

HB865

865MHz TWO-Port SAW Resonator



Approved by:
Checked by:
Issued by:

SPECIFICATION

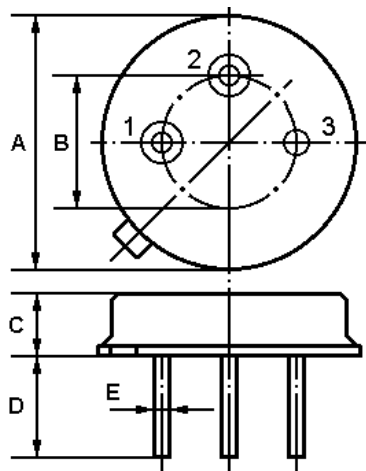
PRODUCT: SAW RESONATOR

MODEL: HB865 TO-39

HOPE MICROELECTRONICS CO.,LIMITED

The HB865 is a two-port, 180° surface-acoustic-wave (**SAW**) resonator in a low-profile metal **TO-39** case. It provides reliable, fundamental-mode, quartz frequency stabilization i.e. in transmitters or local oscillators operating at **865.000 MHz**.

1.Package Dimension (TO-39)



Pin	Configuration
1	Input / Output
2	Output / Input
3	Case Ground

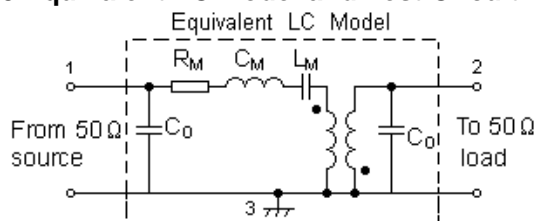
Dimension	Data (unit: mm)
A	9.30±0.20
B	5.08±0.10
C	3.40±0.20
D	3±0.20 / 5±0.20
E	0.45±0.20

2.Marking

HB865

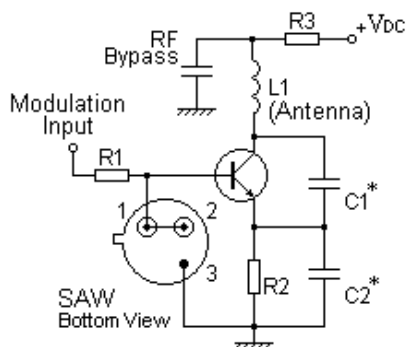
Color: Black or Blue

3.Equivalent LC Model and Test Circuit

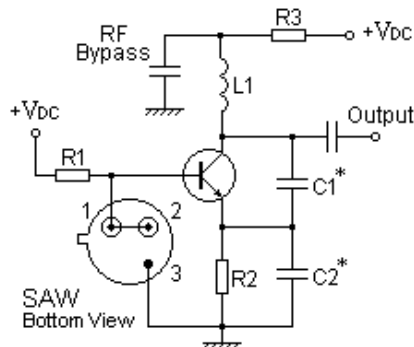


4.Typical Application Circuits

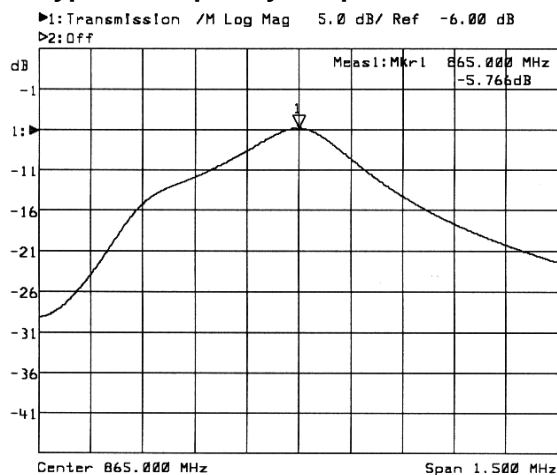
1) Low-Power Transmitter Application



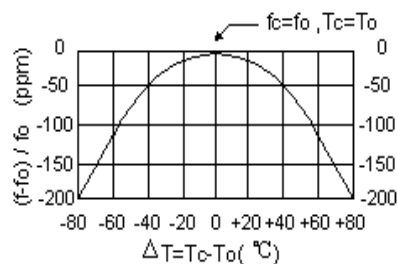
2) Local Oscillator Application



5.Typical Frequency Response



6.Temperature Characteristics



The curve shown above accounts for resonator contribution only and does not include LC component temperature characteristics.

7.Performance

7-1.Maximum Ratings

Rating	Value	Unit
CW RF Power Dissipation P	10	dBm
DC Voltage Between Any Two Pins V_{DC}	± 30	V
Storage Temperature Range T_{stg}	-40 to +85	°C
Operating Temperature Range T_A	-10 to +60	°C

7-2.Electronic Characteristics

Characteristic		Sym	Minimum	Typical	Maximum	Unit
Center Frequency (+25°C)	Absolute Frequency	f_C	864.850		865.150	MHz
	Tolerance from 865.000 MHz	Δf_C		± 150		kHz
Insertion Loss		IL		6.0	8.0	dB
Quality Factor	Unloaded Q	Q_U		6,400		
	50 Ω Loaded Q	Q_L		3,200		
Temperature Stability	Turnover Temperature	T_O	25		55	°C
	Turnover Frequency	f_O		f_C		kHz
	Frequency Temperature Coefficient	FTC		0.032		ppm/°C ²
Frequency Aging	Absolute Value during the First Year	$ f_A $		≤ 10		ppm/yr
DC Insulation Resistance Between Any Two Pins			1.0			M Ω
RF Equivalent RLC Model	Motional Resistance	R_M		99.5	151	Ω
	Motional Inductance	L_M		117.5214		μH
	Motional Capacitance	C_M		0.2884		fF
	Shunt Static Capacitance	C_O	2.10	2.40	2.70	pF

ⓘ CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!

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- The frequency f_C is the frequency of minimum IL with the resonator in the specified test fixture in a 50 Ω test system with VSWR $\leq 1.2:1$. Typically, $f_{OSCILLATOR}$ or $f_{TRANSMITTER}$ is less than the resonator f_C .
- Unless noted otherwise, case temperature $T_C = +25^\circ\text{C} \pm 2^\circ\text{C}$.
- Frequency aging is the change in f_C with time and is specified at $+65^\circ\text{C}$ or less. Aging may exceed the specification for prolonged temperatures above $+65^\circ\text{C}$. Typically, aging is greatest the first year after manufacture, decreasing in subsequent years.
- 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: $f = f_O [1 - \text{FTC} (T_O - T_C)^2]$. Typically, *oscillator* T_O is 20° less than the specified *resonator* T_O .
- This equivalent RLC model approximates resonator performance near the resonant frequency and is provided for reference only. The capacitance C_O is the measured static (nonmotional) capacitance between either Pin 1 and ground or Pin 2 and ground. The measurement includes case parasitic capacitance.
- Derived mathematically from one or more of the following directly measured parameters: f_C , IL, 3 dB bandwidth, f_C versus T_C , and C_O .
- The specifications of this device are based on the test circuit shown above and subject to change or obsolescence without notice.
- Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- 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.
- For questions on technology, prices and delivery, please contact our sales offices or e-mail sales@hoperf.com.