



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 provides 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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SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current consumption 1	I _{IN}	No load, VIN = 3.7V, VBATT = 3.0V		14	25	μA
Current consumption 2	I _{BATT1}	No load, VIN = 3.7V, VBATT = 3.0V		0	0.5	μA
Current consumption 3	I _{BATT2}	No load, VIN = OPEN, VBATT = 3.0V		1.0	2.5	μA
Voltage regulator						
Output voltage 1	V _{OUT1}	I _{OUT} = 10mA	2.35	2.40	2.45	V
Dropout voltage 1	V _{drop1}	I _{OUT} = 10mA		150	250	mV
Load stability 1	LDV _{OUT1}	I _{OUT} = 100μA-30mA		10	100	mV
Input stability 1	LN _{VOUT1}	VIN = 2.7V-4.8V, I _{OUT} = 1mA		5	20	mV
Output voltage temperature coefficient 1	$\frac{\Delta V_{OUT1}}{\Delta T_a \cdot V_{OUT1}}$	Ta = -30°C to +85°C		±100		ppm/°C
Output voltage 2	V _{CHG}	I _{OUT} = 3mA	2.94	3.00	3.06	V
Dropout voltage 2	V _{drop2}	I _{OUT} = 3mA		150	250	mV
Load stability 2	LDV _{CHG}	I _{OUT} = 100μA-15mA		10	100	mV
Input stability 2	LN _{VCHG}	VIN = 3.4V-4.8V, I _{OUT} = 3mA		5	20	mV
Output voltage temperature coefficient 2	$\frac{\Delta V_{CHG}}{\Delta T_a \cdot V_{CHG}}$	Ta = -30°C to +85°C		±100		ppm/°C
Output voltage 3	V _{OUT3}	I _{OUT} = 20mA	3.13	3.20	3.27	V
Dropout voltage 3	V _{drop3}	I _{OUT} = 20mA		300	350	mV
Load stability 3	LDV _{OUT3}	I _{OUT} = 100μA-60mA		10	100	mV
Input stability 3	LN _{VOUT3}	V _{BOOST} = 3.5V-5.2V, I _{OUT} = 20mA		5	20	mV
Output voltage temperature coefficient 3	$\frac{\Delta V_{OUT3}}{\Delta T_a \cdot V_{OUT3}}$	Ta = -30°C to +85°C		±100		ppm/°C
Voltage detection block						
BAT_OFF detection voltage	-V _{DET1}	VIN voltage detection 1	2.40	2.45	2.50	V
BAT_OFF reset hysteresis width	+V _{DET1}			100		mV
RESET detection voltage	-V _{DET2}	VOUT voltage detection	2.15	2.20	2.25	V
RESET reset hysteresis width	+V _{DET2}			100		mV
RESET reset delay time	t _{DELAY}		0.3	1.00		ms
VIN detection voltage	-V _{DET3}	VIN voltage detection 2	2.37	2.42	2.47	V
VIN reset hysteresis width	+V _{DET3}			40		mV
Detection voltage temperature coefficient 1	$\frac{\Delta -V_{DET1}}{\Delta T_a \cdot -V_{DET1}}$	Ta = -30°C to +85°C		±100		ppm/°C
Detection voltage temperature coefficient 2	$\frac{\Delta -V_{DET2}}{\Delta T_a \cdot -V_{DET2}}$	Ta = -30°C to +85°C		±100		ppm/°C
Detection voltage temperature coefficient 3	$\frac{\Delta -V_{DET3}}{\Delta T_a \cdot -V_{DET3}}$	Ta = -30°C to +85°C		±100		ppm/°C
Sink current	I _{SINK}	V _{DS} = 0.5V VIN = VBATT = 2.0V	BAT_OFF	1.0		mA
			RESET	1.0		mA
Leakage current	I _{LEAK}	V _{OUT} = 7V, VIN = 7V	BAT_OFF		0.5	μA
			RESET		0.5	μA
VBATT side on resistance	R _{ONBATT}	VIN = OPEN, VBATT = 3.0V, I _{OUT} = 500μA		15	50	Ω
SW_VOUT side on resistance	R _{ONSW}	VIN = OPEN, SW_VOUT = 3.0V, I _{SWVOUT} = 1mA		50	80	Ω
PULL_UPV side on resistance	R _{ONPULL}	VIN = 3, PULL_UPV = 3.0V, I _{PULLUPV} = 1mA		15	50	Ω

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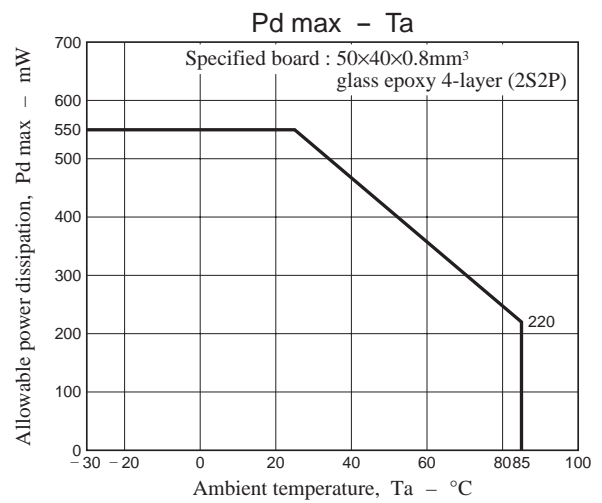
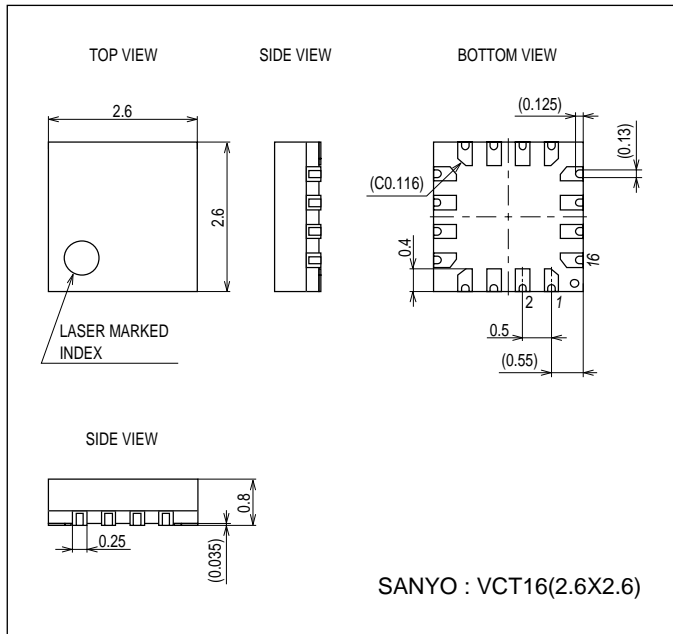
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Control block						
SEL ON retention voltage	V _{SELON}	H Active	1.5			V
SEL OFF retention voltage	V _{SELOFF}				0.3	V
BACK_CNT ON retention voltage	V _{BACKON}	H Active	0.8V _{OUT}			V
BACK_CNT OFF retention voltage	V _{BACKOFF}				0.2V _{OUT}	V
SW_VOUT ON retention voltage	V _{SWON}	L Active			V _{OUT} -2.0	V
SW_VOUT OFF retention voltage	V _{SWOFF}		V _{OUT} -0.5			V
PULL_UPON ON retention voltage	V _{UPON}	H Active	V _{OUT} -0.5			V
PULL_UPON OFF retention voltage	V _{UPOFF}				V _{OUT} -2.0	V
DC_IN ON retention voltage	V _{DCINON}				0.3	V
DC_IN OFF retention voltage	V _{DCINOFF}		2.0			V

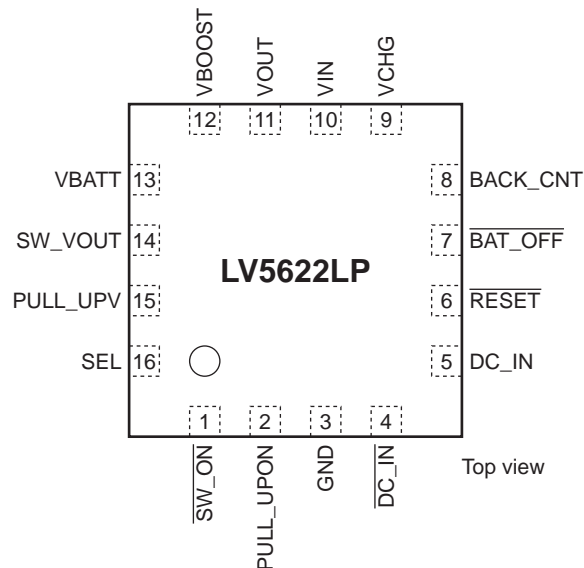
Package Dimensions

unit : mm (typ)

3318

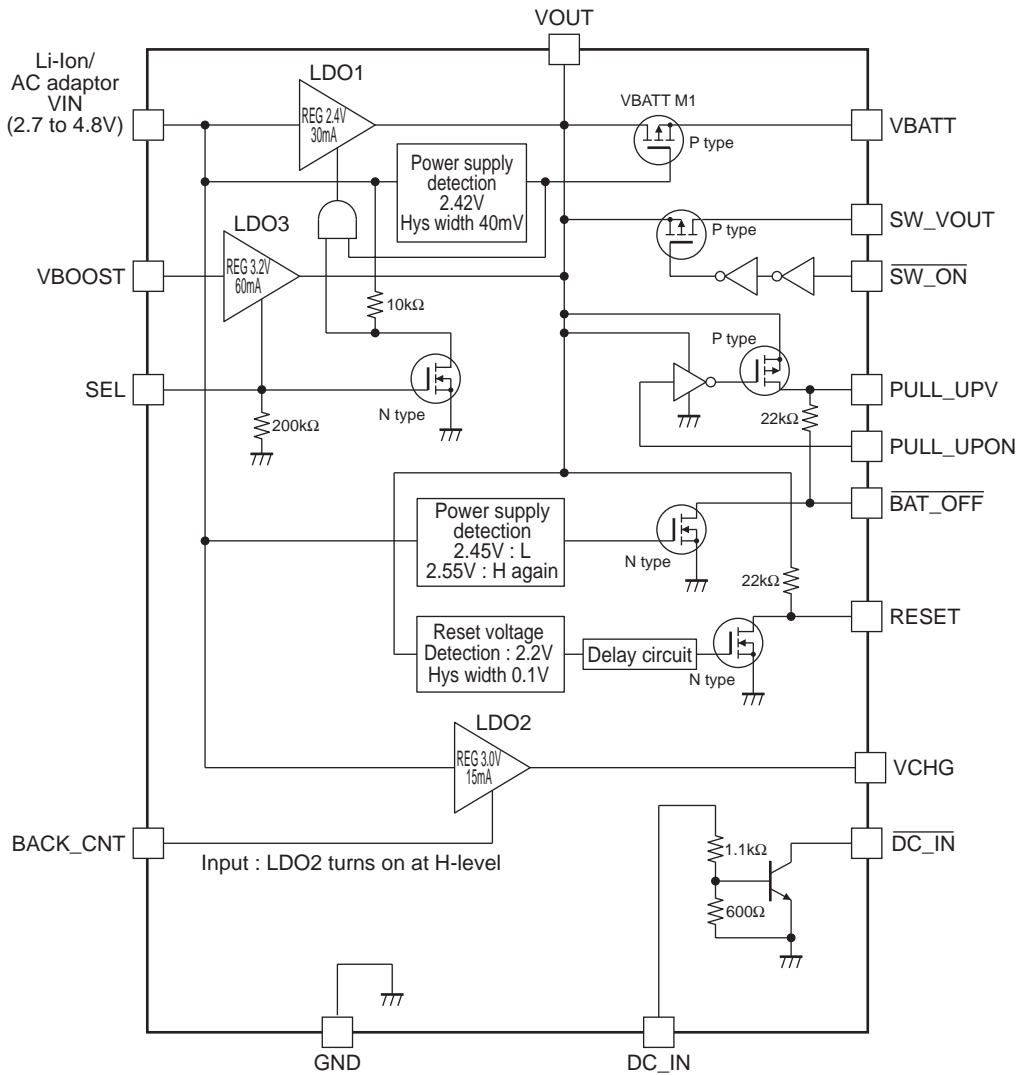


Pin Assignment



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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

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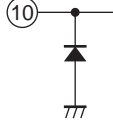
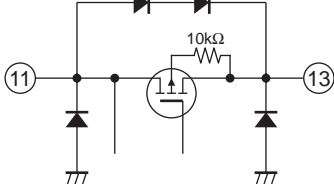
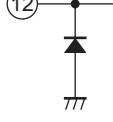
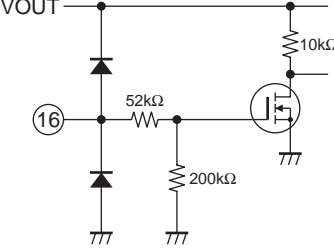
Pin Functions

Pin No.	Pin Name	Pin Description	Pin voltage	Equivalent Circuit
1	SW_ON	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	BAT_OFF	BAT_OFF voltage detector output pin.	0/VOUT	
3	GND	Ground.		
4	DC_IN	DC_IN output pin.		
5	DC_IN	DC_IN input pin.		
6	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.		

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