



Low Power Mobile VGA EMI Reduction IC

FEATURES

- FCC approved method of EMI attenuation
- Provides up to 15 dB EMI reduction
- Generates a low EMI spread spectrum clock and a non-spread **Reference Clock** of the input frequency
- Optimized for frequency range from 10 MHz to 170 MHz
 - P1818: 10 MHz to 20 MHz**
 - P1819: 20 MHz to 40 MHz**
 - P1820: 40 MHz to 80 MHz**
 - P1821: 10 MHz to 40 MHz**
 - P1822: 40 MHz to 170 MHz**
- Internal loop filter minimizes external components and board space
- Selectable spread options: **Down Spread** and **Center Spread**
- Low inherent cycle-to-cycle jitter
- **8** spread % selections: **+/-0.625% to -3.5%**
- 3.3V operating voltage
- CMOS/TTL compatible inputs and outputs
- **Ultra low power** CMOS design
 - TBD mA @3.3V, 10 MHz
 - TBD mA @3.3V, 14 MHz
 - TBD mA @3.3V, 27MHz
- Supports notebook VGA and other LCD timing controller applications
- **Power Down** function for mobile application
- Products are available for industrial temperature range.
- Available in 8 pin SOIC and TSSOP

PRODUCT DESCRIPTION

The P18XX is a versatile spread spectrum frequency modulator designed specifically for a wide range of input clock frequencies from 10 MHz to 170 MHz (see Table 1.1). The P18XX can generate an EMI reduced clock from crystal, ceramic resonator, or system clock. The P18XX-A to -H offers various combinations of spread options and percentage deviations (see Table 1.2). These combinations include Down Spread, Center Spread and percentage deviation range from +/-0.625% to -3.50%.

The P18XX reduces electromagnetic interference (EMI) at the clock source, allowing a system wide EMI reduction for all the down stream clocks and data dependent signals. The P18XX allows significant system cost savings by reducing the number of circuit board layers, ferrite beads, shielding, and other passive components that are traditionally required to pass EMI regulations.

The P18XX modulates the output of a single PLL in order to “spread” the bandwidth of a synthesized clock, thereby decreasing the peak amplitudes of its harmonics. This results in significantly lower system EMI compared to the typical narrow band signal produced by oscillators and most clock generators. Lowering EMI by increasing a signal's bandwidth is called “spread spectrum clock generation”.

The P18XX uses the most efficient and optimized modulation profile approved by the FCC and is implemented by using a proprietary all-digital method.

APPLICATIONS

The P18XX is targeted towards EMI management for memory and LVDS interfaces in mobile graphic chipsets and high-speed digital applications such as PC peripheral devices, consumer electronics, and embedded controller systems.

Figure 1 - Pin Diagrams

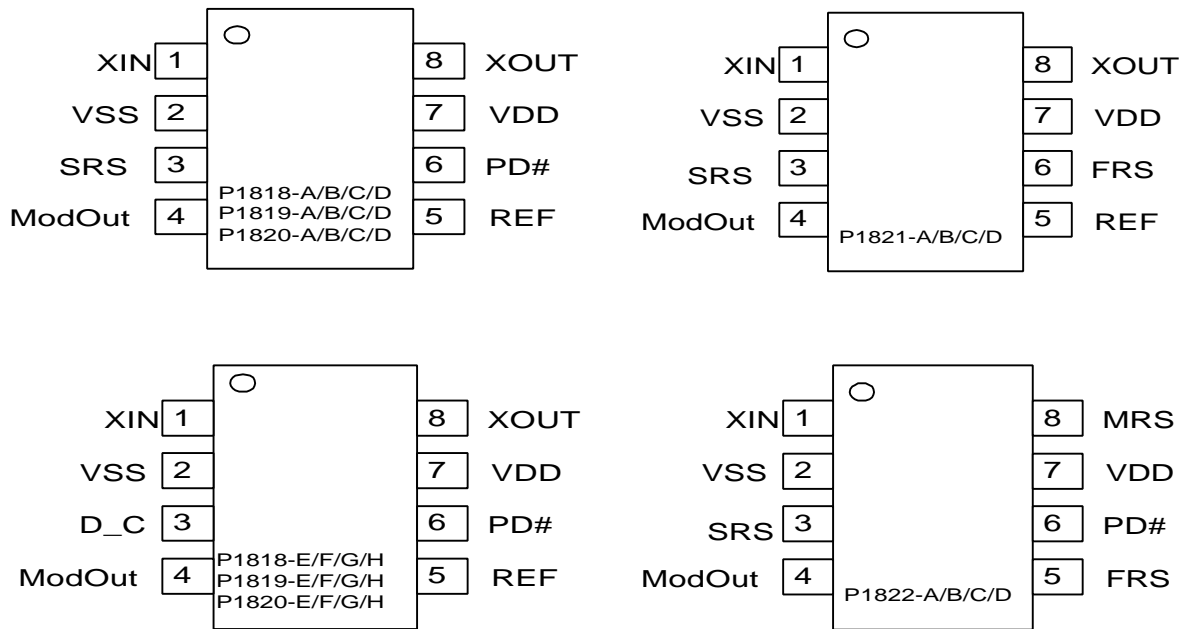


Figure 2 - P1818/19/20/21/22 Block Diagram

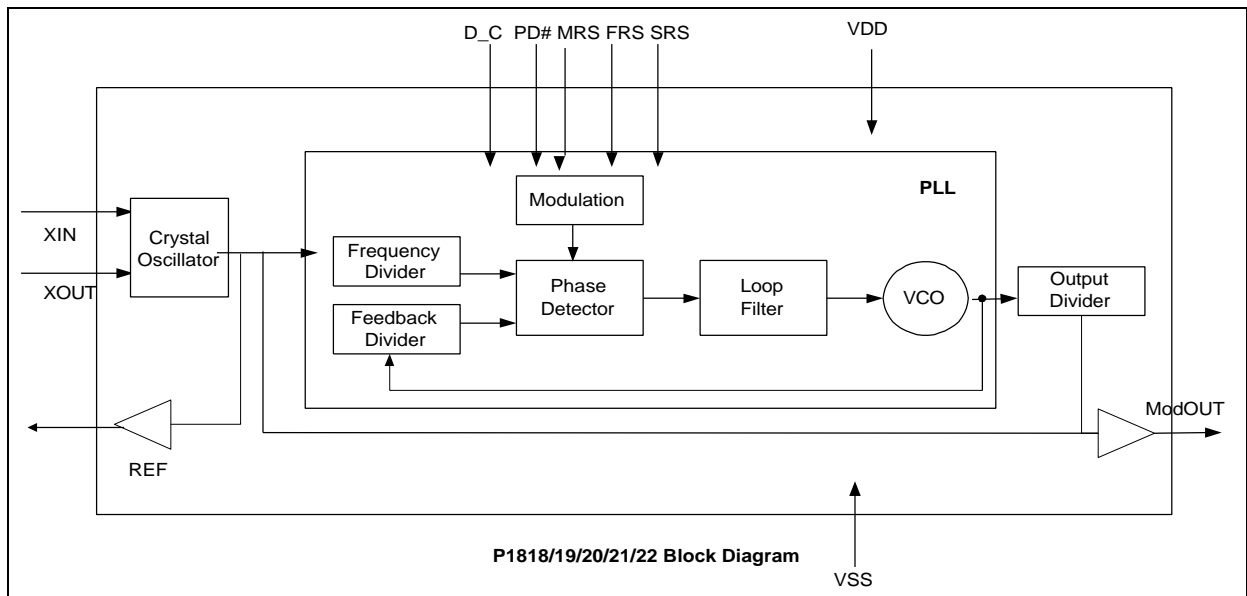


Table 1- Input Frequency Selections

Part Number		Input Frequency Range	Output Frequency Range
P1818		10MHz to 20MHz	10MHz to 20MHz
P1819		20MHz to 40MHz	20MHz to 40MHz
P1820		40MHz to 80MHz	40MHz to 80MHz
P1821	FRS= 0	10MHz to 20MHz	10MHz to 20MHz
	FRS= 1	20MHz to 40MHz	20MHz to 40MHz
P1822	FRS= 0	40MHz to 80MHz	40MHz to 80MHz
	FRS= 1	80MHz to 160MHz	80MHz to 160MHz

Table 2 - Spread Deviation/Option and Modulation Rate Selections*

Part Number	SRS	D_C	Spread Deviation	MRS	Modulation Rate
P1818/19/20/21-A	0	N/A	-2.50% (Down)	N/A	TBD KHz
	1		-3.50% (Down)		
P1818/19/20/21-B	0	N/A	-1.25% (Down)	N/A	TBD KHz
	1		-1.75% (Down)		
P1818/19/20/21-C	0	N/A	+/-1.25% (Center)	N/A	TBD KHz
	1		+/-1.75% (Center)		
P1818/19/20/21-D	0	N/A	+/-0.625% (Center)	N/A	TBD KHz
	1		+/-0.875% (Center)		
P1818/19/20-E	N/A	0	-1.25% (Down)	N/A	TBD KHz
		1	+/-0.625% (Center)		
P1818/19/20-F	N/A	0	-2.5% (Down)	N/A	TBD KHz
		1	+/-1.25% (Center)		
P1818/19/20-G	N/A	0	-1.75% (Down)	N/A	TBD KHz
		1	+/-0.875% (Center)		
P1818/19/20-H	N/A	0	-3.5% (Down)	N/A	TBD KHz
		1	+/-1.75% (Center)		
P1822-A	0	N/A	-2.50% (Down)	0	TBD KHz
	1		-3.50% (Down)	1	TBD KHz
P1822-B	0	N/A	-1.25% (Down)	0	TBD KHz
	1		-1.75% (Down)	1	TBD KHz
P1822-C	0	N/A	+/-1.25% (Center)	0	TBD KHz
	1		+/-1.75% (Center)	1	TBD KHz
P1822-D	0	N/A	+/-0.625% (Center)	0	TBD KHz
	1		+/-0.875% (Center)	1	TBD KHz

*Note: -A through -H represents various combinations of spread deviations, options, and modulation rates.



PIN DESCRIPTION

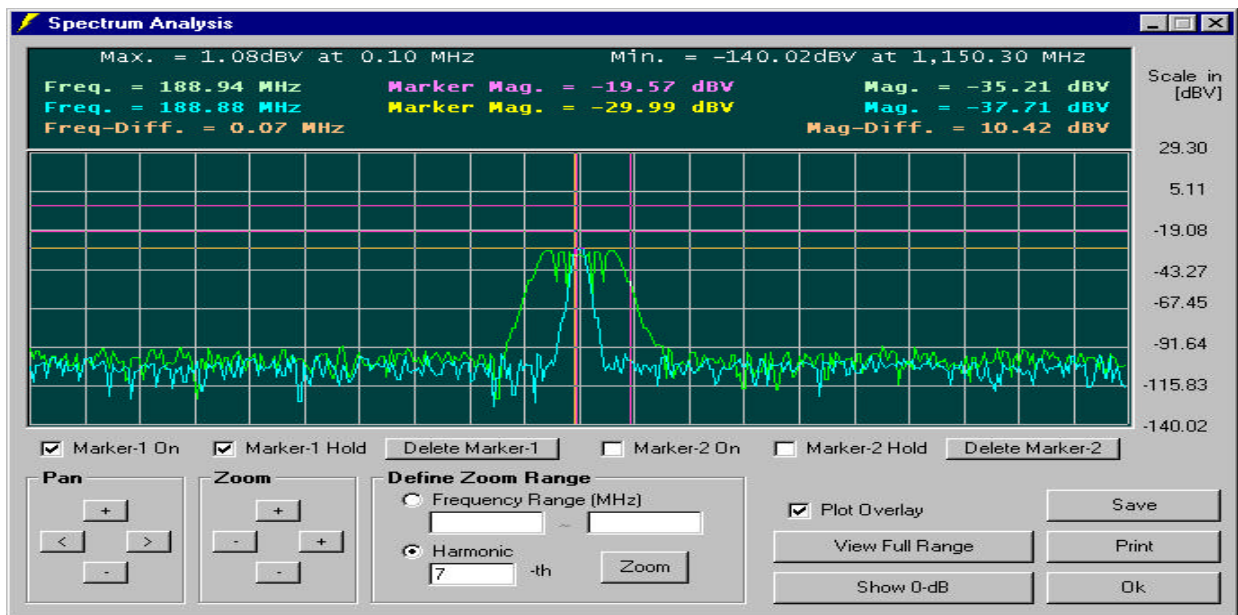
PIN #	Name	Type	Description
1	XIN	I	Connect to externally generated clock signal or crystal.
2	VSS	P	Ground Connection. Connect to system ground.
3	SRS	I	Spread Range Select. Digital logic input used to select frequency deviation (see Table 2). This pin has an internal pull-up resistor.
3*	D_C	I	Digital logic input used to select Down (LOW) or Center (HIGH) Spread Options (see Table 2). This pin has an internal pull-up resistor.
4	ModOut	O	Spread Spectrum clock output (see Table 1 and Table 2).
5	REF	O	Non-modulated reference output clock of the input frequency.
5/6*	FRS	I	Frequency Range Select. Digital logic input used to select input frequency range (see Table 1.1). This pin has an internal pull-up resistor.
6*	PD#	I	Power-Down control pin. Pull LOW to enable Power-Down mode. This pin has an internal pull-up resistor.
7	VDD	P	Connect to +3.3V
8	XOUT	I	Connect to crystal. No connect if externally generated clock signal is used.
8*	MRS	I	Modulation Rate Select. Digital logic input used to select Modulation Rate (see Table 2). This pin has an internal pull-up resistor.

***Please refer to Figure 1 for pin assignment**

EMC SOFTWARE SIMULATION

By using PulseCore’s proprietary EMC simulation software – **EMI-lator**[®], radiated system level EMI analysis can be made easier, allowing a quantitative measure on the benefits of PulseCore’s EMI reduction products. The simulation engine of this EMC software has already been characterized to correlate with the electrical characteristics of PulseCore EMI reduction IC’s. **Figure 3** below is an example of the simulation result. Please visit our web site at www.pulsecore.com for information on how to obtain a free copy and demonstration of **EMI-lator**[®].

Figure 3 - Simulation Results from EMI-Lator[®]



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Unit
V_{DD}, V_{IN}	Voltage on any pin with respect to GND	-0.5 to +7.0	V
T_{STG}	Storage Temperature	-65 to +125	°C
T_A	Operating Temperature	0 to +70	°C

DC ELECTRICAL CHARACTERISTICS

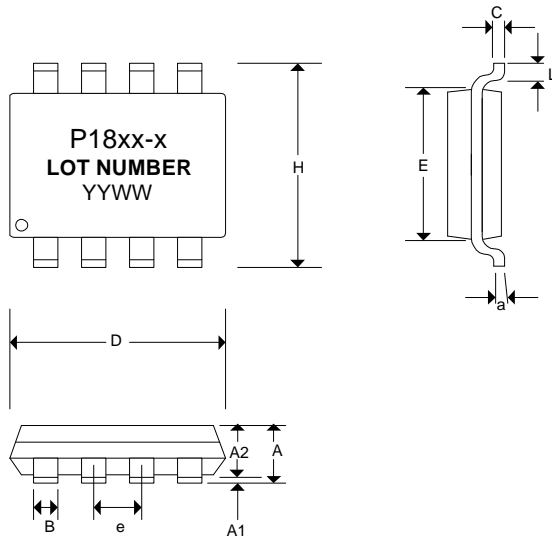
Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input Low Voltage	GND – 0.3	-	TBD	V
V_{IH}	Input High Voltage	TBD	-	$V_{DD} + 0.3$	V
I_{IL}	Input Low Current (pull-up resistor on inputs SR0, SR1)	-	-	TBD	μA
I_{IH}	Input High Current (pull-down resistor on input SSON)	-	-	TBD	μA
I_{XOL}	XOUT Output Low Current (@ 0.4V, $V_{DD} = 3.3V$)	-	TBD	-	mA
I_{XOH}	XOUT Output High Current (@ 2.5V, $V_{DD} = 3.3V$)	-	TBD	-	mA
V_{OL}	Output Low Voltage ($V_{DD}=3.3V, I_{OL} = 20\text{ mA}$)	-	-	TBD	V
V_{OH}	Output High Voltage ($V_{DD}=3.3V, I_{OH} = 20\text{ mA}$)	TBD	-	-	V
I_{DD}	Static Supply Current Standby Mode	-	TBD	-	mA
I_{CC}	Dynamic Supply Current Normal Mode (3.3V and 10 pF loading)	TBD f_{IN-min}	TBD f_{IN-tp}	TBD f_{IN-max}	mA
V_{DD}	Operating Voltage	TBD	3.3	TBD	V
t_{ON}	Power Up Time (First locked clock cycle after power up)	-	TBD	-	mS
Z_{OUT}	Clock Output Impedance	-	TBD	-	Ω

AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
f_{IN}	Input Frequency	10	TBD	170	MHz
t_{LH} Note 1	Output Rise Time (measured at 0.8V to 2.0V)		TBD		ns
t_{HL} Note 1	Output Fall Time (measured at 2.0V to 0.8V)		TBD		ns
t_{JC}	Jitter (cycle to cycle)	-	-	TBD	ps
t_D	Output Duty Cycle		TBD		%

Note1: t_{LH} and t_{HL} are measured into a capacitive load of 15pF

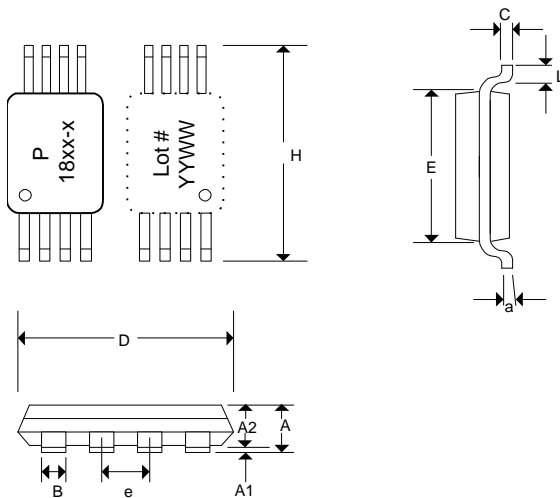
Figure 4 - Mechanical Package Outline (8 Pin SOIC)



SYMBOL	INCHES			MILLIMETERS		
	MIN	NOR	MAX	MIN	NOR	MAX
A	0.057	0.064	0.071	1.45	1.63	1.80
A1	0.004	0.007	0.010	0.10	0.18	0.25
A2	0.053	0.061	0.069	1.35	1.55	1.75
B	0.012	0.016	0.020	0.31	0.41	0.51
C	0.004	0.006	0.001	0.10	0.15	0.25
D	0.186	0.194	0.202	4.72	4.92	5.12
E	0.148	0.156	0.164	3.75	3.95	4.15
e	0.050 BSC			1.27 BSC		
H	0.224	0.236	0.248	5.70	6.00	6.30
L	0.012	0.020	0.028	0.30	0.50	0.70
a	0°	5°	8°	0°	5°	8°

Note: Controlling dimensions are millimeters.

Figure 5 - Mechanical Package Outline (8 Pin TSSOP)

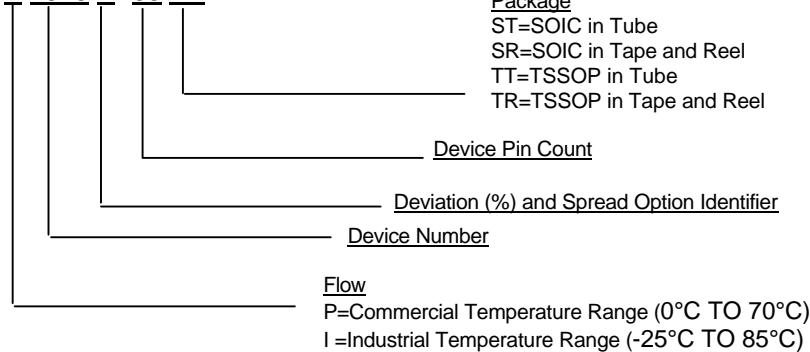


SYMBOL	INCHES			MILLIMETERS		
	MIN	NOR	MAX	MIN	NOR	MAX
A	-	-	0.047	-	-	1.10
A1	0.002	-	0.006	0.05	-	0.15
A2	0.031	0.039	0.041	0.80	1.00	1.05
B	0.007	-	0.012	0.19	-	0.30
C	0.004	-	0.008	0.09	-	0.20
D	0.114	0.118	0.122	2.90	3.00	3.10
E	0.169	0.173	0.177	4.30	4.40	4.50
e	0.026 BSC			0.65 BSC		
H	0.244	0.252	0.260	6.20	6.40	6.60
L	0.018	0.024	0.030	0.45	0.60	0.75
a	0°	-	8°	0°	-	8°

Note: Controlling dimensions are millimeters.

Ordering Information:

X 1818-X- 08 XX



Ordering Number	Marking	Input Frequency (MHz)	Frequency Deviation (%)	Package Type	Qty. / Reel	Temperature (NOTE)
P1818-A-08ST	P1818-A	10 – 20	-2.5, -3.5	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-A-08SR	P1818-A	10 – 20	-2.5, -3.5	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-A-08TT	P1818-A	10 – 20	-2.5, -3.5	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-A-08TR	P1818-A	10 – 20	-2.5, -3.5	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-B-08ST	P1818-B	10 – 20	-1.25, -1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-B-08SR	P1818-B	10 – 20	-1.25, -1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-B-08TT	P1818-B	10 – 20	-1.25, -1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-B-08TR	P1818-B	10 – 20	-1.25, -1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-C-08ST	P1818-C	10 – 20	+/-1.25, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-C-08SR	P1818-C	10 – 20	+/-1.25, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-C-08TT	P1818-C	10 – 20	+/-1.25, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-C-08TR	P1818-C	10 – 20	+/-1.25, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-D-08ST	P1818-D	10 – 20	+/-0.625, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-D-08SR	P1818-D	10 – 20	+/-0.625, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-D-08TT	P1818-D	10 – 20	+/-0.625, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-D-08TR	P1818-D	10 – 20	+/-0.625, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-E-08ST	P1818-E	10 – 20	-1.25, +/-0.625	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-E-08SR	P1818-E	10 – 20	-1.25, +/-0.625	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-E-08TT	P1818-E	10 – 20	-1.25, +/-0.625	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-E-08TR	P1818-E	10 – 20	-1.25, +/-0.625	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-F-08ST	P1818-F	10 – 20	-2.5, +/-1.25	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-F-08SR	P1818-F	10 – 20	-2.5, +/-1.25	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-F-08TT	P1818-F	10 – 20	-2.5, +/-1.25	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-F-08TR	P1818-F	10 – 20	-2.5, +/-1.25	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1818-G-08ST	P1818-G	10 – 20	-1.75, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-G-08SR	P1818-G	10 – 20	-1.75, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-G-08TT	P1818-G	10 – 20	-1.75, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-G-08TR	P1818-G	10 – 20	-1.75, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C



PRELIMINARY Specification
P1818/19/20/21/22

Ordering Number	Marking	Input Frequency (MHz)	Frequency Deviation (%)	Package Type	Qty. / Reel	Temperature (NOTE)
P1818-H-08ST	P1818-H	10 – 20	-3.5, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1818-H-08SR	P1818-H	10 – 20	-3.5, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1818-H-08TT	P1818-H	10 – 20	-3.5, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1818-H-08TR	P1818-H	10 – 20	-3.5, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-A-08ST	P1819-A	20 – 40	-2.5, -3.5	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-A-08SR	P1819-A	20 – 40	-2.5, -3.5	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-A-08TT	P1819-A	20 – 40	-2.5, -3.5	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-A-08TR	P1819-A	20 – 40	-2.5, -3.5	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-B-08ST	P1819-B	20 – 40	-1.25, -1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-B-08SR	P1819-B	20 – 40	-1.25, -1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-B-08TT	P1819-B	20 – 40	-1.25, -1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-B-08TR	P1819-B	20 – 40	-1.25, -1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-C-08ST	P1819-C	20 – 40	+/-1.25, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-C-08SR	P1819-C	20 – 40	+/-1.25, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-C-08TT	P1819-C	20 – 40	+/-1.25, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-C-08TR	P1819-C	20 – 40	+/-1.25, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-D-08ST	P1819-D	20 – 40	+/-0.625, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-D-08SR	P1819-D	20 – 40	+/-0.625, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-D-08TT	P1819-D	20 – 40	+/-0.625, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-D-08TR	P1819-D	20 – 40	+/-0.625, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-E-08ST	P1819-E	20 – 40	-1.25, +/-0.625	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-E-08SR	P1819-E	20 – 40	-1.25, +/-0.625	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-E-08TT	P1819-E	20 – 40	-1.25, +/-0.625	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-E-08TR	P1819-E	20 – 40	-1.25, +/-0.625	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-F-08ST	P1819-F	20 – 40	-2.5, +/-1.25	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-F-08SR	P1819-F	20 – 40	-2.5, +/-1.25	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-F-08TT	P1819-F	20 – 40	-2.5, +/-1.25	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-F-08TR	P1819-F	20 – 40	-2.5, +/-1.25	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-G-08ST	P1819-G	20 – 40	-1.75, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-G-08SR	P1819-G	20 – 40	-1.75, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-G-08TT	P1819-G	20 – 40	-1.75, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-G-08TR	P1819-G	20 – 40	-1.75, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1819-H-08ST	P1819-H	20 – 40	-3.5, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1819-H-08SR	P1819-H	20 – 40	-3.5, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1819-H-08TT	P1819-H	20 – 40	-3.5, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1819-H-08TR	P1819-H	20 – 40	-3.5, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-A-08ST	P1820-A	40 – 80	-2.5, -3.5	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-A-08SR	P1820-A	40 – 80	-2.5, -3.5	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-A-08TT	P1820-A	40 – 80	-2.5, -3.5	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-A-08TR	P1820-A	40 – 80	-2.5, -3.5	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C



PRELIMINARY Specification
P1818/19/20/21/22

Ordering Number	Marking	Input Frequency (MHz)	Frequency Deviation (%)	Package Type	Qty. / Reel	Temperature (NOTE)
P1820-B-08ST	P1820-B	40 – 80	-1.25, -1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-B-08SR	P1820-B	40 – 80	-1.25, -1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-B-08TT	P1820-B	40 – 80	-1.25, -1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-B-08TR	P1820-B	40 – 80	-1.25, -1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-C-08ST	P1820-C	40 – 80	+/-1.25, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-C-08SR	P1820-C	40 – 80	+/-1.25, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-C-08TT	P1820-C	40 – 80	+/-1.25, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-C-08TR	P1820-C	40 – 80	+/-1.25, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-D-08ST	P1820-D	40 – 80	+/-0.625, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-D-08SR	P1820-D	40 – 80	+/-0.625, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-D-08TT	P1820-D	40 – 80	+/-0.625, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-D-08TR	P1820-D	40 – 80	+/-0.625, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-E-08ST	P1820-E	40 – 80	-1.25, +/-0.625	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-E-08SR	P1820-E	40 – 80	-1.25, +/-0.625	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-E-08TT	P1820-E	40 – 80	-1.25, +/-0.625	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-E-08TR	P1820-E	40 – 80	-1.25, +/-0.625	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-F-08ST	P1820-F	40 – 80	-2.5, +/-1.25	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-F-08SR	P1820-F	40 – 80	-2.5, +/-1.25	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-F-08TT	P1820-F	40 – 80	-2.5, +/-1.25	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-F-08TR	P1820-F	40 – 80	-2.5, +/-1.25	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-G-08ST	P1820-G	40 – 80	-1.75, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-G-08SR	P1820-G	40 – 80	-1.75, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-G-08TT	P1820-G	40 – 80	-1.75, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-G-08TR	P1820-G	40 – 80	-1.75, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1820-H-08ST	P1820-H	40 – 80	-3.5, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1820-H-08SR	P1820-H	40 – 80	-3.5, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1820-H-08TT	P1820-H	40 – 80	-3.5, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1820-H-08TR	P1820-H	40 – 80	-3.5, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1821-A-08ST	P1821-A	10 – 40	-2.5, -3.5	8 PIN SOIC, TUBE		0°C TO 70°C
P1821-A-08SR	P1821-A	10 – 40	-2.5, -3.5	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1821-A-08TT	P1821-A	10 – 40	-2.5, -3.5	8 PIN TSSOP, TUBE		0°C TO 70°C
P1821-A-08TR	P1821-A	10 – 40	-2.5, -3.5	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1821-B-08ST	P1821-B	10 – 40	-1.25, -1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1821-B-08SR	P1821-B	10 – 40	-1.25, -1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1821-B-08TT	P1821-B	10 – 40	-1.25, -1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1821-B-08TR	P1821-B	10 – 40	-1.25, -1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1821-C-08ST	P1821-C	10 – 40	+/-1.25, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1821-C-08SR	P1821-C	10 – 40	+/-1.25, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1821-C-08TT	P1821-C	10 – 40	+/-1.25, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1821-C-08TR	P1821-C	10 – 40	+/-1.25, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C



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PRELIMINARY Specification
P1818/19/20/21/22

P1821-D-08ST	P1821-D	10 – 40	+/-0.625, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1821-D-08SR	P1821-D	10 – 40	+/-0.625, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1821-D-08TT	P1821-D	10 – 40	+/-0.625, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1821-D-08TR	P1821-D	10 – 40	+/-0.625, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1822-A-08ST	P1822-A	40 – 170	-2.5, -3.5	8 PIN SOIC, TUBE		0°C TO 70°C
P1822-A-08SR	P1822-A	40 – 170	-2.5, -3.5	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1822-A-08TT	P1822-A	40 – 170	-2.5, -3.5	8 PIN TSSOP, TUBE		0°C TO 70°C
P1822-A-08TR	P1822-A	40 – 170	-2.5, -3.5	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1822-B-08ST	P1822-B	40 – 170	-1.25, -1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1822-B-08SR	P1822-B	40 – 170	-1.25, -1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1822-B-08TT	P1822-B	40 – 170	-1.25, -1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1822-B-08TR	P1822-B	40 – 170	-1.25, -1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
Ordering Number	Marking	Input Frequency (MHz)	Frequency Deviation (%)	Package Type	Qty. / Reel	Temperature (NOTE)
P1822-C-08ST	P1822-C	40 – 170	+/-1.25, +/-1.75	8 PIN SOIC, TUBE		0°C TO 70°C
P1822-C-08SR	P1822-C	40 – 170	+/-1.25, +/-1.75	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1822-C-08TT	P1822-C	40 – 170	+/-1.25, +/-1.75	8 PIN TSSOP, TUBE		0°C TO 70°C
P1822-C-08TR	P1822-C	40 – 170	+/-1.25, +/-1.75	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C
P1822-D-08ST	P1822-D	40 – 170	+/-0.625, +/-0.875	8 PIN SOIC, TUBE		0°C TO 70°C
P1822-D-08SR	P1822-D	40 – 170	+/-0.625, +/-0.875	8 PIN SOIC, TAPE & REEL	2,500	0°C TO 70°C
P1822-D-08TT	P1822-D	40 – 170	+/-0.625, +/-0.875	8 PIN TSSOP, TUBE		0°C TO 70°C
P1822-D-08TR	P1822-D	40 – 170	+/-0.625, +/-0.875	8 PIN TSSOP, TAPE & REEL	2,500	0°C TO 70°C

Note: Products are available for Industrial Temperature Range Operation. Please contact factory for more information.

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