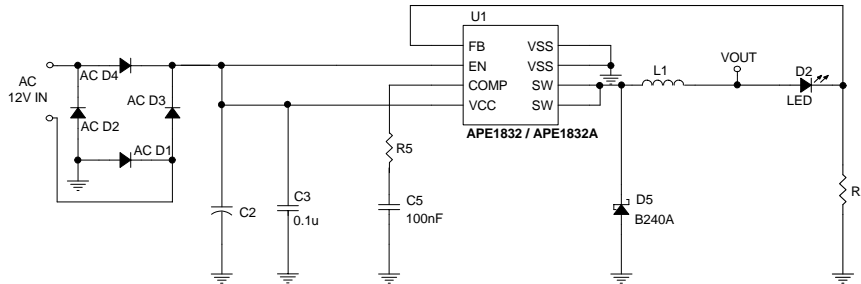




TYPICAL APPLICATION

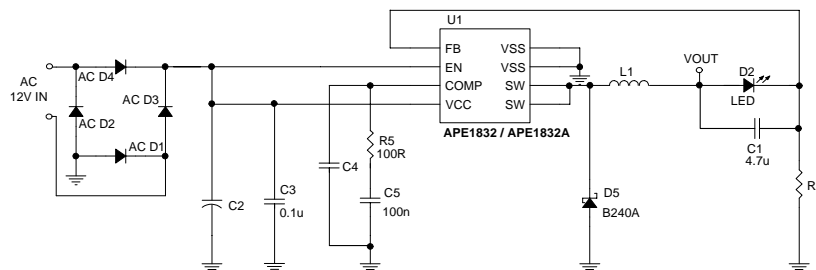
B. 1W/3W LED x 1 for AC Input

(1) No Output Capacitor



Part No.	I _{LED}	R2		C2	R5	L1
APE1832	350mA	0.715 Ω	87.5mW	100uF	0.22K	68uH
	750mA	0.333 Ω	189mW	220uF	0.47K	
	1000mA	0.250 Ω	250mW	330uF	0.47K	
APE1832A	350mA	0.715 Ω	87.5mW	100uF	0.22K	47uH
	750mA	0.333 Ω	189mW	220uF	0.47K	
	1000mA	0.250 Ω	250mW	330uF	0.47K	

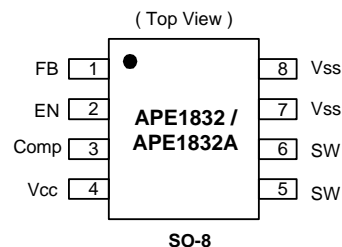
(2) Add 4.7uF Output Capacitor



Part No.	I _{LED}	R2		C2	C4	L1
APE1832	350mA	0.715 Ω	87.5mW	100uF	10nF	33uH
	750mA	0.333 Ω	189mW	220uF		
	1000mA	0.250 Ω	250mW	330uF		
APE1832A	350mA	0.715 Ω	87.5mW	100uF	3.3nF	22uH
	750mA	0.333 Ω	189mW	220uF		
	1000mA	0.250 Ω	250mW	330uF		

ORDERING / PACKAGE INFORMATION

APE1832 X X
 Frequency Package Type
 Blank : 330KHz M : SO-8
 A : 500KHz





ABSOLUTE MAXIMUM RATINGS (at $T_A=25^{\circ}\text{C}$)

V_{CC} PIN Voltage(V_{CC})	-----	$V_{SS} -0.3\text{V}$ to $V_{SS} +25\text{V}$
Feedback PIN Voltage(V_{FB})	-----	$V_{SS} -0.3\text{V}$ to V_{CC}
ON/OFF PIN Voltage(V_{EN})	-----	$V_{SS} -0.3\text{V}$ to $V_{CC} + 0.3\text{V}$
Switch PIN Voltage(V_{SW})	-----	$V_{SS} -0.3\text{V}$ to $V_{CC} + 0.3\text{V}$
Power Dissipation(P_D)	-----	Internally Limited
Storage Temperature Range(T_{ST})	-----	-40°C To 150°C
Operating Temperature Range(T_{OP})	-----	-40°C To 125°C
Operating Supply Voltage(V_{OP})	-----	$+3.6\text{V}$ to $+23\text{V}$
Thermal Resistance from Junction to Case($R_{th,JC}$)		25°C/W
Thermal Resistance from Junction to Ambient($R_{th,JA}$)		70°C/W

Note. $R_{th,JA}$ is measured with the PCB copper area(need connect to SW pins) of approx. 1 in^2 (multi-layers)

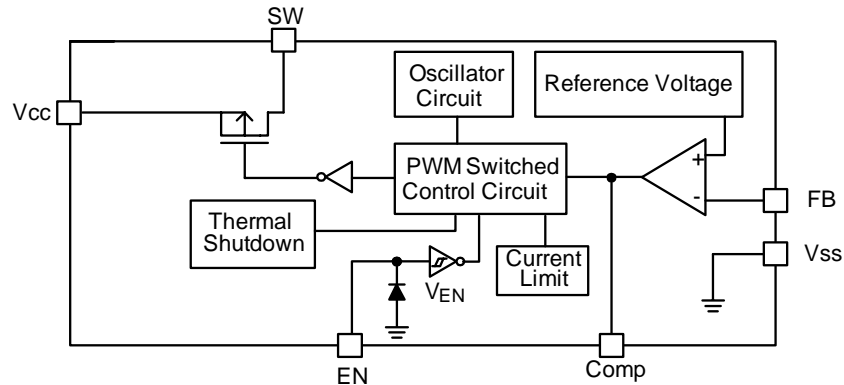
ELECTRICAL SPECIFICATIONS ($V_{IN}=12\text{V}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	SYM	TEST CONDITION	MIN	TYP	MAX	UNITS	
Feedback Voltage	V_{FB}	$I_{OUT}=0.2\text{A}$	0.24	0.25	0.26	V	
Quiescent Current	I_{CCQ}	$V_{FB}=1.2\text{V}$ force driver off	-	3	5	mA	
Feedback Bias Current	I_{FB}	$I_{OUT}=0.1\text{A}$	-	0.1	0.5	uA	
Shutdown Supply Current	I_{SD}	$V_{EN}=0\text{V}$	-	2	10	uA	
Switch Current	I_{SW}		2.5	-	-	A	
Line Regulation	$\Delta V_{OUT}/V_{OUT}$	$V_{CC} = 5\text{V}\sim 23\text{V}$, $I_{OUT}=0.2\text{A}$	-	1	2	%	
Load Regulation	$\Delta V_{OUT}/V_{OUT}$	$I_{OUT} = 0.1$ to 2A	-	0.2	0.5	%	
Oscillation Frequency	F_{OSC}	APE1832	260	330	400	KHz	
		APE1832A	400	500	600	KHz	
EN Pin Logic Input Threshold Voltage	V_{SH}	Slew rate $\geq 120\text{mV}/\mu\text{s}$	2	-	-	V	
	V_{SL}	Slew rate $\geq 120\text{mV}/\mu\text{s}$	-	-	0.8		
EN Pin Input Current	I_{SH}	$V_{EN}=2.5\text{V}$ (ON)	-	20	-	uA	
	I_{SL}	$V_{EN}=0.3\text{V}$ (OFF)	-	-10	-	uA	
Internal MOSFET R_{DSON}	R_{DSON}	$V_{CC}=5\text{V}$, $V_{FB}=0\text{V}$	-	100	140	$\text{m}\Omega$	
		$V_{CC}=12\text{V}$, $V_{FB}=0\text{V}$	-	70	100		
Efficiency	EFFI	$V_{OUT} = 5\text{V}$	$I_{OUT} = 1\text{A}$	-	91	-	%
			$I_{OUT} = 2\text{A}$	-	91	-	
Thermal Shutdown Temp	TSD		-	140	-	$^{\circ}\text{C}$	

PIN DESCRIPTIONS

PIN SYMBOL	PIN DESCRIPTION
V_{SS}	GND Pin
FB	Feedback Pin
EN	Power -Off Pin
	H : Normal Operation(Step-down)
	L : Step-down Operation Stopped
	(All circuits deactivated)
Comp	Compensation Pin
SW	Switch Pin. Connect External Inductor & Diode here.
V_{CC}	IC Power Supply Pin

BLOCK DIAGRAM



FUNCTION DESCRIPTION

PWM Control

The APE1832 / APE1832A consists of DC/DC converters that employ a pulse-width modulation (PWM) system. In converters of the APE1832 / APE1832A, the pulse width varies in a range from 0 to 100%, according to the load current. The ripple voltage produced by the switching can easily be removed through a filter because the switching frequency remains constant. Therefore, these converters provide a low-ripple power over broad ranges of input voltage and load current.

Setting the ILED Current

Application circuit item shows the basic application circuit with APE1832 / APE1832A adjustable output version. The external resistor sets the LED output current according to the following equation:

$$I_{LED} = \left(\frac{0.25V}{R2} \right)$$

Table 1 Resistor select for LED output current setting

I _{LED}	R2	
	350mA	0.715Ω
750mA	0.333Ω	189mW
1000mA	0.250Ω	250mW

RDS(ON) Current Limiting

The current limit threshold is setting by the internal circuit.

Compensation

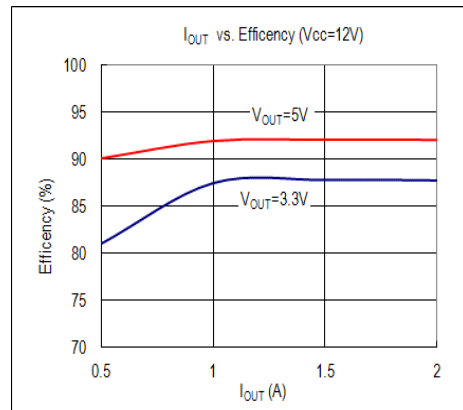
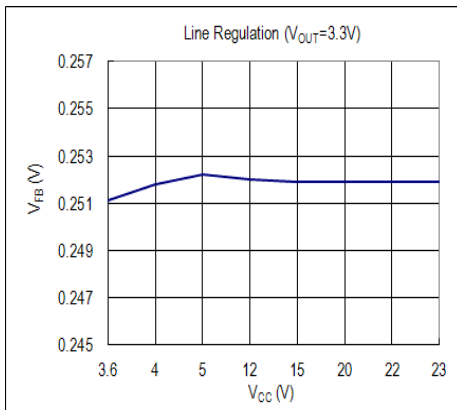
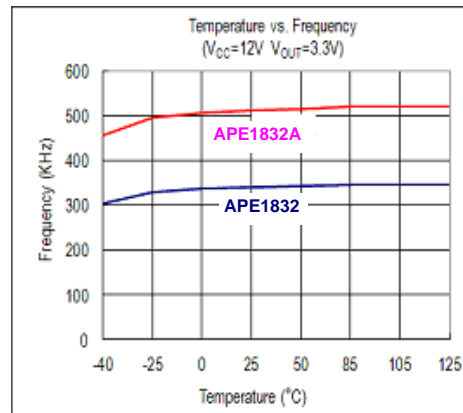
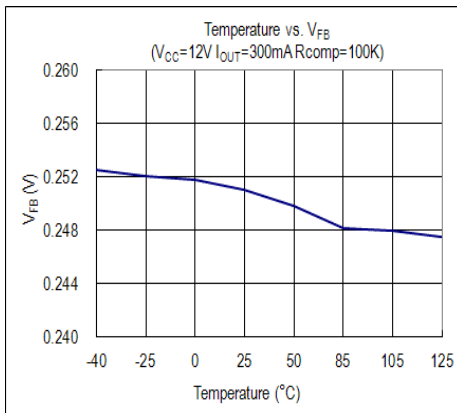
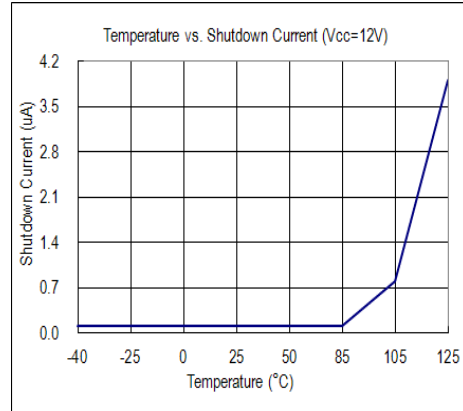
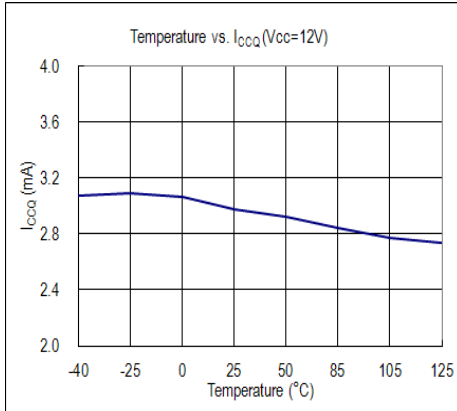
Please refer the table of application circuit. For DC input, the option circuit for compensation is connecting R4 and a 4148 diode to VOUT. In order to protect short circuit and thermal shutdown release for LED.

PCB layout guide

If you need low Tc and Tj or large PD (Power Dissipation), the dual SW pins (5&6) on the SO-8 package are internally connected to die pad, The PCB layout should allow for maximum possible copper area at the SW pins of the APE1832 / APE1832A.



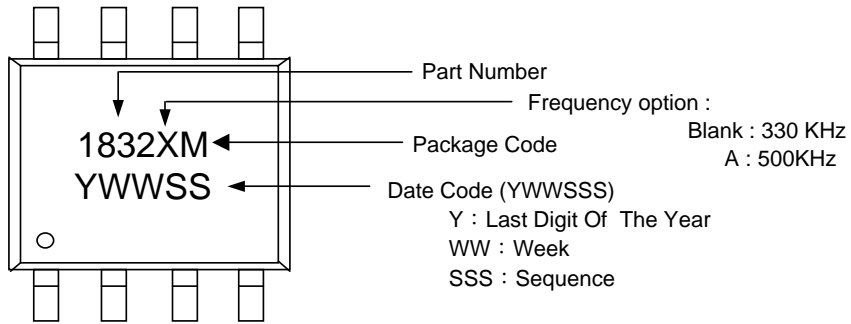
TYPICAL PERFORMANCE CHARACTERISTICS





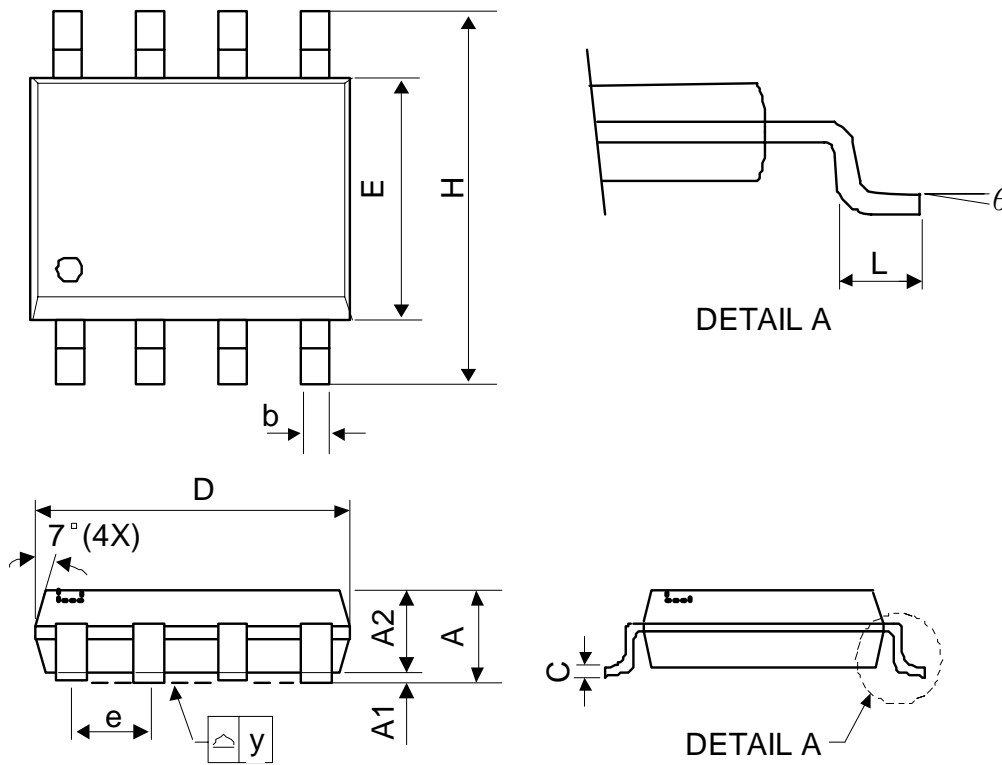
MARKING INFORMATION

SO-8





PACKAGE OUTLINES



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	-	-	1.75	-	-	0.069
A1	0.1	-	0.25	0.04	-	0.1
A2	1.25	-	-	0.049	-	-
C	0.1	0.2	0.25	0.0075	0.008	0.01
D	4.7	4.9	5.1	0.185	0.193	0.2
E	3.7	3.9	4.1	0.146	0.154	0.161
H	5.8	6	6.2	0.228	0.236	0.244
L	0.4	-	1.27	0.015	-	0.05
b	0.31	0.41	0.51	0.012	0.016	0.02
e	1.27 BSC			0.050 BSC		
y	-	-	0.1	-	-	0.004
theta	0°	-	8°	0°	-	8°

Mold flash shall not exceed 0.25mm per side

JEDEC outline: MS-012 AA