

2 Channel Linear Controller with Enable Function

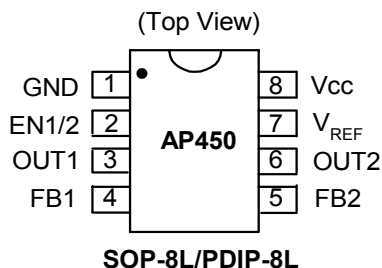
■ Features

- 2 Channel Linear Control Circuitries
- Operating voltage can be up to 20V
- Under voltage Lockout (UVLO) Protection
- Current Limit
- Over Voltage Protection
- Power Good Function
- 1.25V/0.8V internal voltage reference
- 8-pin PDIP and SOP **Pb-Free** packages

■ Applications

- Backlight inverter
- LCD Monitor
- XDROM, XDSL Product

■ Pin Assignment



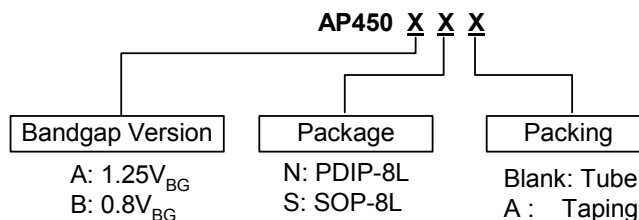
■ General Description

The AP450 series integrates two channel linear controllers into a single chip, mainly designs for power-supply regulator. All the functions included an on-chip 1.25V/0.8V reference output, error amplifier, UVLO, current limit. During low VCC situation, the UVLO makes sure that the outputs are off until the internal circuit is operational normally.

■ Pin Descriptions

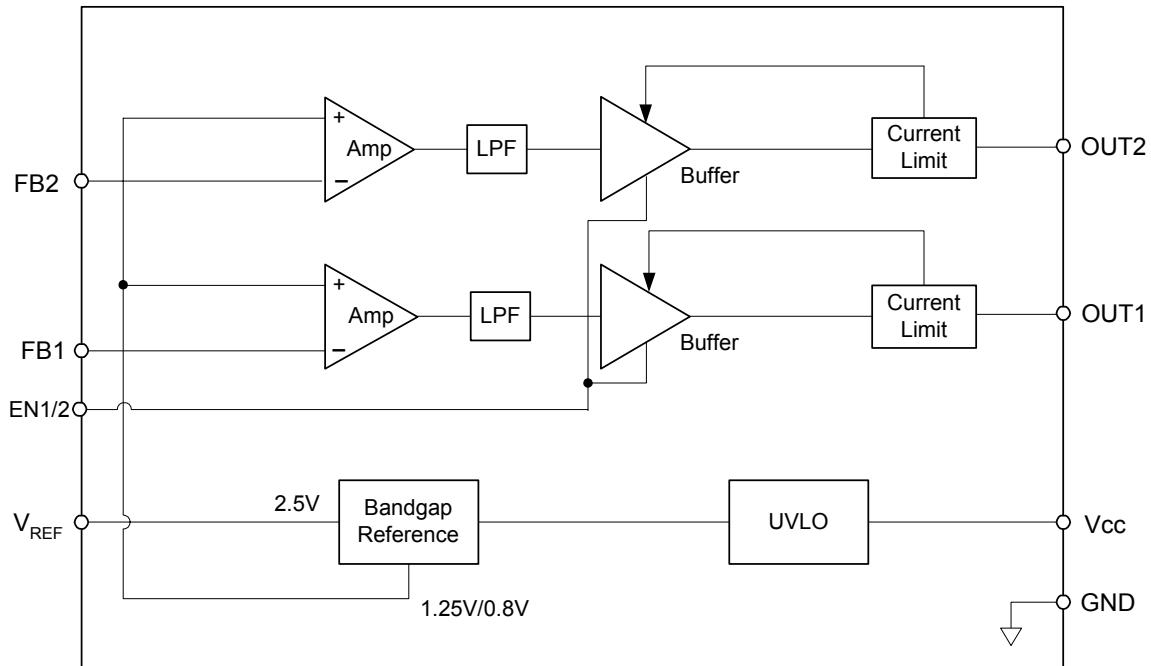
Pin Name	Pin No.	Description
GND	1	Signal Ground
EN1/2	2	Channel 1/2 Enable Pin
OUT1	3	Linear Controller CH1output
FB1, 2	4, 5	Voltage Feedback
OUT2	6	Linear Controller CH2 output
V _{REF}	7	1.25V/0.8V Output
Vcc	8	Supply Voltage

■ Ordering Information



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■ Block Diagram



■ Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{CC}	Supply voltage	22	V
V_I	Amplifier input voltage	20	V
V_{O1} / V_{O2}	CH1 / CH2 Linear driver voltage to ground	$-0.3 \leq V \leq 20$	V
T_{OP}	Operating temperature range	-20 to +85	°C
T_{ST}	Storage temperature range	-65 to +150	°C
T_{LEAD}	Lead temperature 1.6 mm(1/16 inch) from case for 10 seconds	260	°C

■ Recommended Operating Conditions

Symbol	Parameter	Min.	Max.	Unit
V_{CC}	Supply voltage	3.6	20	V
V_I	Amplifier input voltage	1.05	1.45	V
V_{O1} / V_{O2}	CH1 / CH2 Linear driver voltage to ground	-	$V_{CC}-1.5$	V
I_{FB}	Current into feedback terminal	-	45	μA
R_F	Feedback resistor	100	-	kΩ
T_{OP}	Operating free-air temperature	-20	85	°C

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Electrical Characteristics ($T_A=25^\circ\text{C}$, $V_{CC}=6\text{V}$)

Reference (REF)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{OUT1/2}$	V_{O1} / V_{O2} connect to FB1 / FB2	AP450A	1.225	1.25	1.275	V
		AP450B	0.784	0.800	0.816	
	Output voltage change with temperature	$T_A = -20^\circ\text{C} \sim 25^\circ\text{C}$	-	-0.1	± 1	%
		$T_A = 25^\circ\text{C} \sim 85^\circ\text{C}$	-	-0.2	± 1	%

Under voltage lockout (UVLO)

V_{UT}	Upper threshold voltage (V_{CC})	$I_{O(REF)} = 0.1\text{mA}$ $T_A = 25^\circ\text{C}$	-	2.9	-	V
V_{LWT}	Lower threshold voltage (V_{CC})		-	2.4	-	V
V_{HT}	Hysteresis (V_{CC})		-	500	-	mV

Output section

I_{CL1}	CH1 Current Limit	$V_{CC}=5\text{V}$, $V_{NOUT2}=V_{FB2}=0\text{V}$	25	-	-	mA
I_{CL2}	CH2 Current Limit	$V_{CC}=5\text{V}$, $V_{NOUT3}=V_{FB3}=0\text{V}$	25	-	-	mA

Enable function

V_{IL}	EN pin logic input threshold voltage for EN1/2	Low (regulator ON)	-	1.3	0.6	V
V_{IH}		High (regulator OFF)	2.0		-	V
I_{IL}	EN pin logic input current for EN1/2	Low (regulator ON)	-	-0.03	-	μA
I_{IH}		High (regulator OFF)	-	0.3	-	μA

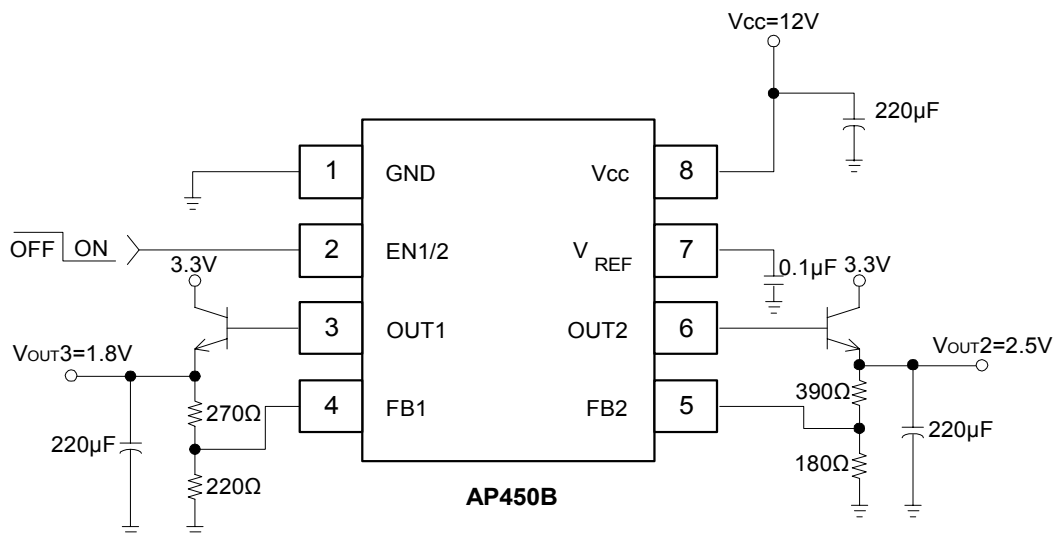
Total device

I_{CCA}	Average supply current	-	5	7	mA
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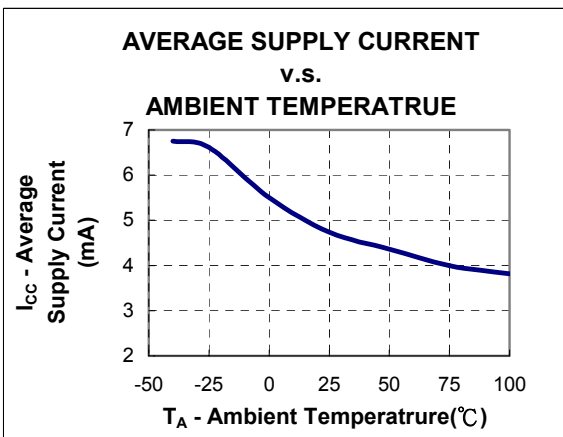
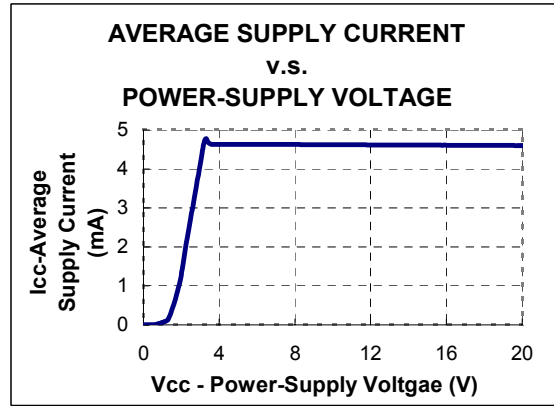
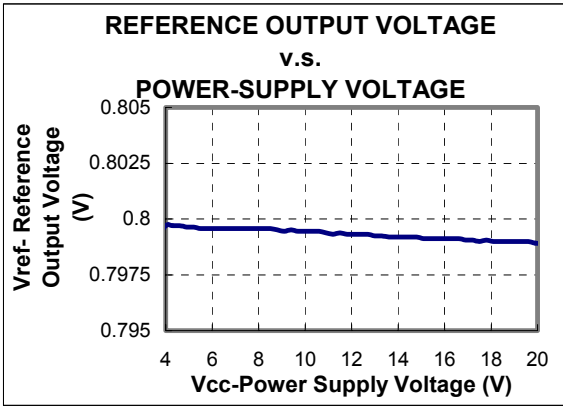
Thermal Resistor

θ_{JA}	Thermal Resistor Junction to Ambient	SOP8	-	90	-	$^\circ\text{C/W}$
		PDIP8	-	60	-	$^\circ\text{C/W}$

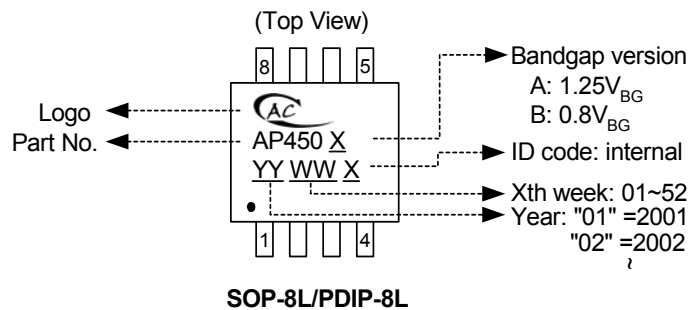
Typical Application Circuit



■ Typical Characteristics



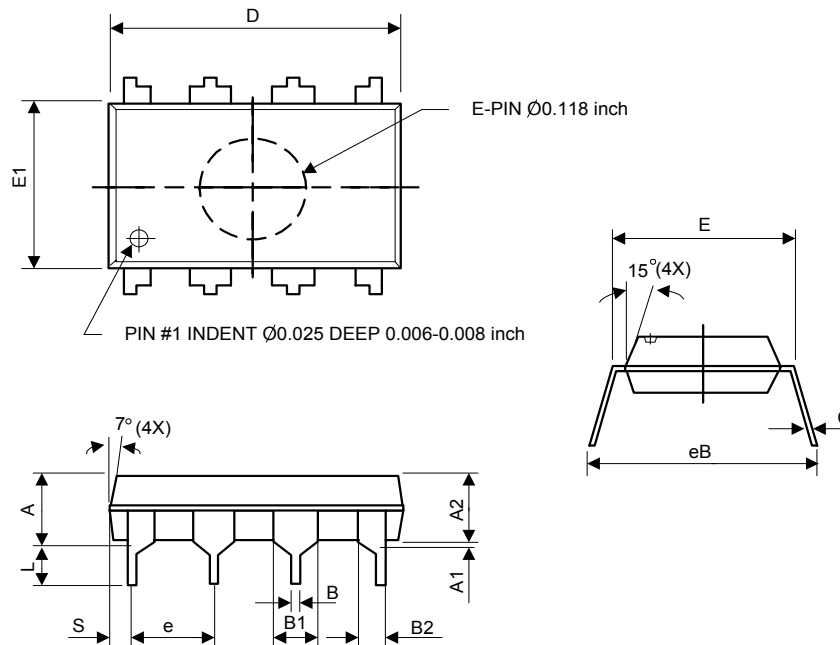
■ Marking Information



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■ Package Information

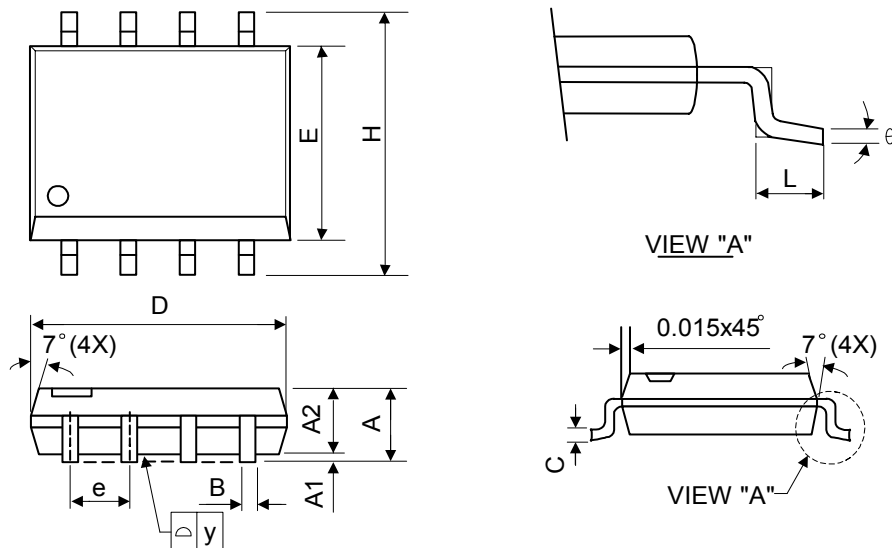
(1) PDIP-8L (Plastic Dual-in-line Package)



Symbol	Dimensions in millimeters			Dimensions in inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	-	-	5.33	-	-	0.210
A1	0.38	-	-	0.015	-	-
A2	3.1	3.30	3.5	0.122	0.130	0.138
B	0.36	0.46	0.56	0.014	0.018	0.022
B1	1.4	1.52	1.65	0.055	0.060	0.065
B2	0.81	0.99	1.14	0.032	0.039	0.045
C	0.20	0.25	0.36	0.008	0.010	0.014
D	9.02	9.27	9.53	0.355	0.365	0.375
E	7.62	7.94	8.26	0.300	0.313	0.325
E1	6.15	6.35	6.55	0.242	0.250	0.258
e	-	2.54	-	-	0.100	-
L	2.92	3.3	3.81	0.115	0.130	0.150
eB	8.38	8.89	9.40	0.330	0.350	0.370
S	0.71	0.84	0.97	0.028	0.033	0.038

■ Package Information (Continued)

(2) SOP- 8L(JEDEC Small Outline Package)



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.40	1.60	1.75	0.055	0.063	0.069
A1	0.10	-	0.25	0.040	-	0.100
A2	1.30	1.45	1.50	0.051	0.057	0.059
B	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.010
D	4.80	5.05	5.30	0.189	0.199	0.209
E	3.70	3.90	4.10	0.146	0.154	0.161
e	-	1.27	-	-	0.050	-
H	5.79	5.99	6.20	0.228	0.236	0.244
L	0.38	0.71	1.27	0.015	0.028	0.050
y	-	-	0.10	-	-	0.004
θ	0°	-	8°	0°	-	8°