



## ABSOLUTE MAXIMUM RATINGS

(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)

Pin1 Voltage .....	-0.3V to 6.0V
Pin5 Voltage .....	-0.3V to 5.0V
All Other Pin Except Pin5 Voltage .....	VIN-0.3V to VIN+0.3
Pin4 to ground current.....	Internally limited
Operating Temperature Range .....	-40°C to 85°C
Storage Temperature Range .....	-55°C to 150°C
Thermal Resistance	$\theta_{JA}$ $\theta_{JC}$
ESOP-8.....	50        10..... °C/W

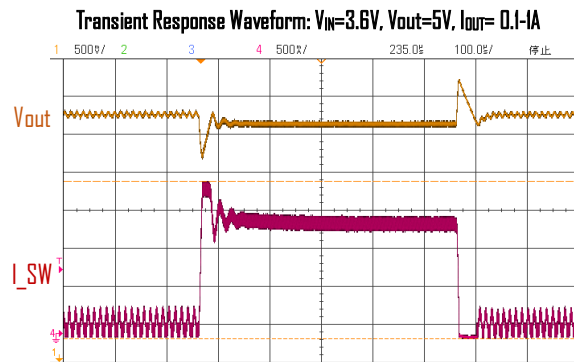
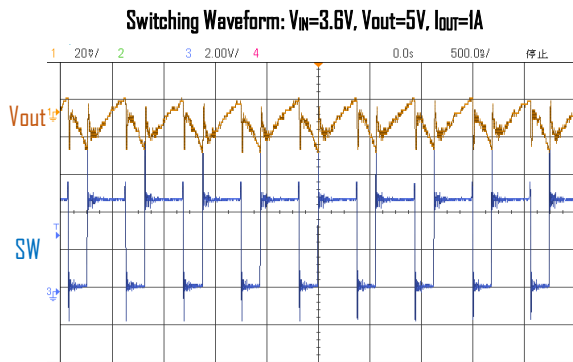
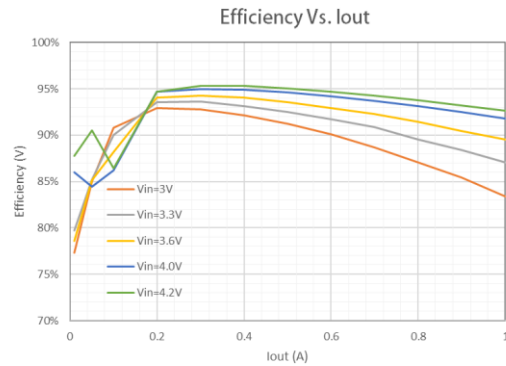
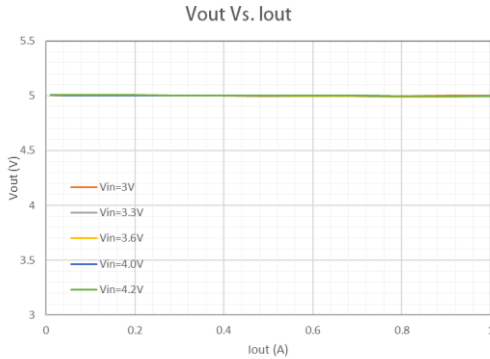
## ELECTRICAL CHARACTERISTICS

(V<sub>BAT</sub> = 3.6V, V<sub>OUT</sub> = 5V, unless otherwise specified. Typical values are at TA = 25°C.)

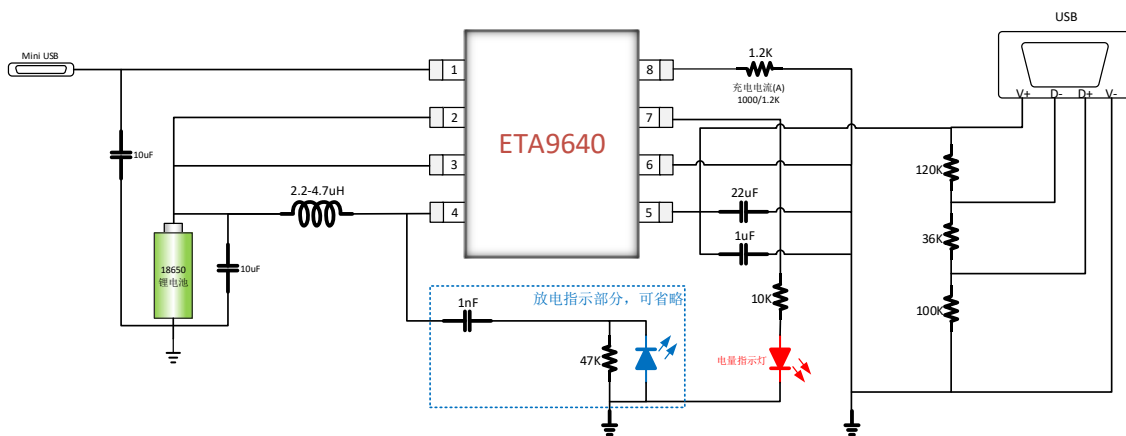
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output USB Voltage Range		4.9	5.05	5.2	V
Quiescent Current from battery	V <sub>BAT</sub> =3.6V, No load		100		μA
Shutdown Supply Current from battery	V <sub>pin3</sub> =GND		6	10	μA
BAT UVLO at Rising			3.07	3.25	V
BAT UVLO at Falling		2.45	2.6	2.75	V
Switching Frequency		1.4	1.8	2.2	MHz
Low Side Main FET R <sub>DS(on)</sub>			180		mΩ
Synchronous FET R <sub>DS(on)</sub>			120		mΩ
Maximum Duty Cycle		90			%
Switch Current Limit		1.6	1.85		A
PIN3 Input Current	V <sub>pin3</sub> =3V	1	1.5	2.5	μA
Input miniUSB Voltage		4.5		6.0	V
Charge Termination Voltage		4.15	4.2	4.24	V
Recharge Threshold			4.05		V
Trickle Charge Voltage threshold		2.65	2.87	3.1	V
Charging Current	=1000/R1, when R1=1K,	0.85	1	1.15	A
Trickle Charge Current		50	80	110	mA
Termination Charge Current Threshold	=I <sub>term</sub> /I <sub>charge_set</sub>		0.1		
LED Sink Current			5		mA
Thermal Shutdown	Rising, Hysteresis=20°C		150		°C

## TYPICAL CHARACTERISTICS

(Typical values are at  $T_A = 25^\circ\text{C}$  unless otherwise specified.)



## APPLICATION NOTES



The ETA9640 is designed dedicated for a Li-ion powered system with 1A USB output port, such as portable power bank. A complete application circuit is shown above, where one can find very few peripheral devices needed. The 120K/36K/120K serial resistor is just for the iPhone charging port setup, which is not necessary for all systems. One can also simply short the D+ and D- pin of the USB output port to achieve the same function.

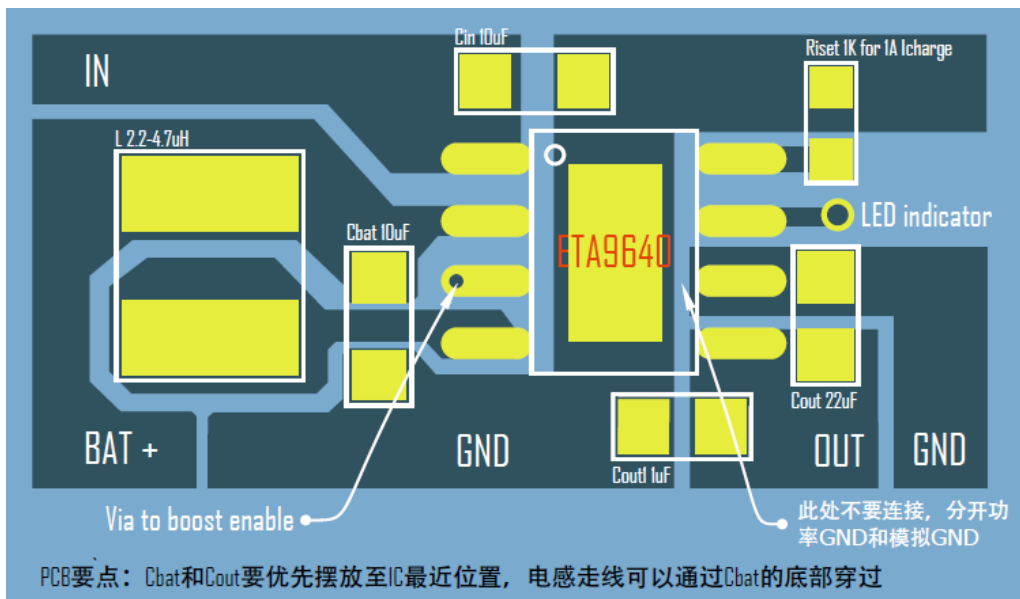
The blue LED with InF capacitor and 47K resistor filter is for an output indicator, which can also be removed if one don't need this indicator. The red LED is to indicate the battery voltage level, which serves as an 4-level battery "gas gauge".

*Customer service*

Please contact your dealer or directly e-mail customer service of ETA Solutions for detail information of ETA9640.

**PCB LAYOUT GUIDELINE**

A recommended PCB layout is shown below. The capacitors, Cbat and Cout must be placed as close the ETA9640 as possible.



**PACKAGE OUTLINE**

Package: ESOP-8

