

## Custom Clock Generator for Display Systems

### Features

- Custom Clock Generator for Display Systems
- Wide Operating Frequency Range covering most of the pixel frequencies
- Generates a low EMI 1x Output
- 4 Spread Deviation selection options
- Supply voltage : 3.3V±0.3V  
2.5V±0.125V
- Frequency range:
  - 3.3V: 20 MHz – 130 MHz
  - 2.5V: 30 MHz – 130 MHz
- 6 Pin TSOT-26 package
- Commercial and Industrial Temperature range

### Product Description

PCS3P7100A is a versatile spread spectrum modulator designed specifically for a wide range of clock frequencies. The device addresses the need of a low

EMI clock generator for use in display systems covering wide choice of pixel frequencies.

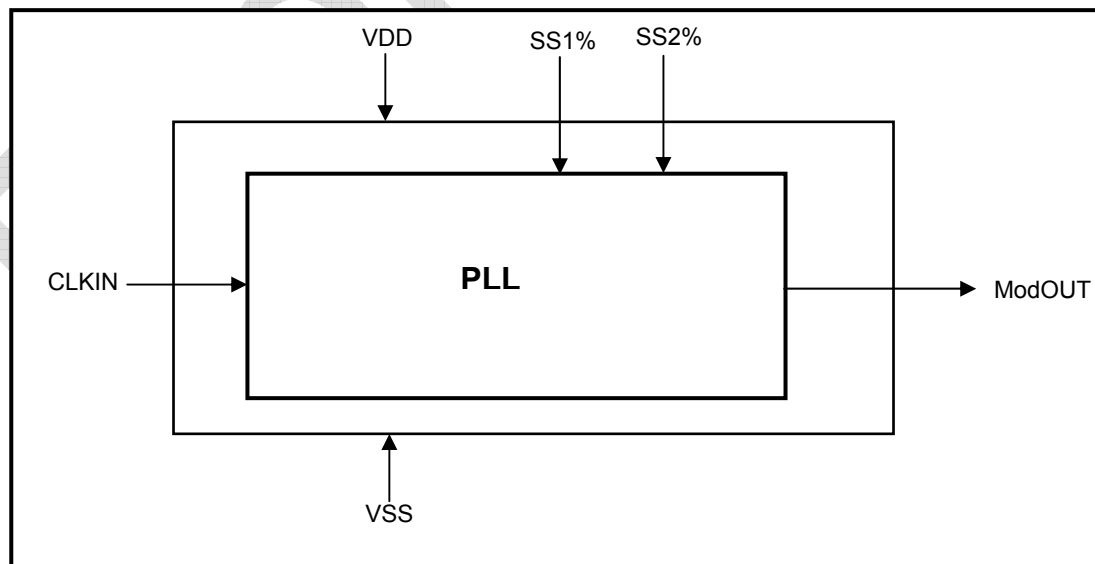
PCS3P7100A reduces electromagnetic interference (EMI) at the clock source, allowing system wide reduction of EMI of all clock dependent signals. PCS3P7100A allows significant system cost savings by reducing the number of circuit board layers, ferrite beads, shielding that are traditionally required to pass EMI regulations.

The Supply Voltage of the Device is 3.3V/2.5V. It has two Spread Selection Pins, SS1% and SS2%. Refer to the Spread Deviation Selection Table for details. The Device is available in 6 Pin TSOT-26 Package, in Commercial and Industrial Temperature grade.

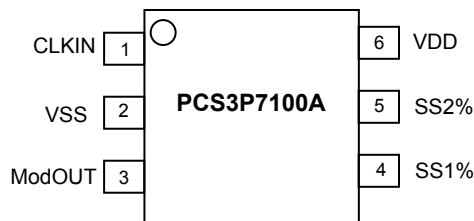
### Application

PCS3P7100A is targeted for use in Display Systems

### Block Diagram



**Pin Configuration (6L TSOT- 26 Package)**



**Pin Description**

Pin#	Pin Name	Type	Description
1	CLKIN	I	External Reference Input frequency.
2	VSS	P	Ground to entire chip
3	ModOUT	O	Modulated Frequency Output
4	SS1%	I	Spread Deviation Selection Pin -1. Refer to “Spread Deviation Selection Table” for details. Has an Internal pull-up resistor.
5	SS2%	I	Spread Deviation Selection Pin -2. Refer to “Spread Deviation Selection Table” for details. Has an Internal pull-up resistor.
6	VDD	P	Power to entire chip

**Spread Deviation Selection Table**

SS2% Pin	SS1% Pin	Spread Deviation @ 72MHz
L	L	± 1.50%
L	H	± 1.25%
H	L	± 0.75%
H	H	± 1.00%

rev 0.6

**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Unit
$V_{DD}, V_{IN}$	Voltage on any pin with respect to Ground	-0.5 to +4.6	V
$T_{STG}$	Storage temperature	-65 to +125	°C
$T_s$	Max. Soldering Temperature (10 sec)	260	°C
$T_J$	Junction Temperature	150	°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.

**Operating Conditions for 2.5V and 3.3V Supply Voltage**

Parameter	Description	Min	Max	Unit
$V_{DD(2.5)}$	Supply Voltage	2.375	2.625	V
$V_{DD(3.3)}$		3.0	3.6	
$T_A$	Operating Temperature (Ambient Temperature)	-40	+85	°C
$C_L$	Load Capacitance		15	pF

**DC Electrical Characteristics for 2.5V Supply**

Symbol	Parameter	Min	Typ	Max	Unit
$V_{IL}$	Input low voltage	$V_{SS} - 0.3$		0.7	V
$V_{IH}$	Input high voltage	1.7		$V_{DD} + 0.3$	V
$I_{IL}$	Input low current			-35	µA
$I_{IH}$	Input high current			35	µA
$V_{OL}$	Output low voltage ( $V_{DD} = 2.5V, I_{OL} = 8\text{ mA}$ )			0.6	V
$V_{OH}$	Output high voltage ( $V_{DD} = 2.5V, I_{OH} = -8\text{ mA}$ )	1.8			V
$I_{DD}$	Static supply current*			4	mA
$I_{CC}$	Dynamic supply current (2.5V and no load)		11		mA
$V_{DD}$	Operating voltage	2.375	2.5	2.625	V
$t_{ON}$	Power-up time (first locked cycle after power-up)			5	mS
$C_{IN}$	Input Capacitance		5		pF
$Z_{OUT}$	Output Impedance		40		Ω

\* CLKIN pin is pulled low

rev 0.6

**AC Electrical Characteristics for 2.5V Supply**

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	30		130	MHz
ModOUT	Output frequency	30		130	MHz
$t_{LH}^*$	Output rise time (measured from 0.7V to 1.7V)		2.2		nS
$t_{HL}^*$	Output fall time (measured from 1.7V to 0.7V)		1.2		nS
$t_{JC}$	Jitter (Cycle to cycle)		$\pm 250$		pS
$t_D$	Output duty cycle	40	50	60	%

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

**DC Electrical Characteristics for 3.3V Supply**

Symbol	Parameter	Min	Typ	Max	Unit
$V_{IL}$	Input low voltage	VSS - 0.3		0.8	V
$V_{IH}$	Input high voltage	2.0		VDD + 0.3	V
$I_{IL}$	Input low current			-35	$\mu$ A
$I_{IH}$	Input high current			35	$\mu$ A
$V_{OL}$	Output low voltage (VDD = 3.3V, $I_{OL}$ = 8 mA)			0.4	V
$V_{OH}$	Output high voltage (VDD = 3.3V, $I_{OH}$ = -8 mA)	2.5			V
$I_{DD}$	Static supply current*			4.5	mA
$I_{CC}$	Dynamic supply current (3.3V and no load)		14		mA
$V_{DD}$	Operating voltage	3.0	3.3	3.6	V
$t_{ON}$	Power-up time (first locked cycle after power-up)			5	mS
$C_{IN}$	Input Capacitance		5		pF
$Z_{OUT}$	Output Impedance		40		$\Omega$

\* CLKIN pin is pulled low

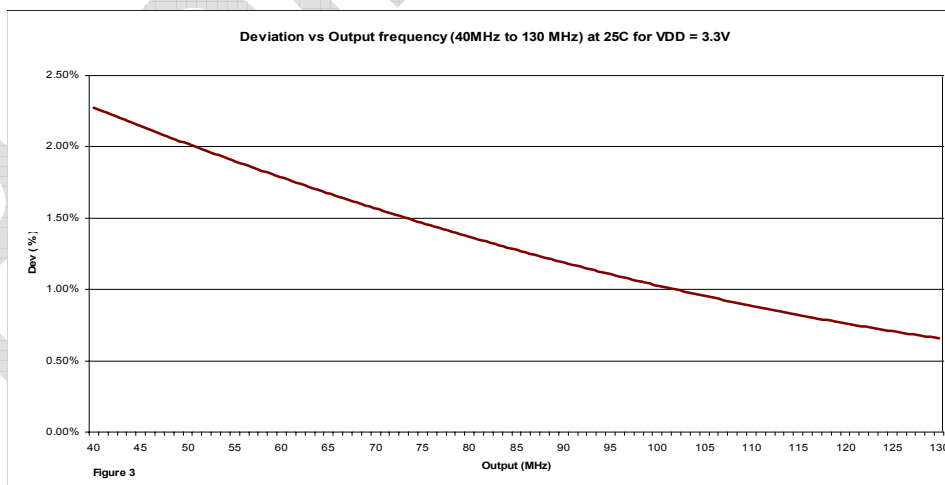
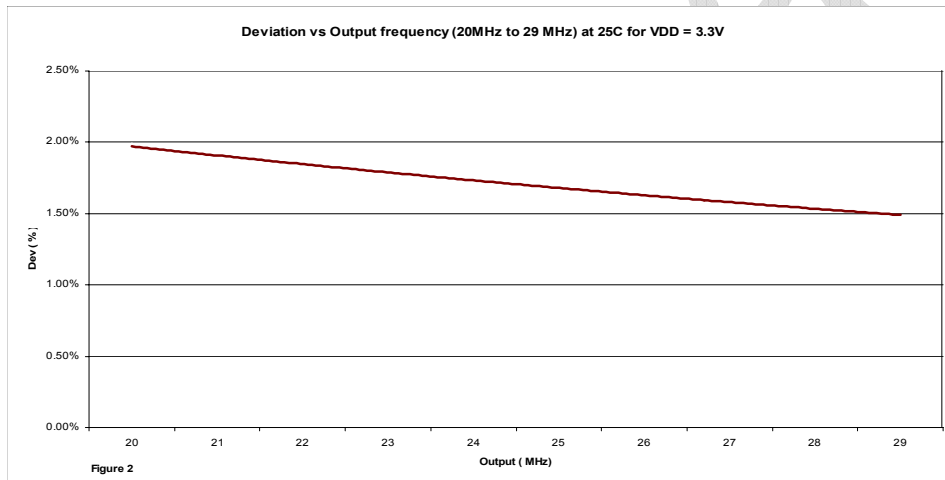
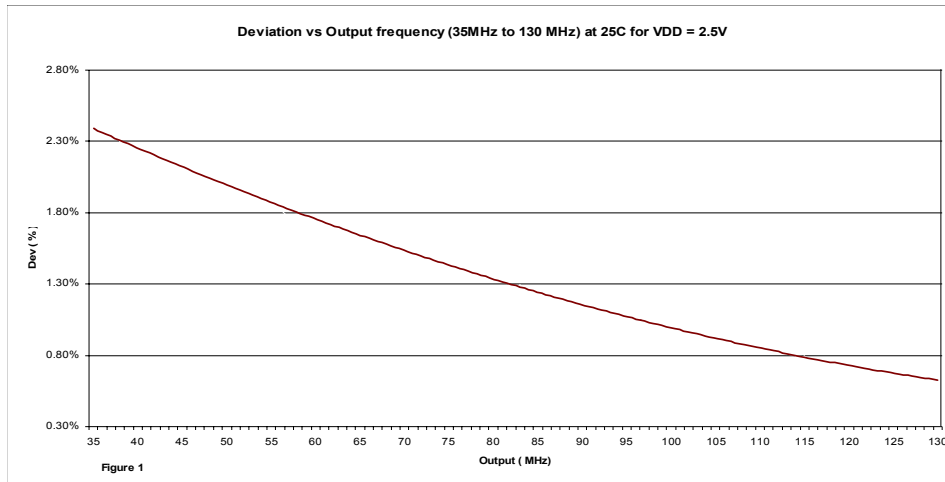
**AC Electrical Characteristics for 3.3V Supply**

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN	Input frequency	20		130	MHz
ModOUT	Output frequency	20		130	MHz
$t_{LH}^*$	Output rise time (measured from 0.8 to 2.0V)		1.5		nS
$t_{HL}^*$	Output fall time (measured at 2.0V to 0.8V)		1.1		nS
$t_{JC}$	Jitter (Cycle to cycle)		$\pm 225$		pS
$t_D$	Output duty cycle	45	50	55	%

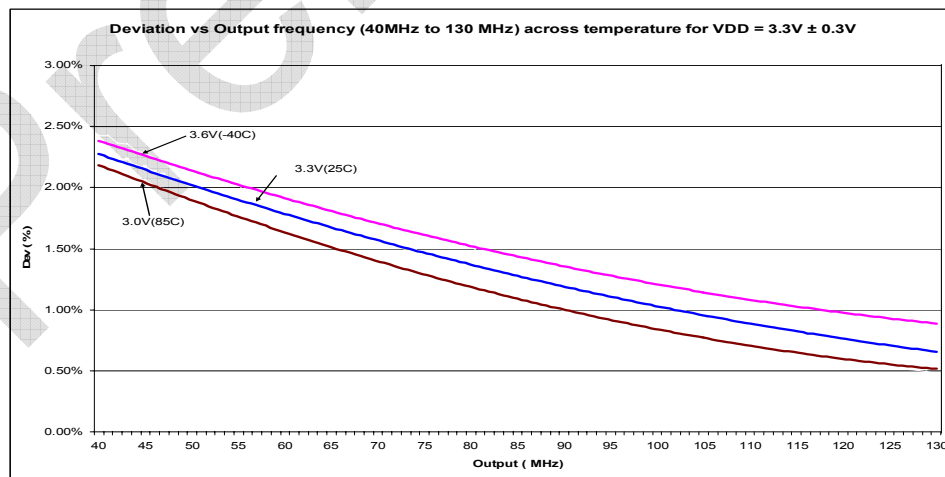
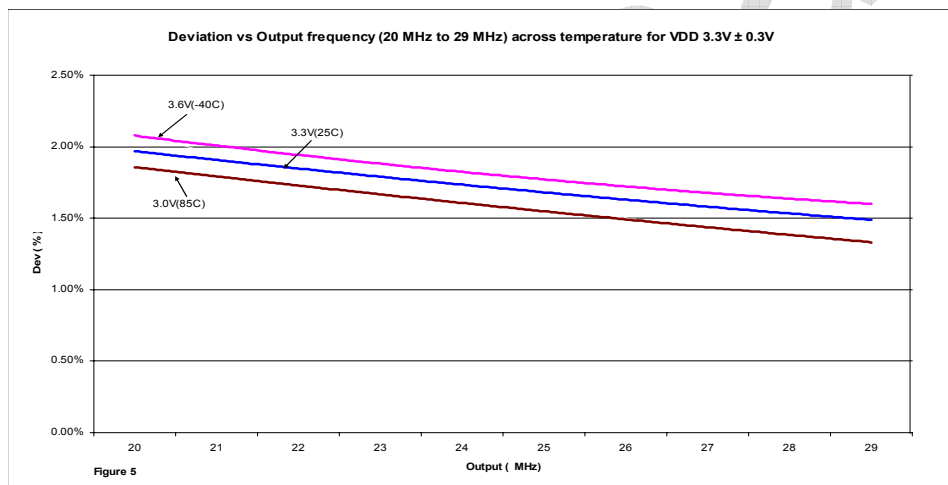
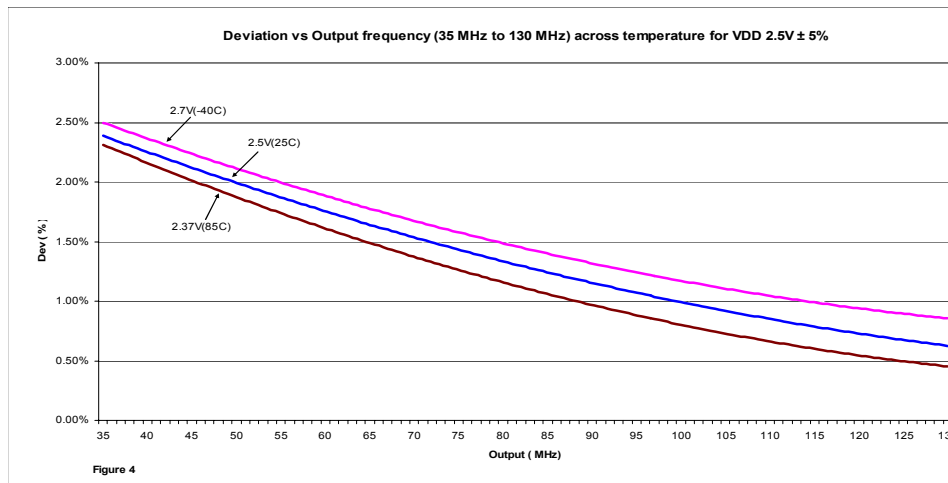
\*  $t_{LH}$  and  $t_{HL}$  are measured into a capacitive load of 15pF

rev 0.6

**Deviation Charts**



Note: Transition band is 30MHz to 34 MHz for VDD=2.5V at 25C. Deviation in this band is 2.5% ± 4%.  
Transition band is 30MHz to 39 MHz for VDD=3.3V at 25C. Deviation in this band is 1.8% ± 30%.

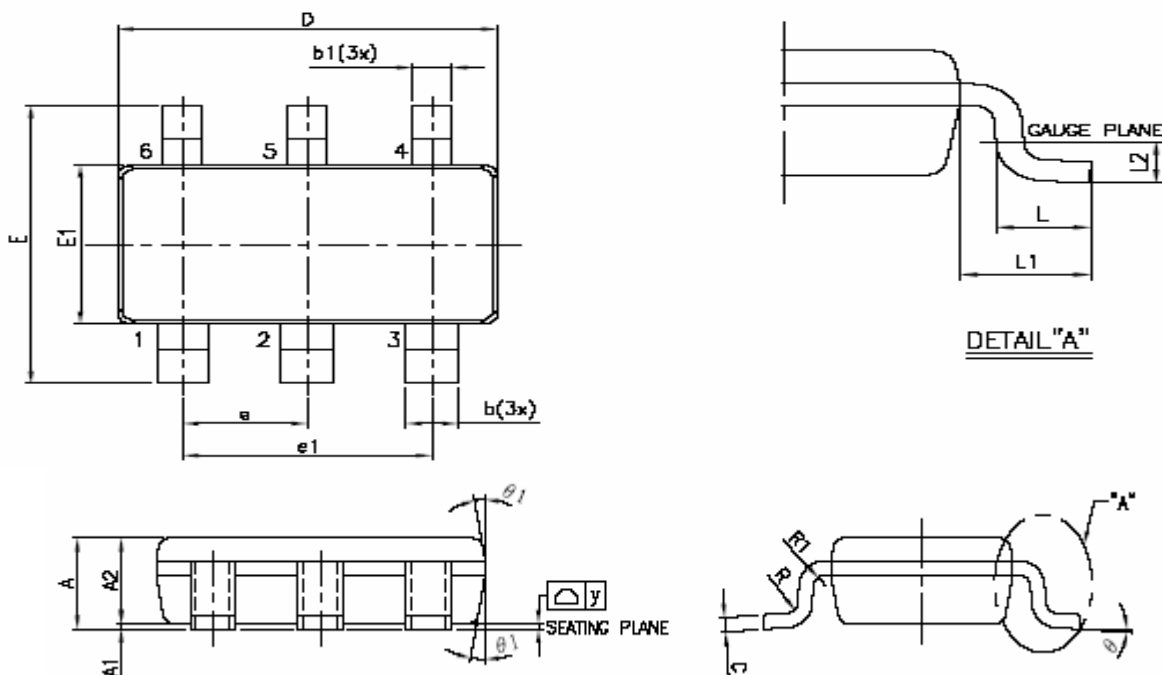


Note: Transition band is 30MHz to 34 MHz for VDD=2.5V ± 5%, across -40C to +85C. Deviation in this band is 1.93% ± 37%.  
 Transition band is 30MHz to 39 MHz for VDD=3.3V ± 0.3V, across -40C to +85C. Deviation in this band is 1.8% ± 45%.

rev 0.6

Package Information

6L TSOT26



Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.0295	0.035	0.75	0.90
A1	0.00	0.0039	0.00	0.10
A2	0.0275	0.0314	0.70	0.80
b	0.0157	0.0197	0.40	0.50
b1	0.0118	0.0157	0.30	0.40
c	0.0031	0.0078	0.08	0.20
D	0.1141		2.90 REF	
E	0.1023	0.1181	2.60	3.00
E1	0.0590	0.0069	1.50	1.70
e	0.0374		0.95 BSC	
e1	0.0748		1.90 BSC	
L	0.0118	0.0236	0.30	0.60
L1	0.0236 REF		0.60 REF	
L2	0.0098 BSC		0.25 BSC	
R	0.0039	.....	0.10	.....
R1	0.0039	0.0098	0.10	0.25
θ	0°	8°	0°	8°
y	....	0.0039	....	0.10

Ordering Codes

Part Number	Marking	Package Type	Temperature
PCS3P7100AG-06JT	AA4LL	6-Pin TSOT-26, TUBE, Green	Commercial
PCS3P7100AG-06JR	AA4LL	6-Pin TSOT-26, TAPE & REEL, Green	Commercial
PCS3I7100AG-06JT	AA2LL	6-Pin TSOT-26, TUBE, Green	Industrial
PCS3I7100AG-06JR	AA2LL	6-Pin TSOT-26, TAPE & REEL, Green	Industrial

LL = 2 Character LOT #

Device Ordering Information

PCS3P7100AG-06JR

R = Tape & Reel, T = Tube or Tray

O = TSOT23	U = MSOP	J = TSOT26
S = SOIC	E = TQFP	
T = TSSOP	L = LQFP	
A = SSOP	U = MSOP	
V = TVSOP	P = PDIP	
B = BGA	D = QSOP	
Q = QFN	X = SC-70	

DEVICE PIN COUNT

F = LEAD FREE AND RoHS COMPLIANT PART  
G = GREEN PACKAGE, LEAD FREE, and RoHS

PART NUMBER

X = Automotive (-40C to +125C)    I = Industrial (-40C to +85C)    P or n/c = Commercial (0C to +70C)

1 = Reserved	6 = Power Management
2 = Non PLL based	7 = Power Management
3 = EMI Reduction	8 = Power Management
4 = DDR support products	9 = Hi Performance
5 = STD Zero Delay Buffer	0 = Reserved

PulseCore Semiconductor Mixed Signal Product





PulseCore Semiconductor Corporation  
1715 S. Bascom Ave Suite 200  
Campbell, CA 95008  
Tel: 408-879-9077  
Fax: 408-879-9018  
www.pulsecoresemi.com

Copyright © PulseCore Semiconductor  
All Rights Reserved  
Preliminary Information  
Part Number: PCS3P7100A  
Document Version: 0.6

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

© Copyright 2006 PulseCore Semiconductor Corporation. All rights reserved. Our logo and name are trademarks or registered trademarks of PulseCore Semiconductor. All other brand and product names may be the trademarks of their respective companies. PulseCore reserves the right to make changes to this document and its products at any time without notice. PulseCore assumes no responsibility for any errors that may appear in this document. The data contained herein represents PulseCore's best data and/or estimates at the time of issuance. PulseCore reserves the right to change or correct this data at any time, without notice. If the product described herein is under development, significant changes to these specifications are possible. The information in this product data sheet is intended to be general descriptive information for potential customers and users, and is not intended to operate as, or provide, any guarantee or warranty to any user or customer. PulseCore does not assume any responsibility or liability arising out of the application or use of any product described herein, and disclaims any express or implied warranties related to the sale and/or use of PulseCore products including liability or warranties related to fitness for a particular purpose, merchantability, or infringement of any intellectual property rights, except as express agreed to in PulseCore's Terms and Conditions of Sale (which are available from PulseCore). All sales of PulseCore products are made exclusively according to PulseCore's Terms and Conditions of Sale. The purchase of products from PulseCore does not convey a license under any patent rights, copyrights; mask works rights, trademarks, or any other intellectual property rights of PulseCore or third parties. PulseCore does not authorize its products for use as critical components in life-supporting systems where a malfunction or failure may reasonably be expected to result in significant injury to the user, and the inclusion of PulseCore products in such life-supporting systems implies that the manufacturer assumes all risk of such use and agrees to indemnify PulseCore against all claims arising from such use.