Ordering number : ENA1252

SANYO Semiconductors

DATA SHEET

LV5622LP — Bi-CMOS LSI For Digital Still Camera Main/Back-up Power Supply Switching IC

Overview

The LV5622LP is a main/back-up power supply switching IC for digital still cameras (DSC) that provices three power supply switching modes (main battery, button battery, and external power supply). The IC incorporates an internal voltage detector circuit and features low power consumption.

Functions

- LDO × 3 (2.4V, 3.0V, 3.2V)
- Input voltage detection circuit (2.45V)
- Output switching voltage-detection-circuit (2.42V)
- Reset voltage detection circuit (2.2V)

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	V_{CC} max1	VIN (main power supply input voltage)	10	V
Supply voltage 2	V_{CC} max2	VBATT (back-up power supply input voltage)	5	V
Supply voltage 3	V_{CC} max3	VBOOST (external power supply input voltage)	10	V
Allowable power dissipation	Pd max	Mounted on a specified board. *	550	mW
Operating temperature	Topr		-30 to +85	°C
Storage temperature	Tstg		-40 to +125	°C

* Specified board : 40mm × 50mm × 0.8mm, glass epoxy four-layer board (2S2P)

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage 1	$V_{CC}1$	VIN (main power supply input voltage)	2.7 to 4.8	V
Supply voltage 2	$V_{CC}2$	VBATT (back-up power supply input voltage)	3	V
Supply voltage 3	$V_{CC}3$	VBOOST (external power supply input voltage)	3.5 to 6.0	V

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Electrical Characteristics at Ta = 25°C, VIN = 3.7V, unless otherwise specified.

Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	Unit
Current consumption 1	I_{IN}	No load, VIN = 3.7V, VBATT = 3.0V			14	25	µA
Current consumption 2	$I_{BATT}1$	No load, VIN = 3.7V, VBATT = 3.0V			0	0.5	µA
Current consumption 3	$I_{BATT}2$	No load, VIN = OPEN, VBATT = 3.0V			1.0	2.5	µA
Voltage regulator							
Output voltage 1	VOUT1	I_{OUT} = 10mA		2.35	2.40	2.45	V
Dropout voltage 1	Vdrop1	I_{OUT} = 10mA			150	250	mV
Load stability 1	LDVOUT1	I_{OUT} = 100µA-30mA			10	100	mV
Input stability 1	LNVOUT1	VIN = 2.7V-4.8V, I_{OUT} = 1mA			5	20	mV
Output voltage temperature coefficient 1	$\frac{\Delta VOUT1}{\Delta Ta \cdot VOUT1}$	Ta = -30°C to +85°C			±100		ppm/°C
Output voltage 2	VCHG	I_{OUT} = 3mA		2.94	3.00	3.06	V
Dropout voltage 2	Vdrop2	I_{OUT} = 3mA			150	250	mV
Load stability 2	LDVCHG	I_{OUT} = 100µA-15mA			10	100	mV
Input stability 2	LNVCHG	VIN = 3.4V-4.8V, I_{OUT} = 3mA			5	20	mV
Output voltage temperature coefficient 2	$\frac{\Delta VCHG}{\Delta Ta \cdot VCHG}$	Ta = -30°C to +85°C			±100		ppm/°C
Output voltage 3	VOUT3	I_{OUT} = 20mA		3.13	3.20	3.27	V
Dropout voltage 3	Vdrop3	I_{OUT} = 20mA			300	350	mV
Load stability 3	LDVOUT3	I_{OUT} = 100µA-60mA			10	100	mV
Input stability 3	LNVOUT3	VBOOST = 3.5V-5.2V, I_{OUT} = 20mA			5	20	mV
Output voltage temperature coefficient 3	$\frac{\Delta VOUT3}{\Delta Ta \cdot VOUT3}$	Ta = -30°C to +85°C			±100		ppm/°C
Voltage detection block							
BAT_OFF detection voltage	-VDET1	VIN voltage detection 1		2.40	2.45	2.50	V
BAT_OFF reset hysteresis width	+VDET1				100		mV
$\overline{RESET}$ detection voltage	-VDET2	VOUT voltage detection		2.15	2.20	2.25	V
$\overline{RESET}$ reset hysteresis width	+VDET2				100		mV
$\overline{RESET}$ reset delay time	tDELAY			0.3	1.00		ms
VIN detection voltage	-VDET3	VIN voltage detection 2		2.37	2.42	2.47	V
VIN reset hysteresis width	+VDET3				40		mV
Detection voltage temperature coefficient 1	$\frac{\Delta\text{-}VDET1}{\Delta Ta \cdot \text{-}VDET1}$	Ta = -30°C to +85°C			±100		ppm/°C
Detection voltage temperature coefficient 2	$\frac{\Delta\text{-}VDET2}{\Delta Ta \cdot \text{-}VDET2}$	Ta = -30°C to +85°C			±100		ppm/°C
Detection voltage temperature coefficient 3	$\frac{\Delta\text{-}VDET3}{\Delta Ta \cdot \text{-}VDET3}$	Ta = -30°C to +85°C			±100		ppm/°C
Sink current	I_{SINK}	VDS = 0.5V VIN = VBATT = 2.0V	BAT_OFF	1.0			mA
			$\overline{RESET}$	1.0			mA
Leakage current	I_{LEAK}	VOUT = 7V, VIN = 7V	BAT_OFF			0.5	µA
			$\overline{RESET}$			0.5	µA
VBATT side on resistance	$R_{ON}BATT$	VIN = OPEN, VBATT = 3.0V, I_{OUT} = 500µA			15	50	Ω
SW_VOUT side on resistance	$R_{ON}SW$	VIN = OPEN, SW_VOUT = 3.0V, I_{SWVOUT} = 1mA			50	80	Ω
PULL_UPV side on resistance	$R_{ON}PULL$	VIN = 3, PULL_UPV = 3.0V, $I_{PULLUPV}$ = 1mA			15	50	Ω

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Control block						
SEL ON retention voltage	$V_{SEL}ON$	H Active	1.5			V
SEL OFF retention voltage	$V_{SEL}OFF$				0.3	V
BACK_CNT ON retention voltage	$V_{BACK}ON$	H Active	0.8VOUT			V
BACK_CNT OFF retention voltage	$V_{BACK}OFF$				0.2VOUT	V
SW_VOUT ON retention voltage	$V_{SW}ON$	L Active			VOUT-2.0	V
SW_VOUT OFF retention voltage	$V_{SW}OFF$		VOUT-0.5			V
PULL_UPON ON retention voltage	$V_{UP}ON$	H Active	VOUT-0.5			V
PULL_UPON OFF retention voltage	$V_{UP}OFF$				VOUT-2.0	V
$\overline{\text{DC\_IN}}$ ON retention voltage	$V_{DCIN}ON$				0.3	V
$\overline{\text{DC\_IN}}$ OFF retention voltage	$V_{DCIN}OFF$		2.0			V

Package Dimensions

unit : mm (typ)

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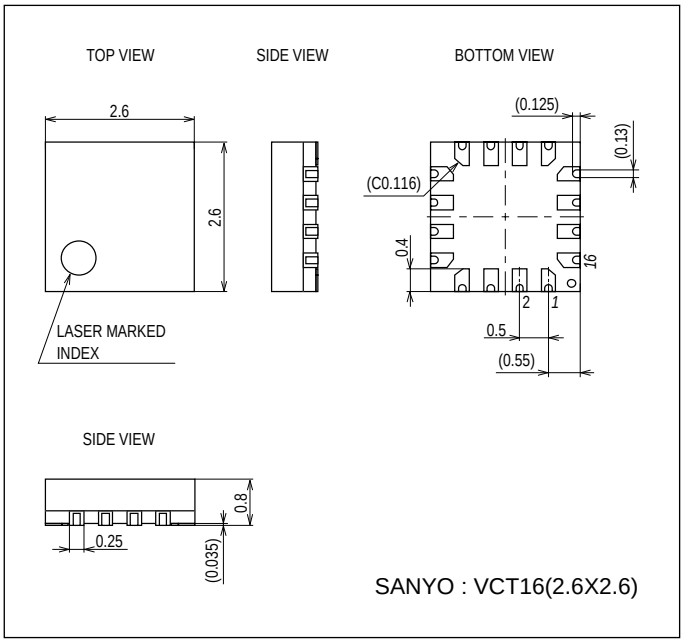
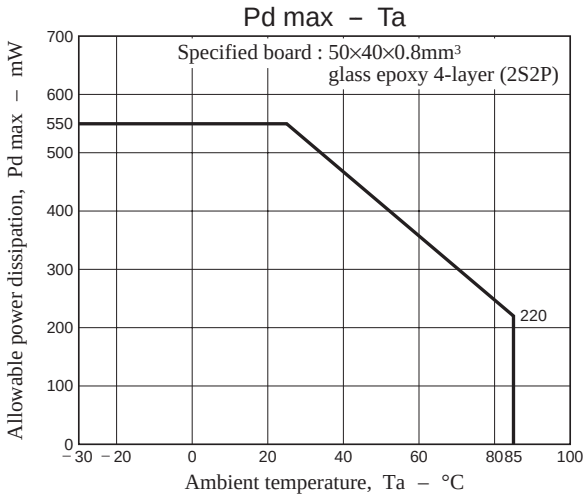
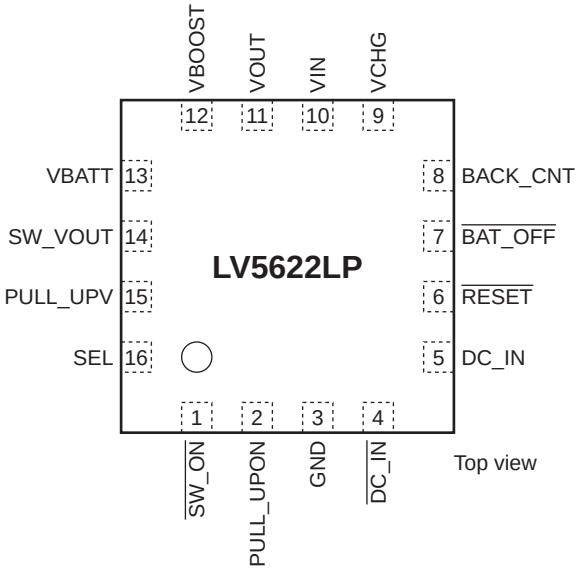
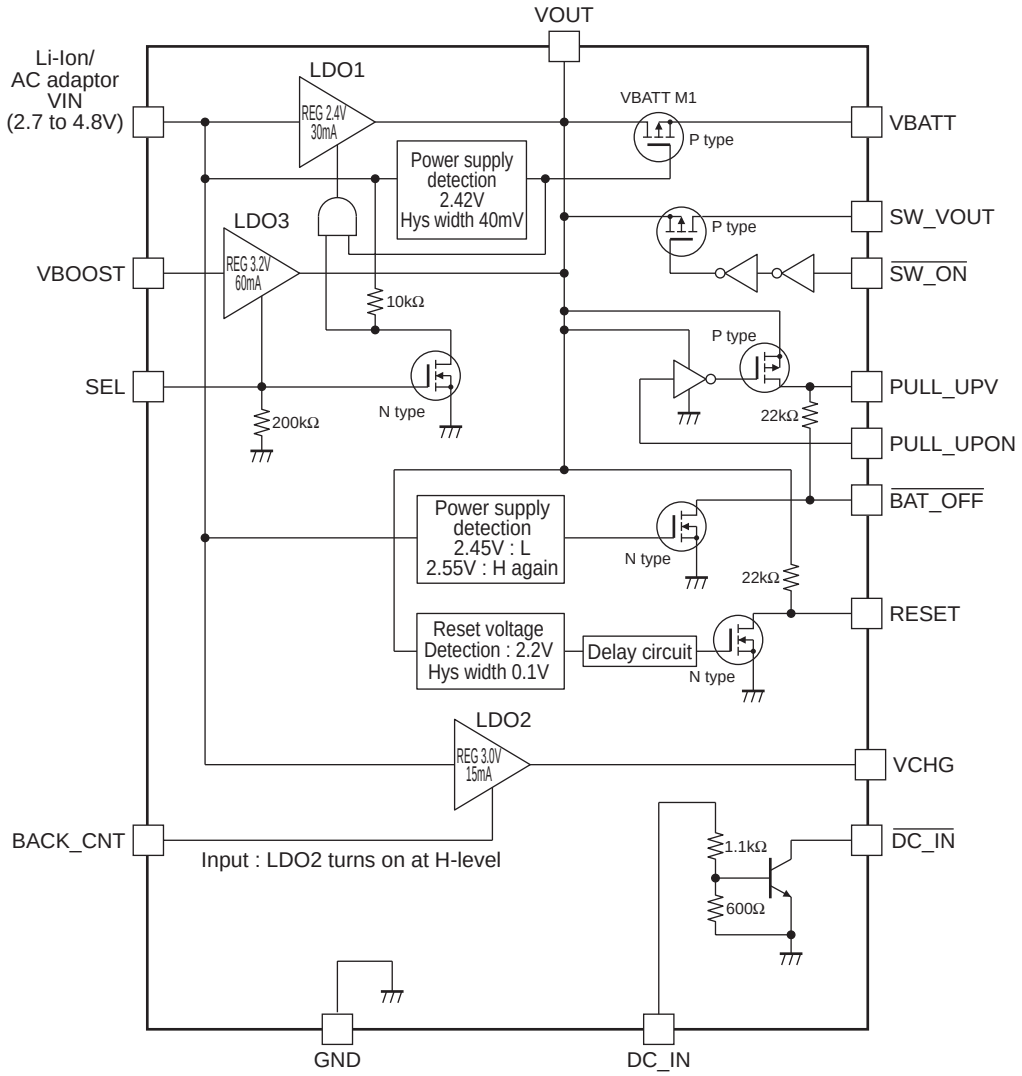




Pin Assignment



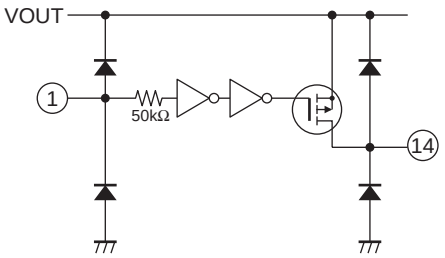
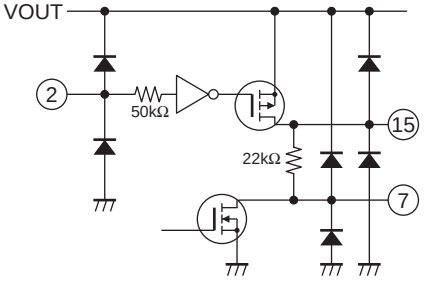
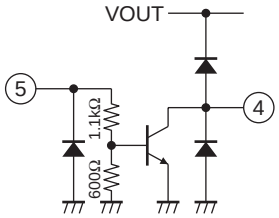
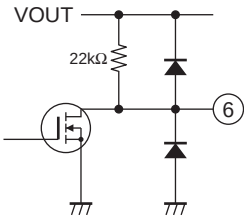
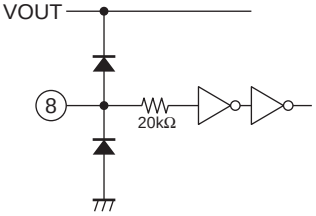
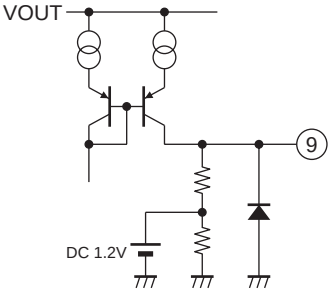
Block Diagram



Output voltage switching

SEL pin	Supply voltage VIN	LDO1	VBATT M1	LDO3	VOUT
SEL = L	VIN > 2.42V	ON	OFF	OFF	2.4V (LDO1 output)
	VIN < 2.42V	OFF	ON	OFF	VBATT
SEL = H	VIN > 2.42V	OFF	OFF	ON	3.2V (LDO3 output)
	VIN < 2.42V	OFF	ON	OFF	VBATT

Pin Functions

Pin No.	Pin Name	Pin Description	Pin voltage	Equivalent Circuit
1	$\overline{\text{SW\_ON}}$	$\overline{\text{SW\_ON}}$ input pin.		
14	SW_VOUT	SW_VOUT pin.	0/VOUT	
2	PULL_UPON	PULL_UPON input pin.		
15	PULL_UPV	PULL_UPV output pin.	0/VOUT	
7	$\overline{\text{BAT\_OFF}}$	BAT_OFF voltage detector output pin.	0/VOUT	
3	GND	Ground.		
4	$\overline{\text{DC\_IN}}$	DC_IN output pin.		
5	DC_IN	DC_IN input pin.		
6	$\overline{\text{RESET}}$	RESET voltage detector output pin.	0/VOUT	
8	BACK_CNT	BACK_CNT input pin.		
9	VCHG	LDO2 output pin.	3.0V	

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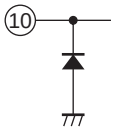
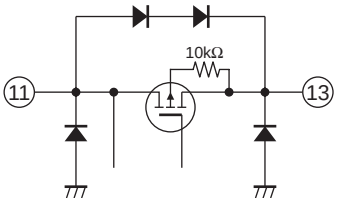
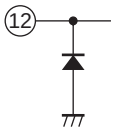
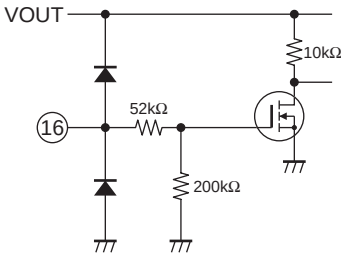
Pin No.	Pin Name	Pin Description	Pin voltage	Equivalent Circuit
10	VIN	Main battery power supply input pin.		
11	VOUT	VOUT output pin.	2.6V/3.2V	
13	VBATT	Back-up power supply input pin.		
12	VBOOST	External power supply voltage input pin.		
16	SEL	SEL input pin.		

This catalog provides information as of July, 2008. Specifications and information herein are subject to change without notice.