

OC18T

Square Wave

OC18E

True Sine Wave

Best stability

±0.01 ppm (SC-cut)**±0.02 ppm** (AT-cut)

Voltage Control

5 pins

12V

5.0V

Min.

1.25 MHz

Max.

100 MHz

Applications

- OC18_ (20.3 * 20.3 * 10.5 mm) , 5 pin solder sealed metal package
- +12.0V , +5.0V Supply Voltages
- " AT - cut " crystal or " SC - cut " crystal
- Voltage control (Electronic Frequency Tuning) is standard .



General Specifications (at+25°C and specified input voltage)

Type of Crystal Cut Used		AT - cut , use " A " for crystal code ; SC - cut , use " S " for crystal code .											
Output Wave Form		Square wave. Wave form code is " T "				True Sine Wave. Wave form code is " E "							
Supply Voltage		+12V		+5 V		+12V		+5 V					
Supply Voltage range , " Voltage code "		+12V ± 0.5V , " 12 "		+5.0V ± 0.2V , " 5 "		+12V ± 0.5V , " 12 "		+5.0V ± 0.2V , " 5 "					
Frequency Range		1.25 ~ 100.0 MHz		1.25 ~ 100.0 MHz		10.0 ~ 100.0 MHz		10.0 ~ 100.0 MHz					
Initial Calibration Tolerance		± 0.5 ppm (max.)		± 0.5 ppm (max.)		± 0.5 ppm (max.)		± 0.5 ppm (max.)					
		Vcon = +2.5 V		Vcon = +2.5 V		Vcon = +2.5 V		Vcon = +2.5 V					
Frequency Stability	vs Temperature (ppm)	AT - cut	SC - cut	AT - cut	SC - cut	AT - cut	SC - cut	AT - cut	SC - cut				
		0 ~ 60 °C	± 0.02	± 0.01	± 0.02	± 0.01	± 0.02	± 0.01	± 0.02	± 0.01			
		-20 ~ 70°C	± 0.05	± 0.01	± 0.05	± 0.01	± 0.05	± 0.01	± 0.05	± 0.01			
	-40 ~ 85°C	± 0.1	± 0.03	± 0.1	± 0.03	± 0.1	± 0.03	± 0.1	± 0.03				
	vs Warm -up time (+25°C)	AT - cut : 3.0 minutes (max.) , within ± 0.5 ppm of its reference frequency . SC - cut : 1.0 minutes (max.) , within ± 0.1 ppm of its reference frequency .											
	vs Aging	AT - cut : ± 5.0 ppb (max.) / day , ± 0.5 ppm (max.) / first year , ± 3.0 ppm (max.) over 10 years . SC - cut : ± 2.0 ppb (max.) / day , ± 0.1 ppm (max.) / first year , ± 0.5 ppm (max.) over 10 years .											
vs Voltage Change		≤ ±20 ppb , supply voltage ±5 % variation											
vs Load Change		≤ ±20 ppb , for a ±5 % load condition change .											
Voltage Control	Freq. Deviation Range	AT - cut : ± 5.0ppm (min.) , ± 20ppm (max.) Reference to fo at +25°C and over operating temperature range . SC - cut : ± 0.5ppm (min.) , ± 2.0ppm (max.) Reference to fo at +25°C and over operating temperature range .											
On pin 1 (EFC)	Control Voltage Range	2.5 V ± 2.0 V											
	Transfer Function	Positive : Increasing control voltage increases output frequency .											
(Electronic Freq. Tuning)	Input Impedance	100 K ohms (min.)											
	EFC Linearity	± 10 % (max.)											
Power	Power Dissipation (at +25°C)	200 mA (max.) at steady-state ; 500 mA (max.) at turn-on											
Output	Output Level (for True Sine)	---		---		+3 dBm (typ.) , +8 dBm (max.) into 50Ω load .							
	Harmonic (for True Sine)	---		---		-30 dBc (min.)							
	Spurious (for True Sine)	---		---		-75 dBc (min.)							
	Load (Fan out)	15 pF HCMOS (max.)											
	Output Logic High (V _{OH})	+4.5 V (min.)											
	Output Logic Low (V _{OL})	+ 0.5 V (max.)											
	Duty Cycle (at 50% Vcc)	50 % ± 10%											
	Rise and Fall Time (20% ~ 80%)	5 nS (max.) (measured at 20% → 80% of waveform)											
	Reference Voltage	+ 4.0 VD.C. ± 0.3 VD.C. or custom											
	Phase Noise (10.0 MHz) [Unit : dBc / Hz] (typical)	Offset	Crystal Type		Offset	Crystal Type		Offset	Crystal Type		Offset	Crystal Type	
			AT - cut	SC - cut		AT - cut	SC - cut		AT - cut	SC - cut		AT - cut	SC - cut
		1 Hz	-75	-85	1 Hz	-75	-85	1 Hz	-75	-85	1 Hz	-75	-85
10 Hz		-100	-120	10 Hz	-100	-120	10 Hz	-100	-120	10 Hz	-100	-120	
100 Hz		-130	-140	100 Hz	-130	-140	100 Hz	-130	-140	100 Hz	-130	-140	
1 KHz		-140	-145	1 KHz	-140	-145	1 KHz	-140	-145	1 KHz	-140	-145	
10 KHz	-150	-150	10 KHz	-150	-150	10 KHz	-150	-150	10 KHz	-150	-150		
Storage Temperature	- 55°C to + 125°C												
Shock	2000 G's , 0.3 ms 1/2 sine												
Vibration	10 to 2000 Hz / 10 G's												

" OCXO " [Oven Controlled Crystal Oscillators]

True Sine wave " OC _ E "

Square wave " OC _ T "

Part Number Format and Example

	[1]	[2]	[3]	[4]	[5]		[6]		[7]		[8]	
	Holder Type	G	Output Wave	Supply Voltage	Cut Type	-	Center Frequency	-	Frequency Stability	/	Operating Temp. Range	
Examples	(1)	OC14	G	T	3.3	A	-	10.000	-	0.5	/	-40+85
	(2)	OC30	G	E	12	S	-	100.000	-	0.02	/	-20+70
	(2)	OC22	G	T	5	A	-	20.000	-	0.2	/	-30+75

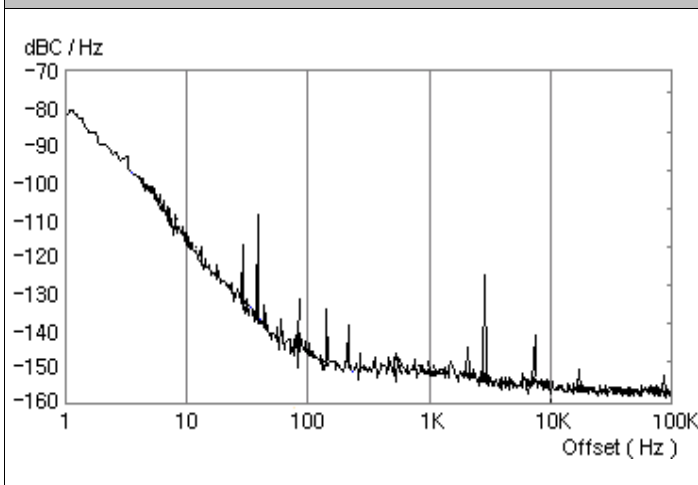
Ex (1): **OC14GT33A - 10.000 - 0.5 / -40+85** [OC14 type , RoHS , CMOS output , 3.3V , 10.000MHz , ± 0.5ppm from -40°C to 85°C]

Ex (2): **OC30GE12S - 100.000 - 0.02 / -20+70** [OC30 type , RoHS , True Sine wave , 12V , 100.000MHz , ± 0.02ppm from -20°C to 70°C]

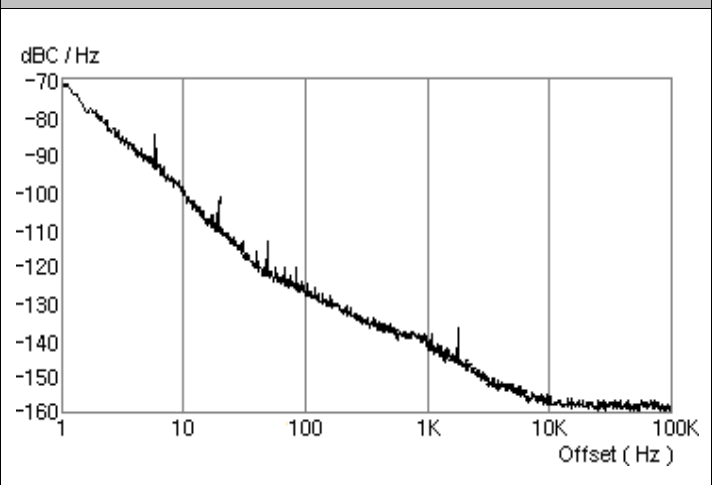
Ex (3): **OC22GT5A - 20.000 - 0.2 / -30+75** [OC22 type , RoHS , CMOS output , 5.0V , 20.000MHz , ± 0.2ppm from -30°C to 75°C]

[1]	Holder Type "OC_-" stands for OCXO ,
[2]	Please add "G" after the " type code " for RoHS compliant
[3]	"T" stands for Square Wave , "E" stands for True Sine Wave ex 1 : OC14T , OC14 package , CMOS output ; ex 2 : OC30E , OC30 package , True Sine wave
[4]	Supply voltage , "3" for 3.3V D.C , "5" for 5.0V D.C , "12" for 12V D.C
[5]	Type of crystal used ; "A" stands for AT-cut crystal , "S" stands for SC-cut crystal
[6]	Center Frequency in MHz
[7]	Frequency stability in ± ppm ; ex 1 : ± 0.5ppm --- 0.5 , ex 2 : ± 0.02ppm --- 0.02
[8]	Operating temperature range in °C ex 1 : -10 °C to 60°C ----- -10+60 ; ex 2 : -20 °C to 70°C ----- -20+70 ; ex 3 : -40 °C to 85°C ----- -40+85

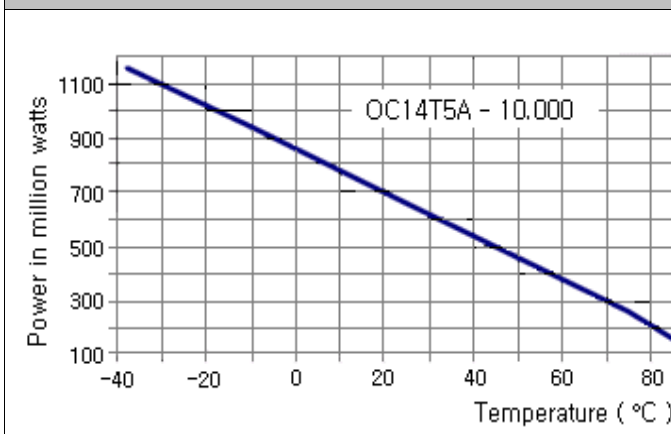
SSB Phase Noise : OC30E12S-10.000 (SC-cut crystal)



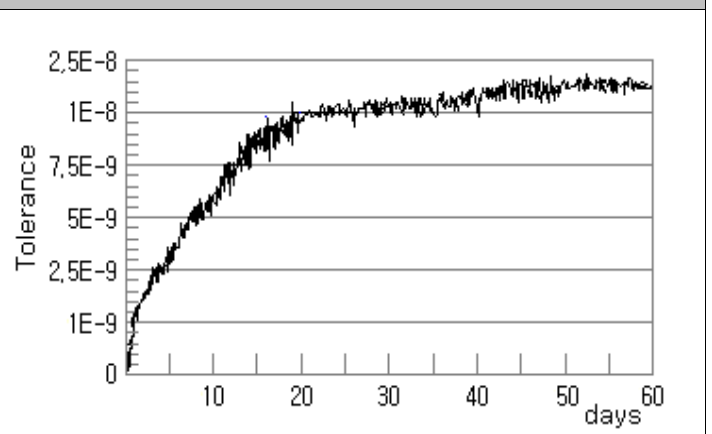
SSB Phase Noise : OC14T5A-10.000 (AT-cut crystal)



Power Consumption vs Temperature



Aging : OC30E12S-10.000 (SC - cut crystal)

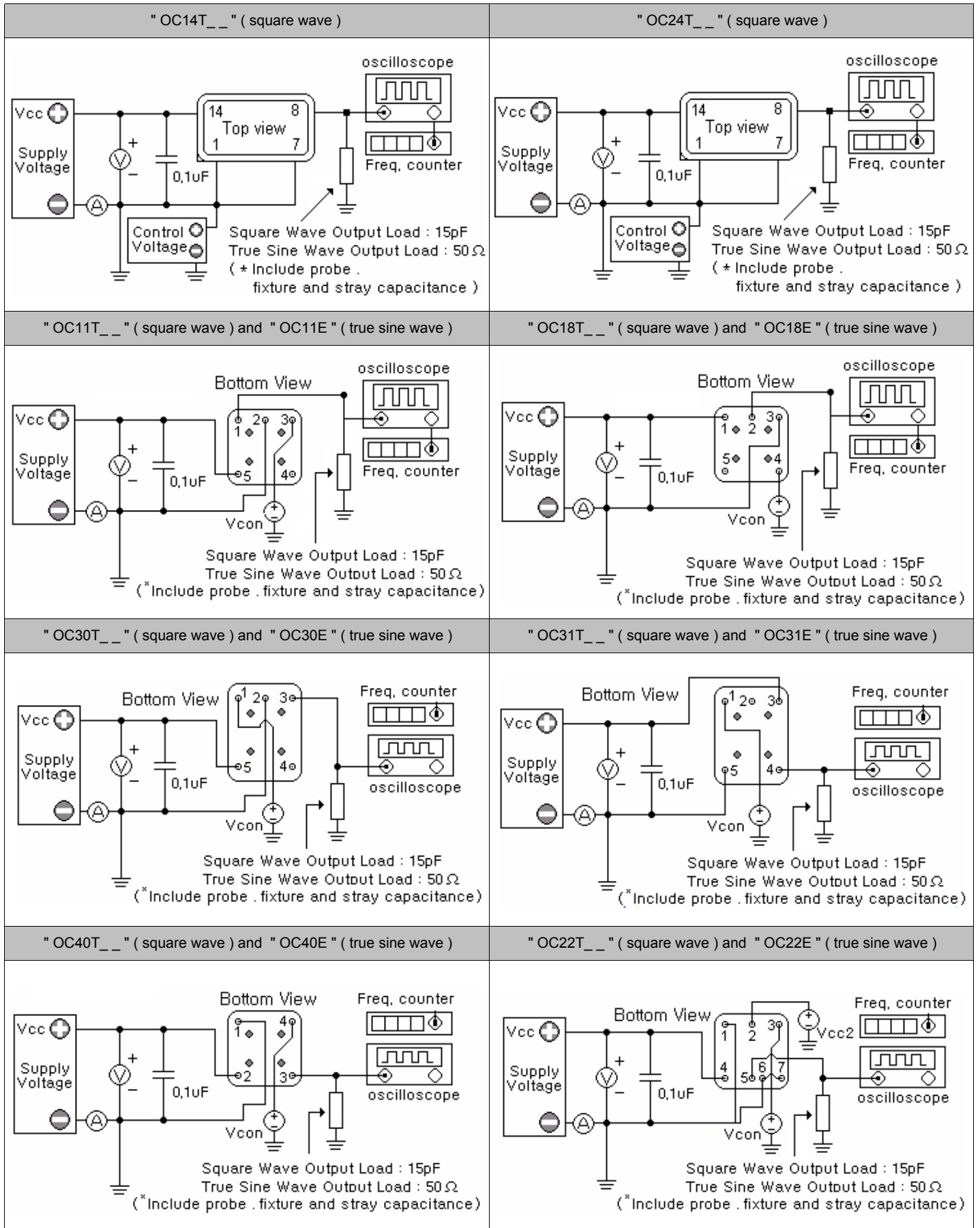


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Test Circuits

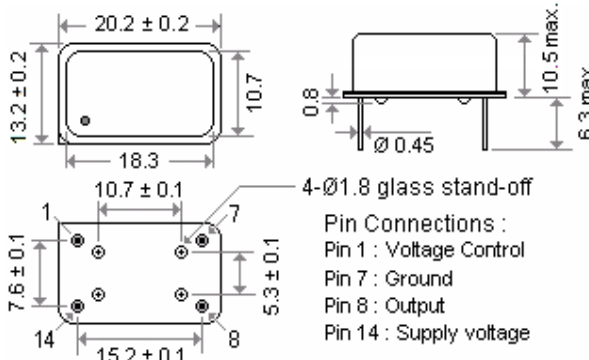
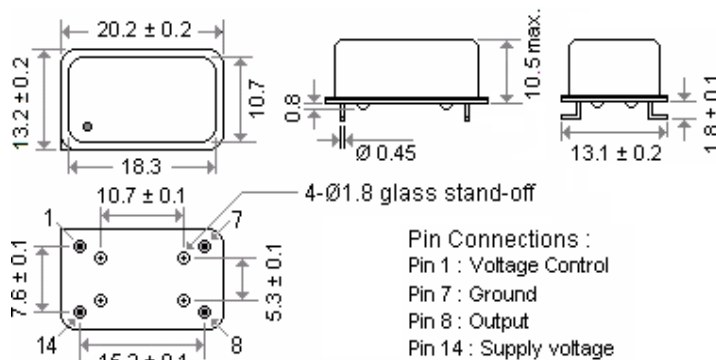
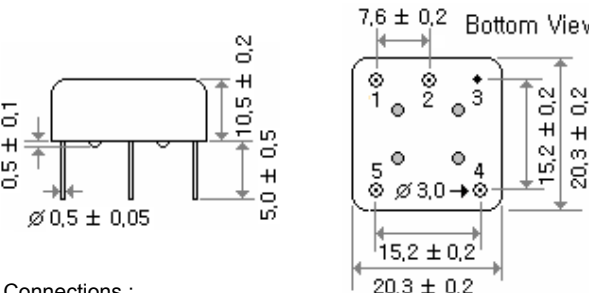
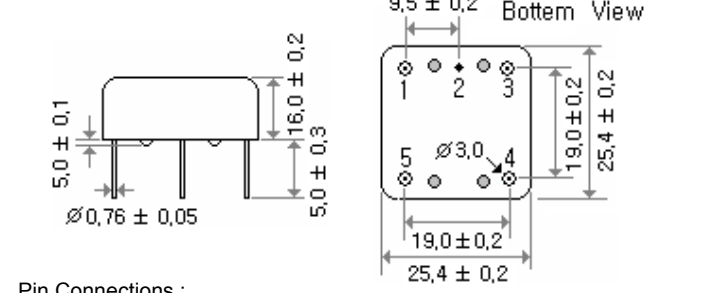
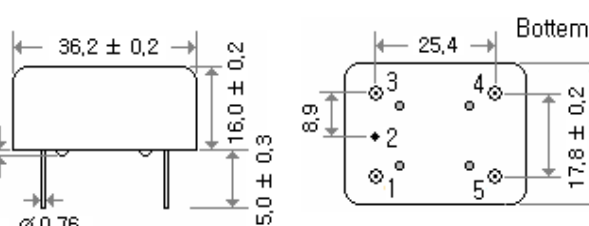
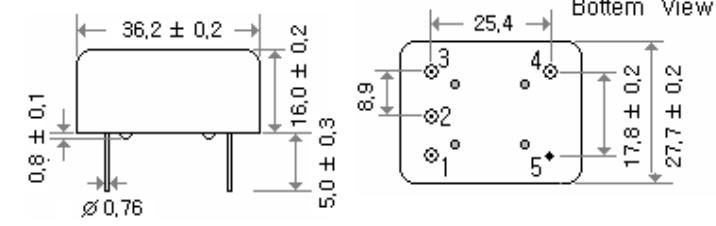
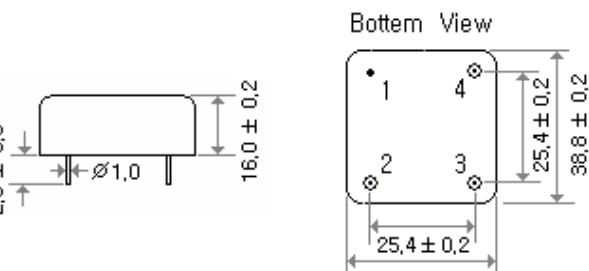
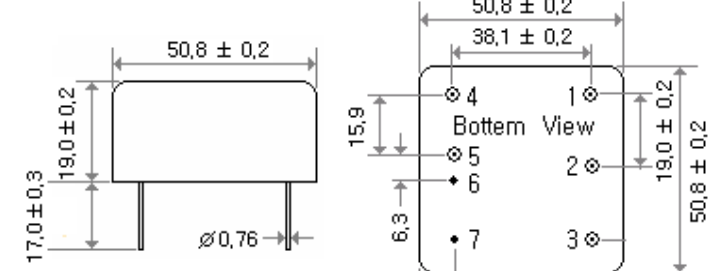


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Outline Dimensions (Unit : mm)

<p>[OC14 __]</p>  <p>Pin Connections : Pin 1 : Voltage Control Pin 7 : Ground Pin 8 : Output Pin 14 : Supply voltage</p>	<p>[OC24 __]</p>  <p>Pin Connections : Pin 1 : Voltage Control Pin 7 : Ground Pin 8 : Output Pin 14 : Supply voltage</p>
<p>[OC18 __]</p>  <p>Pin Connections : Pin 1 : Supply Voltage , Pin 2 : RF Output , Pin 3 : Ground / Case Pin 4 : Voltage Control EFC , Pin 5 : Reference Voltage Output</p>	<p>[OC11 __]</p>  <p>Pin Connections : Pin 1 : RF Output , Pin 2 : Ground / Case , Pin 3 : Voltage Control EFC Pin 4 : Reference Voltage Output , Pin 5 : Supply Voltage</p>
<p>[OC30 __]</p>  <p>Pin Connections : Pin 1 : Voltage Control EFC , Pin 2 : Ground , Case , Pin 3 : RF Output , Pin 4 : Reference Voltage Output , Pin 5 : Supply Voltage</p>	<p>[OC31 __]</p>  <p>Pin Connections : Pin 1 : Voltage Control EFC , Pin 2 : Reference Voltage Output , Pin 3 : Supply Voltage , Pin 4 : RF Output , Pin 5 : Ground / Case</p>
<p>[OC40 __]</p>  <p>Pin Connections : Pin 1 : Ground / Case , Pin 2 : Supply Voltage Pin 3 : RF Output , Pin 4 : Control Voltage</p>	<p>[OC22 __]</p>  <p>Pin Connections : Pin 1 : Oven Return , Pin 2 : Osc. Supply Voltage , Pin 3 : Electronic Tuning , Pin 4 : Oven Supply Voltage , Pin 5 : Output , Pin 6 : RF Ground , Pin 7 : Ground / Case</p>