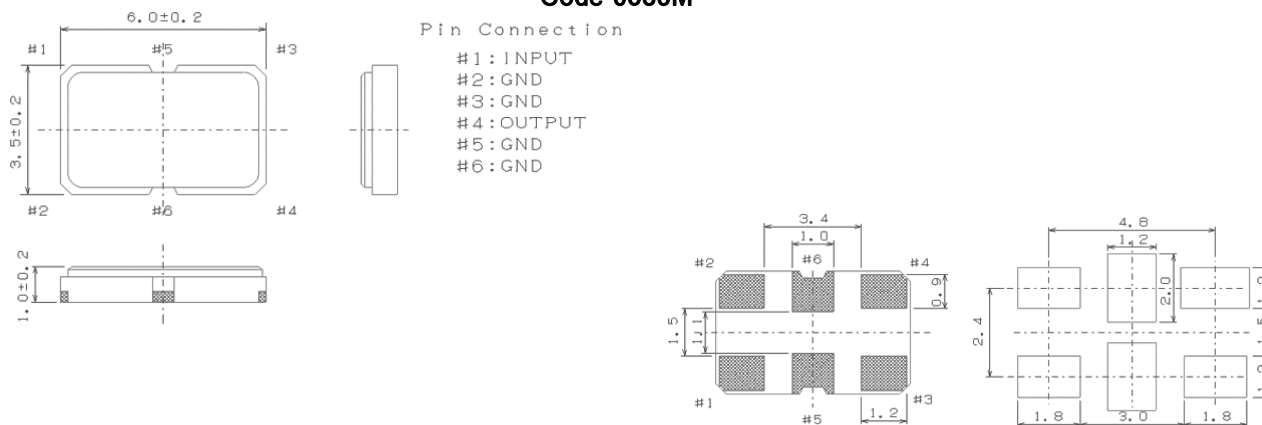
Model 品名	Frequency 周波数 (MHz)	Mode 通倍数	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)	(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
29S20A	29.000	FUND	2	3	±10	10	±25	1.0	2.0	70	-910	1800//1.5	—	7050M
49S20A	49.000	FUND	2	3	±10	15	±40	1.0	2.5	70	-910	1100//0	—	7050M
77S15A	77.550	3rd	2	3	±7.5	18	±28	1.0	3.0	50	-910	1500//−1	—	7050M
100S20A	100.000	3rd	2	3	±10	10	±25	1.0	2.0	70	-1600	1500//−1.5	—	7050M
106S14A	105.000	3rd	2	3	±7	20	±20	1.0	6.0	40	-4000	950//−1.4	—	7050M
109S24A	109.650	3rd	2	3	±7.5	18	±28	1.0	3.0	50	-910	1500//−1	—	7050M
109S20A	109.650	3rd	2	3	±15	22	±60	0.5	2.5	65	-910	2000//−1.3	—	7050M
109S20A2	109.650	3rd	2	3	±15	22	±60	0.5	2.5	65	-910	2000//−0.6	—	3838M
128S30A	128.550	3rd	2	3	±16	20	±58	1.3	2.5	25 40	+300~+1000 −915~−1000	950//−1.6	—	7050M
130S28A	130.000	3rd	2	3	±14	15	±50	1.0	3.5	65	-910	740//−1.2	—	6035M
24.3S20A	24.349	3rd	2	3	±10	10	±25	1.0	2.0	70	-910	1350//1.5	—	7050M
24.5S20A	24.555	3rd	2	3	±10	10	±25	1.0	2.0	70	-910	1350//1.5	—	7050M
25S20A	25.000	3rd	2	3	±10	10	±25	1.0	2.0	70	-910	1350//1.5	—	7050M
25.6S20A	25.655	3rd	2	3	±10	10	±25	1.0	2.0	70	-910	1350//1.5	—	7050M
32.7S8A	32.768	3rd	2	3	±4	40	±60	1.0	2.0	60	-910	650//4.5	—	7050M
38.4S8A	38.400	3rd	2	3	±4	40	±60	1.0	2.0	65	-910	650//4.5	—	7050M

Dimensions(Unit:mm)

Code 7050M

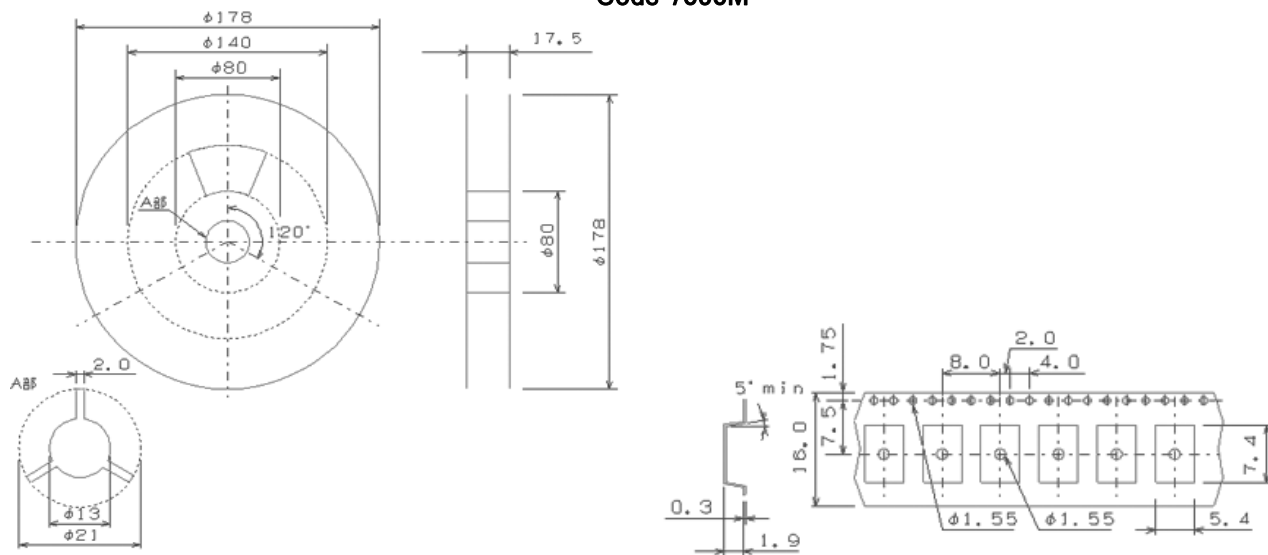


Code 6035M

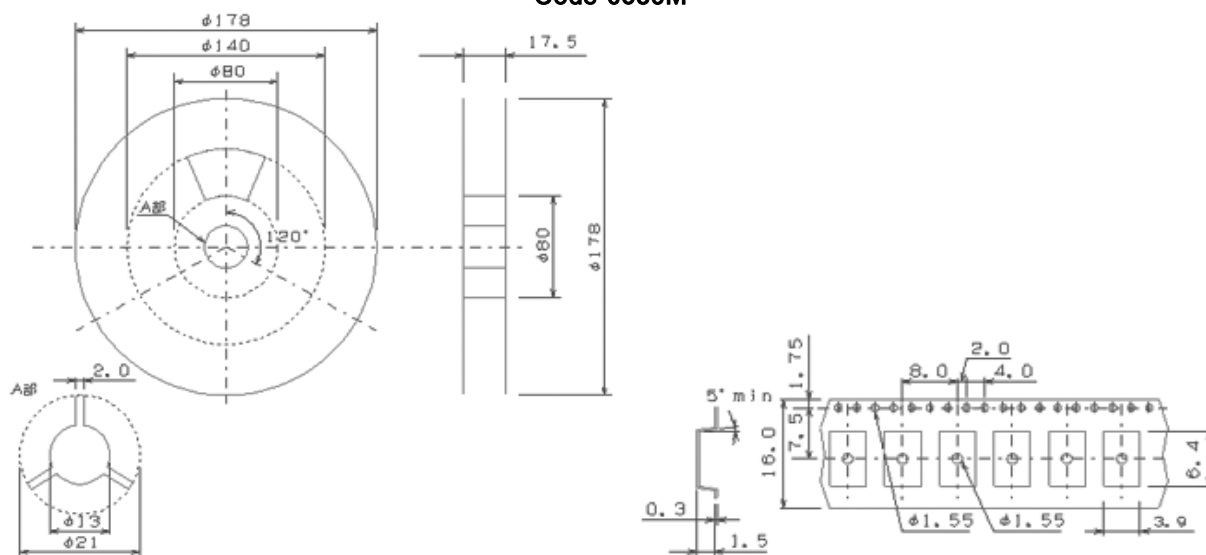


Dimensions(Unit:mm)

Code 7050M



Code 6035M

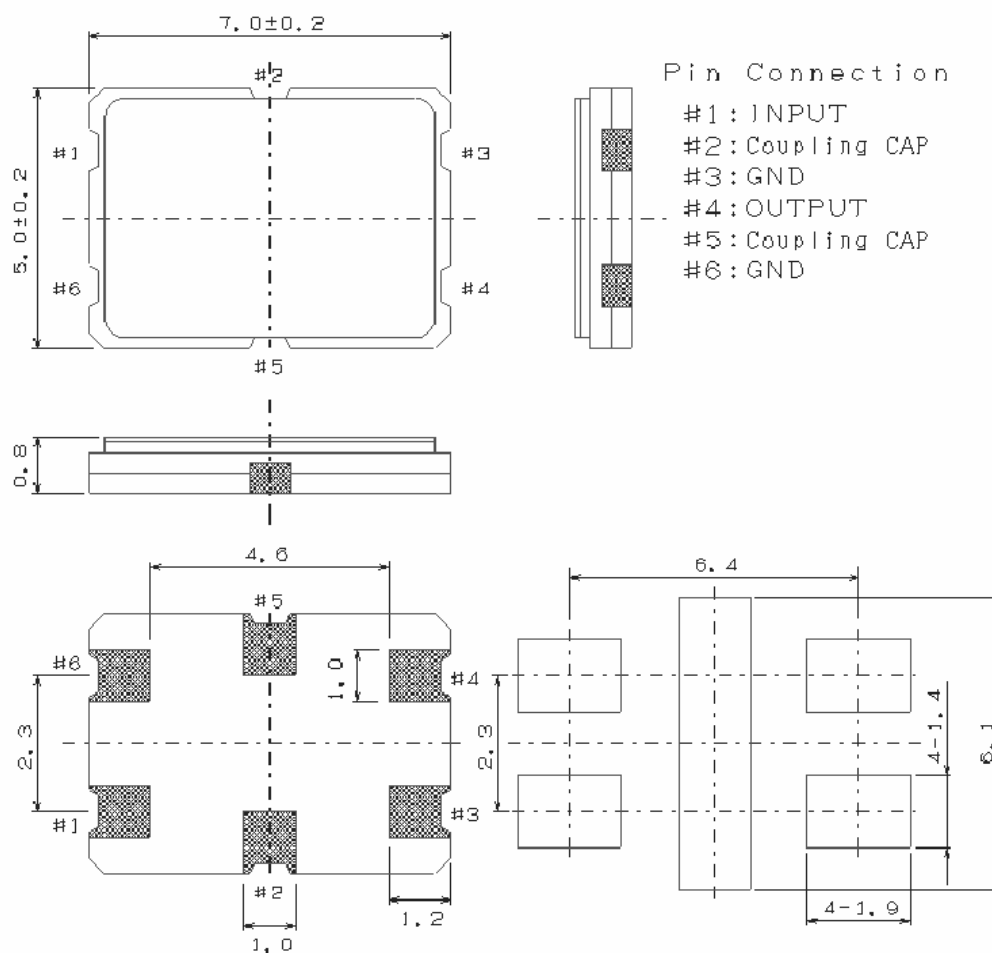


Others

Model 品名	Frequency 周波数 (MHz)	Mode 通波数	Pole 次数	Pass Bandwidth 通過帯域幅		Stop Bandwidth 減衰帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)	(dB)	(kHz)	(dB)	(dB)	(dB)	($\pm$ kHz)	Zt(Ω)	Zc(pF)	
45SS7.5B	45.000	FUND	4	3	± 3.75	30	± 12.5	1.0	4.0	80	-910	350//6.5	18.0	7050M4
45SS15B	45.000	FUND	4	3	± 7.5	35	± 25	1.0	3.0	80	-910	650//3.0	9.0	7050M4
45SS20B	45.000	FUND	4	3	± 10.0	25	± 25	1.0	3.0	80	-910	500//2.5	9.0	7050M4
45SS30B	45.000	FUND	4	3	± 15.0	30	± 50	1.0	3.0	80	-910	1200//0.7	3.5	7050M4
73.35SS13B	73.350	3rd	4	3	± 6.5	30	± 20	1.0	4.0	70	-910	1700//0.6	-1.3	7050M4

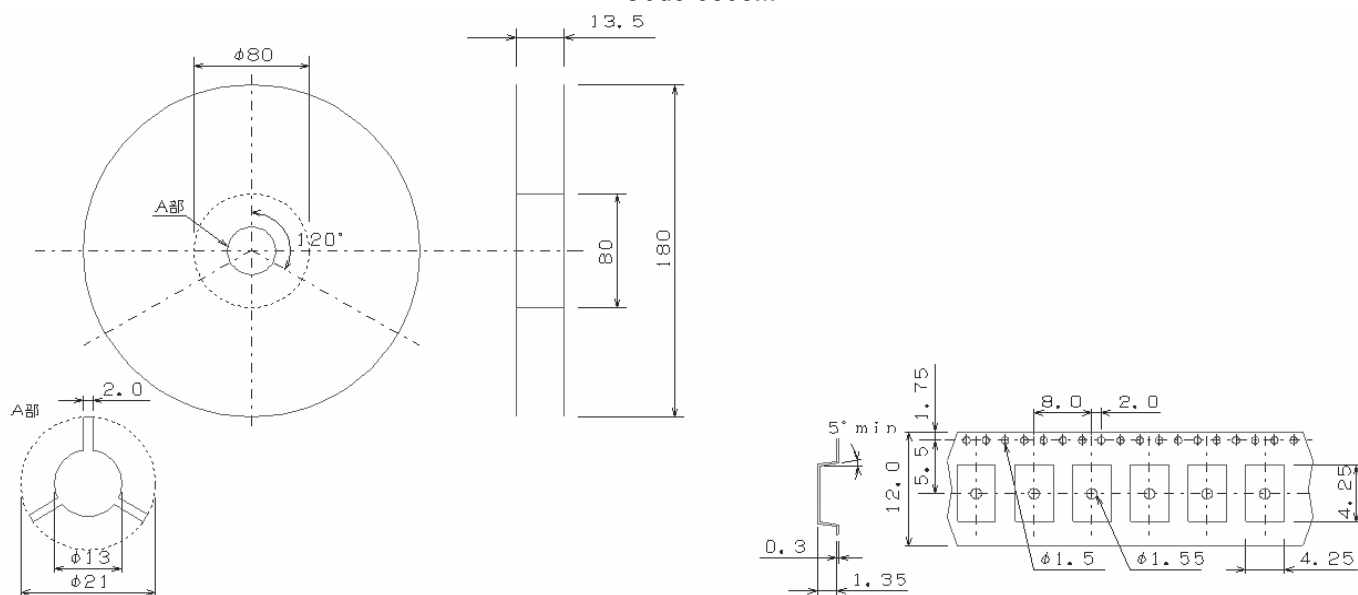
Dimensions(Unit:mm)

Code 7050M4

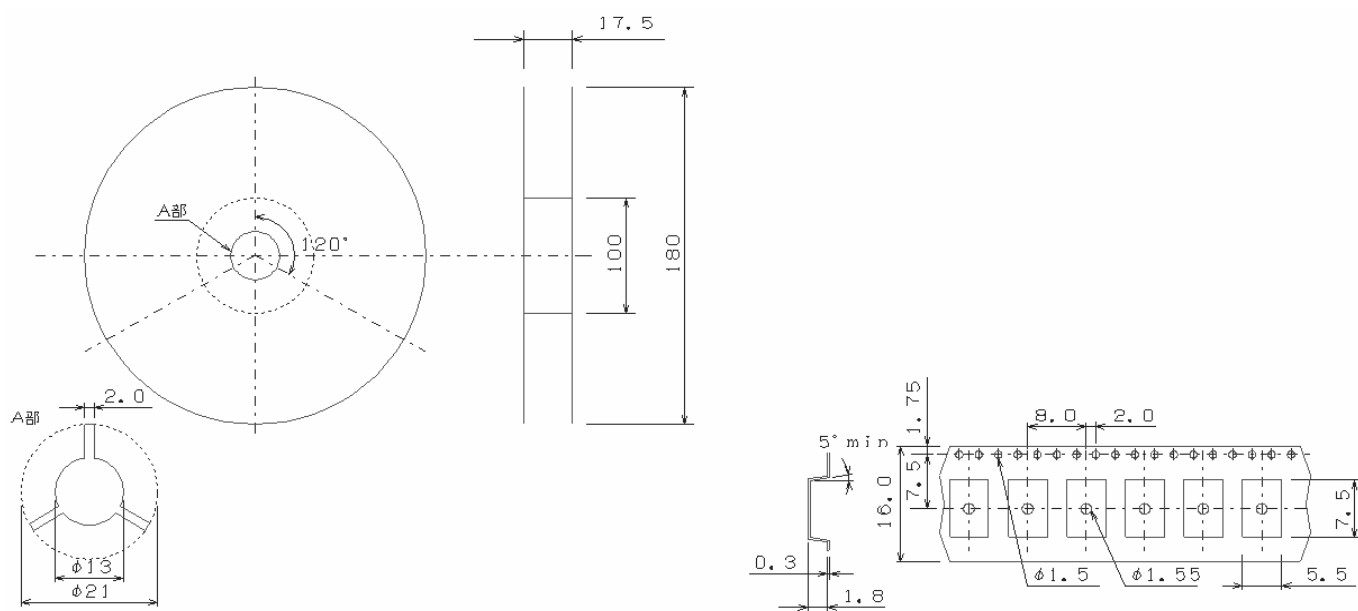


Dimensions(Unit:mm)

Code 3838M



Code 7050M4





C RYSTAL FILTER Low Frequency Type

450KHz series

Model 品名	Frequency 周波数 (KHz)	Mode	Pole 次数	Pass Bandwidth 通過帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
455K250	455.0	CW	8	6	±0.125	2.0	6.0	60	0.25	2000//15	—	YC-2
455K250X	455.0	CW	8	6	±0.125	2.0	6.0	60	0.24	1500//30	—	YC-5
455K400	455.0	CW	8	6	±0.2	2.0	6.0	60	0.4	2000//15	—	YC-2
455K400X	455.0	CW	8	6	±0.2	2.0	6.0	60	0.4	1500//30	—	YC-5
456K400	455.7	CW	8	6	±0.2	2.0	6.0	60	0.4	2000//15	—	YC-2
454K500	454.2	CW	8	6	±0.25	2.0	7.0	60	0.55	2000	—	YC-1
455K500	455.0	CW	8	6	±0.25	2.0	6.0	60	0.5	2000//15	—	YC-2
455K500X	455.0	CW	8	6	±0.25	2.0	6.0	60	0.5	1500//30	—	YC-5
455K600	455.0	CW	8	6	±0.3	2.0	6.0	60	0.6	2000//15	—	YC-2
455K1800	455.0	SSB	8	6	±0.9	2.0	6.0	60	1.65	2000//15	—	YC-2
456K500	455.8	CW	8	6	±0.25	2.0	8.0	60	0.55	2000	—	YC-4
455K2100	455.0	SSB	8	6	±1.05	2.0	6.0	60	1.75	2000//15	—	YC-2
455K2400	455.0	SSB	8	6	±1.2	2.0	7.0	60	2	2000	—	YC-1
455K2400X	455.0	SSB	8	6	±1.2	2.0	6.0	60	2.1	1500//30	—	YC-5

7 – 8MHz series

Model 品名	Frequency 周波数 (KHz)	Mode	Pole 次数	Pass Bandwidth 通過帯域幅		Ripple リップル	Loss 挿入損失	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
7.8M2400	7.8000	SSB	8	6	±1.2	2.0	4.0	60	2	500	—	YC-3
8.8M250	8.8307	CW	8	6	±0.125	2.0	12.0	60	0.125	470//5	—	YC-1
8.8M400	8.8307	CW	8	6	±0.2	2.0	9.0	60	0.7	470//5	—	YC-1
8.8M400X	8.8300	CW	8	6	±0.2	2.0	9.0	60	0.7	470//5	—	YC-1
8.8M1800	8.8300	SSB	8	6	±0.9	2.0	4.0	60	1.7	470//5	—	YC-1
8.8M2100	8.8300	SSB	8	6	±1.05	2.0	4.0	60	1.9	470//5	—	YC-1
8.8M6000	8.8300	AM	8	6	±3	2.0	3.0	60	5.25	470//5	—	YC-1
8.9M250	8.9883	CW	8	6	±0.125	2.0	12.0	60	0.375	500	—	YC-3
8.9M250X	8.9875	SSB	8	6	±0.125	2.0	6.0	60	1.9	500	—	YC-3
8.9M500	8.9883	CW	8	6	±0.25	2.0	8.0	60	0.7	500	—	YC-3
8.9M1800	8.9875	SSB	8	6	±0.9	2.0	4.0	60	1.7	500	—	YC-3
8.9M2100	8.9875	SSB	8	6	±1.05	2.0	4.0	60	2	500	—	YC-3
8.9M2400	8.9875	AM	8	6	±1.2	2.0	4.0	60	6	500	—	YC-3

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C RYSTAL FILTER Low Frequency Type

9MHz series

Model 品名	Frequency 周波数 (KHz)	Mode	Pole 次数	Pass Bandwidth 通過帯域幅		Ripple リップル (dB)	Loss 挿入損失 (dB)	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
9M250	8.9993	CW	8	6	±0.125	2.0	12.0	60	0.375	500	—	YC-3
9M400	9.0025	CW	8	6	±0.2	2.0	9.0	60	0.7	800	—	YC-3
9M400X	9.0106	CW	8	6	±0.2	2.0	9.0	60	0.65	1000//5	—	YC-3
9M400Y	9.0115	CW	8	6	±0.2	2.0	9.0	60	0.65	1000//5	—	YC-3
9M500	8.9993	CW	8	6	±0.25	2.0	8.0	60	0.7	500	—	YC-3
9M600	9.0000	CW	8	6	±0.3	2.0	8.0	60	0.7	500	—	YC-3
9M180	9.0000	SSB	8	6	±0.9	2.0	4.0	60	1.7	500	—	YC-3
9M2100	9.0115	SSB	8	6	±1.05	2.0	4.0	60	1.75	1000//5	—	YC-3
9M2200	9.0000	SSB	8	6	±1.05	2.0	4.0	60	1.9	500	—	YC-3
9M2400	9.0000	SSB	8	6	±1.1	2.0	4.0	60	2	500	—	YC-3
9M2400X	9.0000	SSB	8	6	±1.2	2.0	3.5	60	2.15	500//30	—	YC-4
9M30000	9.0000	SSB	8	6	±1.2	2.0	4.0	60	2	500	—	YC-3
9M4800	9.0000	FM	8	6	±15	2.0	6.0	60	30	500	—	YC-3
9M4800	9.0000	AM	8	3	±2.4	2.0	3.5	60	4.5	500//30	—	YC-4
9M6000	9.0000	AM	8	6	±3	2.0	4.0	60	5.25	500	—	YC-3
9M6000X	9.0000	AM	8	6	±3	2.0	4.0	60	6	500	—	
9M12000	9.0000	FM	8	6	±6	2.0	3.5	60	10.8	1200//30	—	YC-4
9M15000	9.0000	FM	8	6	±7.5	2.0	4.0	60	15	500	—	YC-3

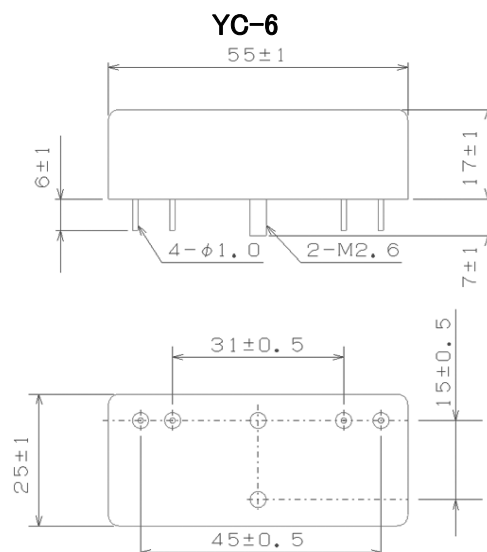
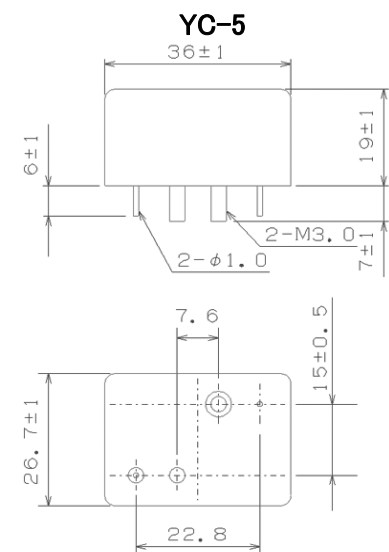
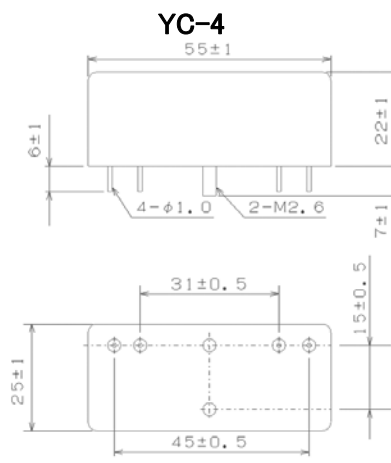
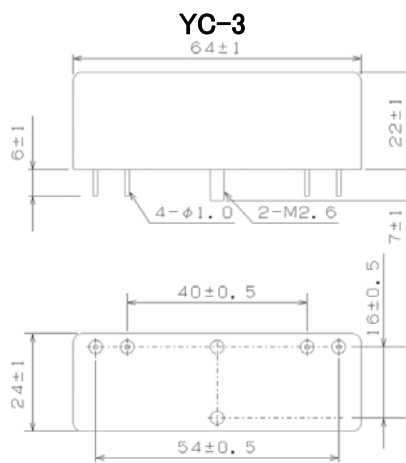
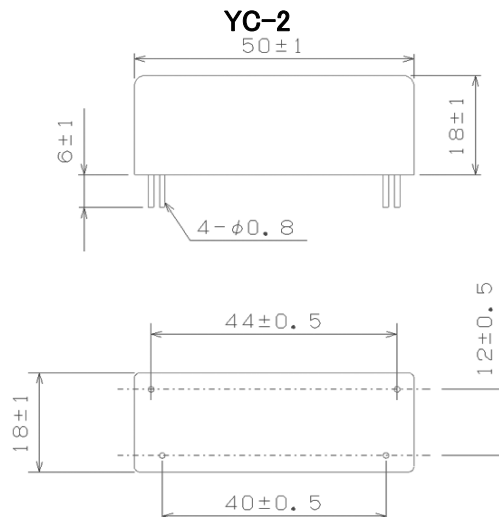
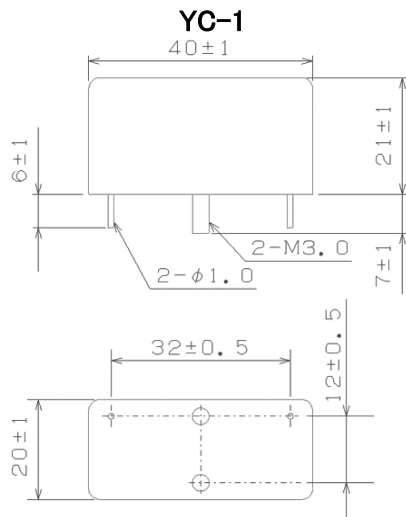
10 - 20MHz series

Model 品名	Frequency 周波数 (KHz)	Mode	Pole 次数	Pass Bandwidth 通過帯域幅		Ripple リップル (dB)	Loss 挿入損失 (dB)	Ultimate Attenuation 保証減衰量		Terminating Impedance 終端インピーダンス		Case Code ケースコード
				(dB)	(kHz)			(dB)	(f0±kHz)	Zt(//pF)	Zc(pF)	
10.7M400	10.7500	CW	8	6	±0.2	2.0	10.0	60	0.7	500//18	—	YC-1
10.7M600	10.7000	CW	8	6	±0.3	2.0	7.0	60	0.95	500	—	YC-3
10.7M600X	10.7000	CW	8	3	±0.3	2.0	9.0	60	0.75	500	—	YC-3
10.7M2100	10.7500	CW	8	6	±1.05	2.0	4.0	60	1.7	500//18	—	YC-1
10.7M2100X	10.7600	SSB	8	6	±1.05	2.0	5.0	60	1.9	500	—	YC-3
10.7M2200	10.6985	SSB	8	6	±1.1	2.0	4.0	60	2	500	—	YC-3
10.7M2200X	10.7015	SSB	8	6	±1.1	2.0	4.0	60	2	500	—	YC-3
10.7M2200Y	10.7000	SSB	8	6	±1.1	2.0	4.0	60	2	500	—	YC-3
10.7M2400	10.7600	SSB	8	6	±1.2	2.0	4.0	60	2	500	—	YC-3
10.7M2400X	10.7000	SSB	8	6	±1.2	2.0	4.0	60	2	500	—	YC-3
10.7M15000	10.7000	FM	8	6	±7.5	2.0	4.0	60	15	500	—	YC-3
10.7M30000	10.7000	FM	8	6	±15	2.0	6.0	60	30	500	—	YC-3
20M9000	20.0000	FM	8	3	±4.5	2.0	3.0	60	20	500	—	YC-4

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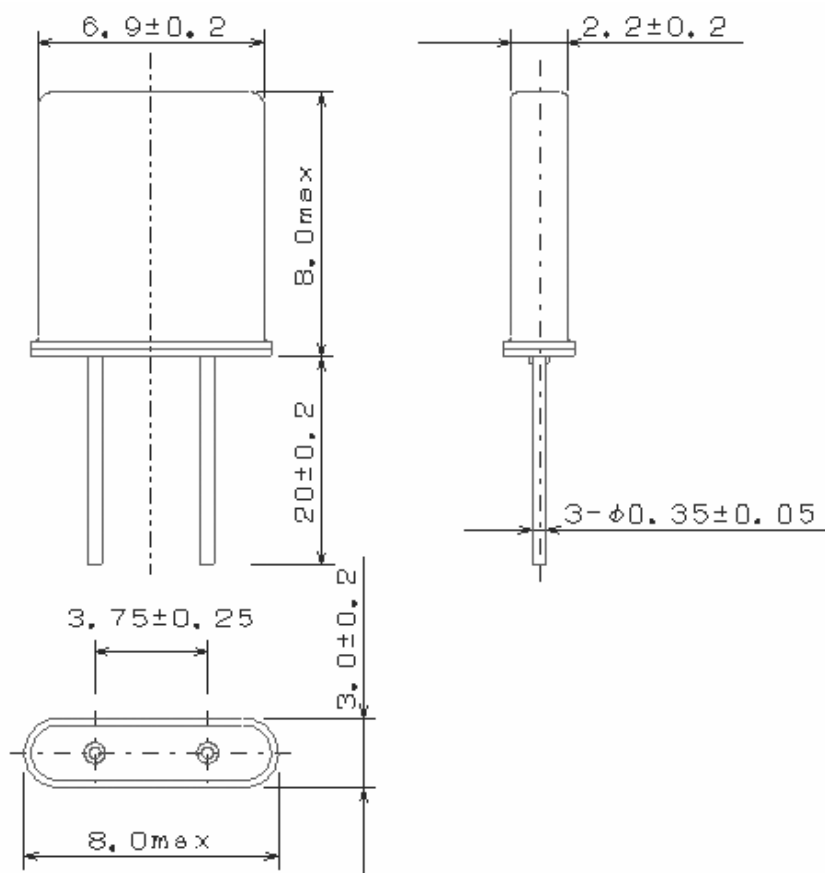
Dimensions(Unit:mm)



900KHz - 1.1MHz series

Frequency Range	周波数範囲	900KHz～1.0MHz	1.0MHz～1.1MHz
Crystal Cut	カット	SL	
Mode of Oscillation	振動モード	Fundamental	
Frequency Tolerance (at25°C)	周波数偏差	50ppm	100ppm
Frequency Stability	周波数温度特性	100ppm (−10 to +60°C)	
Load Capacitance	負荷容量	30pF Standard	
Equivalent Series Resistance (E.S.R)	等価容量	3000 Ω	4000 Ω
Drive Level	励振レベル	500 μW	
Case Type	ケース	UM-1	

Dimensions(Unit:mm)



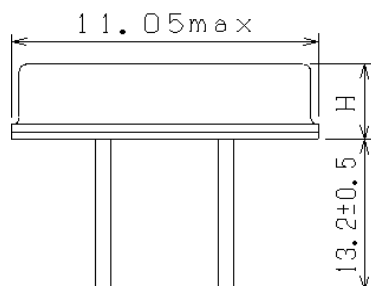
3.5MHz - 40MHz series

Frequency Range	周波数範囲	3.5MHz ~ 27MHz	25MHz ~ 40MHz
Crystal Cut	カット	AT	
Mode of Oscillation	振動モード	Fundamental	3rd overtone
Frequency Tolerance (at25°C)	周波数偏差	15ppm	
Frequency Stability	周波数温度特性	30ppm (0 to +70°C)	
Load Capacitance	負荷容量	30pF Standard	
Shunt Capacitance (CO)	並列容量	5pF max	
Drive Level	励振レベル	100 μ W	
Case Type	ケース	HC-49S / (2H) , (3.5H)	

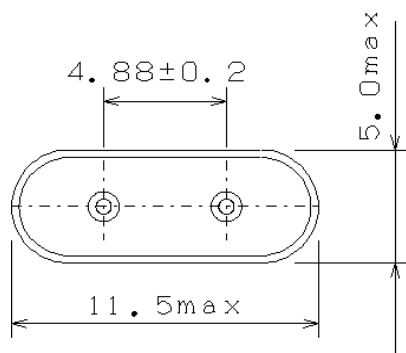
Standard Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	E .S.R (Ω)	Frequency (MHz)	E .S.R (Ω)	Frequency (MHz)	E .S.R (Ω)
3.686400	180	8.000000	70	15.000000	50
4.000000	150	10.000000	50	16.000000	50
4.194304	130	10.240000	50	18.000000	50
4.433619	120	11.059200	50	20.000000	50
4.500000	120	12.000000	50	25.000000	50
4.915200	120	12.288000	50	32.000000	50
5.000000	120	14.000000	50	48.000000	60
6.000000	80	14.318180	50	56.488000	60
7.372800	75	14.745600	50	60.000000	60

Dimensions(Unit:mm)



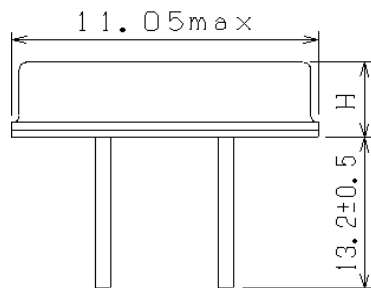
Code	H
HC-49/US(2H)	2.0±0.15
HC-49/US(3.5H)	3.5±0.15



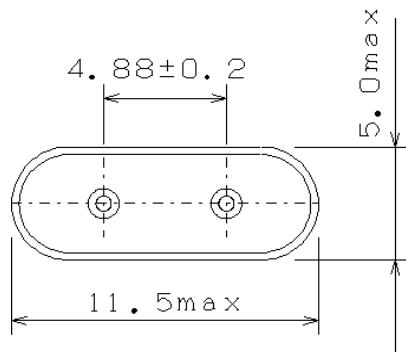
27MHz – 60MHz series

Frequency Range	周波数範囲	27MHz ~ 40MHz
Crystal Cut	カット	BT
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	15ppm
Frequency Stability	周波数温度特性	50ppm (0 to +70°C)
Load Capacitance	負荷容量	30pF Standard
Shunt Capacitance (CO)	並列容量	7pF max
Equivalent Series Resistance (E.S.R)	等価直列抵抗	30Ω max
Drive Level	励振レベル	100μW
Case Type	ケース	HC-49S / (2H) , (3.5H)

Dimensions(Unit:mm)



Code	H
HC-49/US(2H)	2.0±0.15
HC-49/US(3.5H)	3.5±0.15



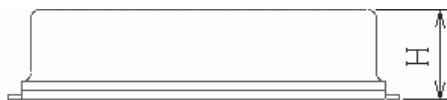
3.5MHz - 40MHz series

Frequency Range	周波数範囲	3.5MHz ~ 27MHz	25MHz ~ 40MHz
Crystal Cut	カット	AT	
Mode of Oscillation	振動モード	Fundamental	3rd overtone
Frequency Tolerance (at25°C)	周波数偏差	15ppm	
Frequency Stability	周波数温度特性	30ppm (0 to +70°C)	
Load Capacitance	負荷容量	30pF Standard	
Shunt Capacitance (CO)	並列容量	5pF max	
Drive Level	励振レベル	100 μ W	
Case Type	ケース	HC-49S / (2H) , (3.5H)	

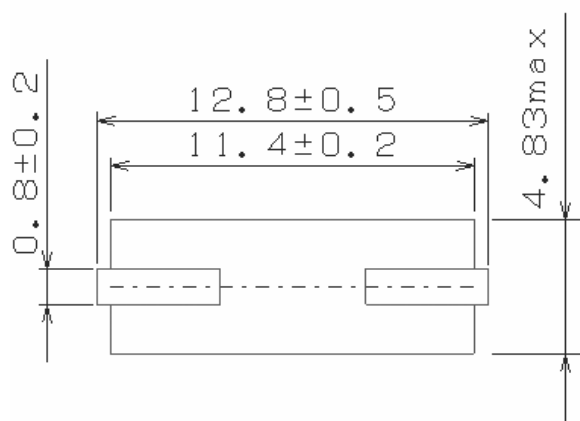
Standard Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	E .S.R (Ω)	Frequency (MHz)	E .S.R (Ω)	Frequency (MHz)	E .S.R (Ω)
3.686400	180	8.000000	70	15.000000	50
4.000000	150	10.000000	50	16.000000	50
4.194304	130	10.240000	50	18.000000	50
4.433619	120	11.059200	50	20.000000	50
4.500000	120	12.000000	50	25.000000	50
4.915200	120	12.288000	50	32.000000	50
5.000000	120	14.000000	50	48.000000	60
6.000000	80	14.318180	50	56.488000	60
7.372800	75	14.745600	50	60.000000	60

Dimensions(Unit:mm)



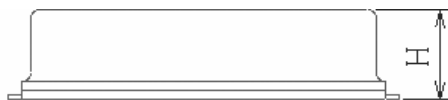
Code	H
2.5HSM	2.5±0.15
4HSM	4.0±0.15



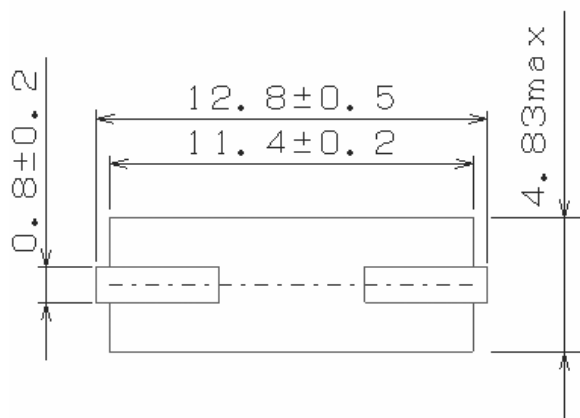
27MHz - 40MHz series

Frequency Range	周波数範囲	27MHz ~ 40MHz
Crystal Cut	カット	BT
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	15ppm
Frequency Stability	周波数温度特性	50ppm (0 to +70°C)
Load Capacitance	負荷容量	30pF Standard
Shunt Capacitance (CO)	並列容量	7pF max
Equivalent Series Resistance (E.S.R)	等価直列抵抗	30Ω max
Drive Level	励振レベル	100μW
Case Type	ケース	HC-49S / (2.5HSM) , (4HSM)

Dimensions(Unit:mm)



Code	H
2.5HSM	2.5±0.15
4HSM	4.0±0.15



Technical drawing of a mechanical part. The main view shows a rectangular plate with a width of 24.0 and a height of 11.5. It features a series of six circular holes with a diameter of $\phi 1.5$ and a center-to-center distance of 2.0. The holes are positioned 1.75 from the top edge and 1.5 from the bottom edge. The plate has a total length of 8.1. A detail view on the left shows a corner with a 5° fillet and a minimum radius of 0.4. The detail view also shows a 4.3 dimension for the corner radius.

3.5MHz – 20MHz series

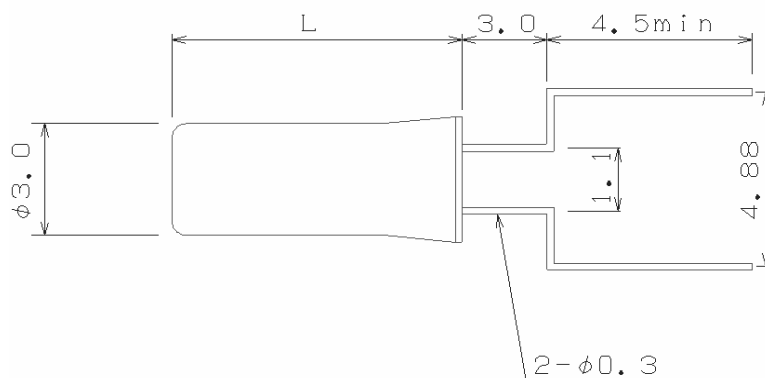
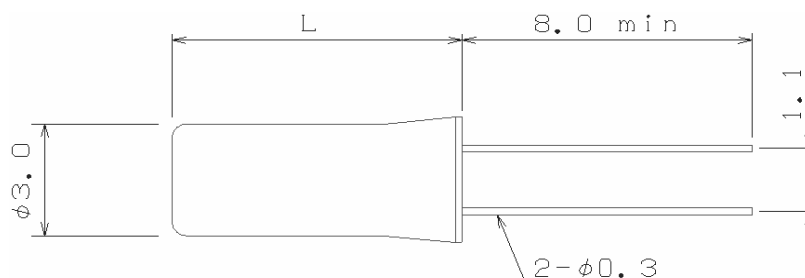
Frequency Range	周波数範囲	3.5MHz ~ 20MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	30ppm
Frequency Stability	周波数温度特性	50ppm (−20 to +70°C)
Load Capacitance	負荷容量	30pF Standard
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	500 μW
Case Type	ケース	3 × 9mm , LF

L

Standard Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	E .S.R (KΩ)	L
3.5 – 3.9	200	10
4.0 – 4.9	150	9
5.0 – 5.9	120	9
6.0 – 6.9	100	9
7.0 – 9.5	80	9
9.6 – 14.9	60	8
15.0 – 18.9	50	8
19.0 – 20.0	40	8

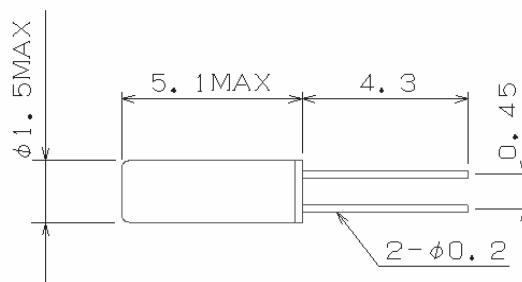
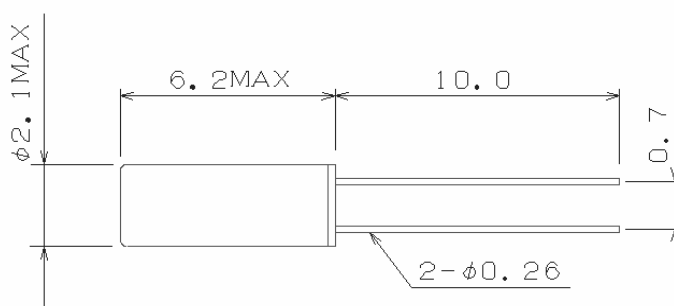
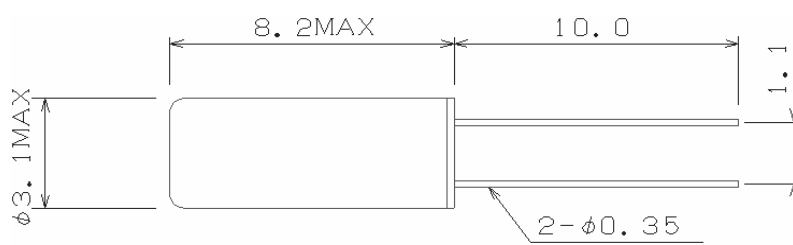
Dimensions(Unit:mm)



32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm (−10 to +60°C)
Load Capacitance	負荷容量	12.5pF,8pF Standard
Shunt Capacitance (CO)	並列容量	1.6pF,1.35pF,1.0pF Typ
Equivalent Series Resistance (E .S.R)	等価直列抵抗	35KΩ,40KΩ max
Drive Level	励振レベル	100μW max
Case Type	ケース	3×8,2×6,1.5×5mm

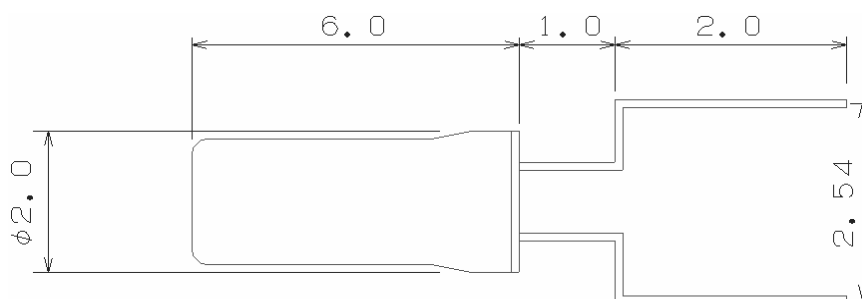
Dimensions(Unit:mm)



32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm (-10 to +60°C)
Load Capacitance	負荷容量	12.5pF Standard
Shunt Capacitance (CO)	並列容量	1.35pF Typ
Equivalent Series Resistance (E .S.R)	等価直列抵抗	35KΩ max
Drive Level	励振レベル	100 μ W max
Case Type	ケース	2 × 6 LF

Dimensions(Unit:mm)



4MHz - 200MHz series

Frequency Range	周波数範囲	4MHz ~ 200MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental, 3rd, 5th
Frequency Tolerance (at25°C)	周波数偏差	±2.5 ~ ±50ppm
Load Capacitance	負荷容量	Please Specify
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	10 ~ 2000 μW
Aging	エージング	±1 ~ ±5ppm / year
Storage Temperature Range	動作温度範囲	-40 ~ +85°C
Case Type	ケース	HC-49UL, HC49UT

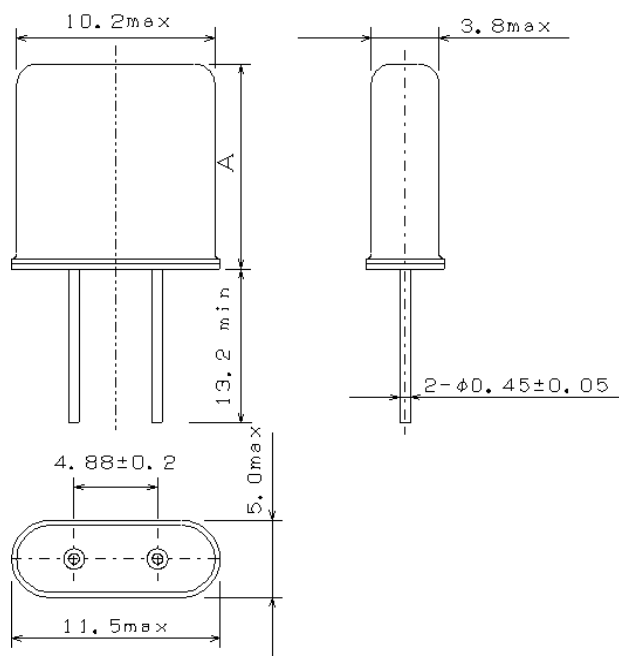
Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E.S.R (Ω)
4 ~ 8	Fundamental	50
8 ~ 40	Fundamental	40
20 ~ 120	3rd OT	60
80 ~ 200	5th OT	80

Frequency Stability

Operating Temp. Rang	Stability	
	0 ~ 50°C	±2.5ppm MIN
	-5 ~ 55°C	±5.0ppm MIN
	-10 ~ 60°C	±5.0ppm MIN
	-15 ~ 65°C	±7.0ppm MIN
	-20 ~ 70°C	±7.5ppm MIN
	-25 ~ 75°C	±10.0ppm MIN
	-30 ~ 80°C	±12.0ppm MIN
	-40 ~ 85°C	±15.0ppm MIN

Dimensions(Unit:mm)



Code	Case	A
HC-a	HC-49/UL	13.5max
HC-b	HC-49/UT	11.2max

C4-5のMJタイプも対応可能です。
Even the MJ type of C4-5 is possible correspond.

6MHz - 200MHz series

Frequency Range	周波数範囲	6MHz ~ 200MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental , 3rd , 5th
Frequency Tolerance (at25°C)	周波数偏差	±2.5 ~ ±50ppm
Load Capacitance	負荷容量	Please Specify
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	10 ~ 2000 μW
Aging	エージング	±1 ~ ±5ppm / year
Storage Temperature Range	動作温度範囲	-40 ~ +85°C
Case Type	ケース	UM-1 , UM-1S

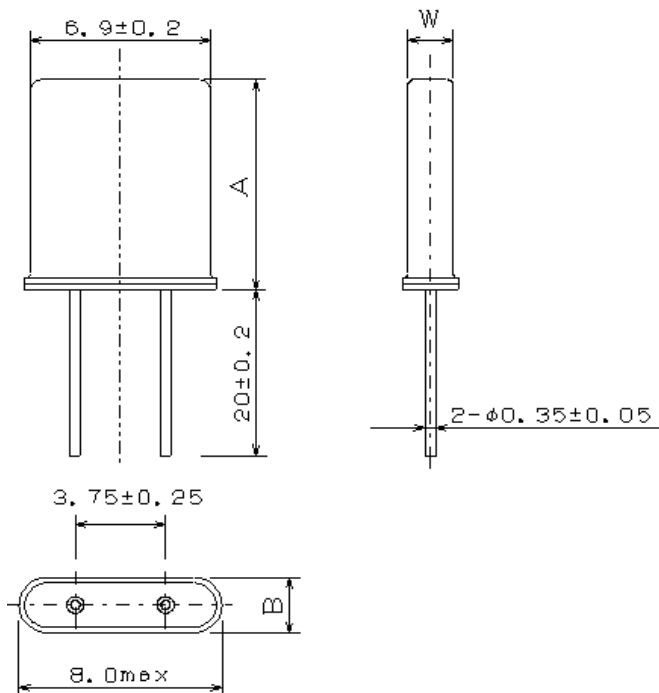
Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
6 ~ 10	Fundamental	40
10 ~ 60	Fundamental	25
24 ~ 60	3rd OT	60
60 ~ 180	3rd OT	40
80 ~ 120	5th OT	80
120 ~ 200	5th OT	70

Frequency Stability

Operating Temp. Rang	Stability	
	0 ~ 50°C	±2.5ppm MIN
	-5 ~ 55°C	±5.0ppm MIN
	-10 ~ 60°C	±5.0ppm MIN
	-15 ~ 65°C	±7.0ppm MIN
	-20 ~ 70°C	±7.5ppm MIN
	-25 ~ 75°C	±10.0ppm MIN
	-30 ~ 80°C	±12.0ppm MIN
	-40 ~ 85°C	±15.0ppm MIN

Dimensions(Unit:mm)



Case	A	B	W
UM-1	8.0max	3.0±0.2	2.2±0.2
UM-1S	8.0max	2.5±0.2	1.8±0.2

C4-5のMJタイプも対応可能です。
Even the MJ type of C4-5 is possible correspond.

10MHz - 200MHz series

Frequency Range	周波数範囲	10MHz ~ 200MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental, 3rd, 5th
Frequency Tolerance (at25°C)	周波数偏差	±2.5 ~ ±50ppm
Load Capacitance	負荷容量	Please Specify
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	10 ~ 2000 μW
Aging	エージング	±1 ~ ±5ppm / year
Storage Temperature Range	動作温度範囲	-40 ~ +85°C
Case Type	ケース	UM-5, UM-5S

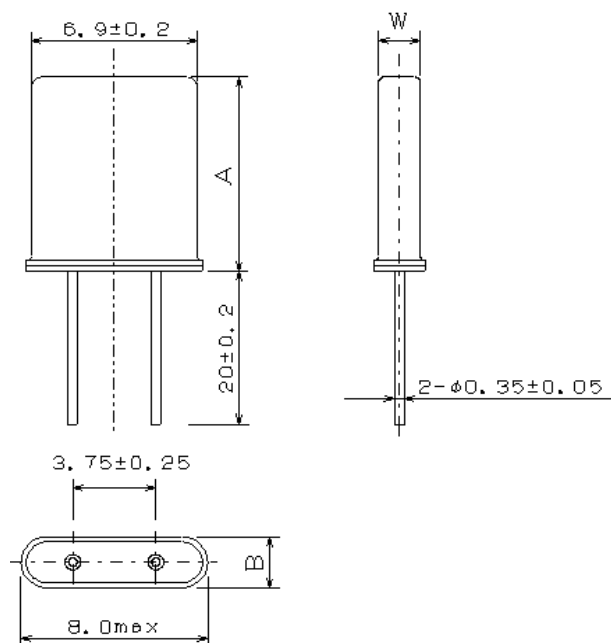
Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E.S.R (Ω)
8 ~ 10	Fundamental	50
10 ~ 20	Fundamental	30
20 ~ 60	Fundamental	25
24 ~ 30	3rd OT	80
30 ~ 60	3rd OT	60
60 ~ 180	3rd OT	40
80 ~ 120	5th OT	100
120 ~ 200	5th OT	80

Frequency Stability

Operating Temp. Rang	Stability	
	0 ~ 50°C	±2.5ppm MIN
	-5 ~ 55°C	±5.0ppm MIN
	-10 ~ 60°C	±5.0ppm MIN
	-15 ~ 65°C	±7.0ppm MIN
	-20 ~ 70°C	±7.5ppm MIN
	-25 ~ 75°C	±10.0ppm MIN
	-30 ~ 80°C	±12.0ppm MIN
	-40 ~ 85°C	±15.0ppm MIN

Dimensions(Unit:mm)



Case	A	B	W
UM-5	6.0max	3.0±0.2	2.2±0.2
UM-5S	6.0max	2.5±0.2	1.8±0.2

C4-5のMJタイプも対応可能です。
Even the MJ type of C4-5 is possible correspond.

10MHz - 200MHz series

Frequency Range	周波数範囲	10MHz ~ 200MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental , 3rd , 5th
Frequency Tolerance (at25°C)	周波数偏差	±2.5 ~ ±50ppm
Load Capacitance	負荷容量	Please Specify
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	10 ~ 2000 μW
Aging	エージング	±1 ~ ±5ppm / year
Storage Temperature Range	動作温度範囲	-40 ~ +85°C
Case Type	ケース	UM-4 , UM-4S

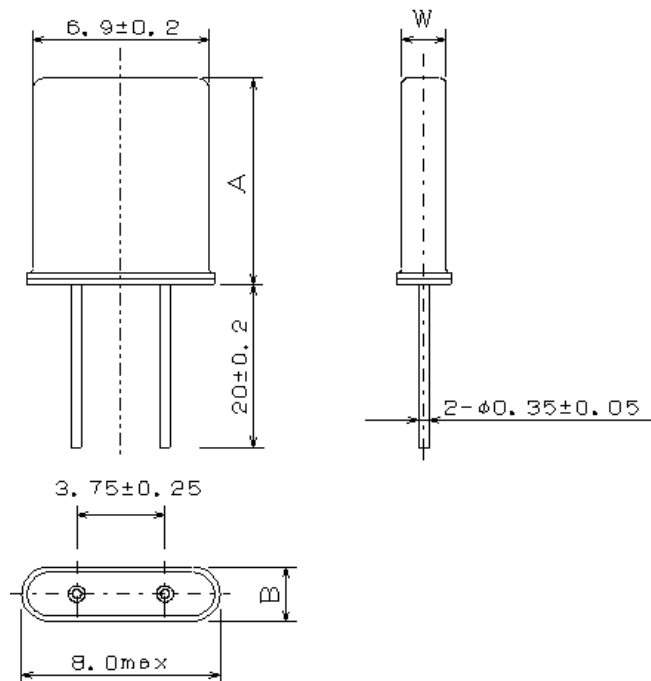
Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
10 ~ 12	Fundamental	60
12 ~ 15	Fundamental	60
15 ~ 20	Fundamental	60
20 ~ 60	Fundamental	30
60 ~ 90	3rd OT	80
90 ~ 180	3rd OT	60
100 ~ 200	5th OT	100

Frequency Stability

Operating Temp. Rang	Stability	
	0 ~ 50°C	±2.5ppm MIN
	-5 ~ 55°C	±5.0ppm MIN
	-10 ~ 60°C	±5.0ppm MIN
	-15 ~ 65°C	±10.0ppm MIN
	-20 ~ 70°C	±10.0ppm MIN
	-25 ~ 75°C	±12.0ppm MIN
	-30 ~ 80°C	±15.0ppm MIN
	-40 ~ 85°C	±15.0ppm MIN

Dimensions(Unit:mm)

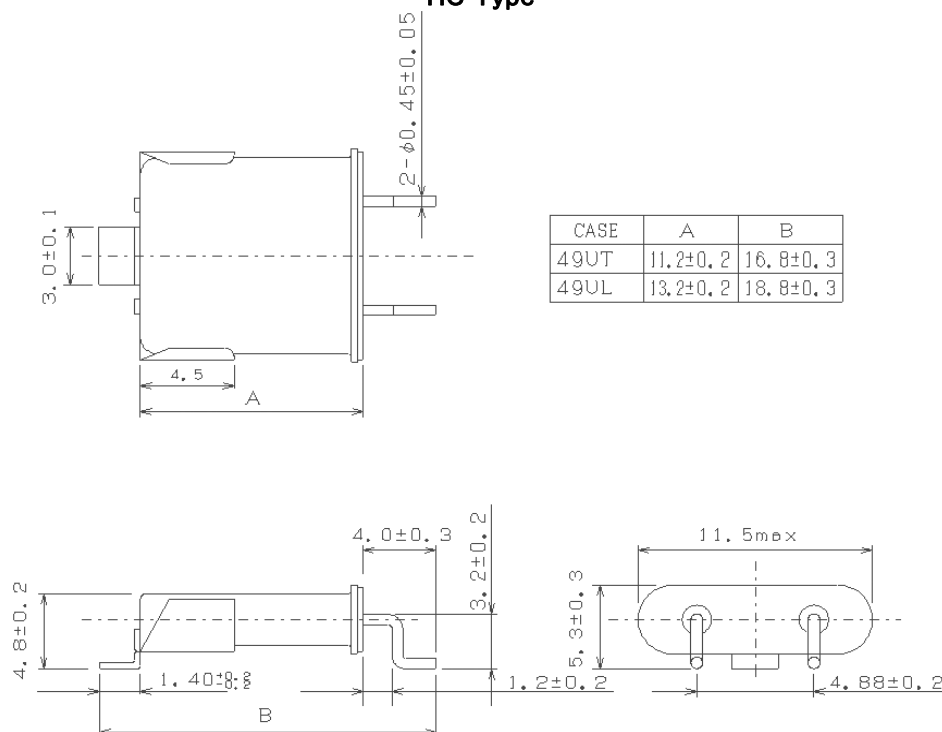


Case	A	B	W
UM-4	4.5max	3.0±0.2	2.2±0.2
UM-4S	4.5max	2.5±0.2	1.8±0.2

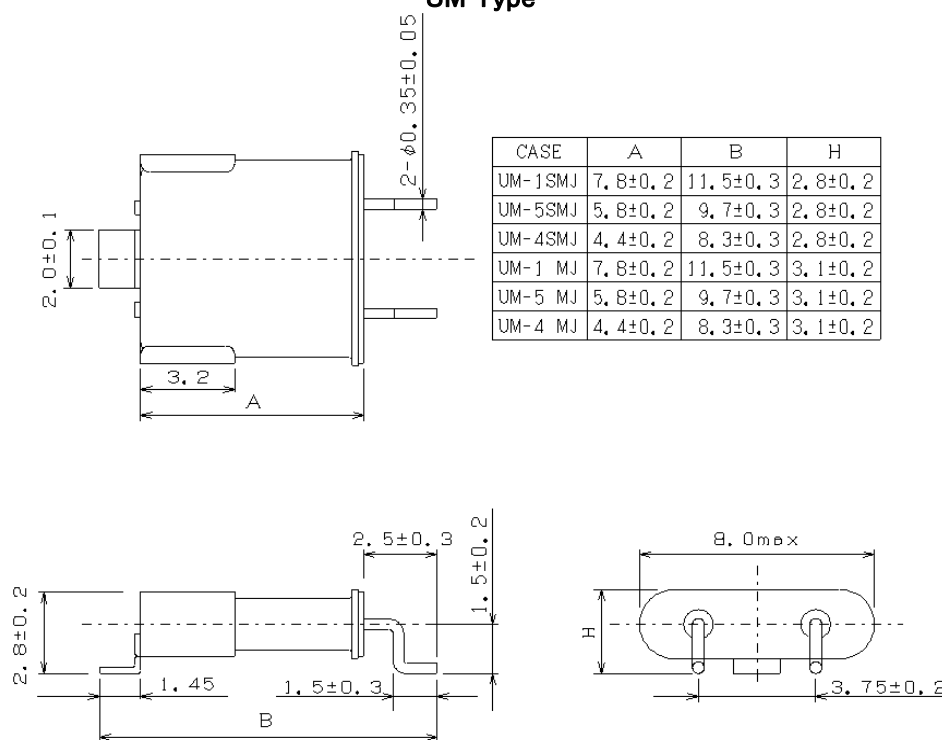
C4-5のMJタイプも対応可能です。
Even the MJ type of C4-5 is possible correspond.

Dimensions(Unit:mm)

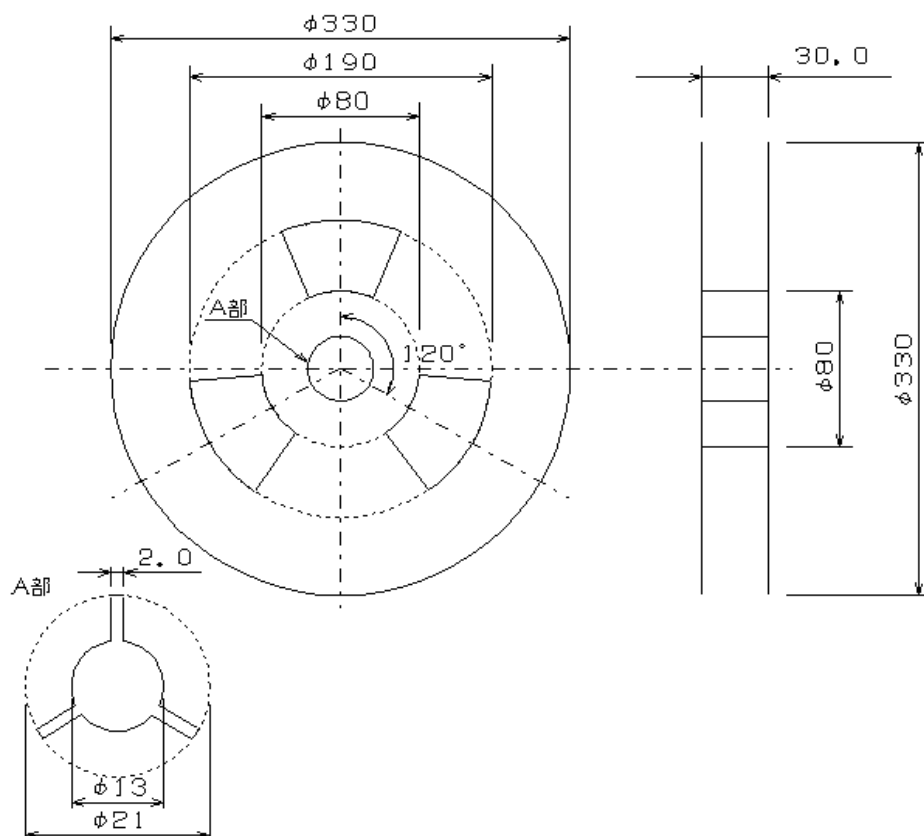
HC Type



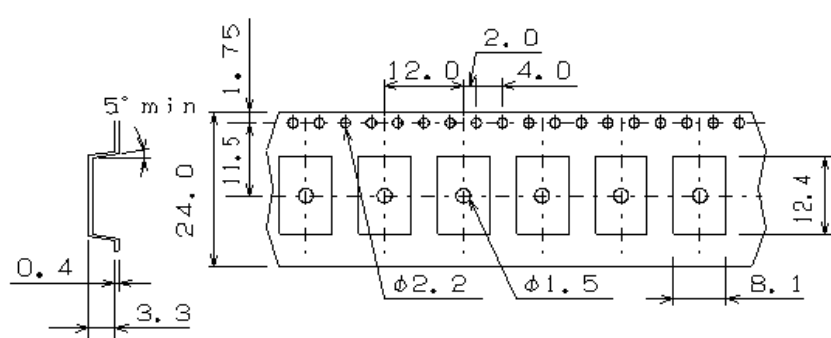
UM Type



Dimensions(Unit:mm)



UM Type



16MHz – 55MHz series

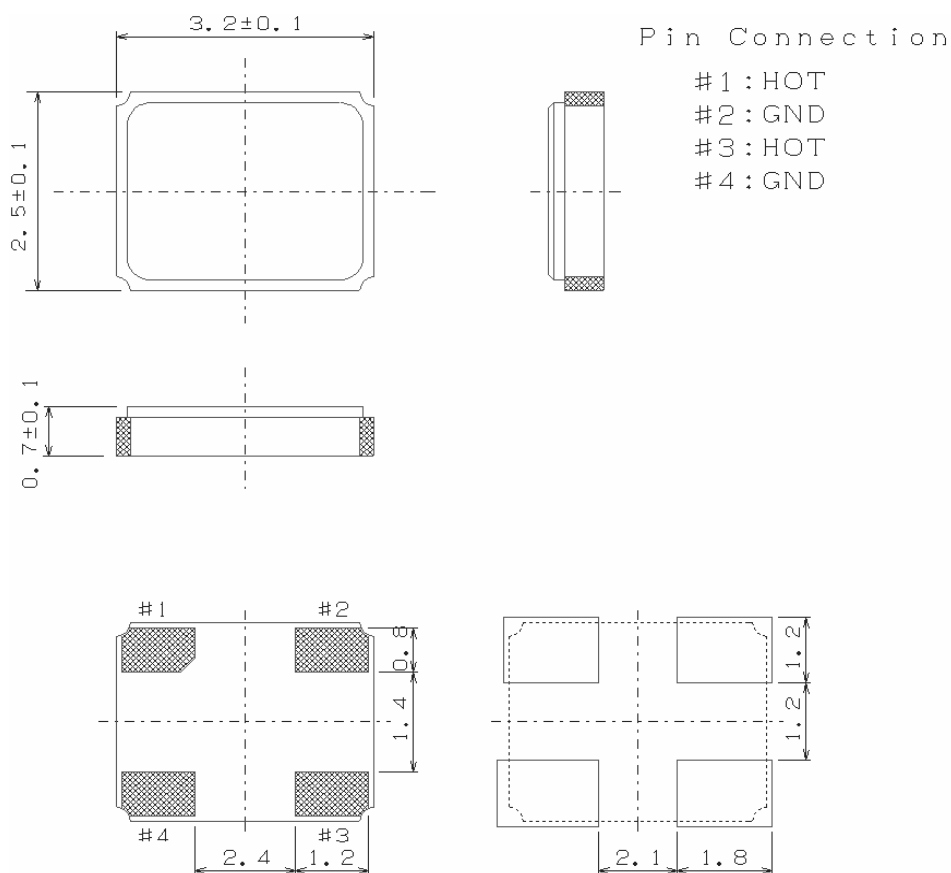
Frequency Range	周波数範囲	16MHz ~ 55MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	10ppm ~ 50ppm
Frequency Stability	周波数温度特性	10ppm ~ 50ppm(-10 to +75°C)
Load Capacitance	負荷容量	Series,8pF,10pF,12pF
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	100 μW
Case Type	ケース	HS-3225A

Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
16 ~ 18.9	Fundamental	40
19 ~ 24.9	Fundamental	35
25 ~ 31.9	Fundamental	30
32 ~ 55	Fundamental	20

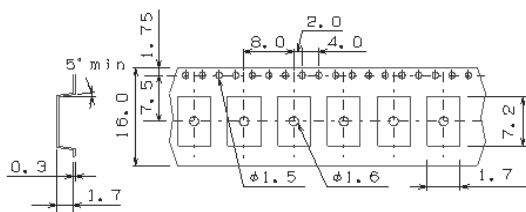
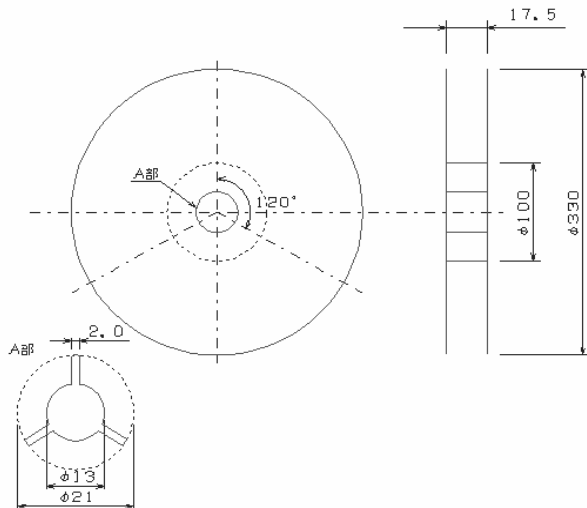
Dimensions(Unit:mm)

HS-3225A

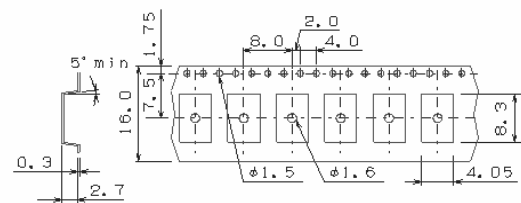
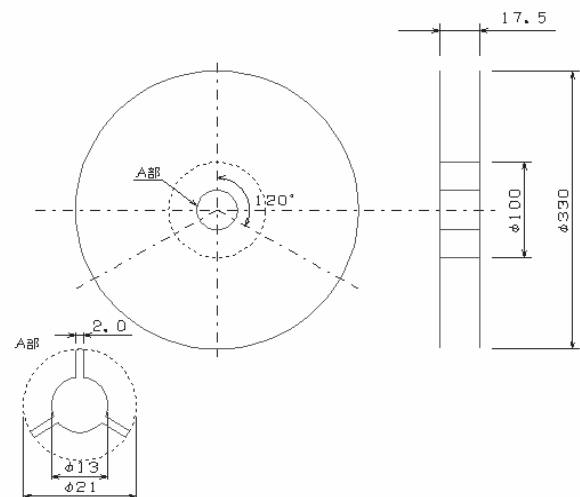


Dimensions(Unit:mm)

Code SCM130



Code SCM200S



10MHz - 160MHz series

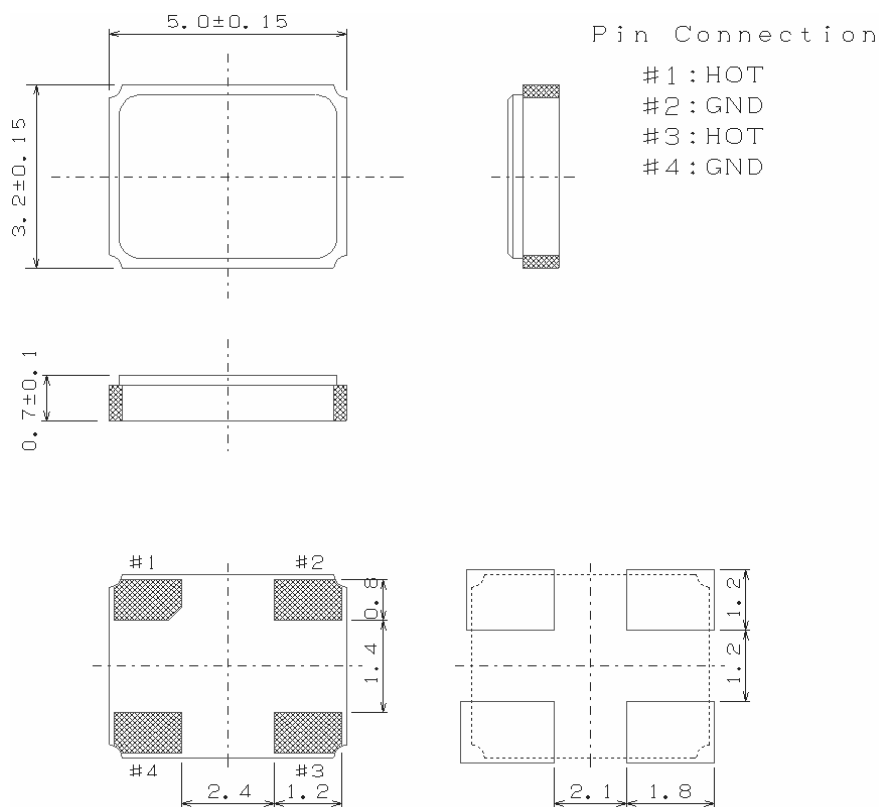
Frequency Range	周波数範囲	10MHz ~ 160MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental,3rd,5th
Frequency Tolerance (at25°C)	周波数偏差	10ppm ~ 50ppm
Frequency Stability	周波数温度特性	5ppm ~ 50ppm(-10 to +60°C)
Load Capacitance	負荷容量	Series,8pF,10pF,12pF
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	100 μW
Case Type	ケース	HS-5032A

Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
10 ~ 11.9	Fundamental	40
12 ~ 14.9	Fundamental	35
15 ~ 19.9	Fundamental	30
20 ~ 44.9	Fundamental	20
45 ~ 59.9	3rd	55
60 ~ 89.9	3rd	50
90 ~ 120	3rd	45
90 ~ 160	5th	90

Dimensions(Unit:mm)

HS-5032A



10MHz - 160MHz series

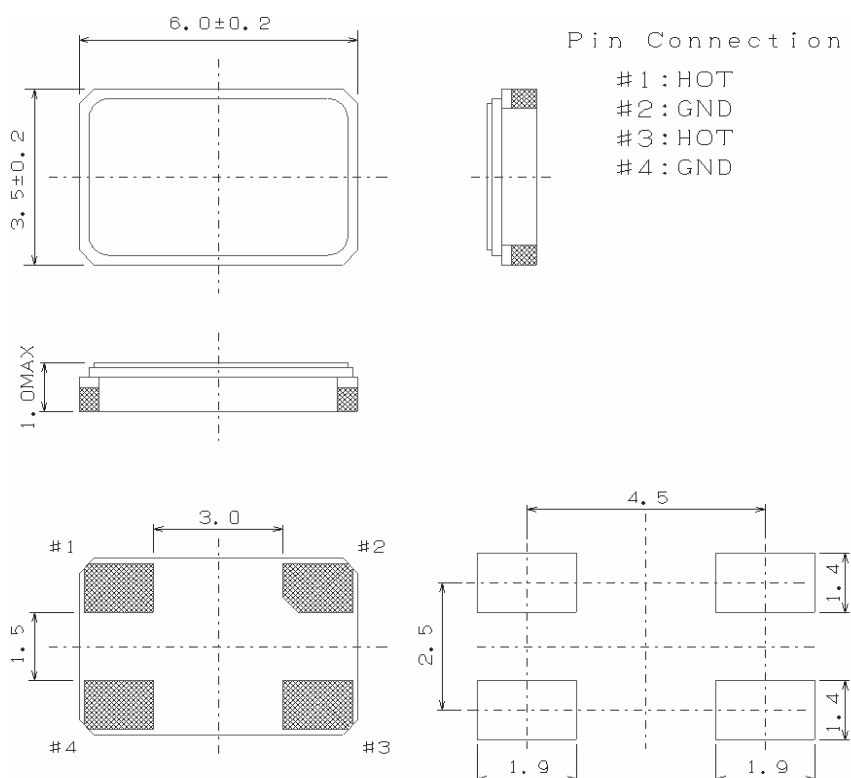
Frequency Range	周波数範囲	10MHz ~ 160MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental,3rd,5th
Frequency Tolerance (at25°C)	周波数偏差	10ppm ~ 50ppm
Frequency Stability	周波数温度特性	5ppm ~ 50ppm(-10 to +60°C)
Load Capacitance	負荷容量	Series,8pF,10pF,12pF
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	100 μW
Case Type	ケース	HS-5

Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
10 ~ 11.9	Fundamental	40
12 ~ 14.9	Fundamental	35
15 ~ 19.9	Fundamental	30
20 ~ 44.9	Fundamental	20
45 ~ 59.9	3rd	55
60 ~ 89.9	3rd	50
90 ~ 120	3rd	45
90 ~ 160	5th	90

Dimensions(Unit:mm)

HS-5



10MHz - 200MHz series

Frequency Range	周波数範囲	10MHz ~ 200MHz
Crystal Cut	カット	AT
Mode of Oscillation	振動モード	Fundamental , 3rd , 5th
Frequency Tolerance (at25°C)	周波数偏差	10ppm
Frequency Stability	周波数温度特性	30ppm (0 to +70°C)
Load Capacitance	負荷容量	Please Specify
Shunt Capacitance (CO)	並列容量	7pF max
Drive Level	励振レベル	100 μ W
Case Type	ケース	HS-1

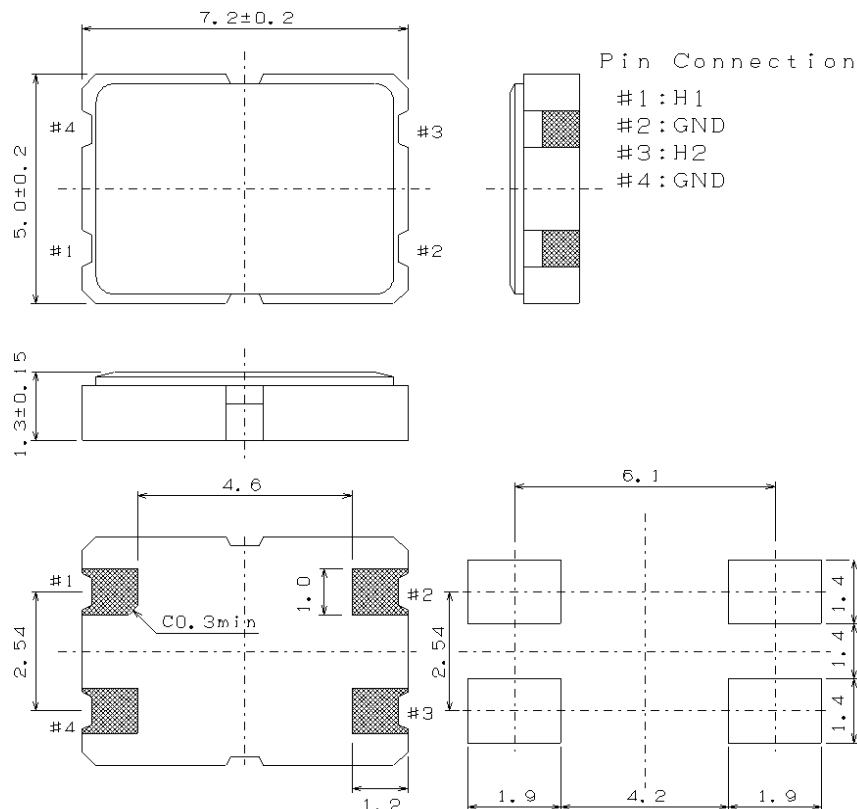
Frequency and Equivalent Series Resistance (E.S.R)

Frequency (MHz)	Mode	E .S.R (Ω)
10 ~ 30	Fundamental	40
30 ~ 120	3rd OT	50
120 ~ 200	5th OT	80

Frequency Stability

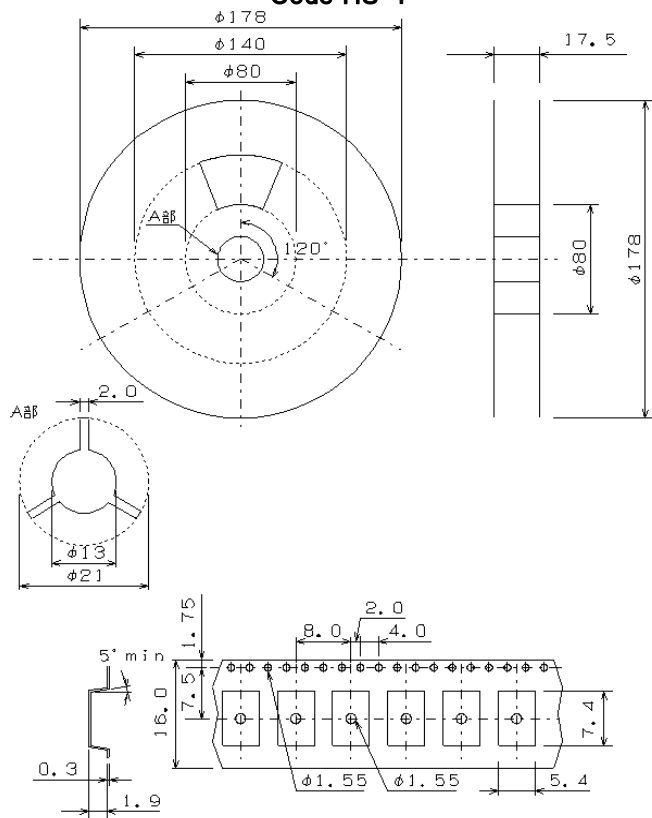
Operating Temp. Rang	Stability
-10°C to +60°C	10
-30°C to +85°C	20
-10°C to +60°C	50

Dimensions(Unit:mm)

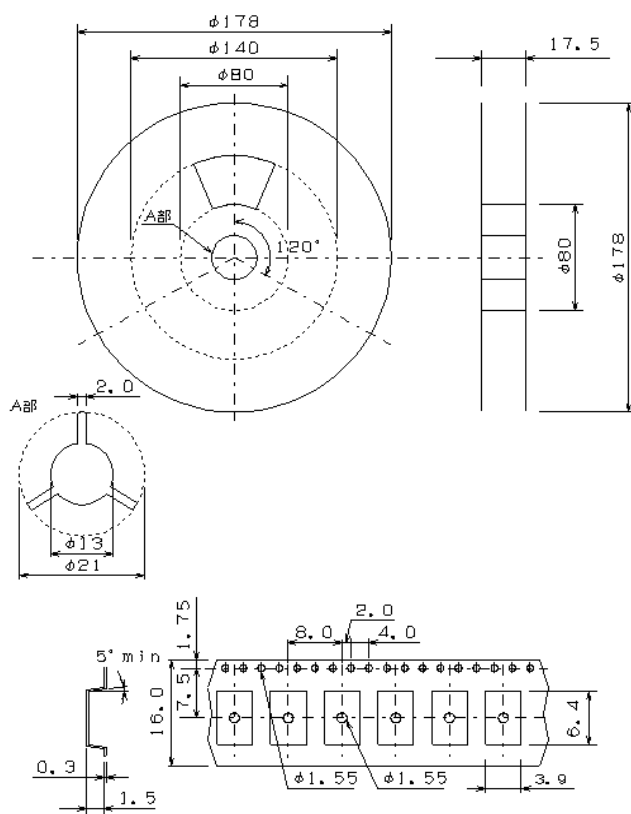


Dimensions(Unit:mm)

Code HS-1



Code HS-5

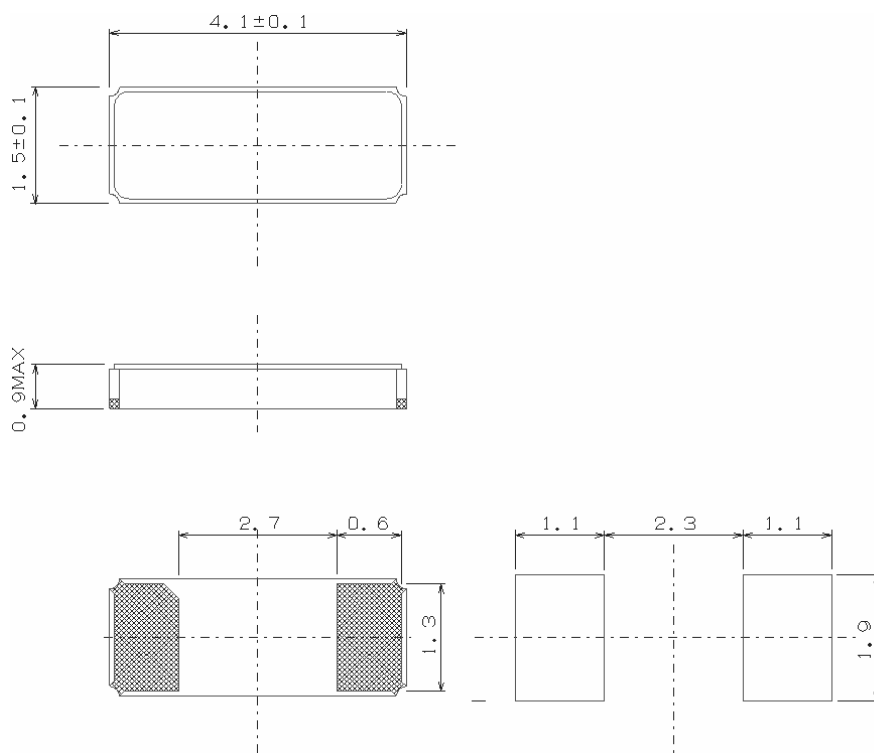


32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental,3rd,5th
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm(−10 to +60°C)
Equivalent Series Resistance (E .S.R)	等価直列抵抗	70KΩ max
Load Capacitance	負荷容量	12.5pF Standard
Shunt Capacitance (CO)	並列容量	1.05pF typ
Drive Level	励振レベル	1000 μ W max
Case Type	ケース	4.1 × 1.5

Dimensions(Unit:mm)

SCM415

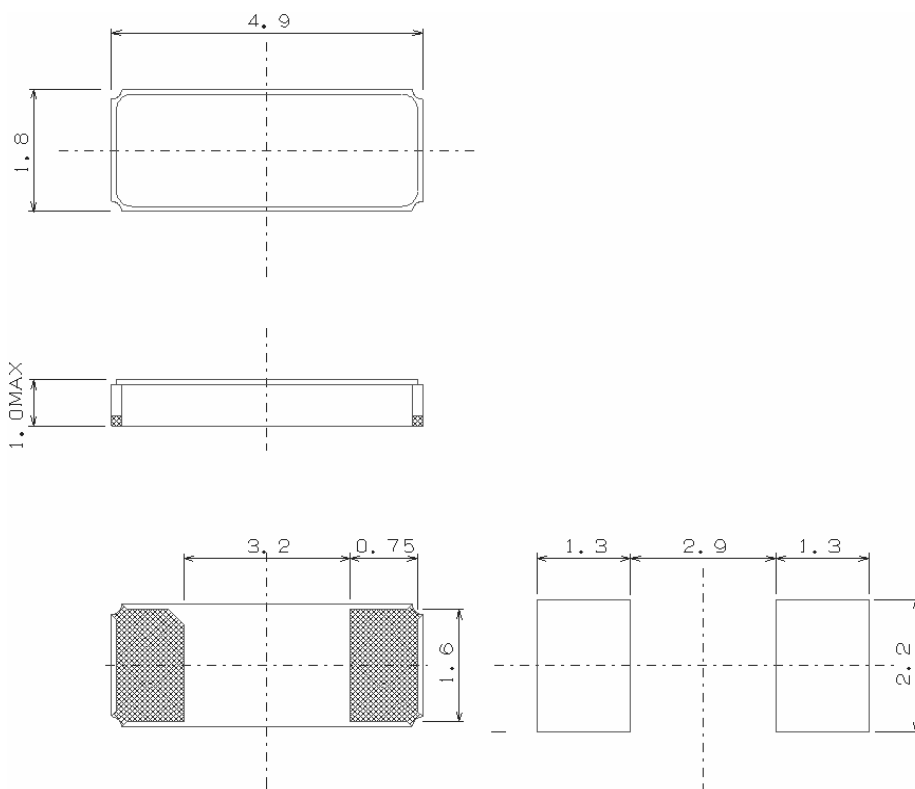


32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm(-10 to +60°C)
Equivalent Series Resistance (E.S.R)	等価直列抵抗	70KΩ max
Load Capacitance	負荷容量	12.5pF Standard
Shunt Capacitance (CO)	並列容量	—
Drive Level	励振レベル	1000μW max
Case Type	ケース	5×1.9

Dimensions(Unit:mm)

SCM519

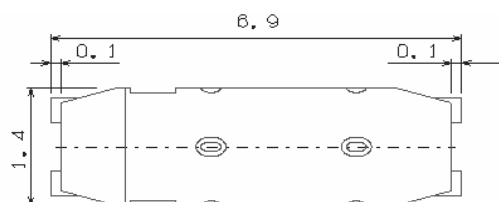


32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm(-10 to +60°C)
Equivalent Series Resistance (E .S.R)	等価直列抵抗	65K Ω max
Load Capacitance	負荷容量	12.5pF Standard
Shunt Capacitance (CO)	並列容量	1.2pF typ
Drive Level	励振レベル	1000 μ W max
Case Type	ケース	7 $\times$ 1.4

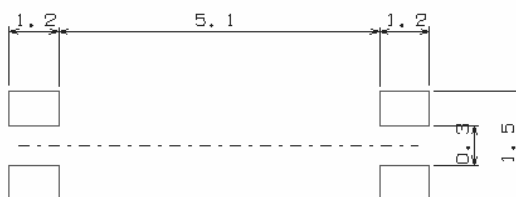
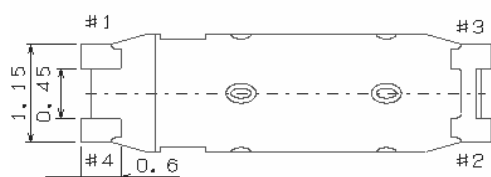
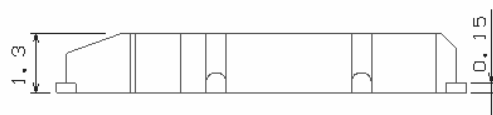
Dimensions(Unit:mm)

SCM130



Pin Connection

- #1: HOT
- #2: GND
- #3: HOT
- #4: GND

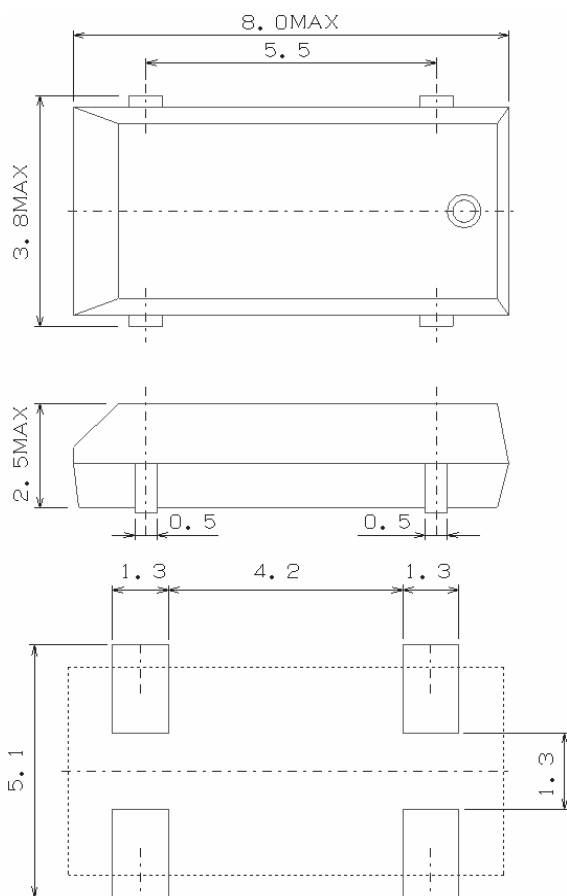


32.768KHz series

Frequency Range	周波数範囲	32.768KHz
Crystal Cut	カット	X
Mode of Oscillation	振動モード	Fundamental
Frequency Tolerance (at25°C)	周波数偏差	20ppm
Frequency Stability	周波数温度特性	50ppm(-10 to +60°C)
Equivalent Series Resistance (E.S.R)	等価直列抵抗	50KΩ max
Load Capacitance	負荷容量	12.5pF Standard
Shunt Capacitance (CO)	並列容量	1.35pF typ
Drive Level	励振レベル	1000 μW max
Case Type	ケース	8×3.8

Dimensions(Unit:mm)

SCM200S



Pin Cennnection

- #1 : HOT
- #2 : GND
- #3 : HOT
- #4 : GND



C RYSTAL OSCILLATOR 5 × 7mm SMD Type

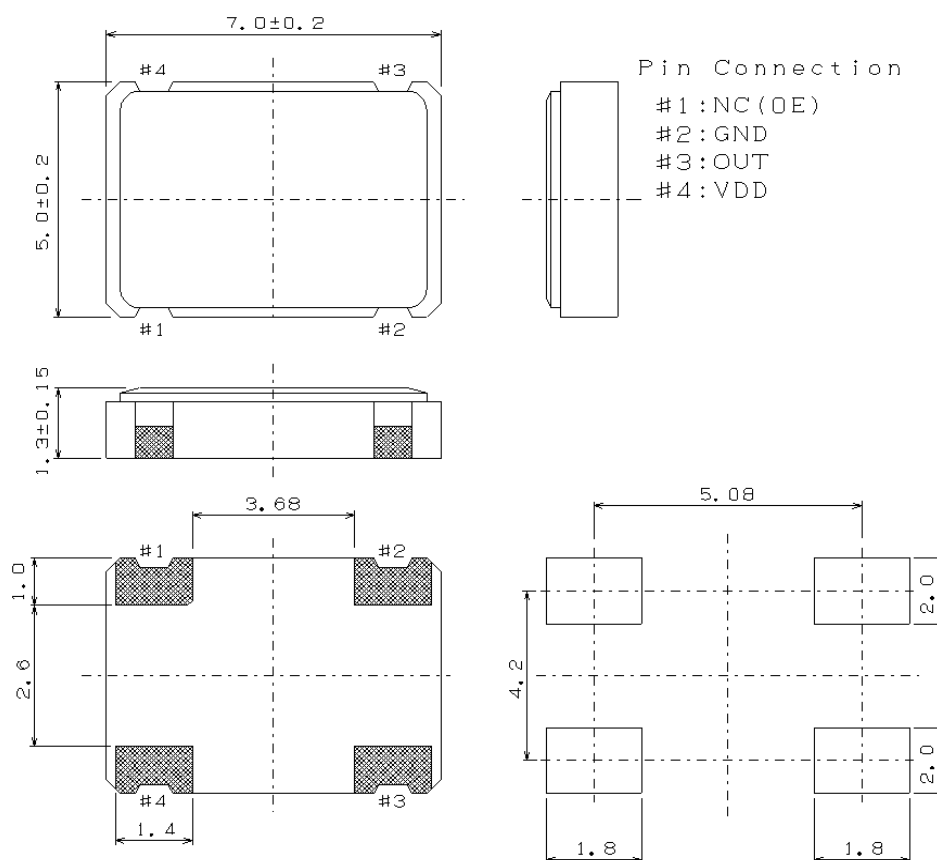
SX-100 CMOS 3.3V series

Type		型式	SX-100C	SX104C
Frequency Range		周波数範囲	80MHz ~ 125MHz	
Supply Voltage		供給電圧	3.3±0.3V	
Input Current		消費電流	55mA Max	
Frequency Stability		周波数安定度	±25ppm, ±50ppm, ±100ppm	
Output Level	VOH	出力電圧	VDD-0.4V Min	
	VOL		0.4V Max	
Output Load		出力負荷	15pF	
Rise/Fall Time		立上り／下り時間	3ns Max	
Duty Cycle		デューティ比	40:60	
Operating Temp. Range		動作温度範囲	0 to +70°C, -40 to +85°C	
Storage Temp. Range		保存温度範囲	-50 to +125°C	
E/D Function	#1 Open	ED機能	—	Enable
	#1 ≥0.8V			Enable
	#1 ≤0.2V			Disable

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)





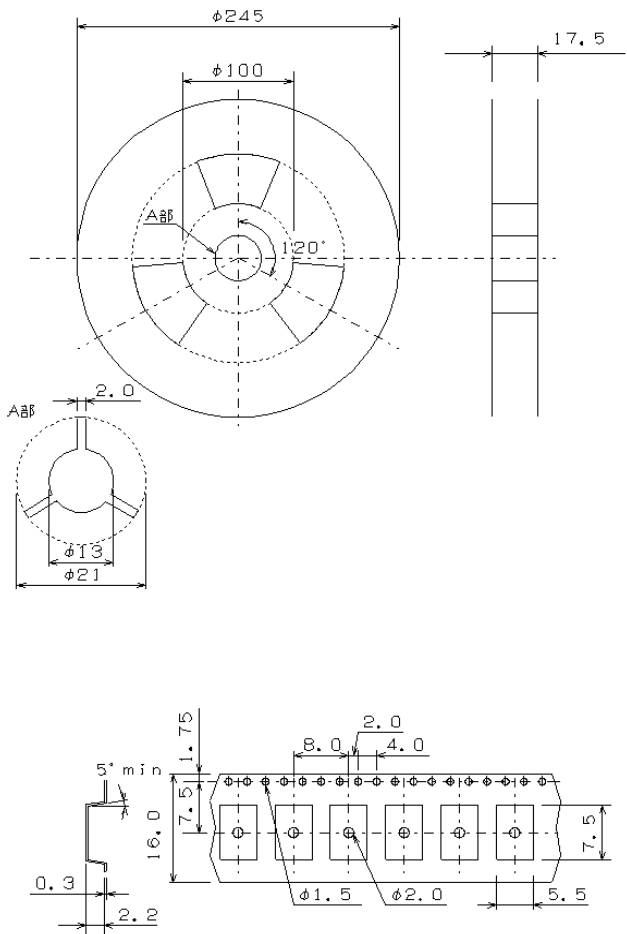
C RYSTAL OSCILLATOR 5 × 7mm SMD Type

SX-100 CMOS 5V series

Type		型式	SX103C	SX107C
Frequency Range		周波数範囲	80MHz ~ 106.25MHz	
Supply Voltage		供給電圧	5.0±0.5V	
Input Current		消費電流	65mA Max	
Frequency Stability		周波数安定度	±25ppm, ±50ppm, ±100ppm	
Output Level	VOH	出力電圧	VDD-0.4V Min	
	VOL		0.4V Max	
Output Load		出力負荷	15pF	
Rise/Fall Time		立上り／下り時間	3ns Max	
Duty Cycle		デューティ比	40:60	
Operating Temp. Range		動作温度範囲	0 to +70°C, -40 to +85°C	
Storage Temp. Range		保存温度範囲	-50 to +125°C	
E/D Function	#1 Open	ED機能	—	Enable
	#1 ≥0.8V			Enable
	#1 ≤0.2V			Disable

NOTE: 0.01 F external by-pass filter recommended.
 注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)





C RYSTAL OSCILLATOR 5 × 7mm SMD Type

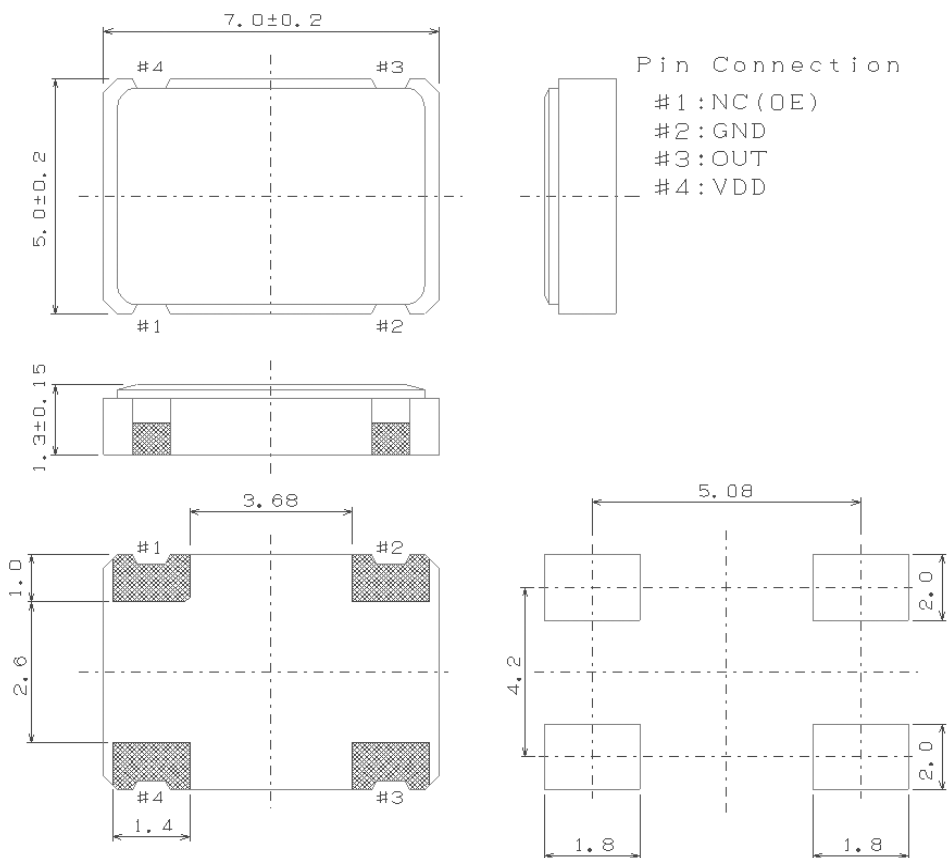
SX-150 CMOS 3.3V and 5V series

Type	型式	SX150C	SX151C	SX152C	SX153C
Frequency Range	周波数範囲	1MHz ~ 50MHz	33MHz ~ 50MHz	50MHz ~ 70MHz	70MHz ~ 133MHz
Supply Voltage	供給電圧	3.3V, 5.0V			
Input Current	消費電流	12mA, 20mA	25mA, 45mA	35mA, 50mA	50mA, 100mA
Frequency Stability	周波数安定度	±25ppm, ±50ppm, ±100ppm			
Output Level	VOH	90% V _{DD} Min 10% V _{DD} Max			
	VOL				
Output Load	出力負荷	15pF ~ 50pF	15pF ~ 50pF	15pF ~ 50pF	15pF
Rise/Fall Time	立上り／下り時間	10ns Max			
Duty Cycle	デューティ比	40:60, 45:55			
Operating Temp. Range	動作温度範囲	0 to +70°C, -20 to +70°C			
Storage Temp. Range	保存温度範囲	-50 to +125°C			
E/D Function	#2 Open	ED機能			
	#2 ≥ 0.8V _{DD}				
	#2 ≤ 0.2V _{DD}				
		Enable			
		Enable			
		Disable			

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)



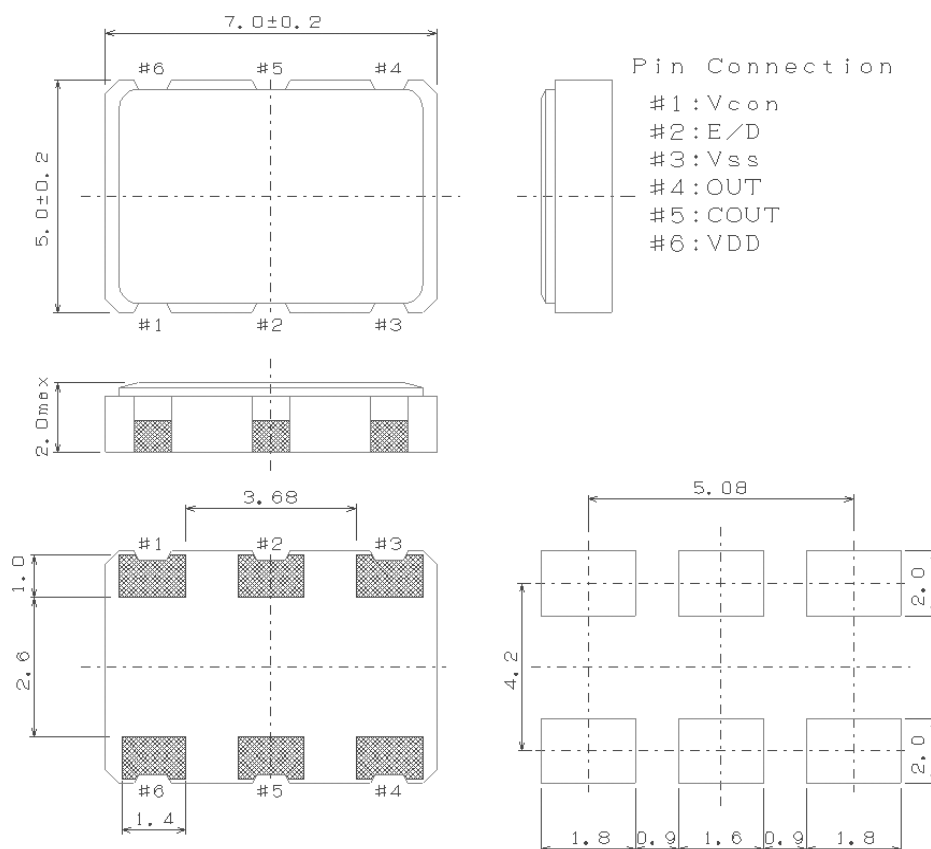
SX-200 LV-PECL 3.3V series

Type		型式	SX200C
Frequency Range		周波数範囲	100MHz ~ 161.2MHz
Supply Voltage		供給電圧	3.3V±5%
Input Current		消費電流	70mA Max
Frequency Stability		周波数安定度	±50ppm
Output Level	VOH	出力電圧	VDD-1.02V
	VOL		VDD-1.63V
Output Load		出力負荷	50Ω (VDD-2.0V)
Rise/Fall Time		立上り／下り時間	1ns Max
Duty Cycle		デューティ比	40:60
Operating Temp. Range		動作温度範囲	0 to +70℃
Storage Temp. Range		保存温度範囲	-50 to +125℃
E/D Function	#2 Open	ED機能	Enable
	#2≥0.7V		Enable
	#2≤0.3V		Disable

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)





VOLTAGE CONTROLLED CRYSTAL OSCILLATORS

VCXO 5 × 7mm SMD Type

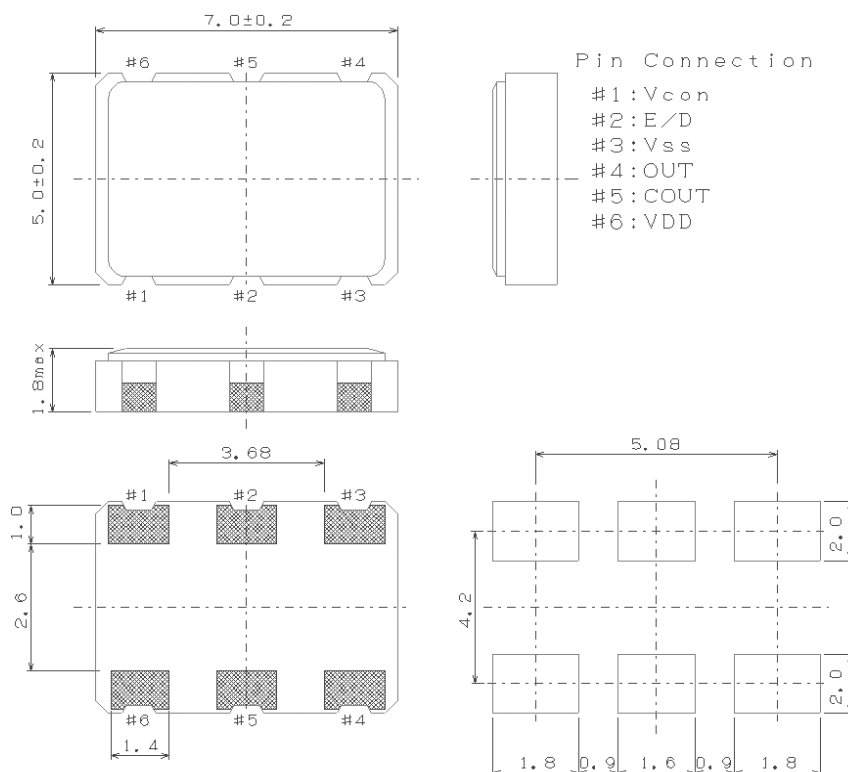
VX-200 CMOS 3.3V series

Type	型式	VX200B	VX204B
Frequency Range	周波数範囲	8MHz ~ 40MHz	
Supply Voltage	供給電圧	3.3V ± 5%	
Control Voltage Range	制御電圧	1.65 ± 1.5V	
Frequency Deviation	周波数制御特性	± 80ppm Min	
Input Current	消費電流	20mA Max	
Frequency Stability	周波数安定度	± 50ppm	
Output Level	VOH	90%VDD Min	
	VOL	0.4V Max	
Output Load	出力負荷	15pF	
Rise/Fall Time	立上り／下り時間	8ns Max	
Duty Cycle	デューティ比	40:60	
Operating Temp. Range	動作温度範囲	0 to +70°C	
Storage Temp. Range	保存温度範囲	-50 to +125°C	
E/D Function	#2 Open	—	Enable
	#2 ≥ 0.8V		Enable
	#2 ≤ 0.2V		Disable

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)





VOLTAGE CONTROLLED CRYSTAL OSCILLATORS

VCXO 5 × 7mm SMD Type

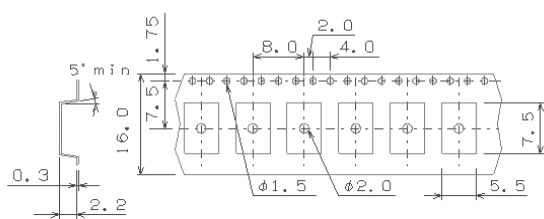
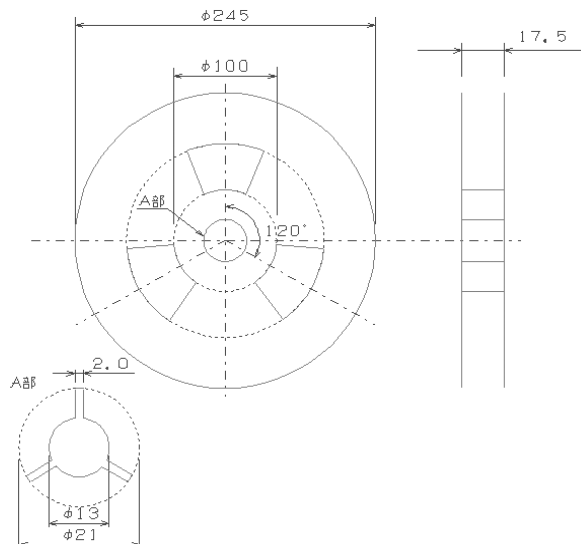
VX-200 CMOS 5V series

Type	型式	VX203B	VX207B
Frequency Range	周波数範囲	8MHz ~ 40MHz	
Supply Voltage	供給電圧	5.0±5%	
Control Voltage Range	制御電圧	2.5±2.0V	
Frequency Deviation	周波数制御特性	±100ppm Min	
Input Current	消費電流	40mA Max	
Frequency Stability	周波数安定度	±50ppm	
Output Level	出力電圧	90%V _{DD} Min	
		0.4V Max	
Output Load	出力負荷	15pF	
Rise/Fall Time	立上り/下り時間	8ns Max	
Duty Cycle	デューティ比	40:60	
Operating Temp. Range	動作温度範囲	0 to +70°C	
Storage Temp. Range	保存温度範囲	-50 to +125°C	
E/D Function	#2 Open	—	Enable
	#2 ≥ 2.0V		Enable
	#2 ≤ 0.8V		Disable

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)





VOLTAGE CONTROLLED CRYSTAL OSCILLATORS

VCXO 5 × 7mm SMD Type

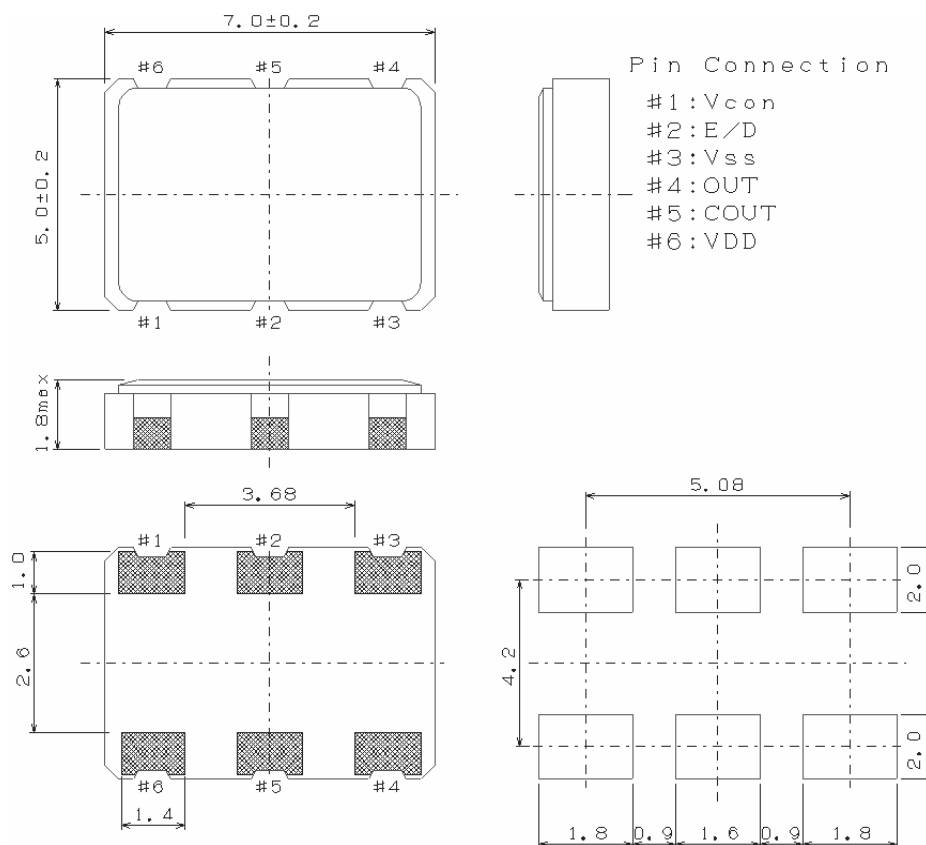
VX-300 LV-PECL 3.3V series

Type	型式	SX200C
Frequency Range	周波数範囲	130MHz ~ 170MHz
Supply Voltage	供給電圧	3.3V ± 5%
Control Voltage Range	制御電圧	1.65 ± 1.5V
Frequency Deviation	周波数制御特性	± 100ppm Min
Input Current	消費電流	100mA Max
Frequency Stability	周波数安定度	± 50ppm
Output Level	出力電圧	V _{DD} - 1.02V
		V _{DD} - 1.63V
Output Load	出力負荷	50 Ω (V _{DD} = 2.0V)
Rise/Fall Time	立上り/下り時間	1ns Max
Duty Cycle	デューティ比	40:60
Operating Temp. Range	動作温度範囲	0 to +70°C
Storage Temp. Range	保存温度範囲	-50 to +125°C
E/D Function	#2 Open	Enable
	#2 ≥ 0.7V	Enable
	#2 ≤ 0.3V	Disable

NOTE: 0.01 F external by-pass filter recommended.

注: 本発信器の間近に0.01 μ F以上の電源パスコンを付加してください。

Dimensions(Unit:mm)



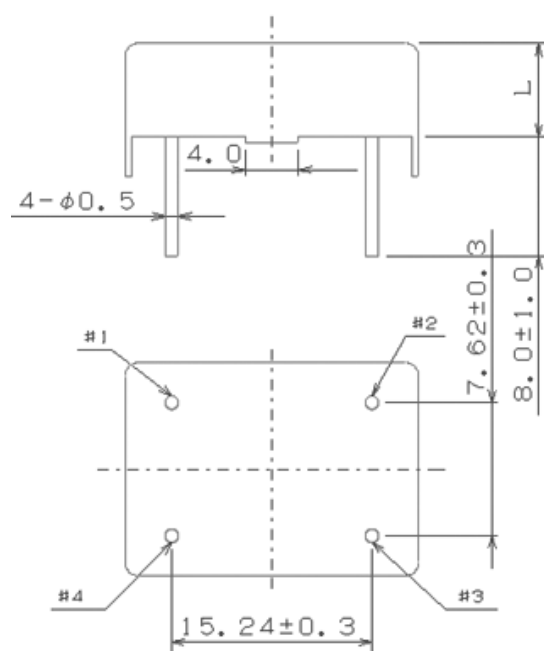
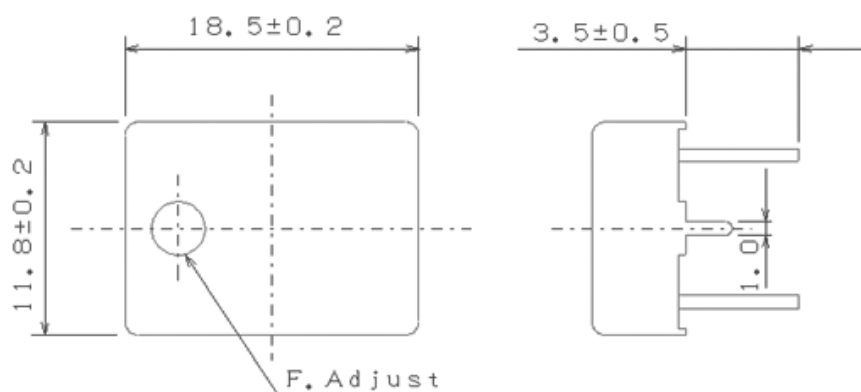


TEMPERATURE COMPENSATED CRYSTAL OSCILLATORS VCXO 14 Pin DIP Type

TX-100 Clipped Sine Wave , TTL/CMOS Compatible series

Type	型式	TX101S	TX101C
Frequency Range	周波数範囲	10MHz ~ 50MHz	
Frequency Stability	周波数温度特性	$\pm 1.0 \sim \pm 2.5\text{ppm}$	$\pm 2.5\text{ppm}$
Operating Temp. Range	動作温度範囲	$-30 \text{ to } +75^{\circ}\text{C}$	
Supply Voltage	供給電圧	$5.0\text{V} \pm 5\%$	
Input Current	消費電流	2.0mA Max	15.0mA Max
Output Level	出力電圧	1.0Vp-p Min	TTL/CMOS
Output Load	出力負荷	$10\text{K}\Omega // 10\text{pF}$	TTL2/15pF
Frequency / Supply Voltage	周波数偏差／電圧	$\pm 0.3\text{ppm}$	
Frequency Adjustment	周波数調整	$\pm 3.0\text{ppm Min}$	
Preset Frequency	周波数偏差	$\pm 2.0\text{ppm Max}$	
Aging	エージング	$\pm 1.0\text{ppm / Year}$	
Storage Temp. Range	保存温度範囲	$-40 \text{ to } +85^{\circ}\text{C}$	
Case Type	ケース	TX100 / A , B	

Dimensions(Unit:mm)



CODE	L
A	4.7 ± 0.2
B	9.0 ± 0.2

Pin Connection

- #1:NC
- #2:GND
- #3:OUT
- #4:VDD



TEMPERATURE COMPENSATED CRYSTAL OSCILLATORS TCXO 9.6 × 11.4mm SMD Type

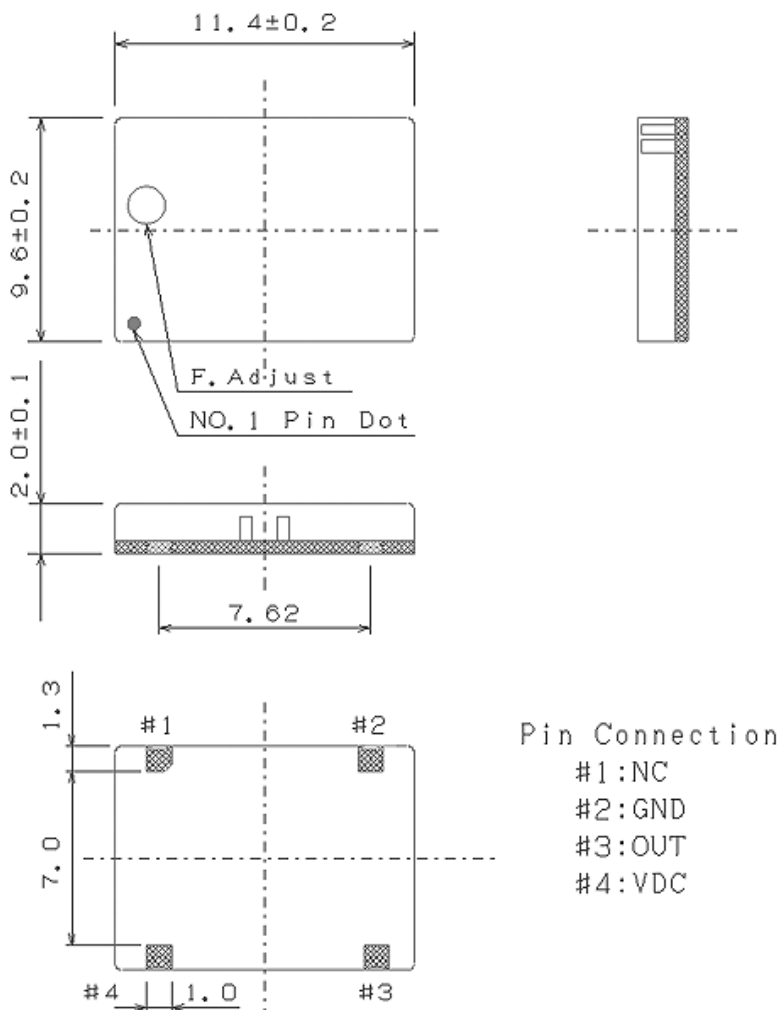
TX-200 Clipped Sine Wave series

Type	型式	TX203	TX203T	TX205	TX205T
Frequency Range	周波数範囲	10MHz ~ 30MHz		10MHz ~ 50MHz	
Frequency Stability	周波数温度特性	±2.5ppm			
Operating Temp. Range	動作温度範囲	-30 to +75°C			
Supply Voltage	供給電圧	3.0V		5.0V	
Input Current	消費電流	2.0mA Max			
Output Level	出力電圧	1.0Vp-p Min			
Output Load	出力負荷	10KΩ ±10%/10pF			
Frequency / Supply Voltage	周波数偏差／電圧	±2.0ppm / V _{DC} ±5%			
Frequency Adjustment	周波数調整	Trimmer less	±3.0ppm Min	Trimmer less	±3.0ppm Min
Preset Frequency	周波数偏差	—	±0.5ppm Max	—	±0.5ppm Max
Aging	エージング	±1.0ppm / Year			
Storage Temp. Range	保存温度範囲	-40 to +85°C			

※TTL CMOSタイプも生産可能です。

※TTL CMOS type is also producible.

Dimensions(Unit:mm)





Type	型式	TX-500	
Frequency Range	周波数範囲	10MHz ~ 60MHz	
Frequency Stability	周波数温度特性	± 2.5ppm	± 1.5ppm
Operating Temp. Range	動作温度範囲	-30 to +75°C	-20 to +60°C
Supply Voltage	供給電圧	DC +5.0V ±5%	
Output Level	出力電圧	1.0Vp-p min	0.1V rms
Output Load	出力負荷	10KΩ // 10pF	100Ω
Supply Current	供給電流	2.0mA max	
F/Volt Change		± 0.3ppm max	
Voltage Control			
Frequency Adjustment	周波数調整	± 3.0ppm min	
Preset Frequency	周波数偏差	± 0.5ppm Max	
Aging	エージング	± 1.0ppm / Year	

Technical drawing of a mechanical part showing three views: Top, Front, and Side.

Top View Dimensions:

- Overall Width: 20.0 ± 0.2
- Overall Height: 20.0 ± 0.2
- Feature: F, Adjust

Front View Dimensions:

- Width: $5-\phi 0.5$
- Height: 10.0 ± 0.5

Side View Dimensions:

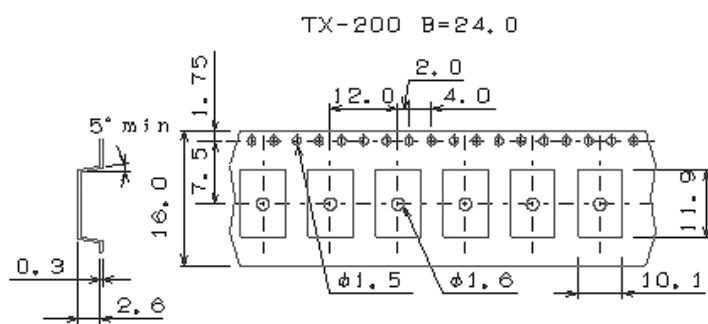
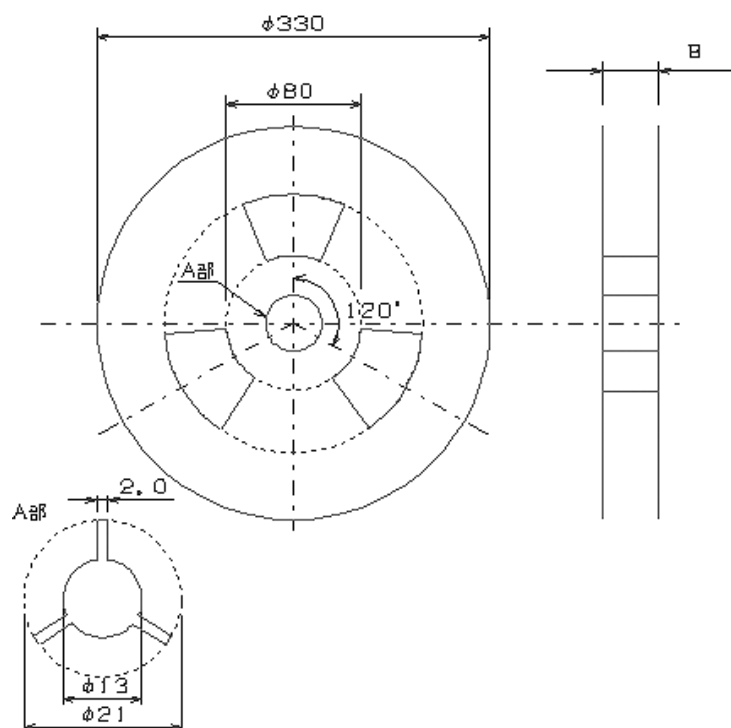
- Width: 15.0 ± 0.3
- Height: 8.0 ± 1.0

Pin Control Table:

Pin	Control
#1:	C
#2:	M
#3:	C
#4:	V
#5:	C

```
#1 : GND
#2 : NC
#3 : GND
#4 : VDC
#5 : OUT
```

Dimensions(Unit:mm)



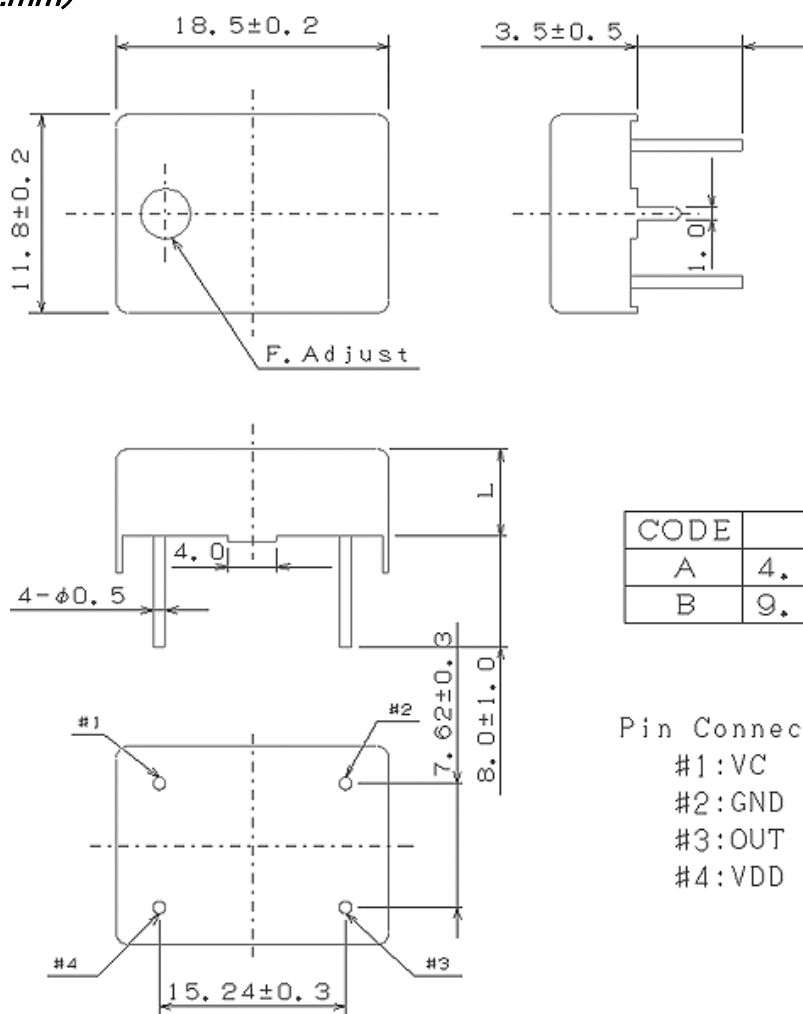


TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO 14 Pin DIP Type

TVX-100 Clipped Sine Wave, TTL/CMOS Compatible series

Type	型式	TVX101S	TVX101C
Frequency Range	周波数範囲	10MHz ~ 50MHz	
Frequency Stability	周波数温度特性	$\pm 1.5 \sim \pm 2.5$ ppm	± 2.5 ppm
Operating Temp. Range	動作温度範囲	-30 to +75°C	-30 to +75°C
Supply Voltage	供給電圧	5.0V $\pm$ 5%	
Input Current	消費電流	2.0mA Max	15.0mA Max
Output Level	出力電圧	1.0Vp-p Min	TTL/CMOS
Output Load	出力負荷	10K Ω // 10pF	TTL2/15pF
Control Voltage Range	制御電圧	2.5V $\pm$ 1.0V	
Frequency Deviation	周波数制御特性	$\pm 5.0 \sim \pm 10.0$ ppm	
Frequency / Supply Voltage	周波数偏差 / 電圧	± 0.3 ppm Max	
Frequency Adjustment	周波数調整	± 3.0 ppm Min	Trimmer less
Preset Frequency	周波数偏差	± 0.2 ppm Max	± 1.5 ppm Max
Aging	エージング	± 1.0 ppm / Year	
Storage Temp. Range	保存温度範囲	-40 to +85°C	
Case Type	ケース	TVX100 / A, B	

Dimensions(Unit:mm)





TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO 9.6 × 11.4mm SMD Type

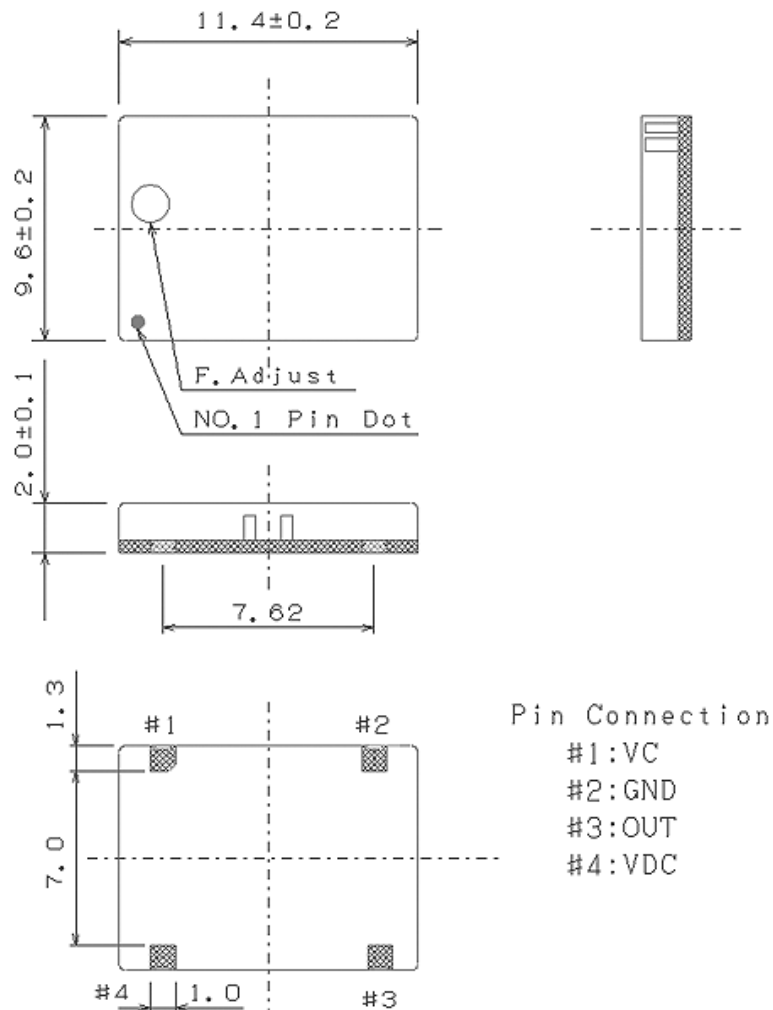
TVX-200 Clipped Sine Wave series

Type	型式	TVX203	TVX203T	TVX205	TVX205T
Frequency Range	周波数範囲	10MHz ~ 30MHz		10MHz ~ 50MHz	
Frequency Stability	周波数温度特性	±2.5ppm			
Operating Temp. Range	動作温度範囲	-30 to +75°C			
Supply Voltage	供給電圧	3.0V		5.0V	
Input Current	消費電流	2.0mA Max			
Output Level	出力電圧	1.0Vp-p Min			
Output Load	出力負荷	10KΩ ±10%/10pF			
Control Voltage Range	制御電圧	1.5V±1.0V		2.5V±1.0V	
Frequency Deviation	周波数制御特性	±5.0 ~ ±15.0ppm			
Frequency / Supply Voltage	周波数偏差／電圧	±0.2ppm / V _{DC} ±5.0%			
Frequency Adjustment	周波数調整	Trimmer less	±3.0ppm Min	Trimmer less	±3.0ppm Min
Preset Frequency	周波数偏差	±0.2ppm Max	±0.5ppm Max	±2.0ppm Max	±0.5ppm Max
Aging	エージング	±1.0ppm / Year			
Storage Temp. Range	保存温度範囲	-40 to +85°C			

※TTL CMOSタイプも生産可能です。

※TTL CMOS type is also producible.

Dimensions(Unit:mm)



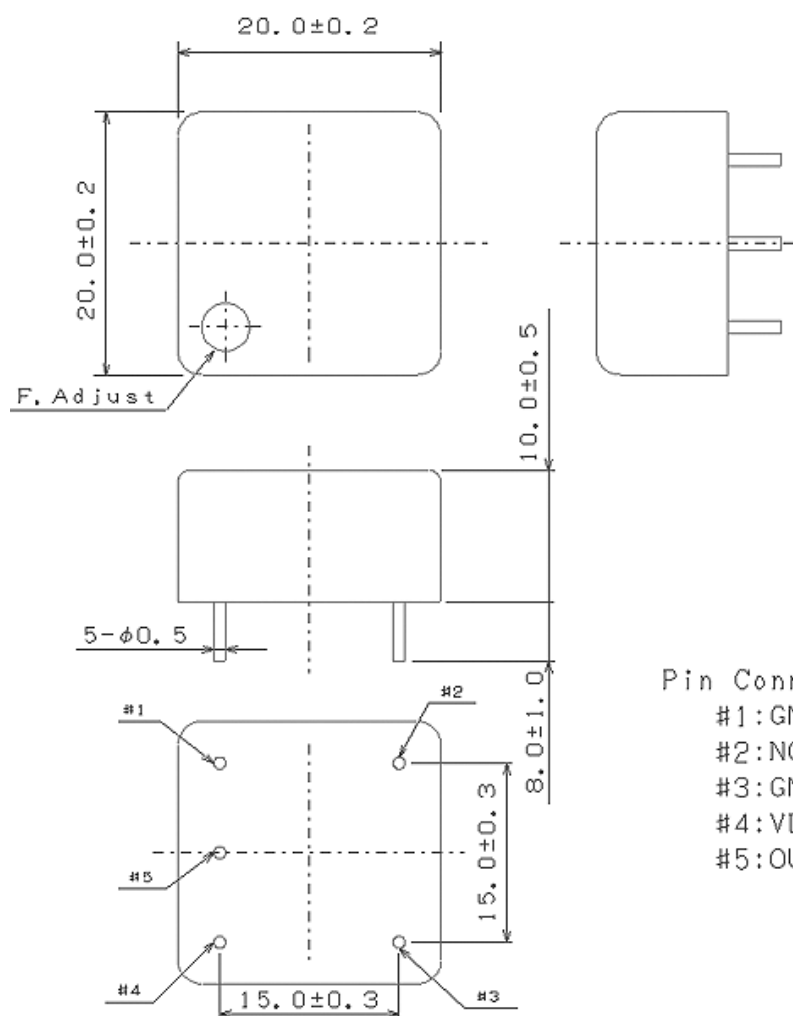


TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO Type

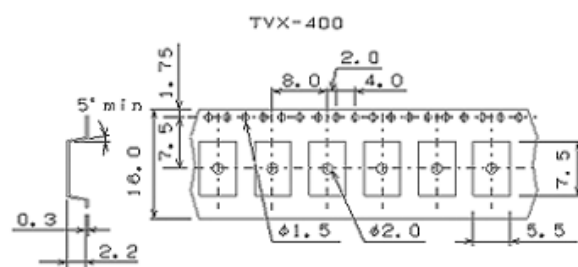
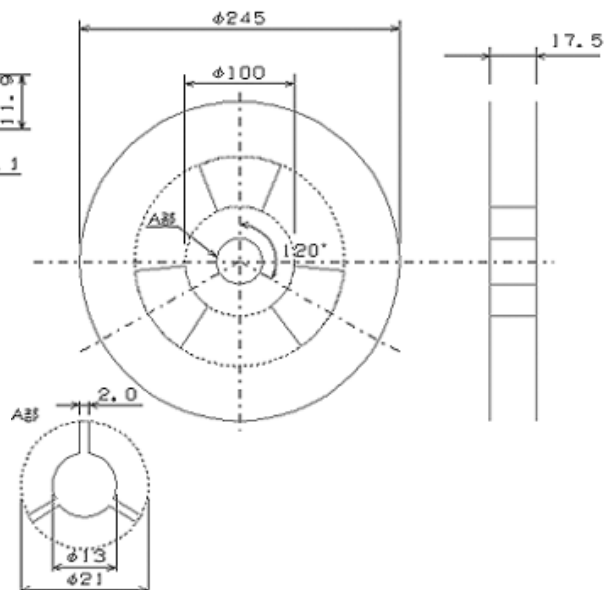
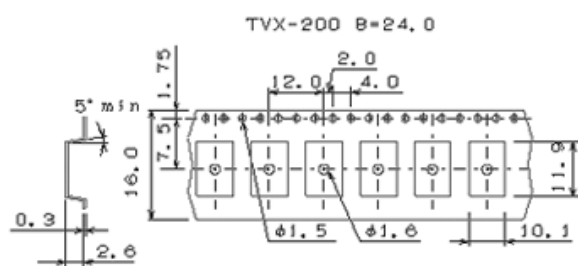
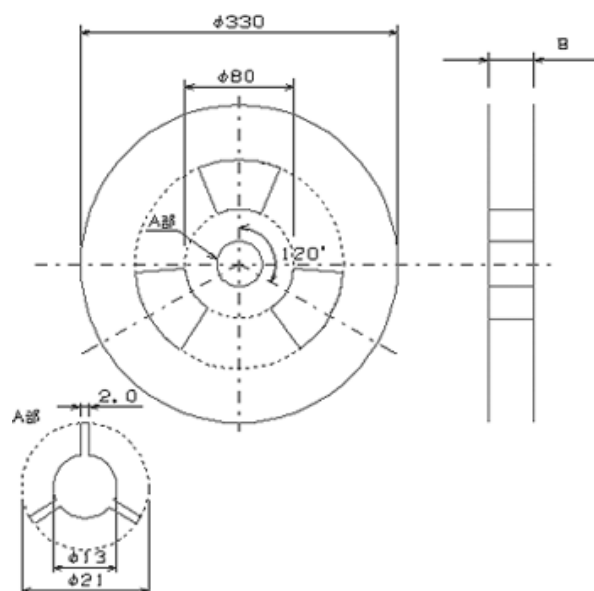
TVX-500 Clipped Sine Wave series

Type	型式	TCVCXO-500	
Frequency Range	周波数範囲	10MHz ~ 60MHz	
Frequency Stability	周波数温度特性	±2.5ppm	±1.5ppm
Operating Temp. Range	動作温度範囲	-30 ~ +75°C	-20 ~ +60°C
Supply Voltage	供給電圧	DC +5.0V ±5%	
Output Level	出力電圧	1.0Vp-p min	0.1V rms
Output Load	出力負荷	10KΩ // 10pF	100Ω
Supply Current	供給電流	2.0mA max	
F/Volt Change		±0.3ppm max	
Voltage Control		±5.0ppm ~ ±10.0ppm (+2.5V ±1.0V)	
Frequency Adjustment	周波数調整	±3.0ppm min	Trimmer less
Preset Frequency	周波数偏差	±0.5ppm Max	±1.5ppm max
Aging	エージング	±1.0ppm / Year	

Dimensions(Unit:mm)



Dimensions(Unit:mm)





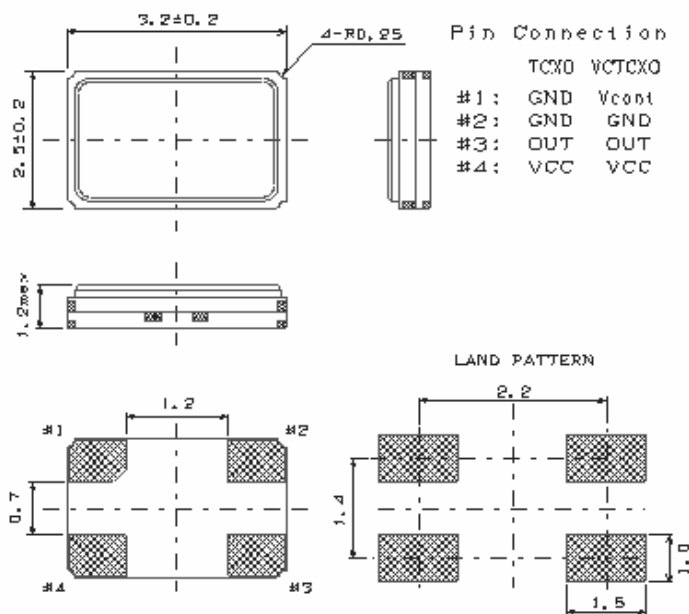
TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO 3.2 × 2.5mm SMD Type

CO-TS3225 Clipped Sine Wave series

Type	型式	CO-TS3255	CO-TS3225V
Frequency Range	周波数範囲	13MHz ~ 26MHz	
Frequency Stability	周波数温度特性	±1.5ppm, ±2.0ppm, ±2.5ppm(−30 to +75°C)	
Supply Voltage	供給電圧	2.7 to 5.0V	
Input Current	消費電流	2.0mA max	
Output Level	出力電圧	0.8Vp-p (Clipped sine wave)	
Output Load	出力負荷	10KΩ ±10%/10pF ±10%	
Load Change	負荷変動	±0.2ppm (10KΩ ±10%/10pF ±10%)	
Control Voltage Range	制御電圧	—	1.5V ±1.0V
Frequency Deviation	周波数制御特性	±8ppm, ±10ppm, ±15ppm	
Frequency / Supply Voltage	周波数偏差／電圧	±0.2ppm/Vcc ±5.0%	
Frequency Adjustment	周波数調整	Trimmer Less	
Aging	エージング	±1.0ppm / Year	
Phase Noise	位相ノイズ	−135dBc/Hz typ. (1.0KHz)	
Storage Temp. Range	保存温度範囲	−40 to +85°C	

Dimensions(Unit:mm)

CO-TS3225 and CO-TS3225V





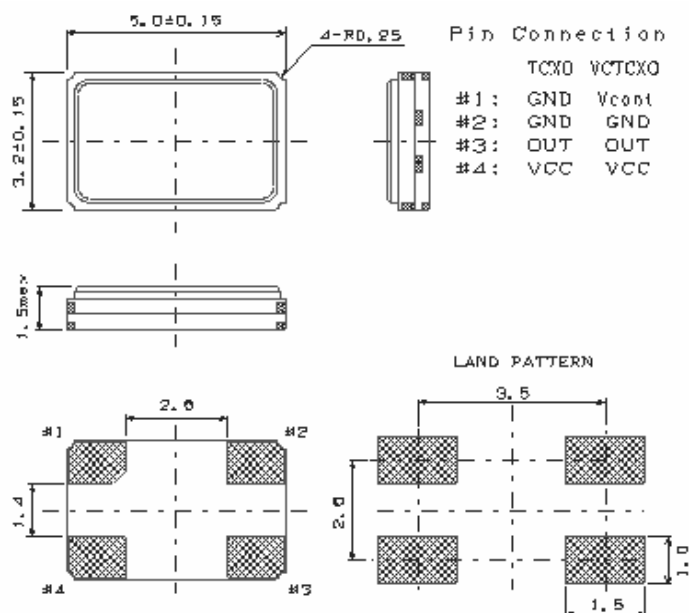
TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO 5 × 3.2mm SMD Type

CO-TS5032 Clipped Sine Wave series

Type	型式	CO-TS5032	CO-TS5032V
Frequency Range	周波数範囲	10MHz ~ 26MHz	
Frequency Stability	周波数温度特性	±1.5ppm, ±2.0ppm, ±2.5ppm(−30 to +75°C) ±2.5ppm, ±3.0ppm(−40 to +85°C)	
Supply Voltage	供給電圧	2.7 to 5.0V	
Input Current	消費電流	2.0mA max	
Output Level	出力電圧	0.8Vp-p (Clipped sine wave)	
Output Load	出力負荷	10KΩ ±10%/10pF ±10%	
Load Change	負荷変動	±0.2ppm (10KΩ ±10%/10pF ±10%)	
Control Voltage Range	制御電圧	—	1.5V ±1.0V
Frequency Deviation	周波数制御特性	±8ppm, ±10ppm, ±15ppm	
Frequency / Supply Voltage	周波数偏差／電圧	±0.2ppm/Vcc ±5.0%	
Frequency Adjustment	周波数調整	Trimmer Less	
Aging	エージング	±1.0ppm / Year	
Phase Noise	位相ノイズ	−135dBc/Hz typ. (1.0KHz)	
Storage Temp. Range	保存温度範囲	−40 to +85°C	

Dimensions(Unit:mm)

CO-TS5032 and CO-TS5032V





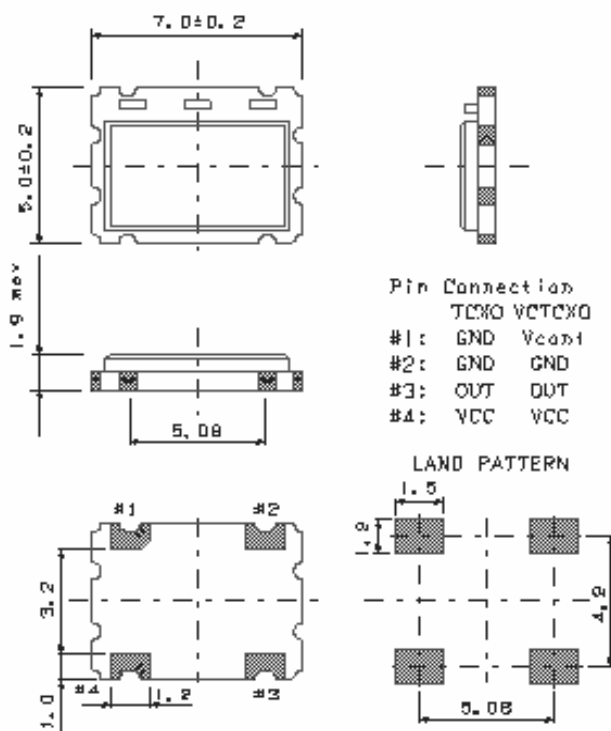
T *EMPERATURE COMPENSATED VOLTAGE CONTROLLED* **CRYSTAL OSCILLATORS TCVCXO 7 × 5mm SMD Type**

CO-TS7050 Clipped Sine Wave series

Type	型式	CO-TS7050	CO-TS7050V
Frequency Range	周波数範囲	10MHz ~ 26MHz	
Frequency Stability	周波数温度特性	$\pm 1.5\text{ppm}, \pm 2.0\text{ppm}, \pm 2.5\text{ppm} (-30 \text{ to } +75^\circ\text{C})$ $\pm 2.5\text{ppm}, \pm 3.0\text{ppm} (-40 \text{ to } +85^\circ\text{C})$	
Supply Voltage	供給電圧	2.7 to 5.0V	
Input Current	消費電流	2.0mA max	
Output Level	出力電圧	0.8Vp-p (Clipped sine wave)	
Output Load	出力負荷	10K Ω $\pm 10\%$ // 10pF $\pm 10\%$	
Load Change	負荷変動	$\pm 0.2\text{ppm}$ (10K Ω $\pm 10\%$ // 10pF $\pm 10\%$)	
Control Voltage Range	制御電圧	—	1.5V $\pm 1.0\text{V}$
Frequency Deviation	周波数制御特性	$\pm 8\text{ppm}, \pm 10\text{ppm}, \pm 15\text{ppm}$	
Frequency / Supply Voltage	周波数偏差／電圧	$\pm 0.2\text{ppm}/V_{CC} \pm 5.0\%$	
Frequency Adjustment	周波数調整	Trimmer Less	
Aging	エージング	$\pm 1.0\text{ppm} / \text{Year}$	
Phase Noise	位相ノイズ	-135dBc/Hz typ. (1.0KHz)	
Storage Temp. Range	保存温度範囲	-40 to +85°C	

Dimensions(Unit:mm)

CO-TS7050 and CO-TS7050V





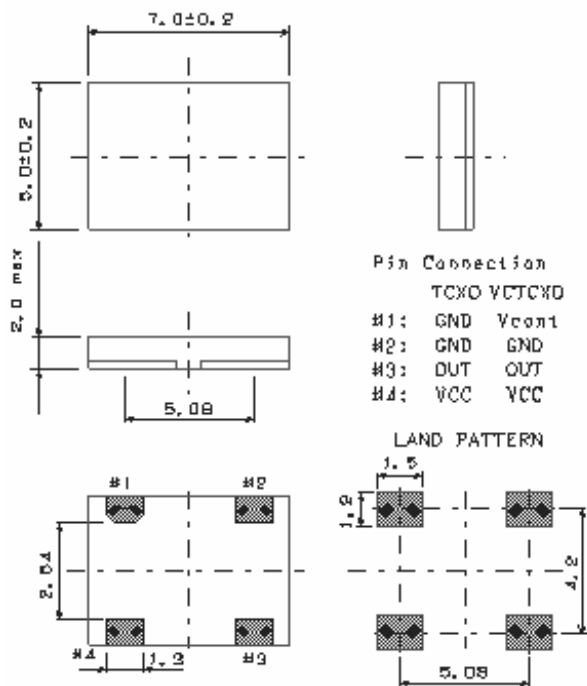
TEMPERATURE COMPENSATED VOLTAGE CONTROLLED CRYSTAL OSCILLATORS TCVCXO 7 × 5mm SMD Type

CO-TS7050 TTL/CMOS series

Type	型式	CO-TS7050TS	CO-TS7050VS
Frequency Range	周波数範囲	13MHz ~ 26MHz	
Frequency Stability	周波数温度特性	$\pm 2.0\text{ppm}, \pm 2.5\text{ppm}(-30 \text{ to } +75^{\circ}\text{C})$	
Supply Voltage	供給電圧	3.0 to 5.0V	
Input Current	消費電流	20mA max	
Output Level	出力電圧	90% Vcc min	
		10% Vcc max	
Output Load	出力負荷	15pF	
Load Change	負荷変動	$\pm 0.2\text{ppm} (15\text{pF} \pm 10\%)$	
Control Voltage Range	制御電圧	—	$1.5\text{V} \pm 1.0\text{V}$
Frequency Deviation	周波数制御特性	$\pm 8\text{ppm}, \pm 10\text{ppm}, \pm 15\text{ppm}$	
Frequency / Supply Voltage	周波数偏差／電圧	$\pm 0.2\text{ppm}/\text{Vcc} \pm 5.0\%$	
Frequency Adjustment	周波数調整	Trimmer Less	
Aging	エージング	$\pm 1.0\text{ppm} / \text{Year}$	
Phase Noise	位相ノイズ	$-135\text{dBc}/\text{Hz typ. (1.0KHz)}$	
Storage Temp. Range	保存温度範囲	$-40 \text{ to } +85^{\circ}\text{C}$	

Dimensions(Unit:mm)

CO-TS7050TS and CO-TS7050VS

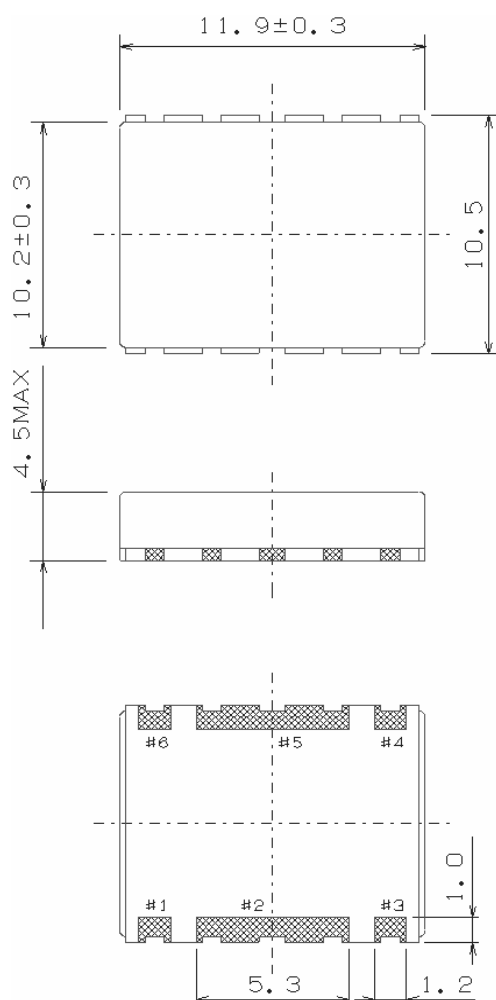


RX-VCO module

Type	型式	RXVCO100
Frequency	周波数	500MHz ~ 1000MHz
Frequency Range	周波数範囲	25MHz
Output Power	出力	0±3dBm
Carrier to Noise ratio	C/N比	118dBc/Hz typ (off 25KHz)
Hermonics	ハーモニクス	20dBc min (n=2 to 5)
Supply Voltage	供給電圧	5.0V
Supply Current	供給電流	6mA typ
Operating Temp. Range	動作温度範囲	-20 to +70°C
Load Impedance	出力負荷	50Ω

Dimensions(Unit:mm)

RX-VCO100



Pin Connection

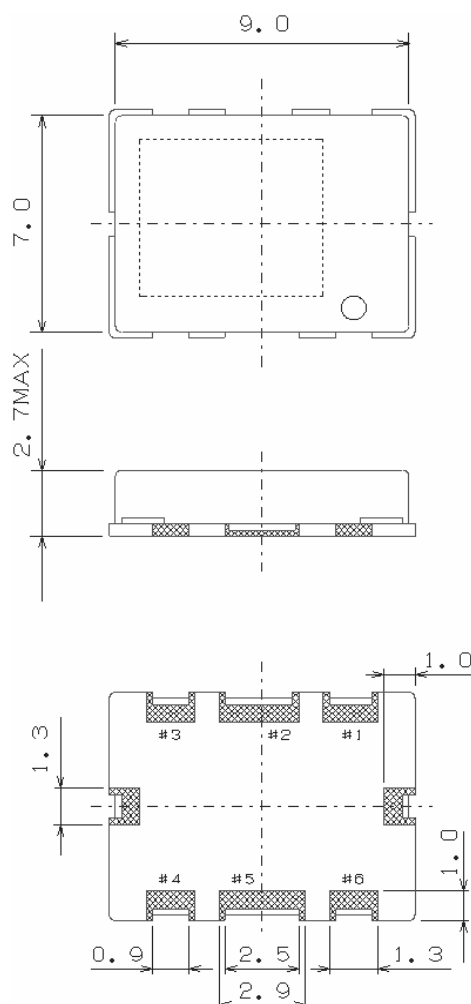
- #1:VCC
- #2:GND
- #3:Vt
- #4:NC
- #5:GND
- #6:OUT

TX-VCO module

Type	型式	TXVCO100
Frequency	周波数	500MHz ~ 1000MHz
Frequency Range	周波数範囲	25MHz
Output Power	出力	0±3dBm
Carrier to Noise ratio	C/N比	110dBc/Hz typ (off 25KHz)
Hermonics	ハーモニクス	20dBc min (n=2 to 5)
Modulation	変調	5.0±0.3KHz (at 1KHz)
AF Input	音声入力	30 ~ 60mVrms (at 1KHz)
Supply Voltage	供給電圧	5.0V
Supply Current	供給電流	5.5mA typ
Operating Temp. Range	動作温度範囲	-20 to +70°C
Load Impedance	出力負荷	50Ω

Dimensions(Unit:mm)

TX-VCO100



Pin Connection

- #1: VCC
- #2: GND
- #3: Vt
- #4: MOD
- #5: GND
- #6: OUT



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