

DTCXO basic

Digitally Thermal Compensated Crystal Oscillator
General Specification (rev1)

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June 12th 2009

▣ Features

- Digitally Thermal Compensated Crystal Oscillator (DTCXO)
- Frequency range : 10 to 60 MHz
- Operating temperature range : [-40 – +85 °C]
- Ground based applications
- 5-pin package
- Output wave form: square or sine
- Supply voltage : 5V +/-5% or 12V +/-5%

▣ Applications

- **Ground based telecommunication**

▣ Environmental conditions

Parameters	Unit	Minimum	Typical	Maximum
Operating temperature range	°C	- 40		+ 85
Storage temperature range	°C	- 55		+ 125
Relative humidity		Up to 100% at Ta = 0°C to 85°C without condensing		
Shock (half sine)				50g, 10 ms
Vibration		As per MIL-STD-810, Issue F (cat 5)		

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▣ Mechanical characteristics

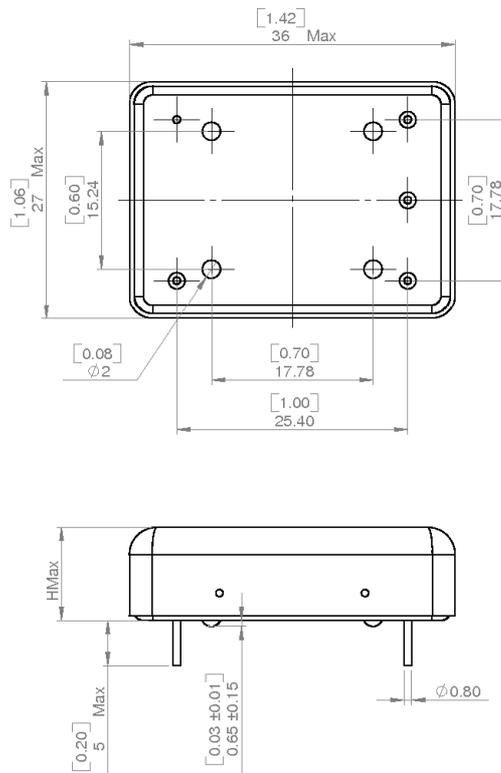
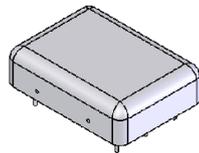


Figure 1 : Oscillator outline

Pin description

Pin number	Name	Function
1	Fout	Frequency output
2	Ground, case	Electrical & mechanical ground
3	Vcc	Supply voltage
4	Vc	Voltage control for electrical tuning
5	NC	

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▣ Performance Characteristics

Electrical Parameters	Unit	Minimum	Typical	Maximum
Sine Wave Output Version				
Nominal frequency range	MHz	10		60
Output level (50 Ω load) option A	dBm	0		
Output level (50 Ω load) option B	dBm	5		
Output VSWR ($F_o \pm 1.5$ MHz)	-			2:1
Harmonics suppression	dBc	25		
Spurious (offset > 50 Hz)	dBc	70		
Phase noise in static conditions @ 10 MHz				
@ 10 Hz offset	dBc/Hz			- 85
@ 100 Hz offset	dBc/Hz			- 115
@ 1 kHz offset	dBc/Hz			- 135
@ 10 kHz offset or greater	dBc/Hz			- 150
Phase noise in static conditions @ 60 MHz				
@ 10 Hz offset	dBc/Hz			- 65
@ 100 Hz offset	dBc/Hz			- 95
@ 1 kHz offset	dBc/Hz			- 130
@ 10 kHz offset or greater	dBc/Hz			- 140
Free running mode (Vctrl pin NC)				
Initial setting	ppm			± 0.5
Stability vs. temperature	ppm		± 0.2	± 0.5
Stability vs. 5 % supply voltage variation	ppm			± 0.05
Stability vs. 10 % load variation	ppm			± 0.05
Aging over first year	ppm			± 0.5
Aging over 10 year	ppm			± 2
Electrical tuning (Vctrl pin)				
Relative pulling frequency range	ppm	± 2		
Input impedance	Ω	10 k		
Voltage range Option A	V _{DC}	0		5
Voltage range Option B	V _{DC}	0		10
Supply voltage (Vcc pin)				
Voltage range option A	V _{DC}	4.75		5.25
Voltage range option B	V _{DC}	11.4		12.6
Supply current option A	mA			40
Supply current option B	mA			20
Start up time	ms			10

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Electrical Parameters	Unit	Minimum	Typical	Maximum
Square Wave Output Version compatible CMOS				
Nominal frequency range	MHz	10		60
Low output level	V			10% Vcc
High output level	V	90%Vcc		
Duty cycle at Vcc/2	-	40%		60%
Rise time	ns			5
Fall time	ns			5
Phase noise in static conditions @ 10 MHz				
@ 10 Hz offset	dBc/Hz			- 85
@ 100 Hz offset	dBc/Hz			- 115
@ 1 kHz offset	dBc/Hz			- 135
@ 10 kHz offset or greater	dBc/Hz			- 150
Phase noise in static conditions @ 60 MHz				
@ 10 Hz offset	dBc/Hz			- 65
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Aging over first year	ppm			± 0.5
Aging over 10 year	ppm			± 2
Electrical tuning (Vctrl pin)				
Relative pulling frequency range	ppm	± 2		
Input impedance	Ω	10 k		
Voltage range Option A	V _{DC}	0		5
Voltage range Option B	V _{DC}	0		10
Supply voltage (Vcc pin)				
Voltage range option A	V _{DC}	4.75		5.25
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Supply current option A	mA			40
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