

Typical Applications

Military Systems
 Avionics and Instrumentation
 Test Equipment
 Medical Equipment

Frequency Range

Standard Frequencies Frequency Stabilities¹

Features

9X14 J Leaded Surface Mount Package
 Reflow Process Compatible
 AC MOS, TTL, LVPECL and LVDS
 MIL-PRF-55310 Class B Screening (optional)
 Military Operating Temperature Range (optional)

1 to 800 MHz (ACMOS and TTL outputs available up to 125 MHz. LVPECL and LVDS output frequencies above 220 MHz are achieved through the use of a PLL multiplier.)
 19.44, 32.768, 44.736, 51.84, 77.76, 155.52, 622.08 MHz

Parameter	Min	Typ	Max	Units	Condition	Ordering Code ⁵
Operating temperature range (referenced to +25°C)	-100		+100	ppm	0 ... +70°C	C104
	-50		+50	ppm	0 ... +70°C	C505
	-25		+25	ppm	0 ... +70°C	C255
	-15		+15	ppm	0 ... +70°C	C155
	-100		+100	ppm	-40 ... +85°C	F104
	-50		+50	ppm	-40 ... +85°C	F505
	-25		+25	ppm	-40 ... +85°C	F255
	-100		+100	ppm	-55 ... +125°C	M104
Initial accuracy (do not use with overall tolerance code below)	-50		+50	ppm	-55 ... +125°C	M505
	-15		+15	ppm	@ 25°C	T155
	-25		+25	ppm	@ 25°C	T255
	-50		+50	ppm	@ 25°C	T505
-100		+100	ppm	@ 25°C	T104	
Parameter	Min	Typ	Max	Units	Condition	Ordering Code ⁵
Overall tolerance (includes operating temperature and initial accuracy) ⁷	-100		+100	ppm	0 ... +70°C	TC104
	-50		+50	ppm	0 ... +70°C	TC505
	-25		+25	ppm	0 ... +70°C	TC255
	-20		+20	ppm	0 ... +70°C	TC205
	-100		+100	ppm	-40 ... +85°C	TF104
	-50		+50	ppm	-40 ... +85°C	TF505
	-25		+25	ppm	-40 ... +85°C	TF255
	-100		+100	ppm	-55 ... +125°C	TM104
Additional stability parameters: vs. Supply voltage change vs. Load change vs. Aging / 1st year vs. Aging / year (following years)	-65		+65	ppm	-55 ... +125°C	TM605
	-2		+2	ppm	V _S ± 5%	
	-1		+1	ppm	Load ± 5%	
	-3		+3	ppm		
-1		+1	ppm			

Supply Voltage (Vs)

Parameter	Min	Typ	Max	Units	Condition	Ordering Code ⁵
Supply voltage	4.75	5.0	5.25	VDC		SV050
Current consumption (+5 VDC)			15	mA	ACMOS or TTL 1.0 to 23.9 MHz	
			20	mA	ACMOS or TTL 24 to 49.9 MHz	
			40	mA	ACMOS or TTL 50 to 125.00 MHz	
Supply voltage	3.135	3.3	3.465	VDC		SV033
Supply voltage	2.375	2.5	2.625	VDC		SV025
Current consumption (+3.3 VDC or +2.5 VDC)			6	mA	ACMOS 1.0 to 14.90 MHz	
			8	mA	ACMOS 15.0 to 39.9 MHz	
			12	mA	ACMOS 40.0 to 59.9 MHz	
			16	mA	ACMOS 60.0 to 84.9 MHz	
			40	mA	ACMOS 85.0 to 125.0 MHz	
			75	mA	LVPECL or LVDS No load <200 MHz	

			100	mA	LVPECL or LVDS No load >200 MHz
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RF Output

Parameter	Min	Typ	Max	Units	Condition	Ordering Code ⁵
Signal	ACMOS					RFA
Load		15	50	pF		
Signal Level (Vol)			0.5 0.3 0.25	VDC VDC VDC	Vs= 5.0V and 15pF load Vs=3.3V and 15pF load Vs=2.5V and 15pF load	
Signal Level (Voh)	4.5 3.0 2.25			VDC VDC VDC	Vs= 5.0V and 15pF load Vs=3.3V and 15pF load Vs=2.5V and 15pF load	
Rise and fall times for ACMOS (measured 10% to 90%)			10 6 3	ns ns ns	1.0 to 23.9 MHz 24.0 to 79.9 MHz 80.0 to 125.0MHz	
Duty cycle	45 40		55 60	% %	@ 50% Vs < 15 MHz @ 50% Vs ≥ 15 MHz	
Signal	TTL					RFT
Load			10			
Signal Level (Vol)			0.5	VDC	Vs= 5.0V and 15pF load	
Signal Level (Voh)	4.5			VDC	Vs= 5.0V and 15pF load	
Rise and fall times for TTL (measured 0.8V to 2.0V)			5 3	ns ns	1.0 to 23.9 MHz 24 to 125 MHz	
Duty Cycle	45 40		55 60	% %	@ 1.4V < 15 MHz @ 1.4V ≥ 15 MHz	
Signal	LVPECL					RFP
Load			50	Ω	Into Vcc-2V or Thevenin Equivalent	
Signal Level (Vol)			Vs -1.62	VDC	-40 ... +85°C operating temp	
Signal Level (Voh)	Vs- 1.025			VDC	-40 ... +85°C operating temp	
Rise and fall times (measured @ 20% to 80%)			1000 600	ps ps	<100 MHz ≥ 100 MHz	
Duty cycle LVPECL	45		55	%	@ 50% Vdd	
Jitter (rms)			10 0.5	ps ps	BW = 10Hz to 20 MHz BW = 12 kHz to 20 MHz	
Period Jitter (pk-pk)			40	ps	10,000 Samples - Rising edge	
Signal	LVDS					RFL
Load	60	100	140	Ω	Between outputs	
Signal Level (Vol)		1.2		VDC		
Signal Level (Voh)		1.4		VDC		
Differential Voltage (Vod)		240	330	mVpeak		
Common Mode (Offset) Voltage (Vos)	1.125	1.2	1.375	V		
Start-up Time			10	mS		
Rise and fall times		600	1000	ps	measured @ 20% to 80% of Vod	
Duty cycle	45		55	%	@ 50% of Vod	
Jitter (rms)			5 1	ps ps	BW = 10Hz to 20 MHz BW = 12 kHz to 20 MHz	
Period Jitter (pk-pk)			40	ps	10,000 Samples - Rising edge	

Additional Parameters

Screening	Vectron Verification ⁹		V
Screening	Class B, MIL-PRF-55310, Rev.D		B
Output Enable ⁶	Logic "0" input = Outputs disabled (Tri-state) Logic "1" or floating input = Outputs enabled)		Standard for ACMOS, TTL and LVDS outputs
	Logic "0" or floating input = Outputs enabled Logic "1" input = Outputs disabled (Tri-state)		Standard for LVPECL output
Weight	< 2 grams		
Processing & Packing	Handling & processing note		

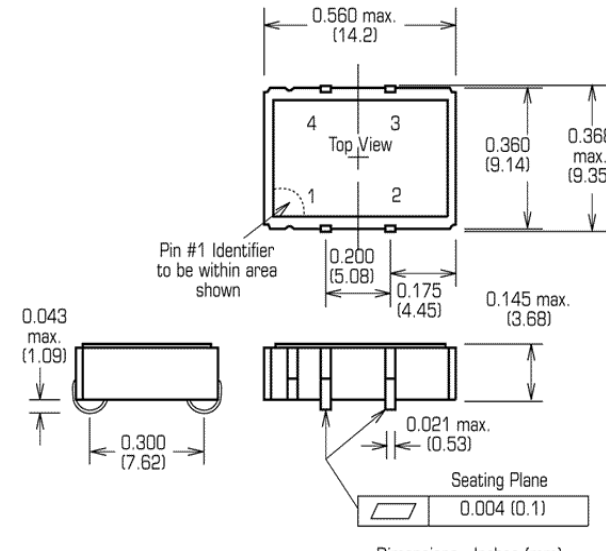
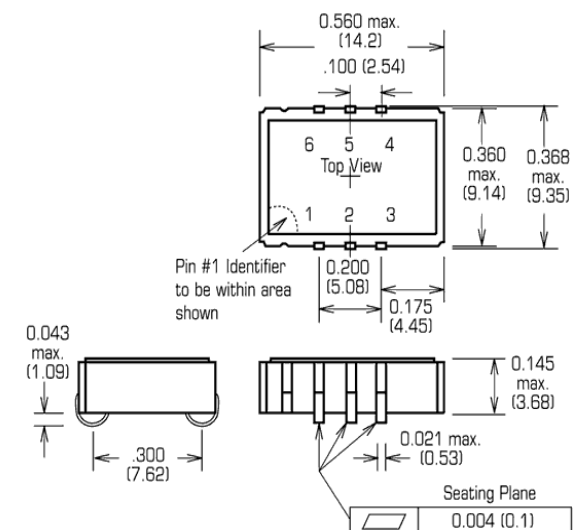
Standard Environmentals

Parameter	Test Condition
Vibration	MIL-STD-202, Method 204, Condition G (30 G, 10Hz-2000Hz)
Shock	MIL-STD-202, Method 213, Condition I (100 G, 6ms, Sawtooth)
Acceleration	MIL-STD-883, Method 2001, Condition A (5000 G, Y1 Plane)
Temperature Cycling	MIL-STD-883, Method 1010, Condition B
Thermal Shock	MIL-STD-883, Method 107, Condition B
Solderability	MIL-STD-202, Method 208
Leak Test (Fine and Gross)	MIL-STD-883, Method 1014, Condition A1 and C1

Absolute Maximum Ratings

Parameter	Min	Typ	Max	Units	Condition
Supply voltage (Vs)			7.0	V	Vs=5.0VDC
			7.0	V	Vs=3.3VDC
Operable temperature range	-55		+125	°C	
Storage temperature range	-62		+125	°C	

Enclosures

Type A – ACMOS or TTL			Type B – LVPECL or LVDS		
Package Codes:					
Codes	Height	Stand-off	Codes	Height	Stand-off
A1 = 4 leads	0.188 max (4.77)	0.043 max (1.09)	B1 = 6 leads	0.188 max (4.77)	0.043 max (1.09)
E1 = Enable/Disable pin 1 X = N/C pin 1			E1 = Enable/Disable pin 1 E2 = Enable/Disable pin 2 X = N/C pin 1 and pin 2		
T= Tinned J leads ⁸ X= No Tinning			T= Tinned J leads ⁸ X= No Tinning		
 <p>Dimensions: Inches (mm)</p>			 <p>Dimensions: Inches (mm)</p>		
Pin Connections			Pin Connections		
1 – Enable/Disable or N/C 2 – Ground (case)	3 – RF Output 4 – Supply Voltage		1 – Enable/Disable or N/C 2 – N/C 3 – Ground (Case)	4 – RF Output 5 – Complementary Output 6 – Supply Voltage	

How to Order this Product: ¹⁰

Step 1 Use this worksheet to forward the following information to your factory representative (example follows):								
Model	Stability Code	Initial Accuracy Code (if required)	Supply Voltage Code	RF Output Code	Screening Code	Package Code	Enable/Disable Code	Tinning Code
C1300	C505	T505	SV033	RFA	V	A1	E1	T

Step 2 The factory representative will then respond with a Vectron Part Number in the following configuration:			
Model	Package Code	Dash	Dash Number
C1300	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N C1300A1-0001

Notes:

- 1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all RF outputs and frequencies.
- 2 Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
- 3 Phase noise degrades with increasing output frequency.
- 4 Subject to technical modification.
- 5 Contact factory for availability.
- 6 Contact factory for other options.
- 7 Overall stabilities do not require an initial accuracy code.
- 8 Leads tinned IAW Vectron International standard procedure (GR-37409).
- 9 Vectron Verification IAW Vectron International standard process (HK-69314).
- 10 Please be sure to specify nominal frequency.