



FEATURES

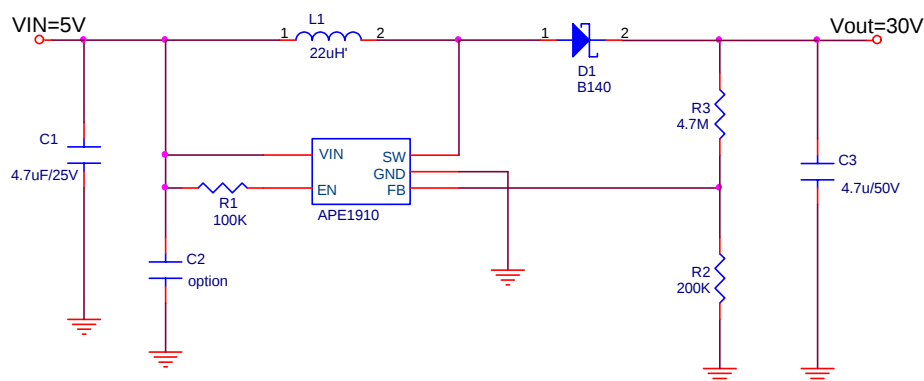
- Input Voltage : 1.2V to 12V
- Low Quiescent Current : 17uA (typ.)
- Low Saturation Voltage : 200mV Typical at 300mA
- 350mA Typical Switching Current Limiting
- High Output Voltage : up to 34V
- Low Profile SOT-23-5L Pb-Free Packaging
- Halogen Free Product

DESCRIPTION

The APE1910 is a Pulse Frequency Modulation (PFM) DC/DC converter. It is Low quiescent current 30uA and shutdown current less 1uA. The APE1910 feature a wide input voltage. The operating voltage is ranged from 1.2V to 12V. It also feature low quiescent current, switching current limiting, low temperature coefficient.

Smaller package size and fewer tiny external components are required in the application to save space and lower cost. APE1910 is available in SOT-23-5L

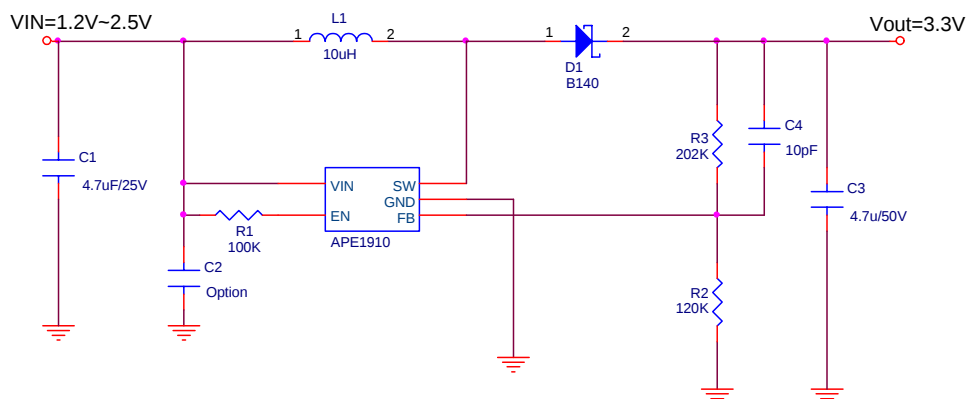
TYPICAL APPLICATION



$$V_{out} = V_{FB} \times (1 + R_3/R_2)$$

VFB=1.23V, R2 suggest 100K~300K

Figure 1. VCC=5V/ VOUT=30V for LCE.OLED Bias Supply



$$V_{out} = V_{FB} \times (1 + R_3/R_2)$$

VFB=1.23V, R2 Suggest 100K~300K

Figure 2. VCC=1.2~2.5V/ VOUT=3.3V for 1 or 2 cells to 3.3V boost converter



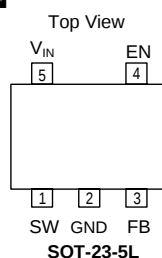
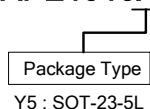
ABSOLUTE MAXIMUM RATINGS

V_{IN} Pin Voltage(V_{IN})	15V
SW Voltage(V_{SW})	36V
Feedback Pin Voltage(V_{FB})	V_{IN}
EN Pin Voltage(V_{EN})	15V
Maximum Junction Temperature(T_J)	150°C
Storage Temperature Range(T_{ST})	-40°C To 150°C
Operating Temperature Range(T_{OP})	-40°C To 125°C
Power Dissipation(P_D)	0.4W
Thermal Resistance from Junction to Case(R_{thJC})	110°C/W
Thermal Resistance from Junction to Ambient(R_{thJA}) ^{Note}	250°C/W

Note. R_{thJA} is measured with the PCB copper area of approximately 1 in² (Multi-layer) that need connect to GND pin of the APE1910

PACKAGE / ORDERING INFORMATION

APE1910X



ELECTRICAL SPECIFICATIONS

($V_{IN}=5V$, $V_{OUT}=12V$, $T_A=25^\circ C$, unless otherwise specified)

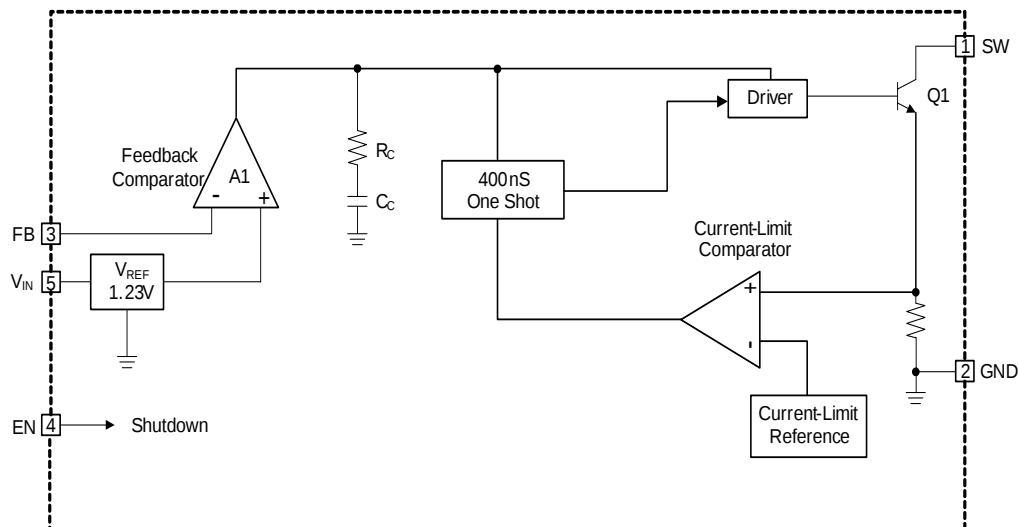
Parameter	SYM	TEST CONDITION	MIN	TYP	MAX	UNITS
Input Voltage	V_{IN}		1.2	-	12	V
Quiescent Current	I_{CCQ}	$V_{FB}=1.5V$, Not Switching	-	17	30	uA
Shutdown Current	I_{SD}	$V_{EN}=0V$	-	-	1	uA
Feedback Voltage	V_{FB}		1.205	1.23	1.255	V
Feedback Bias Current	I_{FB}	$V_{FB}=1.23V$	-	30	80	nA
Line Regulation	V_{Line}	$1.2V < V_{IN} < 12V$, Load=10mA	-	0.05	0.1	%/V
Switching Saturation Voltage	V_{CESAT}	$I_{SW}=300mA$	-	200	300	mV
Switch Current Limit	I_{SW}		300	350	400	mA
Switch Leakage Current	I_{LEAK}	Switch-off, $V_{SW}=5V$	-	0.01	5	uA
EN Pin Logic Input Threshold Voltage	V_{ENH}	High (regulator ON)	0.9	-	-	V
	V_{ENL}	Low (regulator ON)	-	-	0.25	
EN Pin Input Current	I_{EN}	$V_{EN}=1.2V$	-	2	3	uA
		$V_{EN}=5V$	-	8	12	

PIN DESCRIPTIONS

PIN SYMBOL	PIN DESCRIPTON
VIN	IC Power Supply Pin
SW	Switch pin. Connect external inductor & diode here
FB	Feedback Pin
EN	Shutdown Pin
	H : normal operation L : operation stopped
GND	Ground Pin



BLOCK DIAGRAM



APPLICATION INFORMATION

Capacitor Selection

The small size of ceramic capacitors makes them ideal for APE1910 applications. X5R and X7R types are recommended because they retain their capacitance over wider voltage and temperature ranges than other types such as Y5V or Z5U. A 4.7uF input capacitor and a 4.7uF output capacitor are sufficient for most APE1910 applications.

Inductor Selection

A 10uH inductor is recommended for most APE1910 applications. Although small size and high efficiency are major concerns, the inductor should have low core losses and low DCR (copper wire resistance).

Diode Selection

Schottky diodes with higher current ratings usually have lower forward voltage drop, larger diode capacitance and fast reverse recovery, it is the ideal choices for APE1910 applications. The forward voltage drop of a Schottky diode represents the conduction losses in the system, while the diode capacitance (C_T or C_D) represents the switching losses. For diode selection, both forward voltage drop and diode capacitance need to be considered.

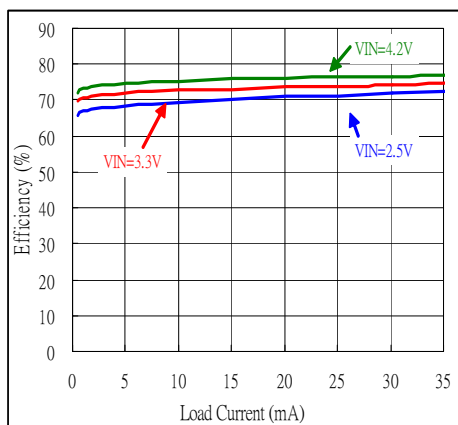
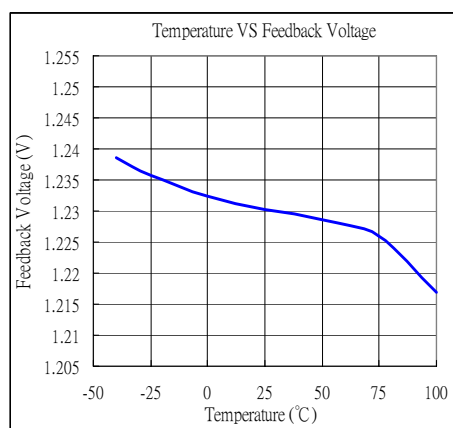
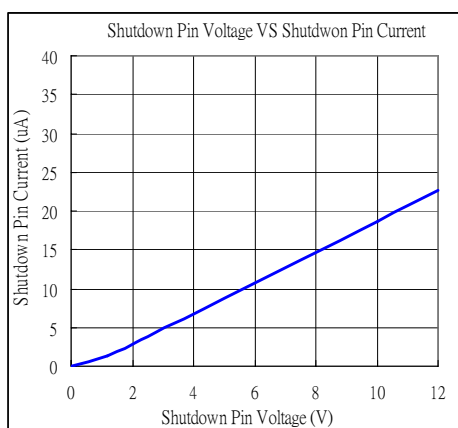
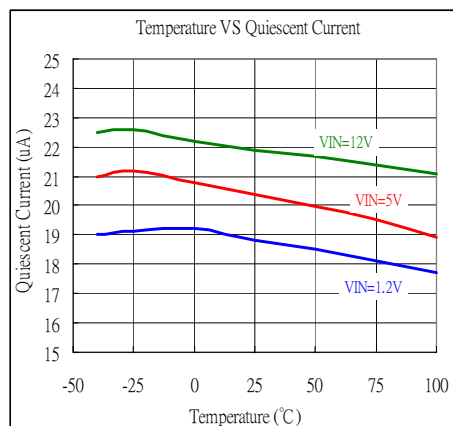
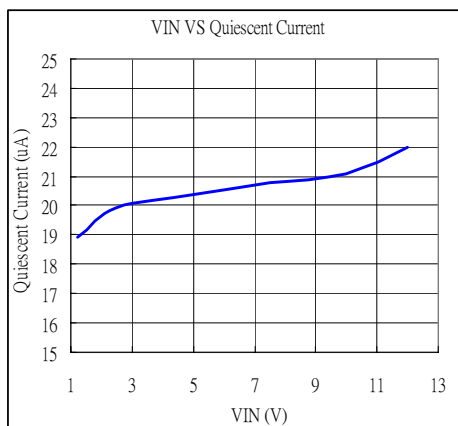
PCB Layout Guide

When laying out the PC board, the following suggestions should be taken to ensure proper operation of the APE1910. These items are also illustrated graphically in below.

1. The power traces, including the GND trace, the SW trace and the V_{CC} trace should be kept short, direct and wide to allow large current flow. Put enough multiply-layer pads when they need to change the trace layer.
2. Connect the input capacitor C1 to the V_{CC} pin as closely as possible to get good power filter effect.
3. Do not trace signal line under inductor.



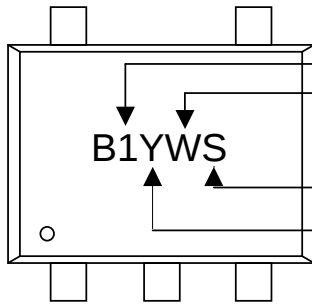
TYPICAL PERFORMANCE CHARACTERISTICS





MARKING INFORMATION

SOT-23-5L



Part Number : B1

Week:

A~Z : 01~26

a~z : 27~52

ID Code : Internal

Year :

A = 2010

1 = 2011

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