Multimedia Clock IC

Technical Document

PRODUCT DESCRIPTION

PhaseLink's PL603-27 is a clock generator IC, specifically designed to accommodate the clock requirements of the set top box, HDTV, and personal video recording (PVR) receiver equipment. It offers seven different clock signals while utilizing a single low-cost 27MHz crystal input. PhaseLink's PL603-27 is designed to save board space and implementation cost while producing multiple system clock outputs.

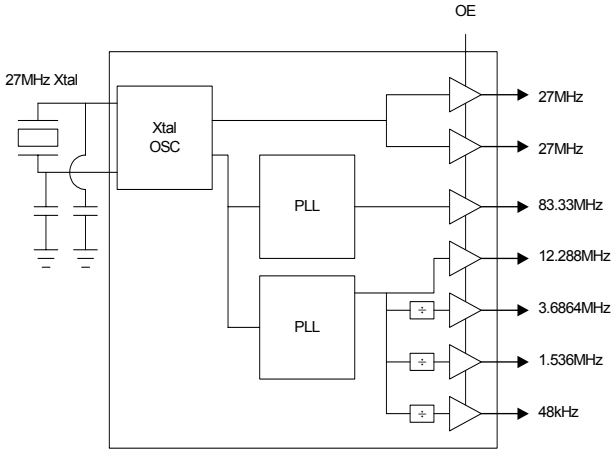


Figure 1: Overall PL603-27 Block Diagram

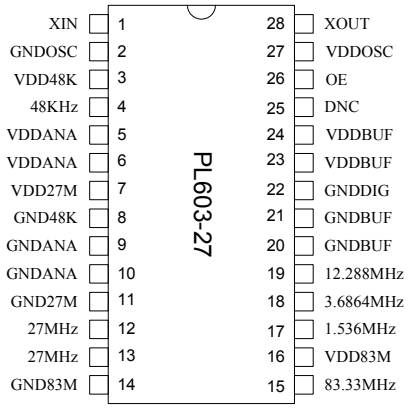


Figure 2: PL603-27 Pin Assignment

FEATURES

- High accuracy synthesis Phase Locked Loop design
- Eliminates costly quartz crystals and crystal oscillators
- Very low jitter and Phasenoise
- Single 27MHz crystal input
- Seven different output frequencies:
  - Two 27MHz output
  - One 83.33MHz output
  - One 12.288MHz output
  - One 3.3864MHz output
  - One 1.536MHz output
  - One 48KHz output
- OE (output enable) feature
- Low-power sub-micron CMOS process
- Single 3.3V +/- 10% power supply
- Available in 28-pin SSOP package

ELECTRICAL SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage	V_{DD}		4.6	V
Input Voltage, dc	V_I	V_{SS}-0.5	V_{DD}+0.5	V
Output Voltage, dc	V_O	V_{SS}-0.5	V_{DD}+0.5	V
Storage Temperature	T_S	-55	+150	°C
Ambient Operating Temperature	T_A	-40	+85	°C
Junction Temperature	T_J		125	°C
Lead Temperature (soldering, 10s)			260	°C

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

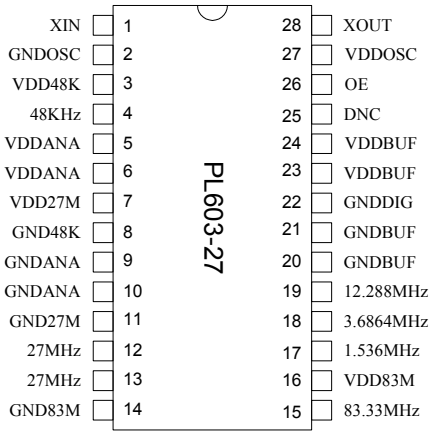
DC SPECIFICATION

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Operating Voltage	VDD		3.13		3.47	V
Input High Voltage	V_{IH}			VDD/2		V
Input Low Voltage	V_{IL}			VDD/2	VDD/2 - 1	V
Input High Voltage	V_{IH}	For all Tri-level input	VDD-0.5			V
Input Low Voltage	V_{IL}	For all Tri-level input			0.5	V
Input High Voltage	V_{IH}	For all normal input	2			V
Input Low Voltage	V_{IL}	For all normal input			0.8	V
Output High Voltage	V_{OH}	I_{OH} = -25mA	2.4			V
Output Low Voltage	V_{OL}	I_{OL} = 25mA			0.4	V
Output High Voltage At CMOS Level	V_{OH}	I_{OH} = -8mA	VDD-0.4			V
Operating Supply Current	I_{DD}	No Load		35		mA
Short-circuit Current	I_S			±50		mA

AC SPECIFICATION

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Input Frequency			27		MHz
Output Clock Rise/Fall Time	10% ~ 90% VDD with 10 pF load		1.2	1.6	ns
Output Clock Duty Cycle	Measured @ 50% VDD	45	50	55	%
Absolute Short Term Jitter			200		ps

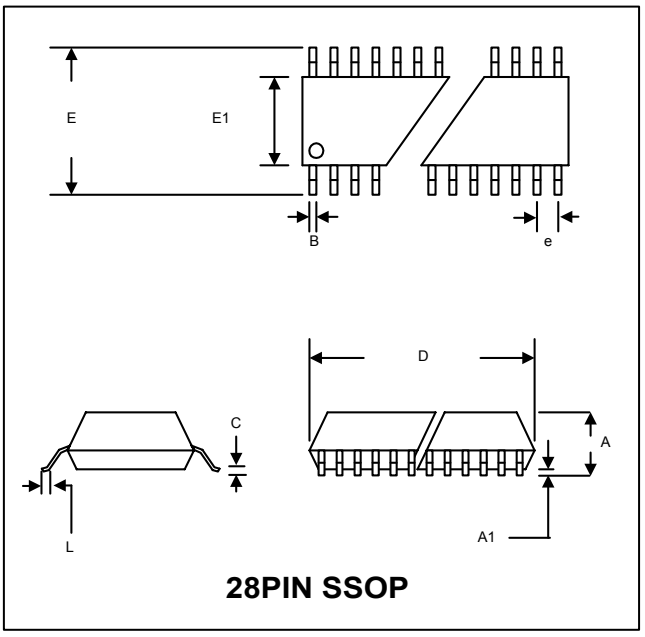
PACKAGE PIN DESCRIPTION AND ASSIGNMENT



PIN ASSIGNMENTS

Name	Pin#	Type	Description
XIN	1	I	Input from crystal oscillator circuitry.
GND	2	P	Connect to Ground.
VDD48K	3	P	Connect to 3.3V. Recommend decoupling to GND48K.
48KHz	4	O	48KHz clock output.
VDDANA	5	P	Connect to 3.3V. Recommend decoupling to GNDANA.
VDDANA	6	P	Connect to 3.3V. Recommend decoupling to GNDANA.
VDD27M	7	P	Connect to 3.3V. Recommend decoupling to GND27M.
GND48K	8	P	Connect to Ground.
GNDANA	9	P	Connect to Ground.
GNDANA	10	P	Connect to Ground.
GND27M	11	P	Connect to Ground.
27MHz	12	O	27MHz clock output.
27MHz	13	O	27MHz clock output.
GND83M	14	P	Connect to Ground.
83.33MHZ	15	O	83.33MHz clock output.
VDD83M	16	P	Connect to 3.3V. Recommend decoupling to GND83M.
1,536MHz	17	O	1.536MHz clock output.
3.6864MHZ	18	O	3.6864MHz clock output.
12.288MHz	19	O	12.288MHz clock output.
GNDBUF	20	P	Connect to Ground.
GNDBUF	21	P	Connect to Ground.
GNDOSC	22	P	Connect to Ground.
VDDBUF	23	P	Connect to 3.3V. Recommend decoupling to GNDBUF.
VDDBUF	24	P	Connect to 3.3V. Recommend decoupling to GNDBUF.
DNC	25	N/A	Do Not Connect.
OE	26	I	Output Enable.
VDDOSC	27	P	Connect to 3.3V. Recommend decoupling to GNDOSC.
XOUT	28	O	Output from crystal oscillator circuitry.

PACKAGE INFORMATION



Package	SSOP (QSOP) 209mil			
Pins#	28			
Unit	mm		inches	
	min	max	min	max
A		2.0		0.079
A1	0.05		0.002	
B	0.25	0.38	0.01	0.015
C	0.09	0.25	0.004	0.010
D	9.9	10.5	0.390	0.413
E	7.40	8.20	0.291	0.323
E1	5.00	5.60	0.197	0.220
e	0.65BSC		0.0256BSC	
L	0.55	0.95	0.022	0.038

PART NUMBERING

For part ordering, please contact our Sales Department:
47745 Fremont Blvd., Fremont, CA 94538, USA
Tel: (510) 492-0990 Fax: (510) 492-0991

PART NUMBER
The order number for this device is a combination of the following:
Device number, Package type and Operating temperature range

PLL603-27 X C

PART NUMBER

TEMPERATURATURE
C=COMMERCIAL
M=MILITARY
I=INDUSTRAL
PACKAGE TYPE
X =SSOP

ORDERING INFORMATION

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