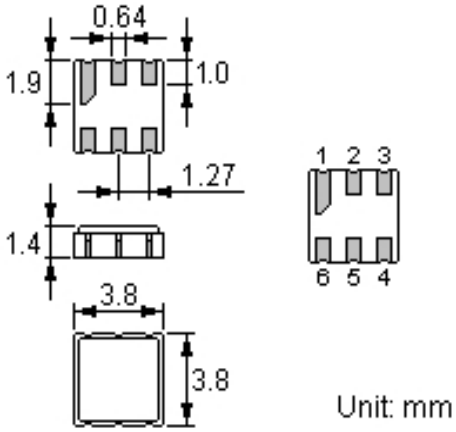
SAW RESONATOR

Part Number：VTR43302

The **VTR43302** is a low-loss, compact, and economical surface-acoustic-wave (**SAW**) RF resonator in a surface-mount ceramic **DCC6** case with center frequency **433.92** MHz.

1. Package Dimension (DCC6)



Pin Configuration

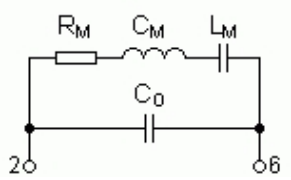
1	Terminal
2	Terminal
1.3.4.6	Ground

2. Marking

VTR
43302

Laser Marking

3. Matching Circuit



4.Performance

4.1Maximum Ratings

Rating		Value	Unit
Input Power Level	*P*	0	dBm
DC Voltage	V_{DC}	+30	V
Storage Temperature Range	T_{stg}	-40 to +85	℃
Operable Temperature Range	T_A	-40 to +85	℃

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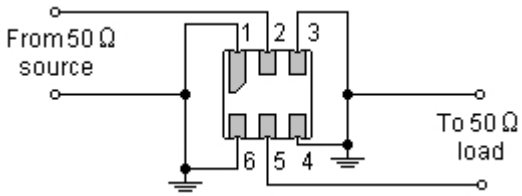
4.2 Electrical Characteristics

Characteristic		Sym	Minimum	Typical	Maximum	Unit
Center Frequency (+25℃)	Absolute Frequency	f_C	433.845		433.995	MHz
	Tolerance from 433.920 MHz	Δf_C		±75		kHz
Insertion Loss		I_L		1.5	2.2	dB
Quality Factor	Unloaded Q	Q_U		8,800		
	50 Ω Loaded Q	Q_L		1,400		
Temperature Stability	Turnover Temperature	T_0	25		45	℃
	Turnover Frequency	f_0		f_C		kHz
	Frequency Temperature Coefficient	FTC		0.032		ppm/℃²
Frequency Aging	Absolute Value during the First Year	|fA|		≤10		ppm/yr
DC Insulation Resistance Between Any Two Terminals			1.0			MΩ
RF Equivalent RLC Model	Motional Resistance	R_M		19	29	Ω
	Motional Inductance	L_M		61.1372		μH
	Motional Capacitance	C_M		2.2027		fF
	Shunt Static Capacitance	C_0	1.9	2.2	2.5	pF

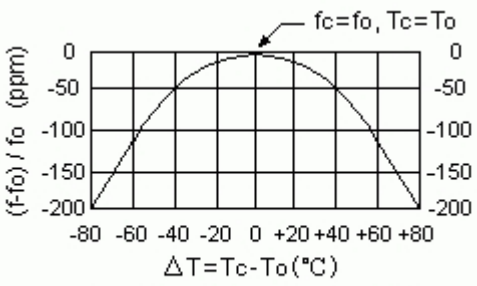
RoHS Compliant **Electrostatic Sensitive Device**

1. Unless noted otherwise, case temperature T_C = +25°C±2°C.
2. The center frequency, f_C, is measured at the minimum insertion loss point with the resonator in the 50Ω test system.
3. Frequency aging is the change in f_C with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
4. Turnover temperature, T_O, is the temperature of maximum (or turnover) frequency, f_O. The nominal frequency at any case temperature, T_C, may be calculated from: $f = f_O [1 - FTC (T_O - T_C)^2]$.
5. This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the static capacitance between the two terminals measured at low frequency (10MHz) with a capacitance meter. The measurement includes case parasitic capacitance.

Test Circuit



Temperature Characteristics



The curve shown above accounts for resonator contribution only.

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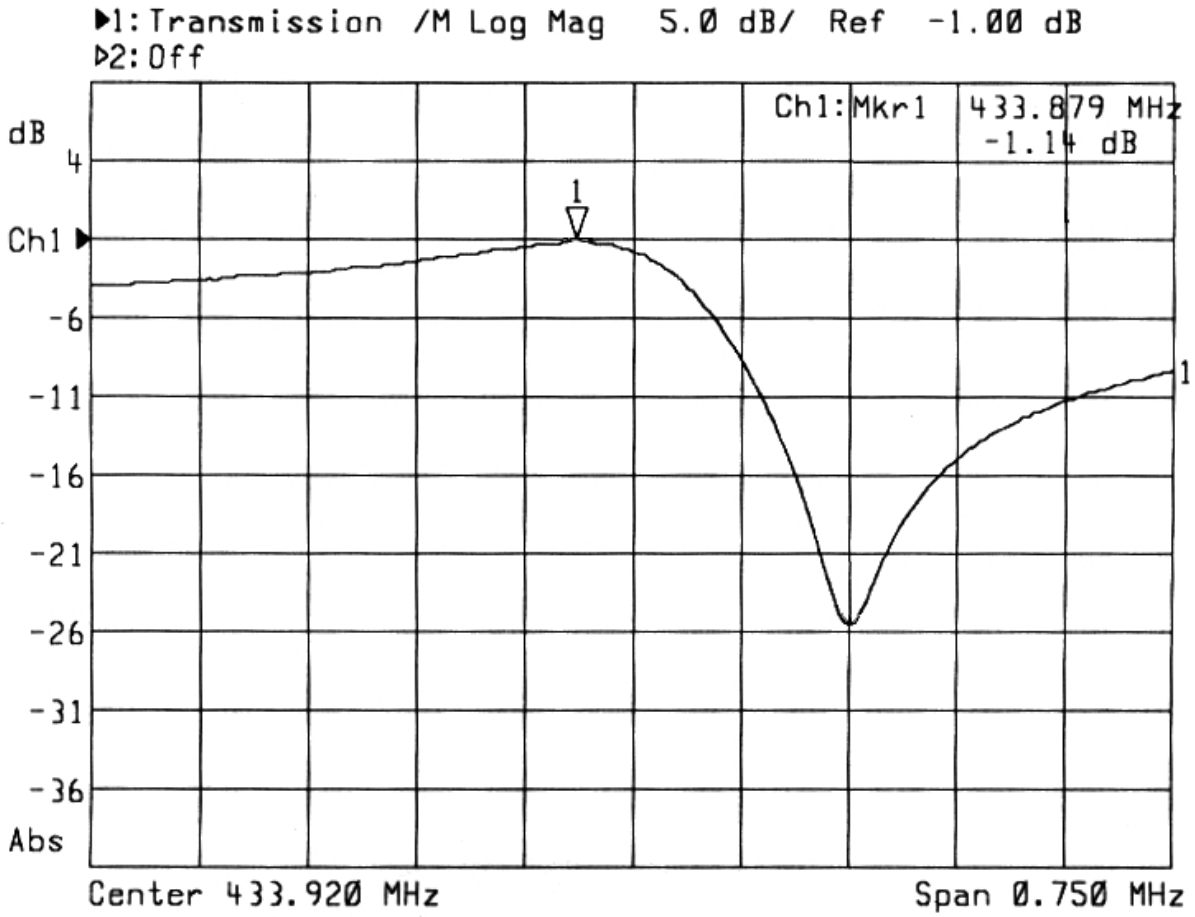
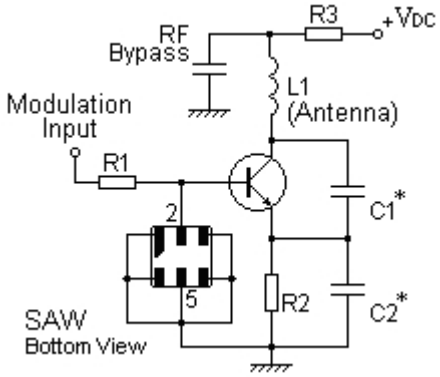
5.Typical Frequency Response

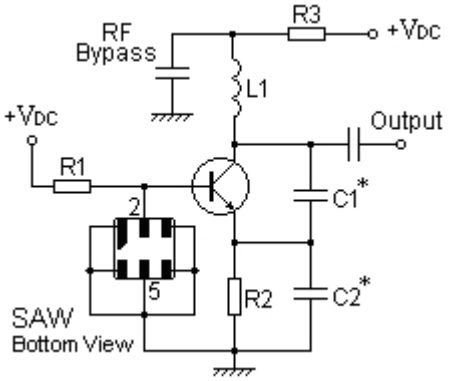


Typical Application Circuits

1) Low-Power Transmitter Application



2) Local Oscillator Application



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Stability Characteristics

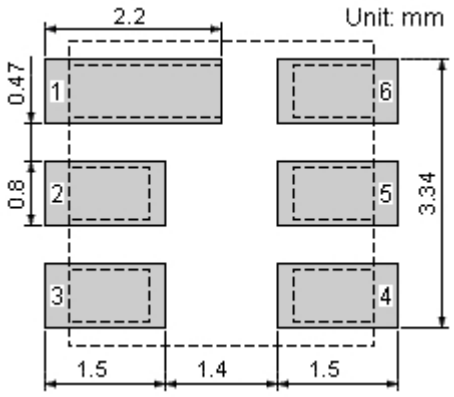
	Test item	Condition of test
1	Mechanical shock	(a) Drops: 3 times on concrete floor (b) Height: 1.0 m
2	Vibration resistance	(a) Frequency of vibration: 10~55Hz (b) Amplitude: 1.5 mm (c) Directions: X,Y and Z (d) Duration: 2 hours
3	Moisture resistance	(a) Condition: 40°C, 90~95% R.H. (b) Duration: 96 hours (c) Wait 4 hours before measurement
4	Climatic sequence	(a) +70°C for 16 hours (b) +55°C for 24 hours, 90~95% R.H. (c) -25°C for 2 hours (d) +40°C for 24 hours, 90~95% R.H. (e) Wait 4 hours before measurement
5	High temperature exposure	(a) Temperature: 70°C (b) Duration: 250 hours (c) Wait 4 hours before measurement
6	Thermal impact	(a) +70°C for 30 minutes ⇒ -25°C for 30 minutes repeated 3 times (b) Wait 4 hours before measurement

Requirements: The SAW resonator shall remain within the electrical specifications after tests.

Remarks

- SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- Be certain not to apply voltage exceeding the rated voltage of components.
- Do not operate outside the recommended operating temperature range of components.
- Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- Be careful of soldering temperature and duration of components when soldering.
- Do not place soldering iron on the body of components.
- Be careful not to subject the terminals or leads of components to excessive force.
- SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

Recommended Land Pattern



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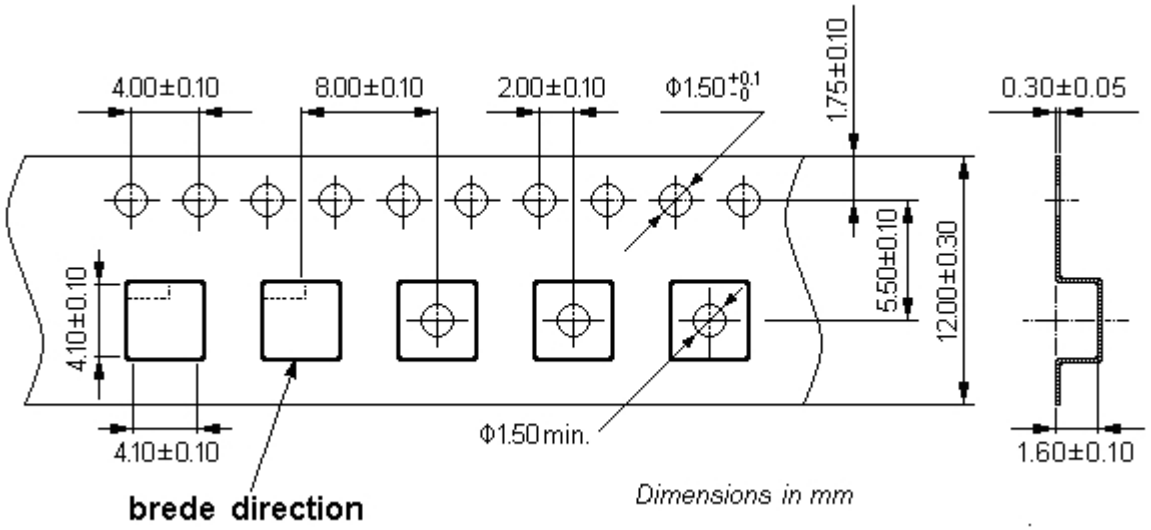
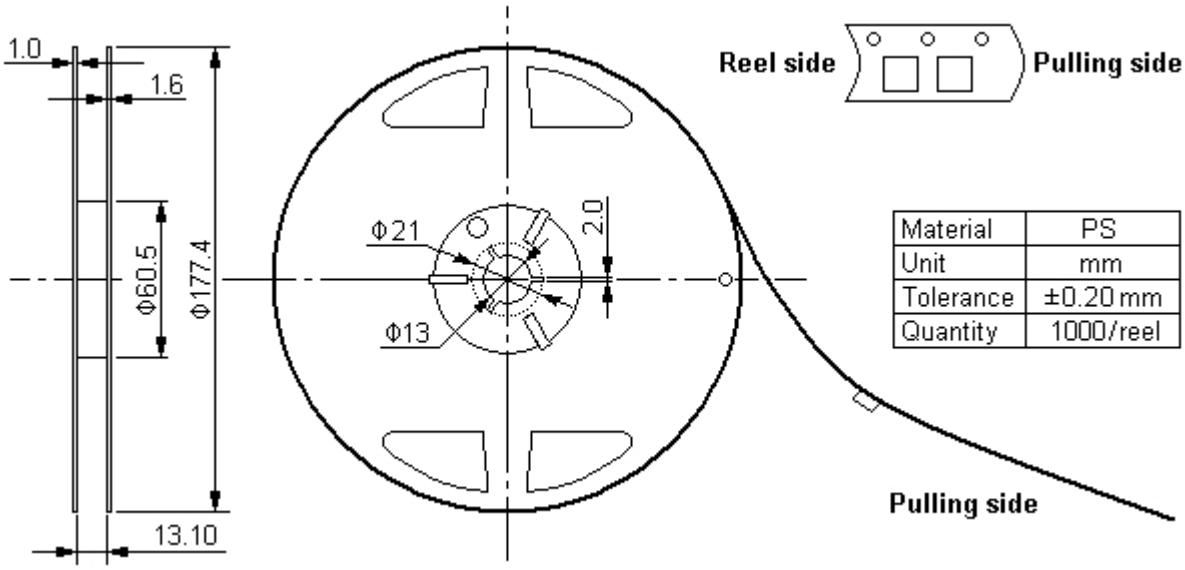
Packing Information

Carrier Tape



Reel Dimensions

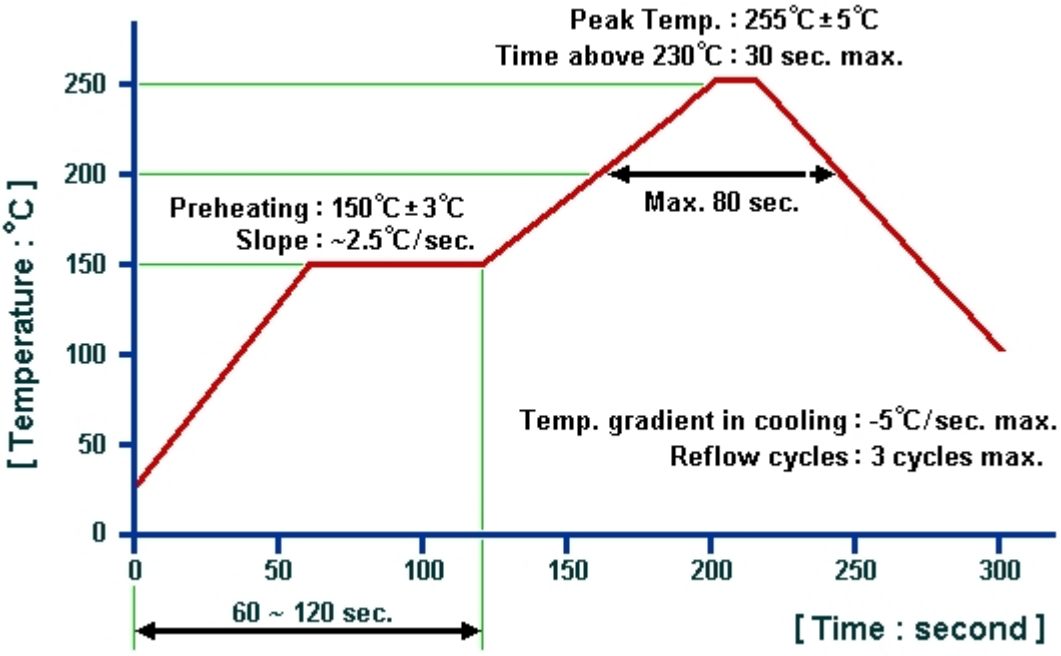


Material	PS
Unit	mm
Tolerance	±0.20 mm
Quantity	1000/reel

Outer Packing

Type	Quantity	Dimension	Description	Weight
Carton Box I	5000	190×190×95	anti-static plastic bag & carton box 1 reel / bag 5 bags / box (5000 pcs) 10 bags / box (10000 pcs)	0.85
Carton Box II	10000	190×190×190		1.80
		Unit: mm		Unit: kg

Recommended Soldering Profile



1. The specifications of this device are subject to change or obsolescence without notice.
2. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
3. Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies.
4. For questions on technology, prices and delivery, please contact our sales offices or e-mail info@vtorch.ca