PCS1P2857A/B

Multi-Output Clock Generator

Features

- Generates multiple clock outputs from an inexpensive 27MHz crystal .
- Frequency outputs: PCS1P2857A
  - CLK1 : 27 MHz
  - CLK2 : 24 MHz
  - CLK3 : 14.31818 MHz
  - CLK4 : 14.31818 MHz
- Frequency outputs: PCS1P2857B
  - CLK1 : 27 MHz
  - CLK2 : 24 MHz
  - CLK3 : 28.322 MHz
- Operates with a 3.3V ± 5%V Supply Voltage
- Available in 8 -pin SOIC and 8 -pin TSSOP.

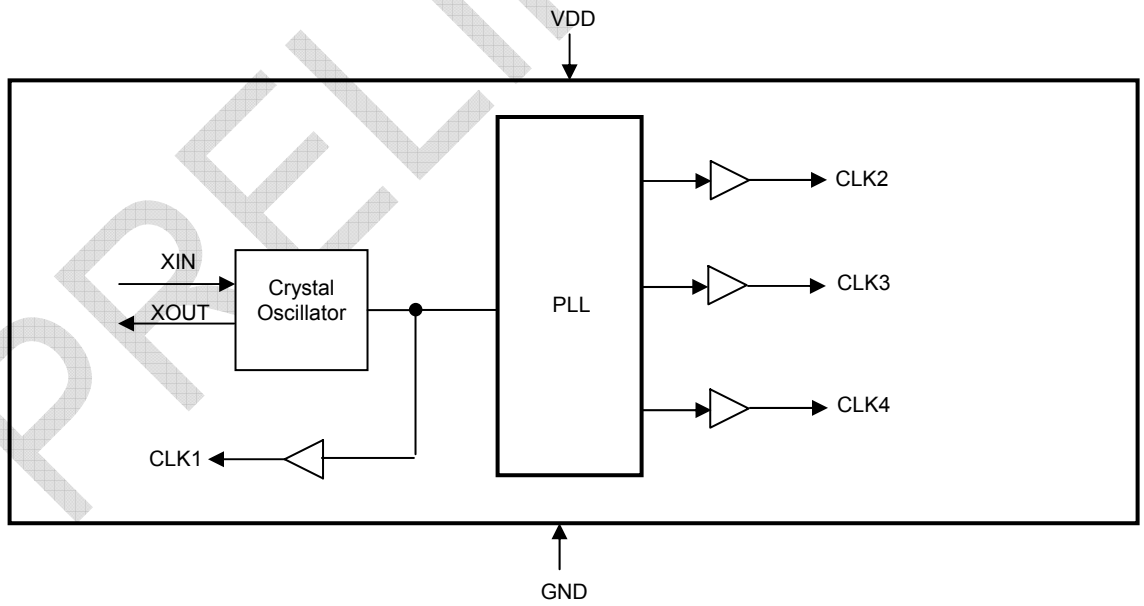
Product Description

The PCS1P2857A/B is a versatile multi output clock generator. The PCS1P2857A/B uses the latest PLL technology. The four Clock outputs are generated using an inexpensive 27MHz Crystal. The accuracy of the 27MHz Input Clock should be within ±50ppm. The outputs consist of 24 MHz, 14.31818 MHz, and 28.322 MHz clocks together with a 27 MHz reference clock. The device operates from a Supply Voltage of 3.3V±5%V. The device is available in a 8 pin SOIC and 8 pin TSSOP JEDEC package.

Application

PCS1P2854A/B is targeted for use in HDTV digital video.

Block Diagram



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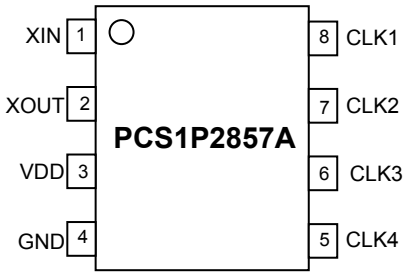
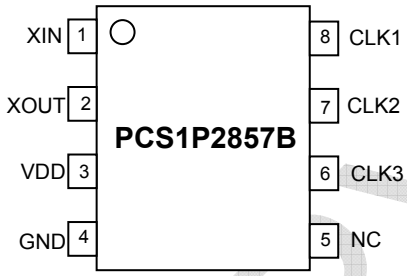
Pin Deseription





Pin Description

Pin #	Pin Name	Pin Type	Pin Description
1	XIN	Input	Crystal connection or external reference frequency input. It can be connected to a 27MHz Fundamental mode crystal
2	XOUT	Output	Connection to crystal. If using an external reference clock, this pin must be left unconnected.
3	VDD	Power	Connect to +3.3V.
4	GND	Power	Connect to ground.
5	CLK4	Output	14.31818MHz Clock output (PCS1P2857A)
	NC	-	No connection (PCS1P2857B)
6	CLK3	Output	14.31818MHz Clock output (PCS1P2857A)
			28.322MHz Clock output (PCS1P2857B)
7	CLK2	Output	24MHz Clock output
8	CLK1		27MHz Reference Clock output

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
VDD	Power Supply Voltage relative to Ground	-0.5 to +4.6	V
V_{IN}	Input Voltage relative to Ground (Input Pins)	-0.5 to VDD+0.5	
T_{STG}	Storage temperature	-65 to +150	°C
T_A	Operating temperature	0 to +70	°C
T_s	Max. Soldering Temperature (10 sec)	260	°C
T_J	Junction Temperature	125	°C
T_{DV}	Static Discharge Voltage (As per JEDEC STD22- A114-B)	2	KV

Note: These are stress ratings only and are not implied for functional use. Exposure to absolute maximum ratings for prolonged periods of time may affect device reliability.

DC Electrical Characteristics

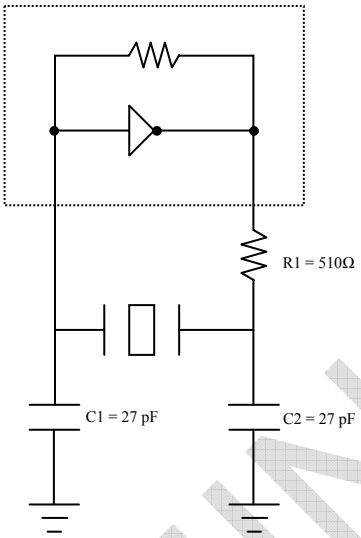
Symbol	Parameter	Min	Typ	Max	Unit
V_{IL}	Input low voltage	GND - 0.3	-	0.8	V
V_{IH}	Input high voltage	2.0	-	VDD + 0.3	V
I_{IL}	Input low current	-	-	-35	µA
I_{IH}	Input high current	-	-	35	µA
V_{OL}	Output low voltage (VDD = 3.3V, I_{OL} =12mA)	-	-	0.4	V
V_{OH}	Output high voltage (VDD = 3.3V, I_{OH} =12mA)	2.4	-	-	V
I_{DD}	Static supply current	-	TBD	-	mA
I_{CC}	Dynamic supply current (VDD =3.3V)	-	TBD	-	mA
VDD	Operating Voltage	3.135	3.3	3.465	V
Z_{OUT}	Output Impedance	-	20	-	Ω
C_{IN}	Input Capacitance	-	5	-	pF
R_{PD}	CLK outputs Internal resistor	-	360	-	kΩ

AC Electrical Characteristics

Symbol	Parameter			Min	Typ	Max	Unit
CLKIN	Input frequency			-	27	-	MHz
CLK OUT	Output frequency	PCS1P2857A		-	27	-	MHz
				-	24	-	MHz
				-	14.31818	-	MHz
		PCS1P2857B		-	27	-	MHz
				-	24	-	MHz
				-	28.322	-	MHz
t_{LH}*	Output rise time (Measured from 0.8V to 2.0V)			0.8	1.4	2.0	nS
t_{HL}*	Output fall time (Measured from 2.0V to 0.8V)			0.8	1.4	2.0	nS
t_{JC}*	Jitter (Cycle to cycle)			-	TBD	-	pS
	Synthesis Error (Output Frequency)	PCS1P2857A	14.31818MHz	-	-0.13	-	ppm
			Other outputs	-	0	-	ppm
		PCS1P2857B	28.322MHz	-	5.68	-	ppm
			Other outputs	-	0	-	ppm
t_D*	Output duty cycle			40	50	60	%
t_{ON}	Power up Time (first locked cycle after power-up)			-	3	5	mS

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

Typical Crystal Oscillator Circuit

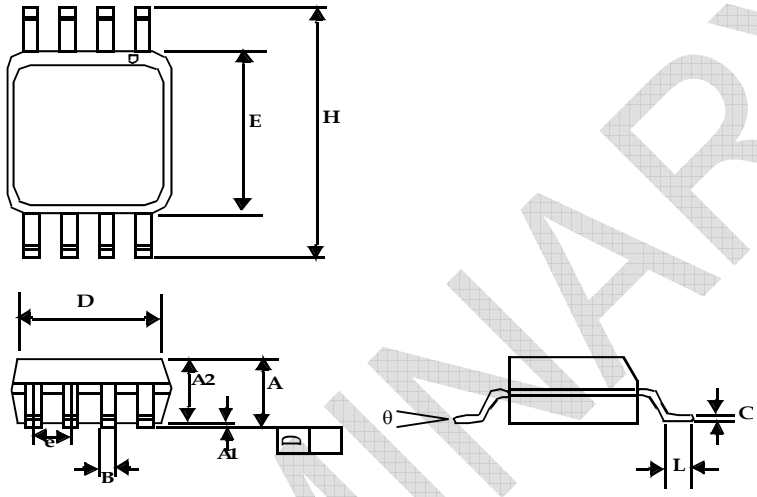


Typical Crystal Specifications

Fundamental AT cut parallel resonant crystal	
Nominal frequency	27MHz
Frequency tolerance	± 50 ppm or better at 25°C
Operating temperature range	-25°C to +85°C
Storage temperature	-40°C to +85°C
Load capacitance	18pF
Shunt capacitance	7pF maximum
ESR	25Ω

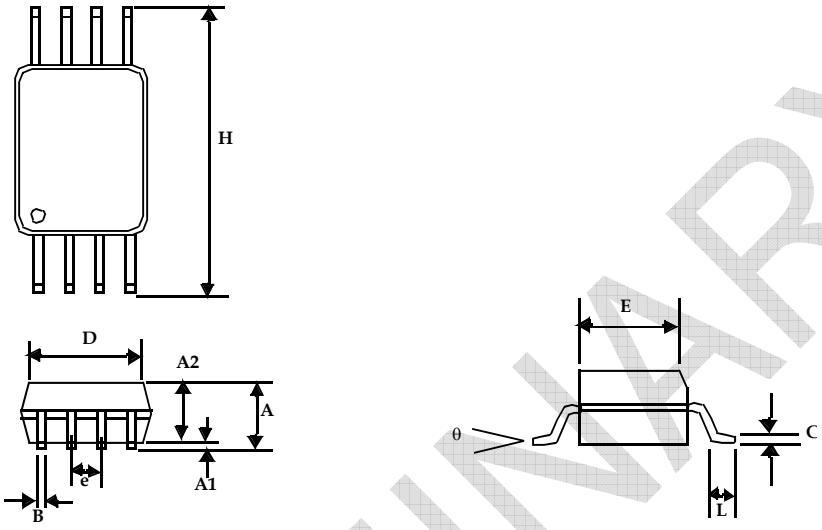
Package Information

8-Pin SOIC Package



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A1	0.004	0.010	0.10	0.25
A	0.053	0.069	1.35	1.75
A2	0.049	0.059	1.25	1.50
B	0.012	0.020	0.31	0.51
C	0.007	0.010	0.18	0.25
D	0.193 BSC		4.90 BSC	
E	0.154 BSC		3.91 BSC	
e	0.050 BSC		1.27 BSC	
H	0.236 BSC		6.00 BSC	
L	0.016	0.050	0.41	1.27
θ	0°	8°	0°	8°

8-lead Thin Shrunk Small Outline Package (4.40-MM Body)

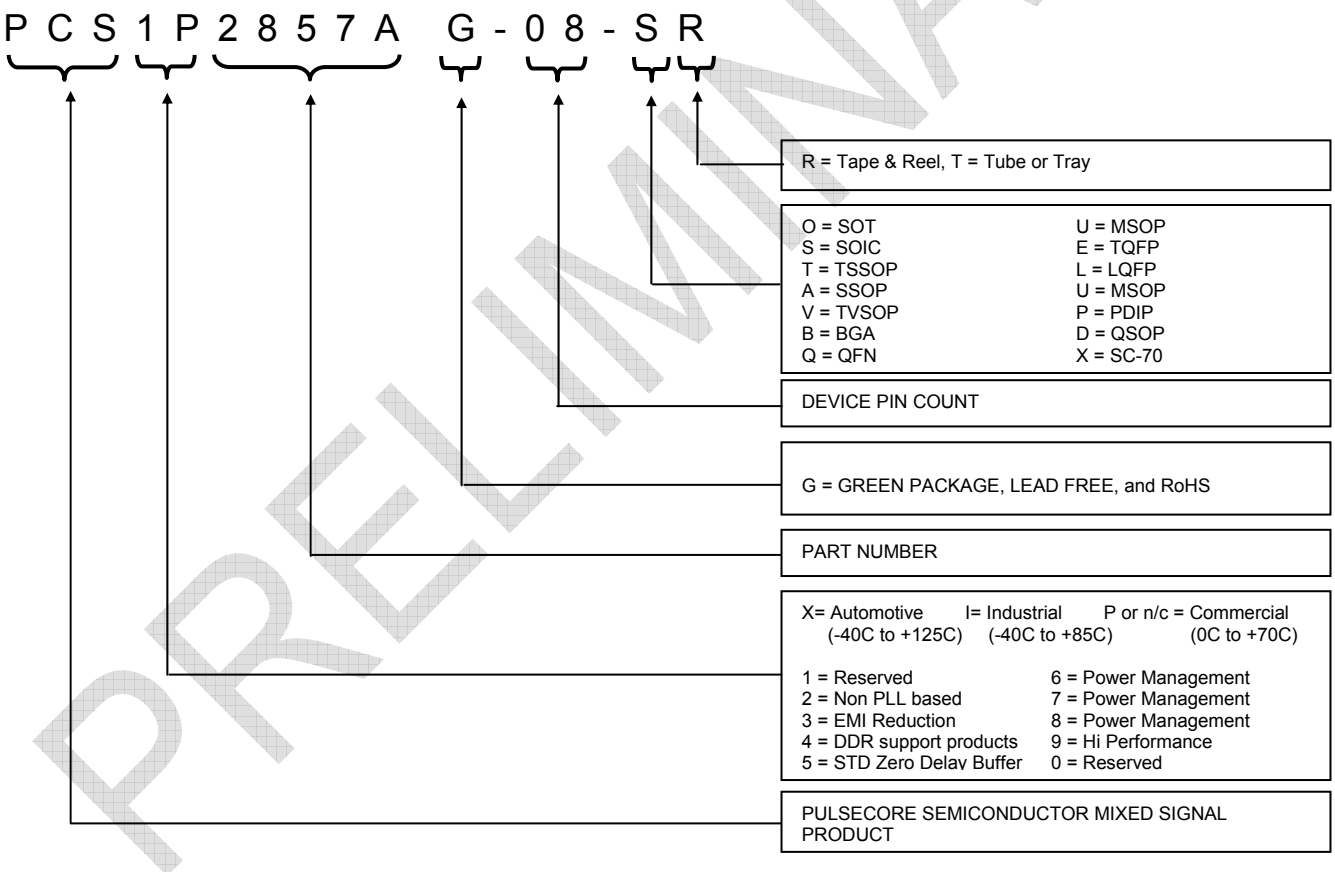


Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A		0.043		1.10
A1	0.002	0.006	0.05	0.15
A2	0.033	0.037	0.85	0.95
B	0.008	0.012	0.19	0.30
c	0.004	0.008	0.09	0.20
D	0.114	0.122	2.90	3.10
E	0.169	0.177	4.30	4.50
e	0.026 BSC		0.65 BSC	
H	0.252 BSC		6.40 BSC	
L	0.020	0.028	0.50	0.70
θ	0°	8°	0°	8°

Ordering Information

Part Number	Marking	Package	Temperature
PCS1P2857AG-08SR	3P2857AG	8-Pin SOIC, TAPE & REEL, Green	Commercial
PCS1P2857AG-08ST	3P2857AG	8-Pin SOIC, TUBE, Green	Commercial
PCS1P2857AG-08TR	3P2857AG	8-Pin TSSOP, TAPE & REEL, Green	Commercial
PCS1P2857AG-08TT	3P2857AG	8-Pin TSSOP, TUBE, Green	Commercial
PCS1P2857BG-08SR	3P2857BG	8-Pin SOIC, TAPE & REEL, Green	Commercial
PCS1P2857BG-08ST	3P2857BG	8-Pin SOIC, TUBE, Green	Commercial
PCS1P2857BG-08TR	3P2857BG	8-Pin TSSOP, TAPE & REEL, Green	Commercial
PCS1P2857BG-08TT	3P2857BG	8-Pin TSSOP, TUBE, Green	Commercial

Device Ordering Information



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Note: This product utilizes US Patent # 6,646,463 Impedance Emulator Patent issued to PulseCore Semiconductor, dated 11-11-2003