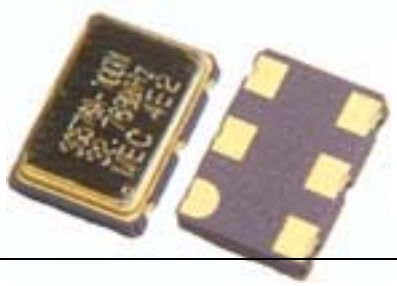
Voltage Controlled Crystal Oscillators V C X O
3GPF576 Series +3.3V, "F" family, PECL Outputs

MERCURY
Since 1973

3GPF576 VCXO products feature 0.4 ps typical phase jitter and low phase noise (-132 dBc at 10 KHz for 155.520 MHz). Differential PECL Outputs meet the requirements for SONET, XDSL and other communication protocols.



RoHS Compliant Product by Mercury

General Specifications

Product Series	**3GPF576**		
Frequency Range	38 MHz ~ 640 MHz.		
Output Logic	Differential PECL 100 K square wave		
Frequency Stability vs Operating Temperature Range	Stability Code	**Commercial " C ":** -10°C to +70°C	**Industrial " I ":** -40°C to +85°C
	±25 ppm	**A**	**D**
	±50 ppm	**B**	**E**
	±100 ppm	**C**	**F**
	Custom ±xx ppm	**C**xx	**I**xx
	If custom, use "temperature range code + desired ppm stability" for the stability code. Example: "**C20**" (±20 ppm over -10 to +70°C) or "**I35**".		
vs Supply Voltage Change	±3 ppm max.with ±10% supply voltage change		
vs Load Change	±2 ppm max.with ±10% Load change:		
Supply Voltage V_{CC}	+3.3 V ± 10 %		
Output Voltage HIGH "1", V_{OH}	2.275 V min.; 2.420 V max. Condition: 50 ohms to V_{DD}-2V		
Output Voltage LOW "0", V_{OL}	1.490 V min..; 1.680 V max. Condition: 50 ohms to V_{DD}-2V		
Current Consumption	38 MHz≤ fout ≤ 100 MHz: 70 mA max. 100 MHz< fout ≤ 320 MHz: 85 mA max 320 MHz< fout ≤ 640 MHz: 95 mA max		
Load	50 ohms into V_{CC}-2V or Thevenin equivalent (terminating resistors required on all outputs). See test circuit below.		
Rise Time (Tr) and Fall Time (Tf)	fout < 150 MHz: 0.5 ns typical; 0.7 ns max. 150 MHz ≤ fout ≤ 320 MHz: 0.4 ns. typical; 0.55 ns. max 320 MHz < fout ≤ 640 MHz: 0.3 ns. typical; 0.45 ns. max Measured at 20% ↔ 80% of the wave form.		
Duty Cycle	50% ± 5% max. measured at 50% waveform.		
Voltage Control Characteristics (pad No. 1)	**Control Voltage Center**	+1.65 V	
	Control Voltage Range	Vcon= +0.3 V to +3.0 V	
	Frequency Deviation Range	From ± 80 ppm to ± 120 ppm. Use "**N**" (minimum), "**M**" (maximum), "**T**" (typical, ±20%) for the desired range. Example: 120M represents ±120 ppm maximum.	
	Linearity	6% typical; 10% max.	
	Slope Polarity (Transfer Function)	Positive: Positive voltage for positive frequency shift	
	Modulation Band Width	25 KHz min. (- 3dB, 0V ≤ Vcon ≤ 3.3V)	
	Input Impedance	60 KΩ min.	
Tri-state	**No Connection**	Differential PECL and complimentary PECL outputs.	

MERCURY www.mercury-crystal.com
Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: sales-tw@mercury-crystal.com
U.S.A.: TEL (1)-909-466-0427, FAX (1)-909-466-0762, e-mail: sales-us@mercury-crystal.com

Function on pad No. 2	**Disable**	Both outputs are disabled (high impedance) when pad No. 2 is taken below 0.45∗Vcc referenced to ground (threshold). Oscillator is always ON. Only buffer stage is disabled. Disable current: 50 uA max. (at 0.0 V). Disable time: 10 ns max.						
	Enable	At disabled mode, both outputs are enabled when pad No. 2 is taken above 0.45∗Vcc referenced to ground (threshold). Enable time: 10ns+one period of the output frequency max.						
SSB Phase Noise (dBc/Hz)	Offset	10 Hz	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz	10 MHz
	77.760 MHz	-65	-96	-124	-136	-132	-145	-149
	155.520 MHz	-62	-92	-120	-132	-128	-144	-150
	311.020 MHz	-59	-86	-116	-129	-124	-140	-148
	622.080 MHz	-48	-80	-108	-118	-114	-131	-138
Jitter		Period Jitter (RMS)			Period Jitter (peak-to-peak)		Integrated Jitter RMS (12 KHz ~20 MHz)	
	77.760 MHz	2.5 ps typ; 4.0 ps max			18 ps typ.; 30 ps max		0.4 ps typ; 0.5 ps max.	
	155.520 MHz	3.0 ps typ; 5.0 ps max			20 ps typ.; 30 ps max		0.4 ps typ; 0.5 ps max.	
	311.020 MHz	3.0 ps typ; 5.0 ps max			25 ps typ.; 30 ps max		0.4 ps typ; 0.5 ps max.	
	622.080 MHz	6.0 ps typ; 8.0 ps max			40 ps typ.; 50 ps max		0.4 ps typ; 0.5 ps max.	
Start-up Time		5 m sec. max.						
Aging		±3 ppm / year max.						
Packaging		179 mm reel; 16 mm tape, 8.0 mm pitch. 1000 pcs per reel.						
Contact Pad Surface Finish		Nickel over gold on ceramic substrate						

(1)Inclusive of 25°C tolerance, operating temperature range, ±10% input voltage variation, load change, aging at +25°C, shock and vibration.

Absolute Maximum Rating Permanent damage may be created if operate beyond limits specified

Supply Voltage V_{DD}	+4.6 V D.C. max.
Input Voltage Vi	Vss-0.5V min.; V_{DD} +0.5V max.
Input Voltage Vo	Vss-0.5V min.; V_{DD} +0.5V max.
E S D Protection	2 KV max. Human body model

Environmental Performance Specifications

Green Requirement	RoHS Compliant and Pb (lead) free
Moisture Sensitivity Level	Level 1
Storage temp. range	-55 to +125°C
Humidity	85% RH, 85°C, 48 hours
Hermetic seal	Leak rate $2x10^{-8}$ ATM-cm^3/sec max.
Solderability	MIL-STD-202F method 208E
Vibration	MIL-STD-202F method 204, 35G, 50 to 2000 Hz
Shock	MIL-STD-202F method 213B, test condi. E, 1000GG ½ sine wave

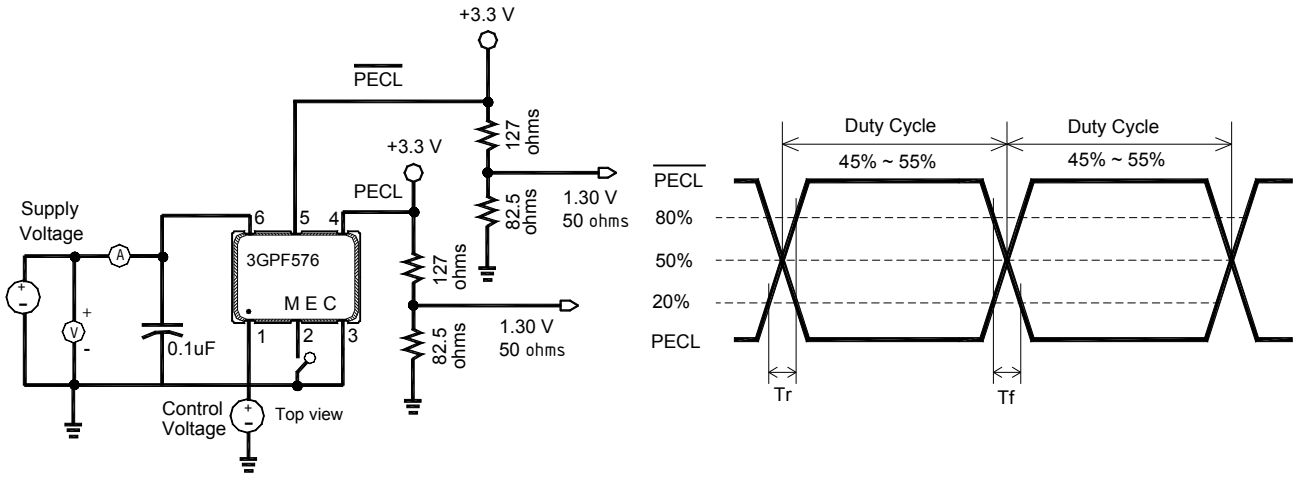
Part Number Format and Example:

Example: 3GPF576A-120N-155.520
Explanation: +3.3V GPF576 series PECL output clock oscillator, 155.520 MHz, frequency stability is ±25 ppm over 0°C to +70°C, frequency deviation range is ±100 ppm minimum.

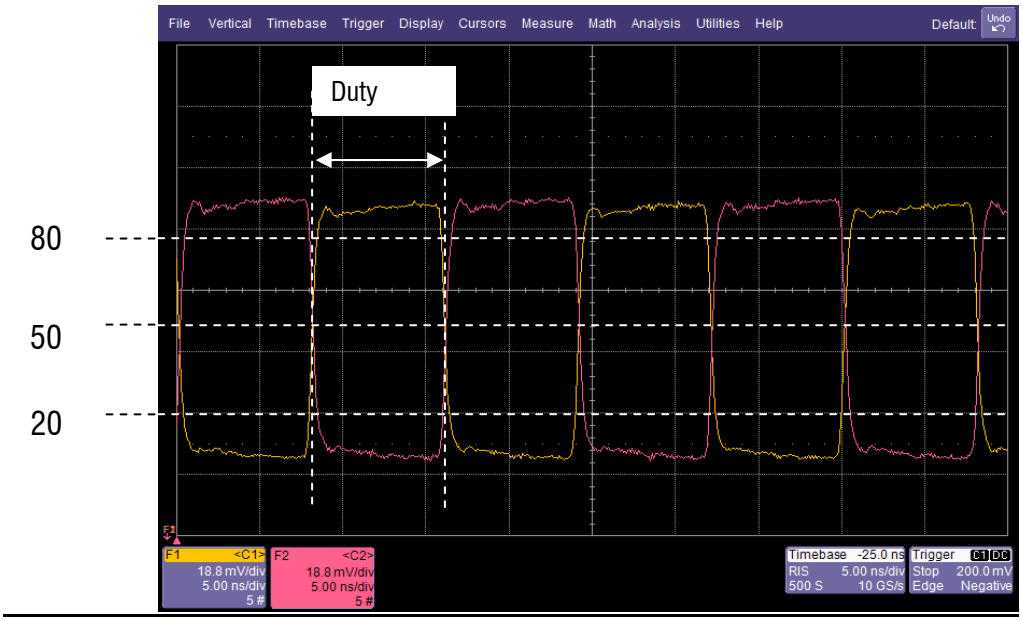
		✍		✍	✍		✍	✍: customer to specify
3	GPF576	A	—	120	N	—	155.520	
❶	❷	❸		❹	❺		❻	

❶: Voltage codes: "**3**" for +3.3 V; ❷: GPF576 product series. '**G**" for VCXO; "**P**" for PECL; "**F**": for "F" family performance."**576**" for 5x7 mm SMD with 6 pads. ❸: Frequency stability code: "**A**" ~ "**F**" or custom. See table above. ❹: Frequency deviation range in ppm ❺ Frequency deviation range code. "**N**" for minimum; "**M**" for maximum; "**T**" for typical (±20%) ❻ Frequency in MHz

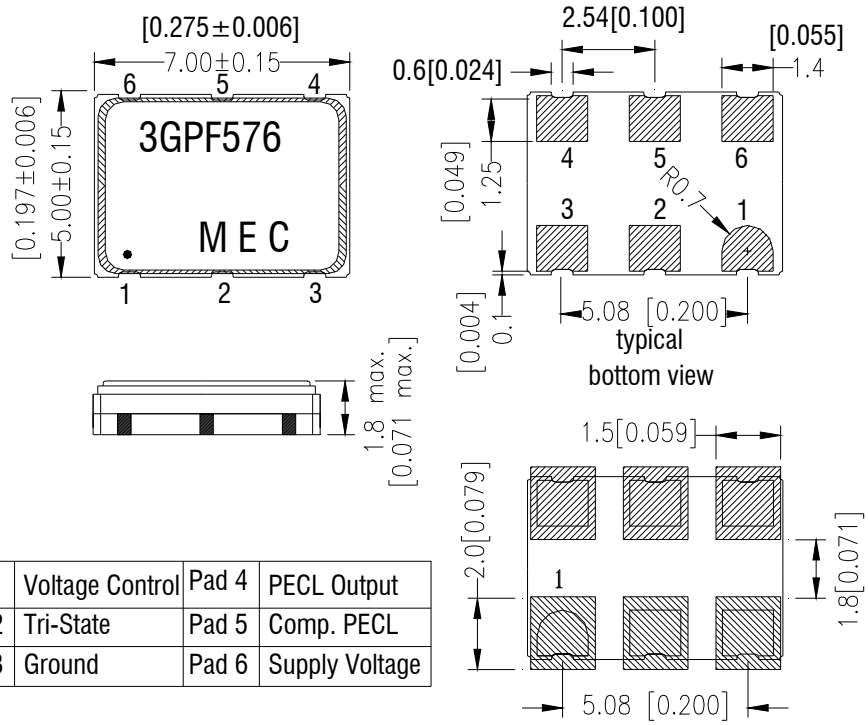
3GPF576 Test Circuit and Wveform:



-



3GPF576 Package Dimensions and Recommended Pad Layout: unit mm[inches]



Pad 1	Voltage Control	Pad 4	PECL Output
Pad 2	Tri-State	Pad 5	Comp. PECL
Pad 3	Ground	Pad 6	Supply Voltage

Chamfered pad is pad No. 1. Count counter-clockwise when looking at top view.
Count clockwise when looking at bottom view.

3GPF576 Recommended Solder Reflow Profile

Topside temperature of board to be 260°C min. and 270°C max.
Peak Temperature: 260°C max. and 10 sec. max.
Time within 5°C of actual peak: 20 to 40 sec. max.