

Features

- 11.4x4.6x4.1mm standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Tape & Reel packaging for automatic assembly.
- Lead Free and RoHS compliant



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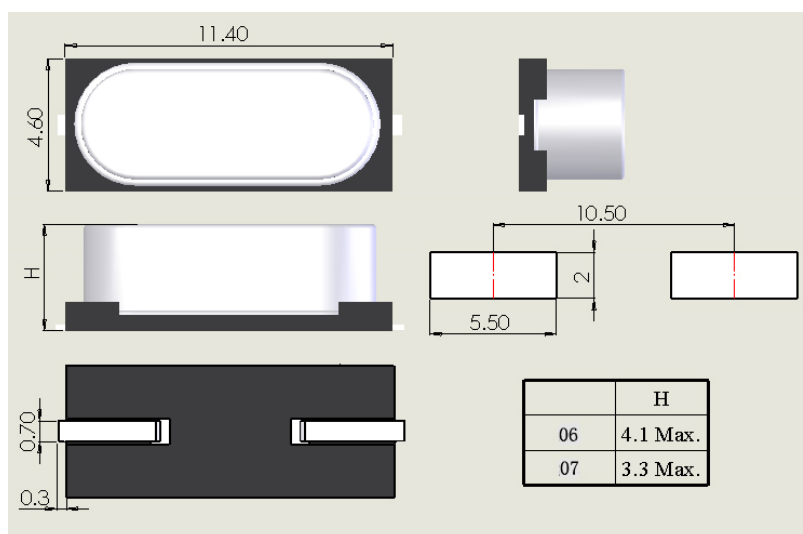
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC06: HC-49/S SMD	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule: JDC06-1C4E18-10.000MHz HC-49/S SMD Fund ±20ppm ±30ppm -10~+70℃ 18pF 10.000MHz						
Note: For special requirements, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uWtyp.,500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @100V DC
Aging	±3ppm/year

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
3.200 – 4.999	Fund	150
5.000 – 6.999	Fund	100
7.000 – 8.999	Fund	80
9.000 – 12.999	Fund	60
13.000 – 19.999	Fund	40
20.000 – 33.000	Fund	30
27.000 – 70.000	3 rd O/T	100



Features

- 11.4x4.6x3.3mm standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Tape & Reel packaging for automatic assembly.
- Lead Free and RoHS compliant.



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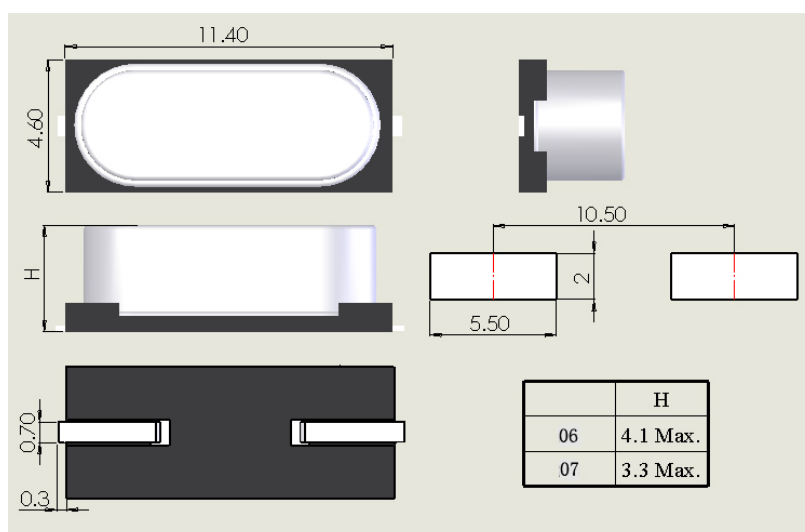
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (MHz)
JDC07: HC-49/S SMDL	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule: JDC07-1C4F18-10.000MHz HC-49/S SMDL Fund ±20ppm ±30ppm -10~+70℃ 18pF 10.000MHz						
Note: For special requirements, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uW typ., 500uW Max.
Shunt Capacitance(C0)	5.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (ohms)
3.200 – 4.999	Fund	100
5.000 – 6.999	Fund	70
7.000 – 8.999	Fund	50
9.000 – 12.999	Fund	35
13.000 – 33.999	Fund	30
27.000 – 70.000	3 rd O/T	100



Features

- 10.7x4.3x3.5mm standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Low profile 3.8mm height max.
- Lead Free and RoHS compliant



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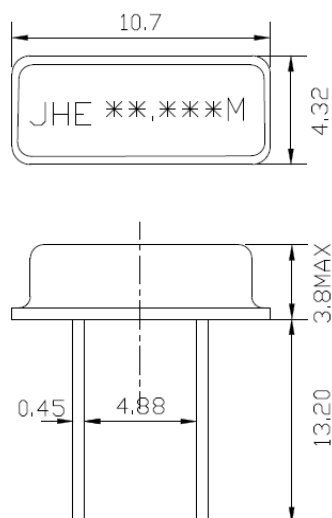
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC08: HC-49/S	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100	H: -35~+85		
Part number rule: JDC08-1C4F18-10.000MHz HC-49/S Fund ±20ppm ±30ppm -10~+70℃ 18pF 10.000MHz						
Note: For special requirements, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uW typ. 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
3.200 – 4.999	Fund	150
5.000 – 6.999	Fund	100
7.000 – 8.999	Fund	80
9.000 – 12.999	Fund	60
13.000 – 19.999	Fund	40
20.000 – 33.000	Fund	30
27.000 – 70.000	3 rd O/T	100



JHE	(1) Supplier LOGO
.*M	(2) Frequency For example: 3.579545M means 3.579545MHz

Features

- 10.7x4.3x2.5mm standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Low profile 2.8mm height max.
- Lead Free and RoHS compliant.



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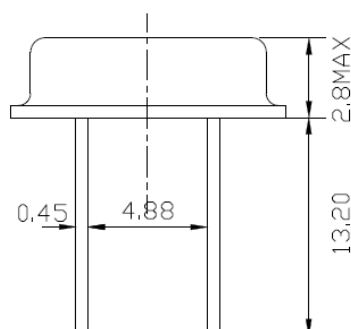
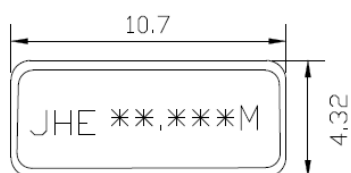
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC09: HC-49/S	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100	H: -35~+85		
Part number rule: JDC09-1C4F18-10.000MHz HC-49/S Fund ±20ppm ±30ppm -10~+70°C 18pF 10.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
3.200 – 4.999	Fund	150
5.000 – 6.999	Fund	100
7.000 – 8.999	Fund	80
9.000 – 12.999	Fund	60
13.000 – 19.999	Fund	40
20.000 – 33.000	Fund	30
27.000 – 70.000	3 rd O/T	100



JHE	(1) Supplier LOGO
.*M	(2) Frequency For example: 3.579545M means 3.579545MHz

Features

- 11.0x4.6x13.5mm standard footprint.
- High stability and Long-term stability.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Lead Free and RoHS compliant.



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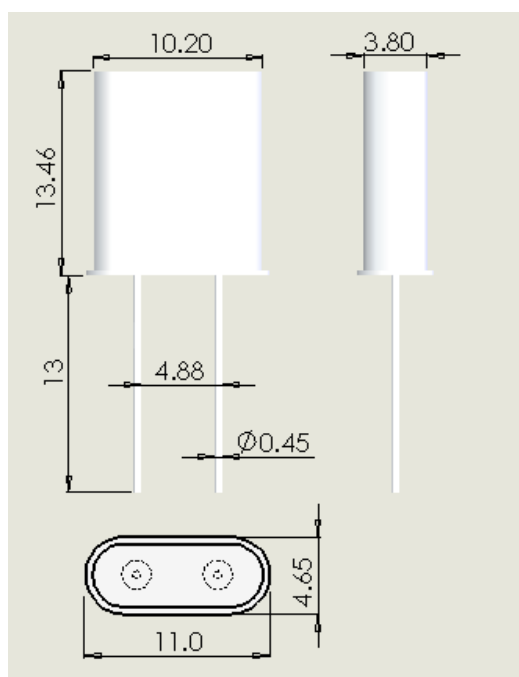
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC10: HC-49/U	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX:	
	5: 5 Th OT	C: ±20	3: ±20	C: -20~+70	Load capacitor	
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
	Part number rule: JDC10-1C4F18-20.000MHz HC-49/U Fund ±20ppm ±30ppm -10~+70°C 18pF 20.000MHz					
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uw typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (ohms)
1.800 – 1.999	Fund	750
2.000 – 2.399	Fund	500
2.400 – 3.199	Fund	300
3.200 – 4.199	Fund	100
4.200 – 4.899	Fund	70
4.900 – 5.999	Fund	50
6.000 – 9.999	Fund	40
10.000 – 15.999	Fund	30
16.000 – 35.000	Fund	20
20.000 – 24.999	3 rd O/T	60
25.000 – 100.000	3 rd O/T	40
60.000 – 79.999	5 th O/T	80
80.000 – 150.000	5 th O/T	60



Features

- $\Phi 2 \times 6$ standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Lead Free and RoHS compliant



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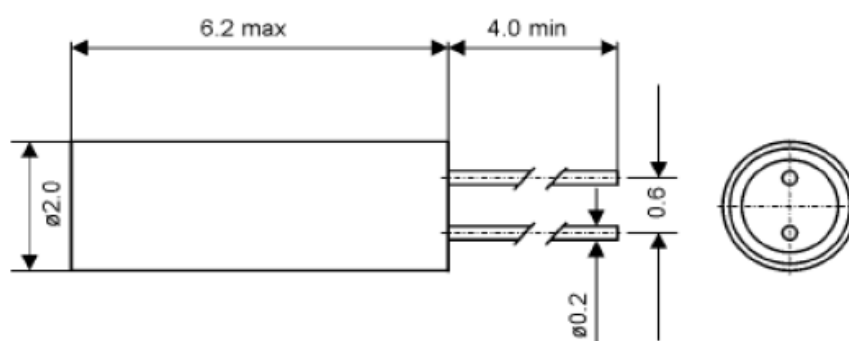
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC15: Φ2x6	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX (12.00-30.00)
		B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25			
			7: ±100			
Part number rule: JDC15-1C4F18-20.000M Φ2x6 Fund ±20ppm ±30ppm -10~+70℃ 18pF 20.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-40°C to $+85^{\circ}\text{C}$
Drive Level(DL)	100uW typ., 500uW Max.
Shunt Capacitance(C0)	5.0pF Max.
Insulation Resistance(IR)	500M Ω Min. @ 100V DC
Aging	± 3 ppm/year

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
12.00 – 27.00	Fund	50
27.01 – 30.00	Fund	30



Features

- $\Phi 3 \times 8$ standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Lead Free and RoHS compliant



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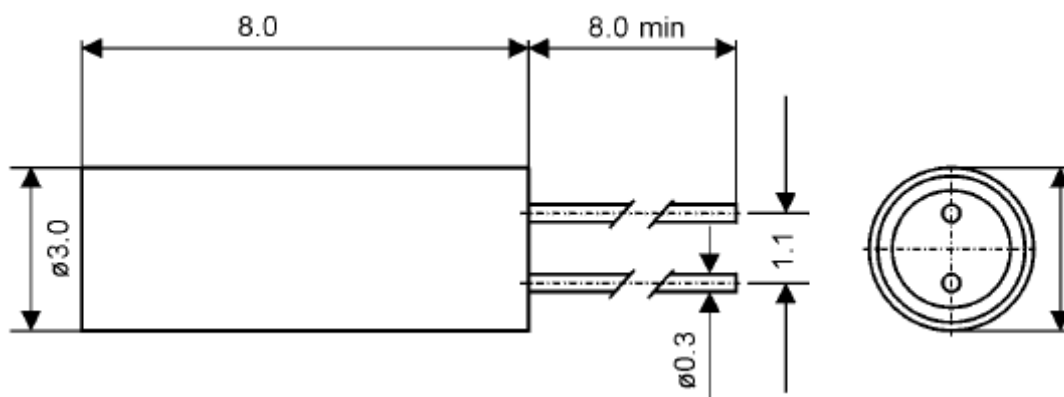
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (MHz)
JDC16: Φ3x8	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX (4.01-70.000)
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25			
			7: ±100			
Part number rule: JDC16-1C4F18-20.000M Φ3x8 Fund ±20ppm ±30ppm -10~+70℃ 18pF 20.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-40°C to $+85^{\circ}\text{C}$
Drive Level(DL)	100uW typ., 500uW Max.
Shunt Capacitance(C0)	5.0pF Max.
Insulation Resistance(IR)	500M Ω Min. @ 100V DC
Aging	± 3 ppm/year

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
4.01 – 6.00	Fund	120
6.01 – 10.00	Fund	80
10.01 – 27.00	Fund	50
27.01 – 36.00	Fund	30
36.01 – 70.00	3rd	80



Features

- 13x4.8x5mm standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Tape & Reel packaging for automatic assembly.
- Lead Free and RoHS compliant



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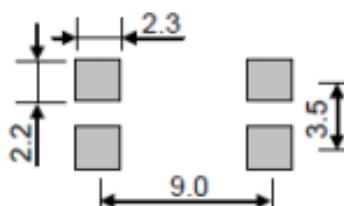
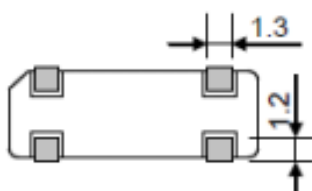
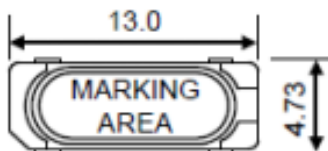
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JDC36: HC-49/SN SMD	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule: JDC36-1C4E18-10.000MHz HC-49/SN SMD Fund ±20ppm ±30ppm -10~+70℃ 18pF 10.000MHz						
Note: For special requirements, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	100uWtyp.,500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @100V DC
Aging	±5ppm/year Max.

Equivalent Series Resistance(ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
3.200 – 4.999	Fund	150
5.000 – 6.999	Fund	100
7.000 – 8.999	Fund	80
9.000 – 12.999	Fund	60
13.000 – 19.999	Fund	40
20.000 – 33.000	Fund	30
27.000 – 70.000	3 rd O/T	100



Features

- Φ2x6 standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Lead Free and RoHS compliant



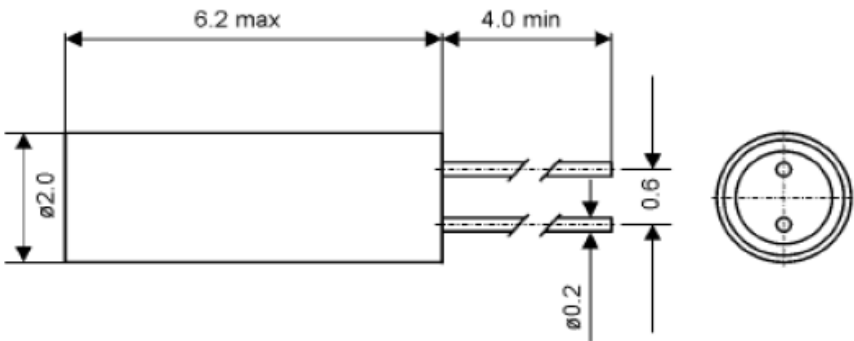
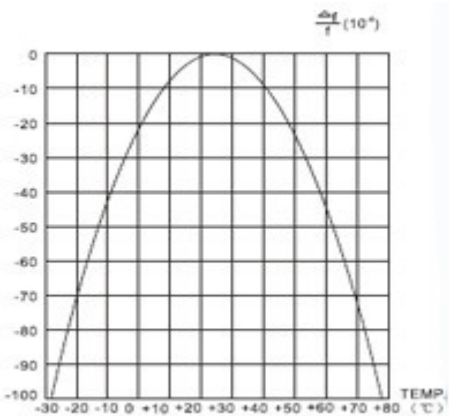
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Product Type	Calibration Tolerance (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (KHz)
JDF15: Φ2x6 Cylinder	1: ±10	A: -10~+60	XX: Load capacitor	XXX.XXX (28KHz~200KHz)
	2: ±15	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JDF15-1C12.5-32.768KHz Φ2x6 ±10ppm -20~+70℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

Electrical Specification

Storage Temp. Range	-40℃ to +85℃
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	1.00pF Typ.
Temperature Coefficient	-0.035ppm/℃ ² Typ.
Aging	±3ppm/year Typ.
ESR	35 KΩ (Typ.)/40 KΩ (Max.)

Frequency & Temperature Curve



Features

- $\Phi 3 \times 8$ standard footprint.
- Resistance welding for hermetical seal.
- Tight tolerance 10 ppm available.
- Lead Free and RoHS compliant



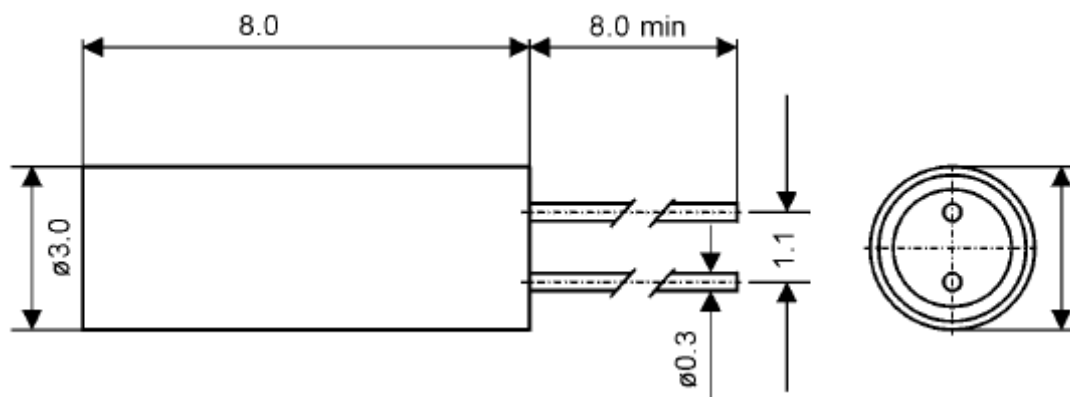
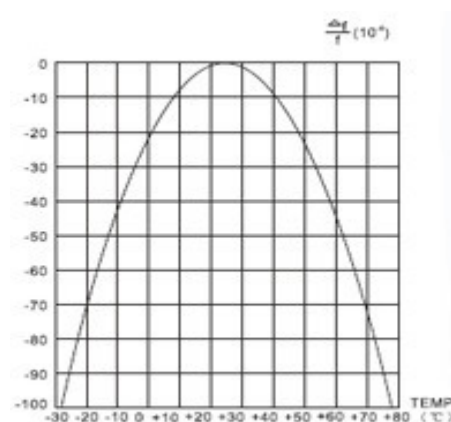
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Product Type	Calibration Tolerance (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (KHz)
JDF16: Φ3x8 Cylinder	1: ±10	A: -10~+60	XX: Load capacitor (5~30pF)	XXX.XXX (30KHz~100KHz)
	2: ±15	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JDF16-1C12.5-32.768KHz Φ3x8 ±10ppm -20~+70℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

Electrical Specification

Storage Temp. Range	-40°C to $+85^\circ\text{C}$
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	1.70pF Typ.
Temperature Coefficient	$-0.035 \text{ppm}/^\circ\text{C}^2$ Typ.
Aging	$\pm 3 \text{ppm}/\text{year}$ Typ.
ESR	25 K Ω (Typ.)/30 K Ω (Max.)

Frequency & Temperature Curve



Features

- Typical 7.0 x 5.0 x 1.2 mm ceramic metal SMD package.
- Resistance welding for hermetical seal.
- Tape & Reel packaging for automatic assembly.
- High frequency up to 50MHz fundamental.
- Lead Free and RoHS compliant



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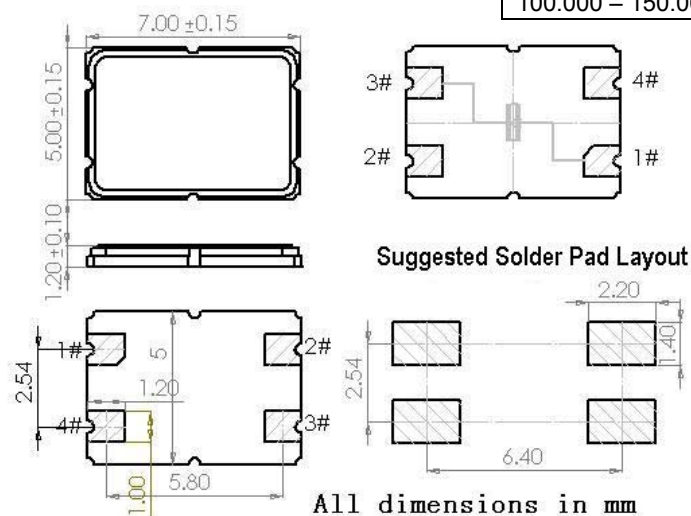
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC01: 7x5 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
	5: 5 Th OT	C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
		7: ±100				
Part number rule: JSC01-1D4C18-20.000M 7x5 SMD crystal Fund ±30ppm ±30ppm -20~+70°C 18pF 20.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	50uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance (ESR)

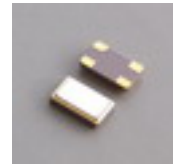
Frequency (MHz)	Mode	Max ESR (Ohms)
7.3728 – 8.000	Fund	80
8.001 – 12.000	Fund	60
12.001 – 20.000	Fund	40
20.001 – 50.000	Fund	30
36.000 – 50.000	3 rd O/T	80
50.001 – 125.000	3 rd O/T	60
100.000 – 150.000	5 th O/T	120



Pin	Connection
#1,#3	X'tal
#2,#4	GND

Features

- Typical 6.0 x3.5 x 1.0 mm ceramic metal SMD package.
- Resistance welding for hermetical seal.
- Tape & Reel packaging for automatic assembly.
- High frequency up to 50MHz fundamental.
- Lead Free and RoHS compliant.



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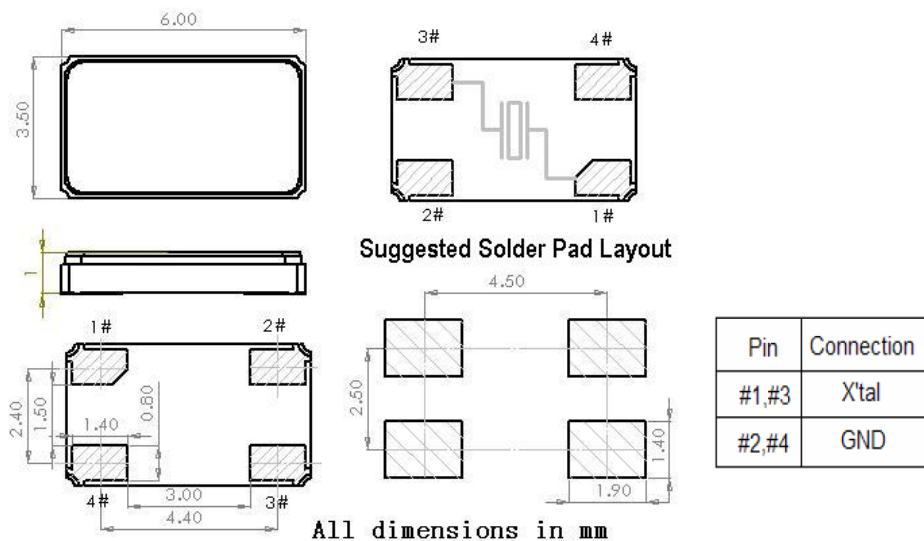
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC02: 6x3.5 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule : JSC02-1D5D18-12.000MHz 6x3.5 SMD crystal Fund ±30ppm ±50ppm -40~+85°C CL=18pF 12.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	50uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
8.000 – 10.000	Fund	80
10.001 – 12.000	Fund	60
12.001 – 50.000	Fund	40
48.000 – 60.000	3 rd O/T	80
60.001 – 125.000	3 rd O/T	60



Features

- Typical 5.0 x3.2 x 0.7 mm ceramic metal SMD package.
- Resistance welding for hermetical seal.
- Tape & Reel packaging for automatic assembly.
- Lead Free and RoHS compliant.



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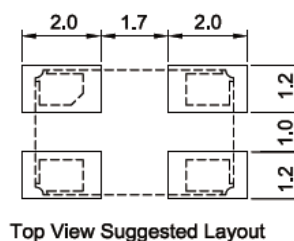
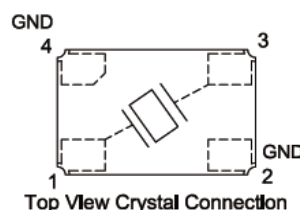
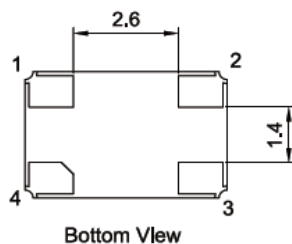
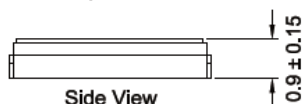
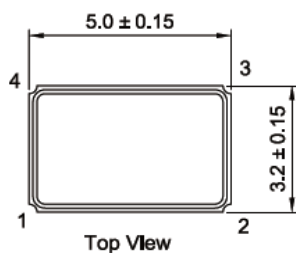
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC03: 5.0x3.2 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100	L: -30~+85		
			8: ±200	J: -40~+125		
Part number rule : JSC03-1C4B20-32.000M 5.0x3.2 SMD crystal Fund ±20ppm ±30ppm 0~+70℃ CL=20pF 32.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55 to +125°C
Drive Level(DL)	50uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500M Ω Min. @ 100V DC
Aging	± 3 ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
8.000 – 9.999	Fund	120
10.000 – 12.000	Fund	100
12.001 – 16.000	Fund	80
16.001 – 25.000	Fund	60
25.001 – 50.000	Fund	40
60.000 – 80.000	3 rd O/T	80
80.001 – 125.000	3 rd O/T	60



Features

- Typical 3.2 x2.5 x 1.0 mm ceramic SMD package.
- Tape & Reel packaging for automatic assembly.
- Small size for PCB space saving.
- High frequency up to 50MHz fundamental.
- Lead Free and RoHS compliant.



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Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (MHz)
JSC04: 3.2x2.5 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	E: -20~+75		
		H: ±25	6: ±25	F: -10~+70		
			7: ±100	G: -45~+125		
			8: ±9	H: -35~+85		
			9: ±150	J: -40~+125		
				K: -40~+105		
				L: -30~+85		
				N: -40~+150		

Part number rule: JSC04-1D4B20-32.000M

3.2x2.5 SMD crystal Fund ±30ppm ±30ppm 0+70℃ CL=20pF 32.000MHz

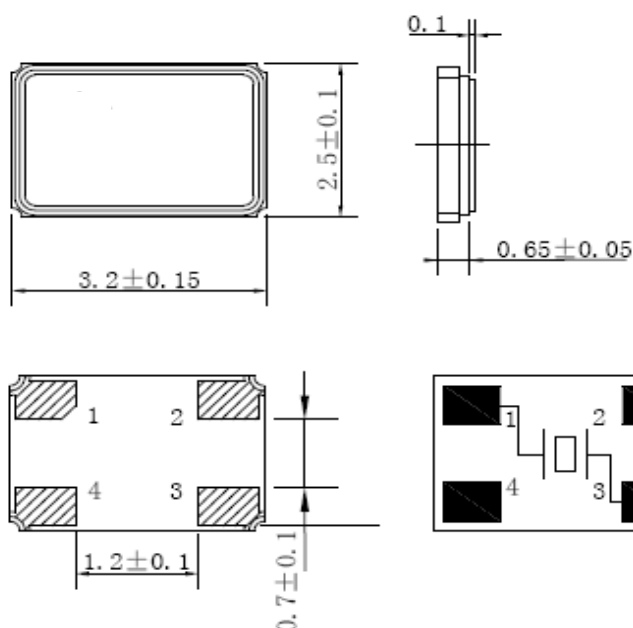
Note: For special requirement, please consult us.

Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	50uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±5ppm/year

Equivalent Series Resistance (ESR)

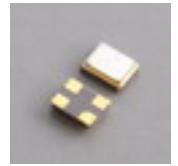
Frequency (MHz)	Mode	Max ESR (Ohms)
10.000 – 12.000	Fund	100
12.001 – 16.000	Fund	80
16.001 – 25.000	Fund	60
25.001 – 50.000	Fund	40
60.000 – 80.000	3 rd O/T	80
80.001 – 125.000	3 rd O/T	60



Pin	Connection
#1,#3	X'tal
#2,#4	GND

Features

- Typical 2.5 x2.0 x 0.6 mm ceramic SMD package.
- Tape & Reel packaging for automatic assembly.
- Small size for PCB space saving.
- High frequency up to 50MHz fundamental.
- Lead Free and RoHS compliant.



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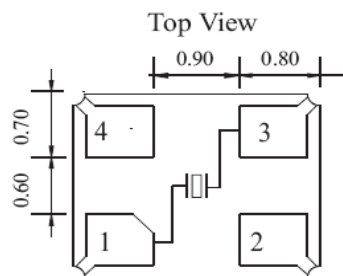
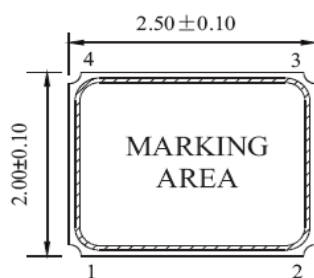
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC05: 2.5x2.0 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
		B: ±15	2: ±15	B: 0~+70	XX: Load capacitor (8~16pF)	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule: JSC05-1C2D12-16.000M 2.5x2.0 SMD crystal Fund ±20ppm ±15ppm -40~+85℃ CL=12pF 16.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-40°C to +85°C
Drive Level(DL)	50uW typ., 100uW Max.
Shunt Capacitance(C0)	3.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

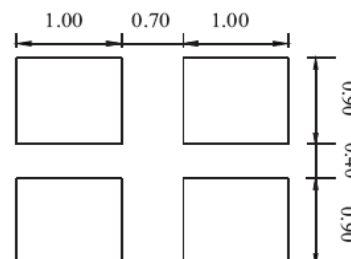
Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
12.000 – 15.999	Fund	120
16.000 – 19.999	Fund	100
20.001 – 29.999	Fund	80
30.000 – 50.000	Fund	50



Pin	Connection
#1,#3	X'tal
#2,#4	GND

Recommended Solder Pattern



Features

- Typical 5.0 x3.2 x 1.0 mm ceramic metal SMD package.
- Resistance welding for hermetical seal.
- Tape & Reel packaging for automatic assembly.
- Lead Free and RoHS compliant.

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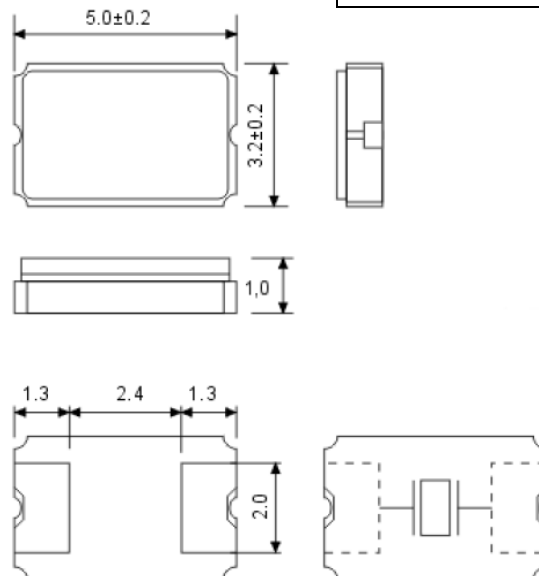
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC31: 5.0x3.2 2 pin SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
	3: 3 rd OT	B: ±15	2: ±15	B: 0~+70	XX: Load capacitor	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule : JSC31-1C4B20-32.000M 5.0x3.2 SMD crystal 2pin Fund ±20ppm ±30ppm 0~+70°C CL=20pF 32.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-55 to +125°C
Drive Level(DL)	50uW typ., 500uW Max.
Shunt Capacitance(C0)	7.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±3ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
8.000 – 9.999	Fund	120
10.000 – 12.000	Fund	100
12.001 – 16.000	Fund	80
16.001 – 25.000	Fund	60
25.001 – 50.000	Fund	40
60.000 – 80.000	3 rd O/T	80
80.001 – 125.000	3 rd O/T	60



Features

- Typical 12.4 x 4.8 x 3.6 mm plastic SMD package.
- Tape & Reel packaging for automatic assembly.
- Small size for PCB space saving.
- High frequency up to 36MHz fundamental.
- RoHS compliant.



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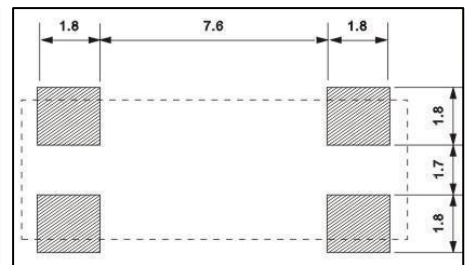
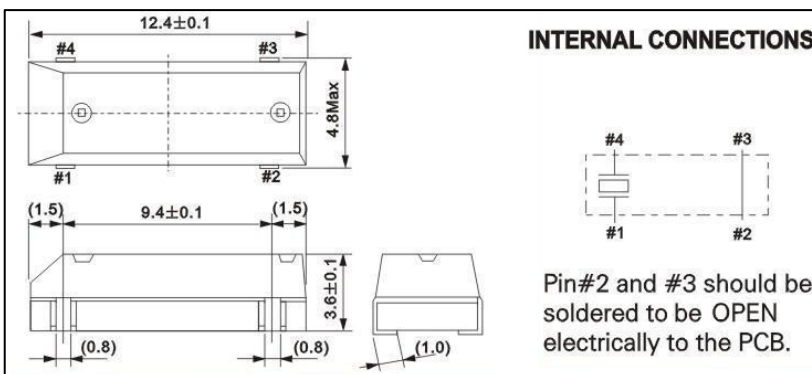
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC32: 12.4x4.8 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
		B: ±15	2: ±15	B: 0~+70	XX: Load capacitor (8~16pF)	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	F: -10~+70		
		H: ±25	6: ±25	G: -45~+125		
			7: ±100			
Part number rule: JSC32-1C2C12-16.000M 12.4x4.8 SMD crystal Fund ±20ppm ±15ppm -20~+70°C CL=12pF 16.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-40°C to +85°C
Drive Level(DL)	50uW typ., 100uW Max.
Shunt Capacitance(C0)	5.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±5ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
3.500 – 4.000	Fund	150
4.001 – 6.000	Fund	120
6.001 – 10.000	Fund	80
10.001 – 27.000	Fund	50
27.001 – 36.000	Fund	30



Features

- Typical 2.0x 1.6 x 0.7 mm plastic SMD package.
- Tape & Reel packaging for automatic assembly.
- Small size for PCB space saving.
- High frequency up to 50MHz fundamental.
- RoHS compliant.

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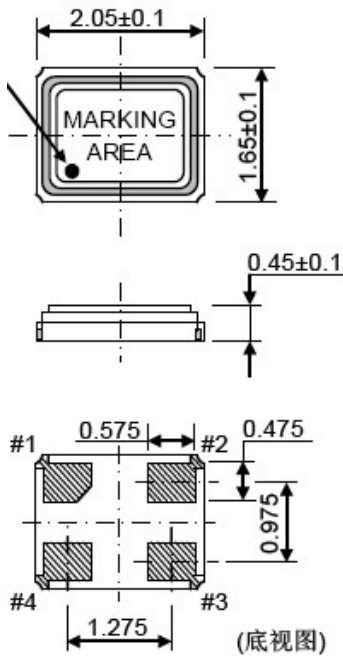
Product Type	Oscillation Mode	Calibration Tolerance (ppm)	Temperature Stability (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (MHz)
JSC35: 2.0x1.6 SMD Crystal	1: Fund	A: ±10	1: ±10	A: -10~+60	0: Series	XXX.XXX
		B: ±15	2: ±15	B: 0~+70	XX: Load capacitor (8~16pF)	
		C: ±20	3: ±20	C: -20~+70		
		D: ±30	4: ±30	D: -40~+85		
		F: ±50	5: ±50	E: -20~+75		
		H: ±25	6: ±25	F: -10~+70		
			7: ±100	G: -45~+125		
				M: -20~+85		
Part number rule: JSC35-1C2C12-16.000M 2.0x1.6 SMD crystal Fund ±20ppm ±15ppm -20~+70℃ CL=12pF 16.000MHz						
Note: For special requirement, please consult us.						

Electrical Specification

Storage Temp. Range	-40°C to +85°C
Drive Level(DL)	50uW typ., 100uW Max.
Shunt Capacitance(C0)	5.0pF Max.
Insulation Resistance(IR)	500MΩ Min. @ 100V DC
Aging	±5ppm/year

Equivalent Series Resistance (ESR)

Frequency (MHz)	Mode	Max ESR (Ohms)
20.000 – 35.000	Fund	100
35.001 – 50.000	Fund	80



Features

- 1 8.0 x 3.8 mm standard footprint.
- 2 Tight tolerance 10 ppm available.
- 3 Lead Free and RoHS compliant



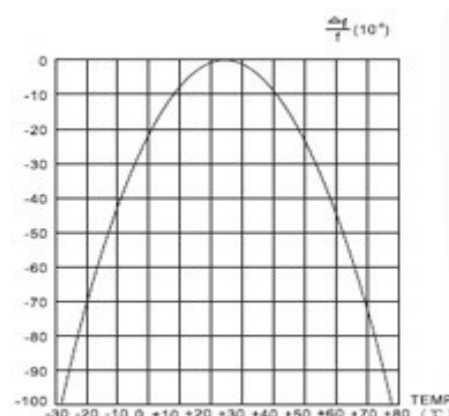
Part Number Guidance

Part Number Guidelines				
Product Type	Calibration Tolerance (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (KHz)
JSF20: 8.0x3.8 Plastic SMD	1: ±10	A: -10~+60	XX: Load capacitor	XXX.XXX (32.768KHz)
	2: ±15	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JSF20-3C12.5-32.768KHz 8.0x3.8 ±20ppm -20~+70℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

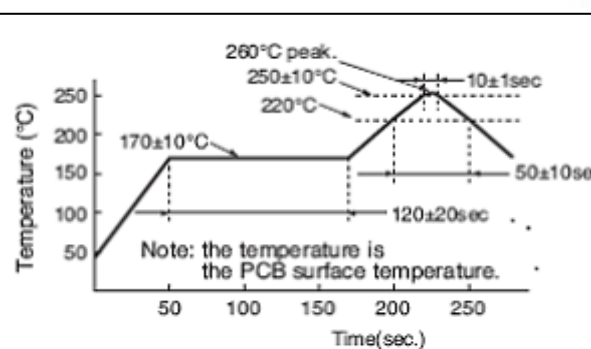
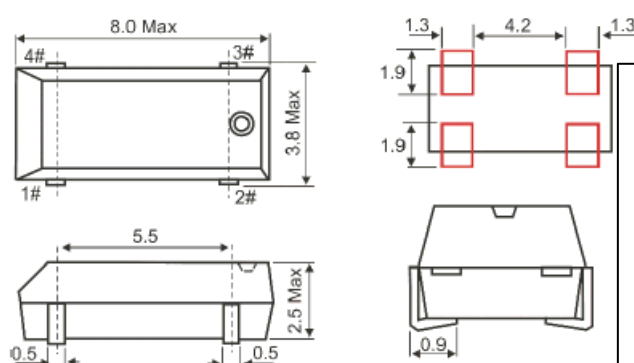
Electrical Specification

Storage Temp. Range	-55°C to +125°C
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	1.55pF Typ.
Temperature Coefficient	-0.035ppm/°C ² Typ.
Aging	±3ppm/year Typ.
ESR	35 KΩ (Typ.)/50 KΩ (Max.)

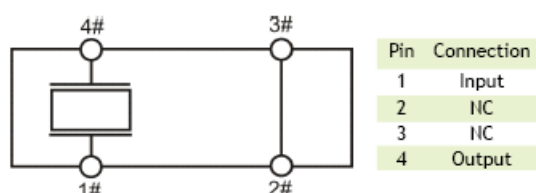
Frequency & Temperature Curve



MECHANICAL DIMENSIONS (all in mm)



ELECTRICAL CONNECTIONS



Remark

1. Do not connect terminals 2#, 3# to external device and GND. These are dummy terminals.
2. The shell of cylinder inside resin mold may be partially exposed; it does not affect the characteristics of crystal unit.

Features

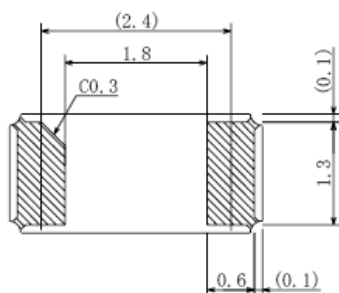
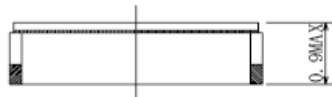
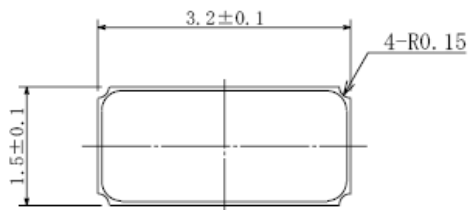
- 3.2 x 1.5 mm SMD package.
- Tight tolerance 20 ppm available.
- Lead Free and RoHS compliant

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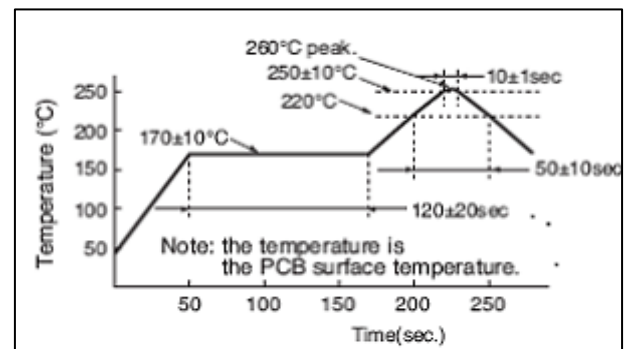
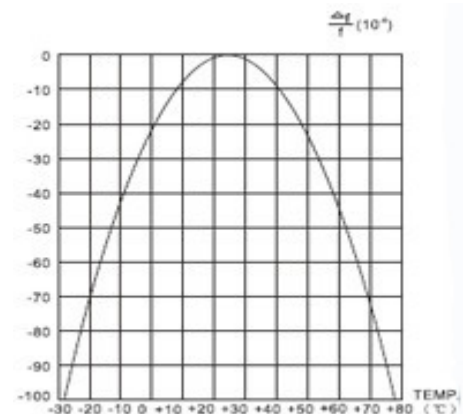
Product Type	Calibration Tolerance (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (KHz)
JSF25: 3.2x1.5 SMD	1: -	A: -10~+60	XX: Load capacitor (7pF,9pF,12.5pF)	XXX.XXX (32.768KHz)
	2: -	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JSF25-3D12.5-32.768KHz 3.2x1.5 ±20ppm -40~+85℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

Electrical Specification

Storage Temp. Range	-45°C to +125°C
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	1.3pF Typ.
Temperature Coefficient	-0.04ppm/°C ² Typ.
Turning point	25°C ± 5°C
Aging	±3ppm/year Typ.
ESR	50 KΩ (Typ.)/80 KΩ (Max.)



Frequency & Temperature Curve



Features

- $\Phi 2 \times 6$ SMD package.
- Tight tolerance 20 ppm available.
- Lead Free and RoHS compliant

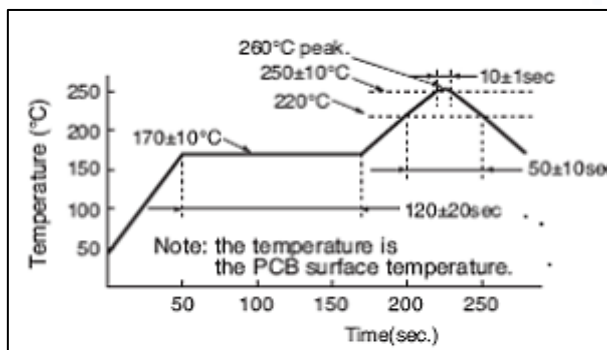
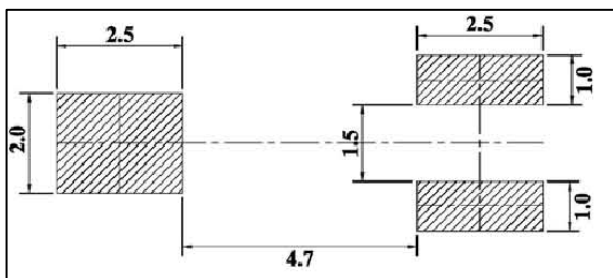
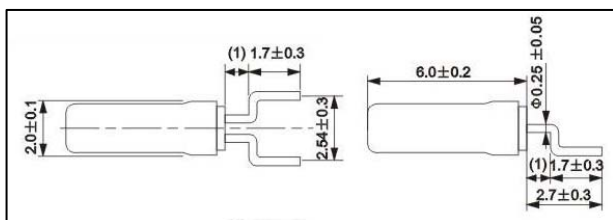
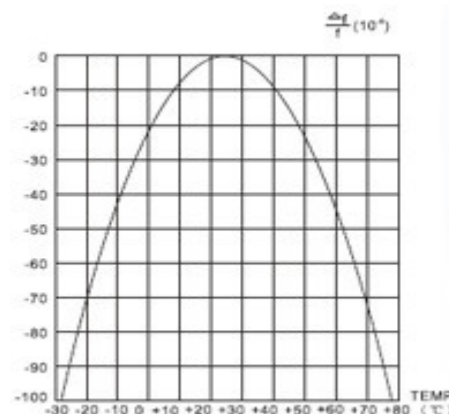
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Product Type	Calibration Tolerance (ppm)	Operation Temp Range (°C)	Load Capacitance (pF)	Frequency (KHz)
JSF29: Φ2x6 SMD	1: -	A: -10~+60	XX: Load capacitor (7pF,9pF,12.5pF)	32.768KHz
	2: -	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JSF29-3D12.5-32.768KHz Φ2x6 SMD ±20ppm -40~+85℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

Electrical Specification

Storage Temp. Range	-40°C to +85°C
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	1.55pF Typ.
Temperature Coefficient	-0.035ppm/°C ² Typ.
Turning point	25°C $\pm$ 5°C
Aging	± 5 ppm/year Typ.
ESR	40 K Ω (Typ.)/50 K Ω (Max.)

Frequency & Temperature Curve



Features

- 6.9 x 1.4 mm SMD package.
- Tight tolerance 20 ppm available.
- Lead Free and RoHS compliant

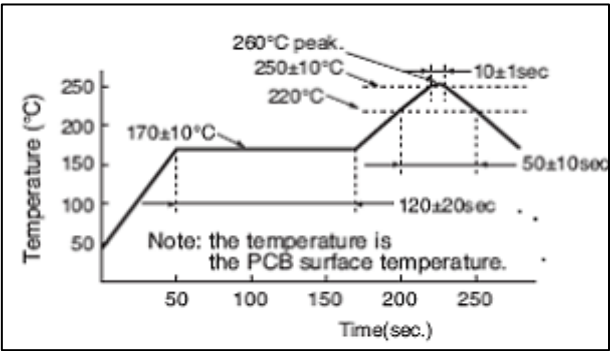
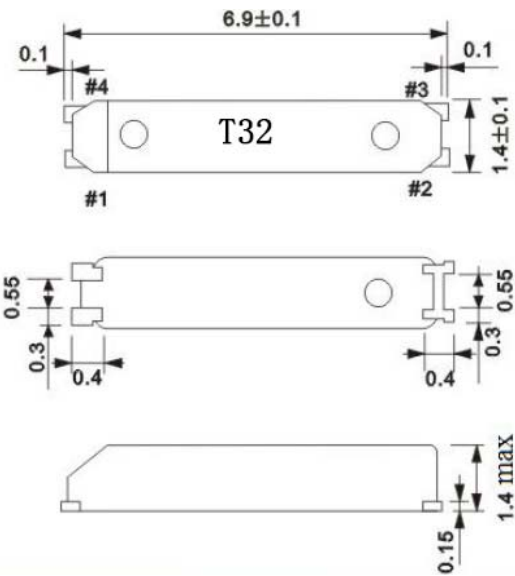
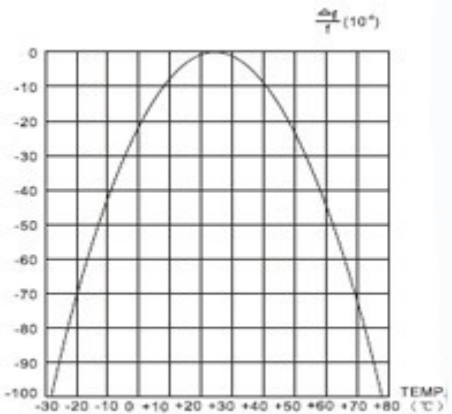
ORDERING GUIDANCE

Product Type	Calibration Tolerance (ppm)	Operation Temp Range (℃)	Load Capacitance (pF)	Frequency (KHz)
JSF30: 6.9x1.4 Plastic SMD	1: -	A: -10~+60	XX: Load capacitor (7pF,9pF,12.5pF)	XXX.XXX (32.768KHz)
	2: -	B: 0~+70		
	3: ±20	C: -20~+70		
	4: ±30	D: -40~+85		
	5: ±50	F: -10~+70		
Part number rule: JSF30-3D12.5-32.768KHz 6.9x1.4 ±20ppm -40~+85℃ 12.5pF 32.768KHz				
Note: For special requirement, please consult us.				

Electrical Specification

Storage Temp. Range	-45°C to +125°C
Drive Level(DL)	1.0uW Max.
Shunt Capacitance(C0)	0.8pF Typ.
Temperature Coefficient	-0.035ppm/°C ² Typ.
Turning point	25°C ± 5°C
Aging	±3ppm/year Typ.
ESR	50 KΩ (Typ.)/65 KΩ (Max.)

Frequency & Temperature Curve



Remark

1. Do not connect terminals 2#, 3# to external device and GND. These are dummy terminals.
2. The shell of cylinder inside resin mold may be partially exposed; it does not affect the characteristics of crystal unit.