GENERAL DESCRIPTION

The EHP2604 is a front-end over voltage and over current protection device. It achieves wide input voltage range from 2.5VDC to 40VDC. The over voltage threshold can be programmed externally or set to internal default setting. The low resistance of integrated power path nFET switch ensures better performance for battery charging system applications. It can deliver up to 1A current to satisfy the battery supply system. It integrates the over-temperature protection shutdown and auto-recovery circuit with hysteresis to protect against over current events.

FEATURES

- Absolute maximum input voltage: 40V
- Maximum load current : 1A
- Low power path resistance : 350mΩ (Typ.)
- Fixed Internal OVP threshold : 5.85/6.1/6.8/10.5/14.0 V (Typ.)
- OVP response time : 50ns
- Internal 15-ms Start-Up or OVP Recovery Delay
- Programmable over voltage threshold : 4V to 20V
- Internal soft start to prevent In-rush current
- Thermal shutdown protection & Auto recovery
- Output short-circuit protection
- RoHS compliant and Halogen free
- Compact package :SOT23-6L

APPLICATIONS

- Smart Device
- Battery Supplied System
- Wearable Device

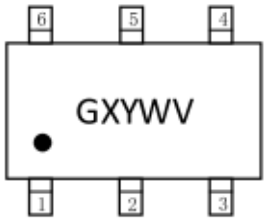
Order Information

EHP2604 XX B3 G R

- R: Reel
- G: Green
- B3: Package Type: SOT23-6L
- XX: OVP threshold voltage

Example: 68: 6.8V

Marking Information



SOT23-6L（Top View）

G: Product Code.
XY: Internal Control Code.
W: The week of manufacturing.
"A"stands for week 1,"Z" stands for week 26,
"a" stands for week 27, "z" stands for week 52.
V: Version.

PIN DESCRIPTION

PIN	SYMBOL	TYPE	PIN DESCRIPTION
1/2/5/6	GND	Ground	Power ground pin.
3	IN	I	Power input pin. Decouple high frequency noise by connecting at least 0.1uF MLCC to ground.
4	OUT	O	Output voltage pin. Source side of the internal nFET.

TYPICAL APPLICATION CIRCUIT

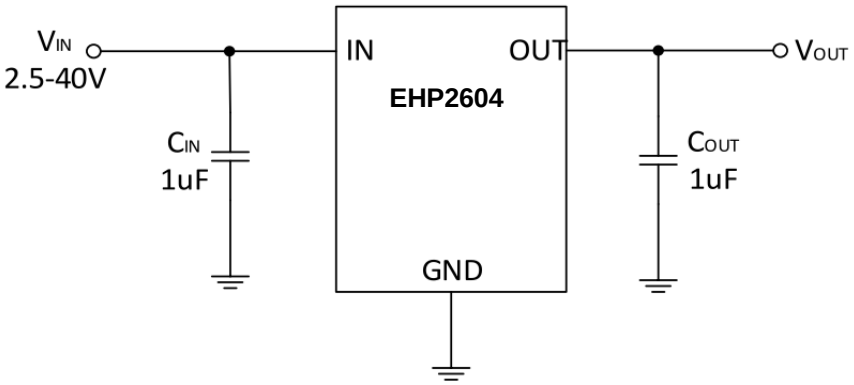


Figure 1. Typical Application Schematic

ABSOLUTE MAXIMUM RATINGS (Note)

SYMBOL	ITEMS		VALUE	UNIT
VIN	Input Voltage		-0.3~40	V
VOUT	Output Voltage		-0.3~15	V
VOVLO	OVLO Voltage		-0.3~20	V
IOMAX	Maximum Output Continues Load Current		1	A
PDMAX	Power Dissipation	SOT23-6	TBD	W
RθJA	Thermal Resistance	SOT23-6	TBD	℃/W
TJ	Junction Temperature		-40~150	℃
Tstg	Storage Temperature		-55~150	℃
Tsolder	Package Lead Soldering Temperature (10s)		260	℃
HBM	ESD Susceptibility, Human Body Model		TBD	KV
MM	ESD Susceptibility, Machine Model		TBD	KV
CDM	ESD Susceptibility, Charged Device Model		TBD	V

Note: *Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.*

RECOMMANDED OPERATING RANGE

SYMBOL	ITEMS	VALUE	UNIT
V_{IN}	Input Supply Voltage	2.5 to 20	V
V_{OUT}	Output Voltage	< 15	V
I_{OUT}	Continue Output Current	<1	A
V_{OVLO}	OVLO Voltage	0 to 20	V
T_{OPR}	Operating Temperature	-40 to +85	℃
C_{IN}	Input capacitance	1	µF
C_{LOAD}	Output load capacitance	1	µF

ELECTRICAL CHARACTERISTICS

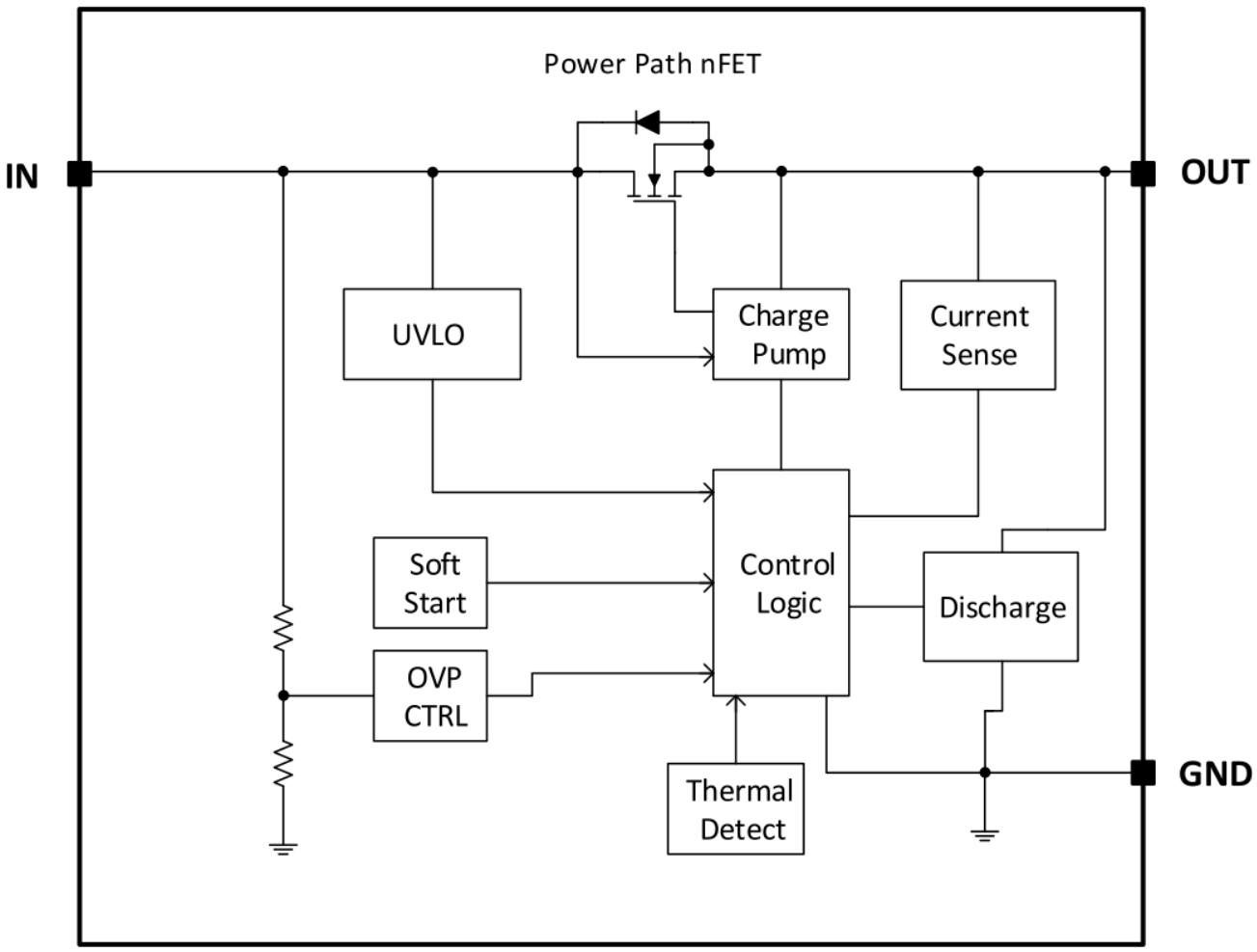
(V_{IN} = 2.8V to 40V, C_{IN}=1uF, C_{OUT}=1uF, T_A=25 ℃, unless otherwise noted.)

Parameter	Symbol	Test Conditions		MIN	TYP	MAX	UNIT
Input Voltage	VIN			2.8		40	V
Input UVLO Threshold	VUVLO					2.4	V
UVLO Hysteresis	VHYS				100		mV
Input Quiescent Current	IQ	VIN=5V,VIN<VOVLO			TBD		μA
OVLO Input Leakage Current	IOVLO	VOVLO=VOVLO_TH		-100		100	nA
Internal Default OVP Threshold	VOVLO	Rising	EHP2604XX-585	5.67	5.85	6.03	V
			EHP2604XX-61	5.8	6.1	6.4	
			EHP2604XX-68	6.6	6.8	7.0	
			EHP2604XX-105	10.0	10.5	11.0	
			EHP2604XX-140	13.5	14.0	14.5	
Internal OVP Hysteresis	VOVLO_HYS	Falling			150		mV
OVLO Preset Threshold	VOVLO_TH	Rising		1.14	1.2	1.26	V
OVLO Hysteresis		Falling			20		mV
External OVLO Select Threshold	VOVLO_SEL				0.2	0.28	V
Programmable OVLO range	VOVPPR			4		20	V
On Resistance of power path	RON	VIN=5V,IOUT=500mA, from IN to OUT			350		mΩ
Startup or OVP Recovery Debounce Time	TDEB	Time from 2.5V<VIN<VOVLO to VOUT=10% of VIN			15		mS
Soft start Turn-On Time	tON	VIN=5V, RL=100, COUT=100uF; VOUT=10% of VIN to 90% VIN			2		mS
OVP Switch Turn-Off Time	tOFF	VIN> VOVLO to VOUT stop rising			50	100	nS
Output Discharge Resistance	RDISC	OVP Triggered			200		Ω
Thermal Shutdown Temperature	TSD				150		℃
Thermal Shutdown Hysteresis	THYS				20		℃

Note : R1=1MΩ is a good starting value for minimum current consumption. Since VOVLO, VOLVO_TH, and R1 are known, R2 can be calculated from the following formula:

$$V_{OVLO} = V_{OVLO\_TH} \times (1+R1/R2)$$
$$= 1.2V \times (1+R1/R2),$$
$$R2 = R1/[(V_{OVLO}/1.2)-1].$$

SIMPLIFIED BLOCK DIAGRAM



TIMING DIAGRAM

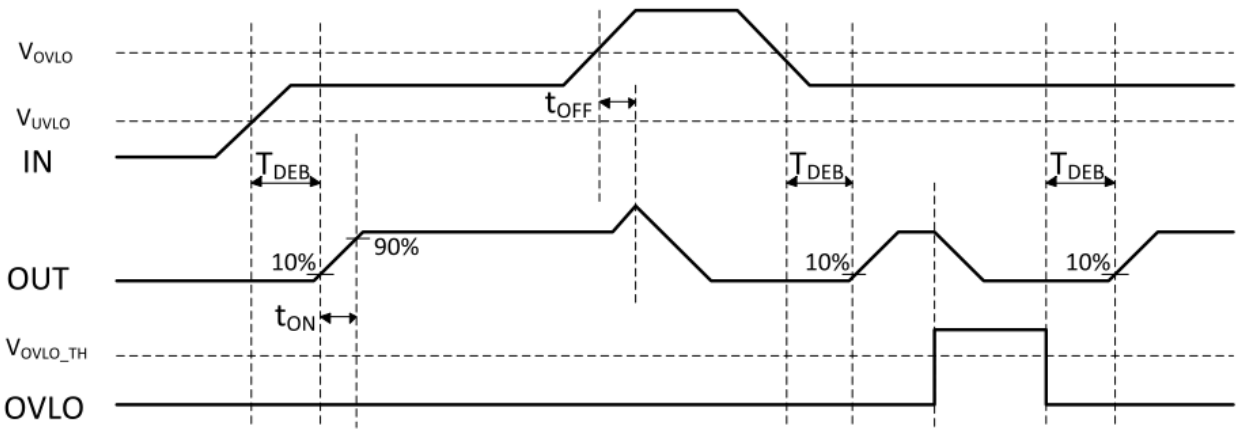
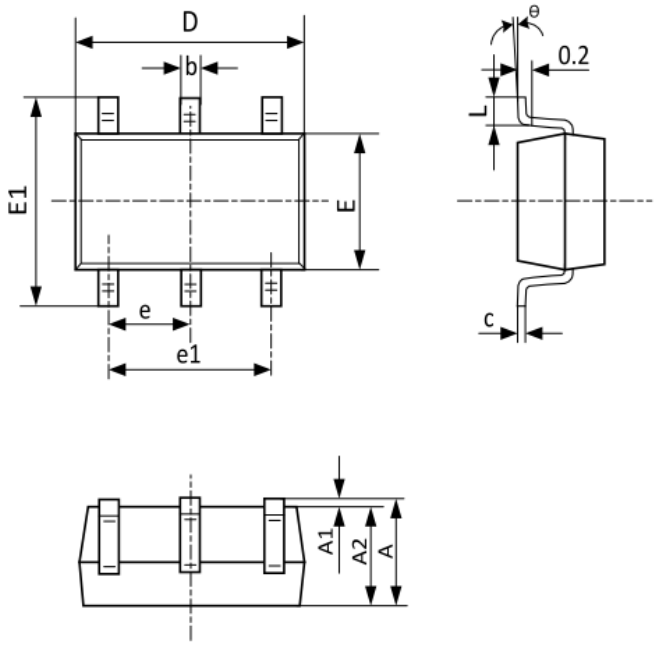


Figure 2. Timing diagram

PACKAGE OUTLINE

Package	SOT23-6L	Devices per reel	3000Pcs	Unit	mm

Package Dimension:



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	1.050	-	1.250
A1	0.000	-	0.100
A2	1.050	-	1.150
b	0.300	0.400	0.500
c	0.100	-	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950 Typ.		
e1	1.800	1.900	2.000
L	0.300	-	0.600
θ	0°	-	8°