



DESCRIPTION

The A6310F is a 3A output current, high PSRR low dropout linear regulator. The A6301F integrate soft-start, under-voltage protection, current limit protection, power-on reset and over-temperature protection. And the A6310F has dual power supplies (a control input for the control circuit and a power input down to 1.05V) for supplying current to the output.

The A6310F input voltage as low as 1.05V at a Vcc voltage of 3V and an adjustable output voltage as low as 0.8V. The ultra-low input and output dropout characteristics to be suitable in applications where the output voltage is very close to the input voltage. The A6310F has an enable control pin, and the current consumption in the shutdown state can be extremely low, with almost no power loss.

The A6310F provides excellent voltage regulation over the entire input, output and operating temperature range.

The A6310F is available in PSOP8 Package.

ORDERING INFORMATION

Package Type	Part Number	
PSOP8	MP8	A6310FMP8R
SPQ: 4,000pcs/Reel		A6310FMP8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

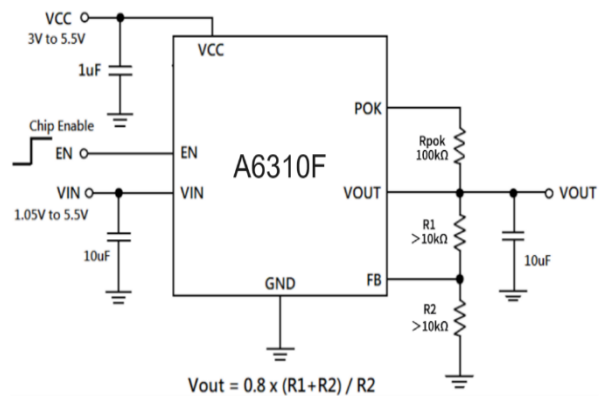
FEATURES

- Output Voltage is Adjustable: 0.8V~3.3V
- Excellent Line Regulation (0.01%/V Typ.)
- Excellent Load Regulation (0.1%/A Typ.)
- Drop Out Voltage: 250mV@3A
- Built-in Thermal Protection
- Built-in Overcurrent Protection
- V_{OUT} Under Voltage Protection
- Compatible with Low ESR Ceramic Capacitors

APPLICATION

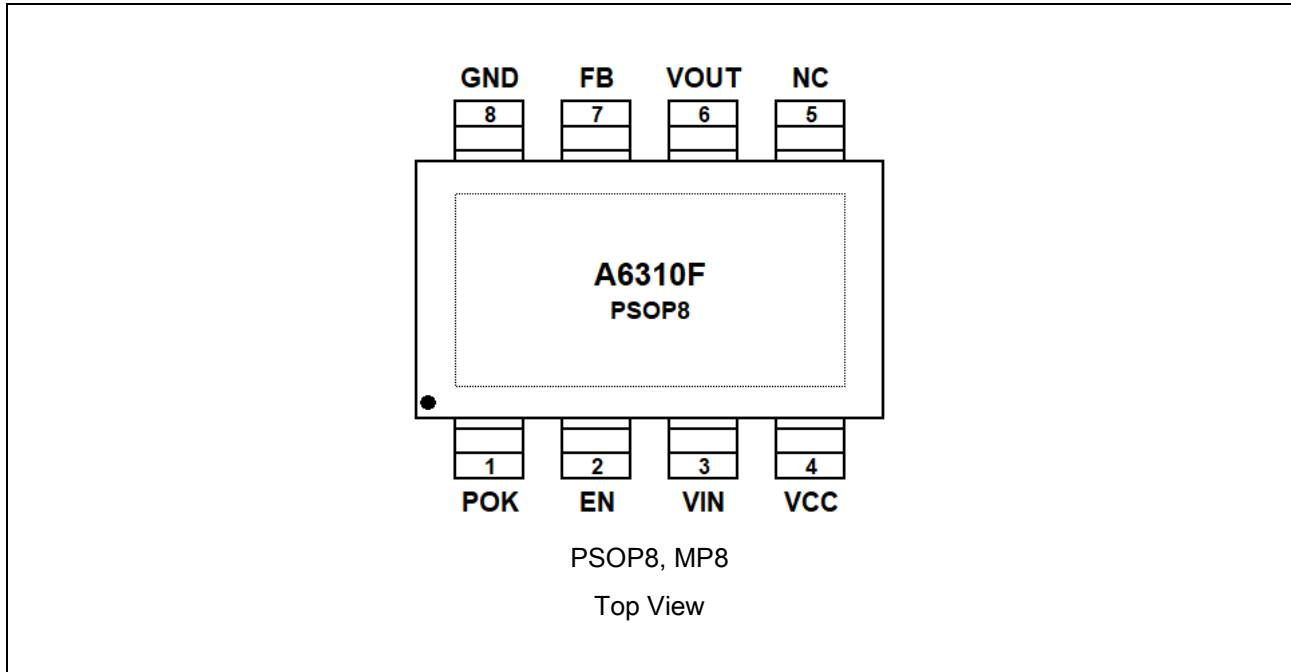
- LCD Monitor/TV
- PC Motherboard/NB Graphics Card
- DVD-Video Player
- ADSL Modem
- Peripherals Such as Printers

TYPICAL APPLICATION





PIN DESCRIPTION



Pin #	Symbol	Function
1	POK	Power OK Indication, Open Drain Output
2	EN	Enable Pin. Internal Pull High to VCC
3	V _{IN}	Input Voltage Pin, the Drain of Power Device
4	VCC	Supply Input of Control Circuit
5	NC	Not Connected
6	V _{OUT}	Output Voltage Pin
7	FB	Feedback Pin
8	GND	Ground



ABSOLUTE MAXIMUM RATINGS

V _{IN} , Input Voltage	-0.3V ~ 6V
V _{CC} , Control Input Voltage	-0.3V ~ 6V
-, Other Pins	-0.3V ~ V _{CC} +0.3V
-, Lead Temperature (Soldering, 10 sec.)	300°C
T _{STG} , Storage Temperature	-65°C~+150°C
T _J , Junction Temperature	125°C

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED WORK CONDITIONS

Parameter	Symbol	Min	Max	Unit
Input Voltage	V _{IN}	1.05	V _{CC}	V
Control Input Voltage	V _{CC}	I _{OUT} < 1A	(V _{OUT} +2.1) ~ 5.5	V
		I _{OUT} < 2A	(V _{OUT} +2.2) ~ 5.5	
		I _{OUT} < 3A	(V _{OUT} +2.4) ~ 5.5	
Junction Temperature	T _J	-40	125	°C

**ELECTRICAL CHARACTERISTICS** $V_{CC} = 5V$, $T_J = 25^\circ C$, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Control Input Voltage V_{CC}	V_{CC}	$V_{OUT} = V_{REF}$	3	-	6	V
V_{CC} POR Threshold	V_{CCPOR}		2.50	-	2.90	V
V_{CC} POR Hysteresis	V_{CCHY}		-	0.40	-	V
Power Input Voltage V_{IN}	V_{IN}	$V_{OUT} = V_{REF}$	1.05	-	V_{CC}	V
V_{IN} POR Threshold	V_{INPOR}		0.80	-	1	V
V_{IN} POR Hysteresis	V_{INHY}		0.10	-	0.50	V
V_{IN} POR Deglitch Time	T_{DEG}		-	100	-	μS
Control Input Current in Shutdown	I_{VCCSD}	$V_{IN} = V_{CC} = 5V$, $V_{EN} = 0V$	-	10	30	μA
Quiescent Current	I_Q	$V_{IN} = V_{CC} = V_{EN} = 5V$, $I_{OUT} = 0A$	-	0.90	1.50	mA
Reference Voltage	V_{REF}	$V_{IN} = V_{CC} = V_{EN} = 5V$, $I_{OUT} = 0A$, $V_{OUT} = V_{REF}$	0.785	0.80	0.815	V
V_{IN} Line Regulation	$V_{REFLINE}$	$1.05V < V_{IN} < 5V$, $V_{CC} = V_{EN} = 5V$	-	0.01	0.10	%/V
Load Regulation	$V_{REFLOAD}$	$0A < I_{OUT} < 3A$, $V_{CC} = V_{EN} = 5V$	-	0.10	0.50	%/A
Dropout Voltage	V_{DROP}	$I_{OUT} = 3A$, $V_{CC} = 5V$, $V_{OUT} = 1.2V$	-	250	360	mV
Enable High Level	V_{EN}	$V_{CC} = 5V$, $V_{EN} = 0V$, Sink=5mA	1.10	-	-	V
Disable Low Level	V_{SD}		-	-	0.30	V
Enable Source Current	I_{EN}	$V_{CC} = 5V$, $V_{EN} = 0V$	-	5	10	μA
Enable Pull High Resistor	R_{EN}		500K	-	-	ohm
Output Voltage Ramp Up Time	T_{SS}		0.60	1	2	mS
POK Threshold	V_{POKH}	V_{FB} Rising	-	92	-	%
	V_{POKL}	V_{FB} Falling	-	82	-	%
POK Sink Voltage	V_{POK}	Sinking Current = 5mA	-	--	0.40	V
POK Delay Time	T_{POKDE}	from $V_{OUT} > 92\%$ to POK Rising	1	2	4	mS
OCP Threshold Level	I_{OCP}		3.20	4.50	-	A
Under Voltage Threshold	V_{UVP}	V_{FB} Falling	-	0.15	-	V
Thermal Shutdown Temperature	T_{SD}		-	165	-	$^\circ C$
Thermal Shutdown Hysteresis	T_{SDHY}		-	30	-	$^\circ C$



TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = 5V$, $V_{CC} = 5V$, $V_{OUT} = 0.80V$, $C_{IN} = 10\mu F$, $C_{OUT} = 10\mu F$, $T_J = 25^\circ C$, unless otherwise noted.

Fig 1. VCC Power ON, IOUT=200mA

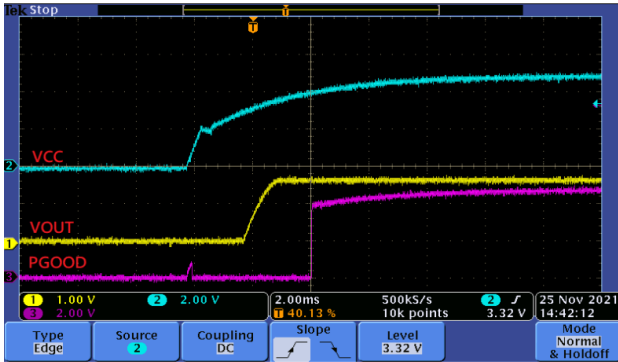


Fig 2. VIN Power ON, IOUT=200mA

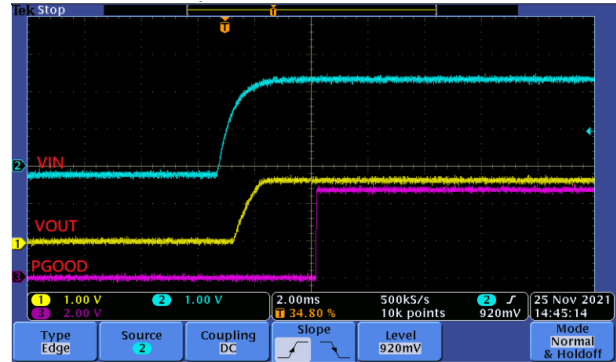


Fig 3. EN Power ON, IOUT=200mA

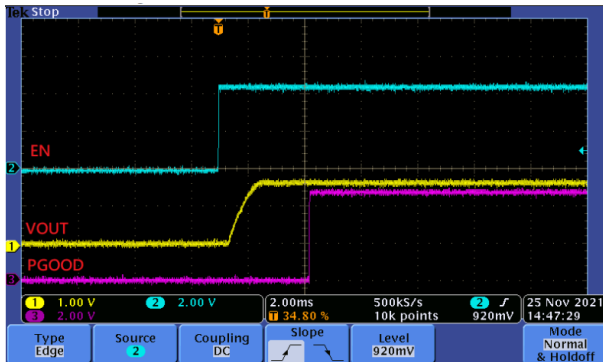


Fig 4. Load Transient, IOUT=0A to 3A

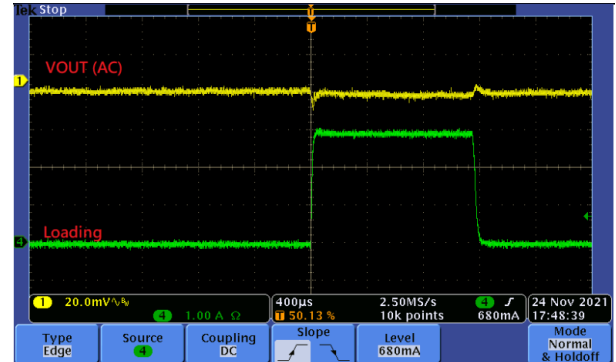


Fig 5. VOUT Short circuit

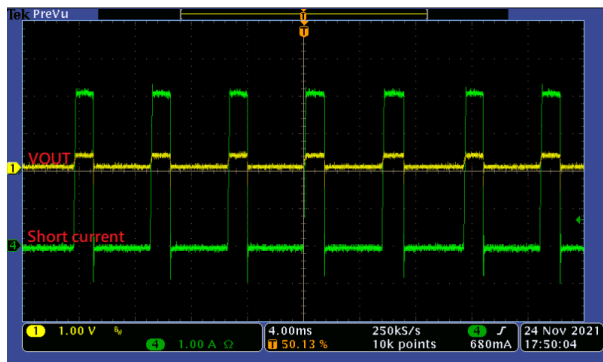


Fig 6. VDROPP vs. Output Current

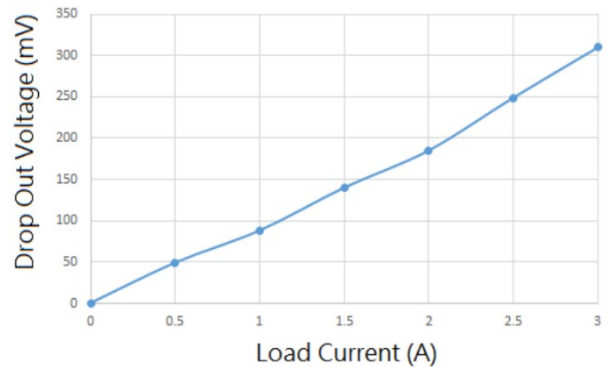




Fig 7. FB Voltage vs. Temperature

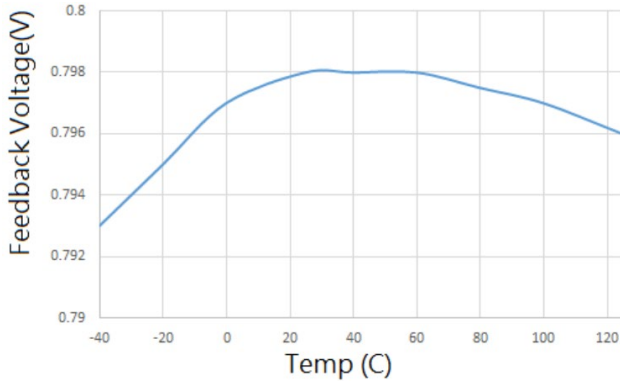
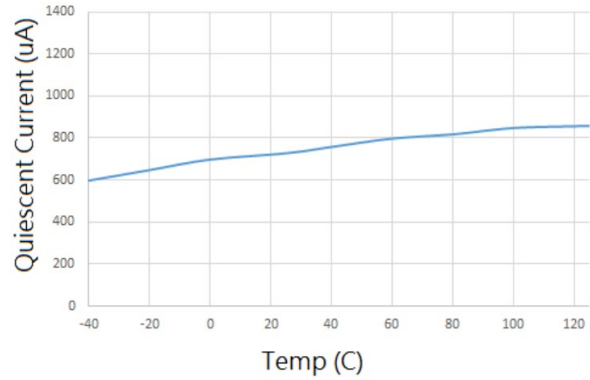
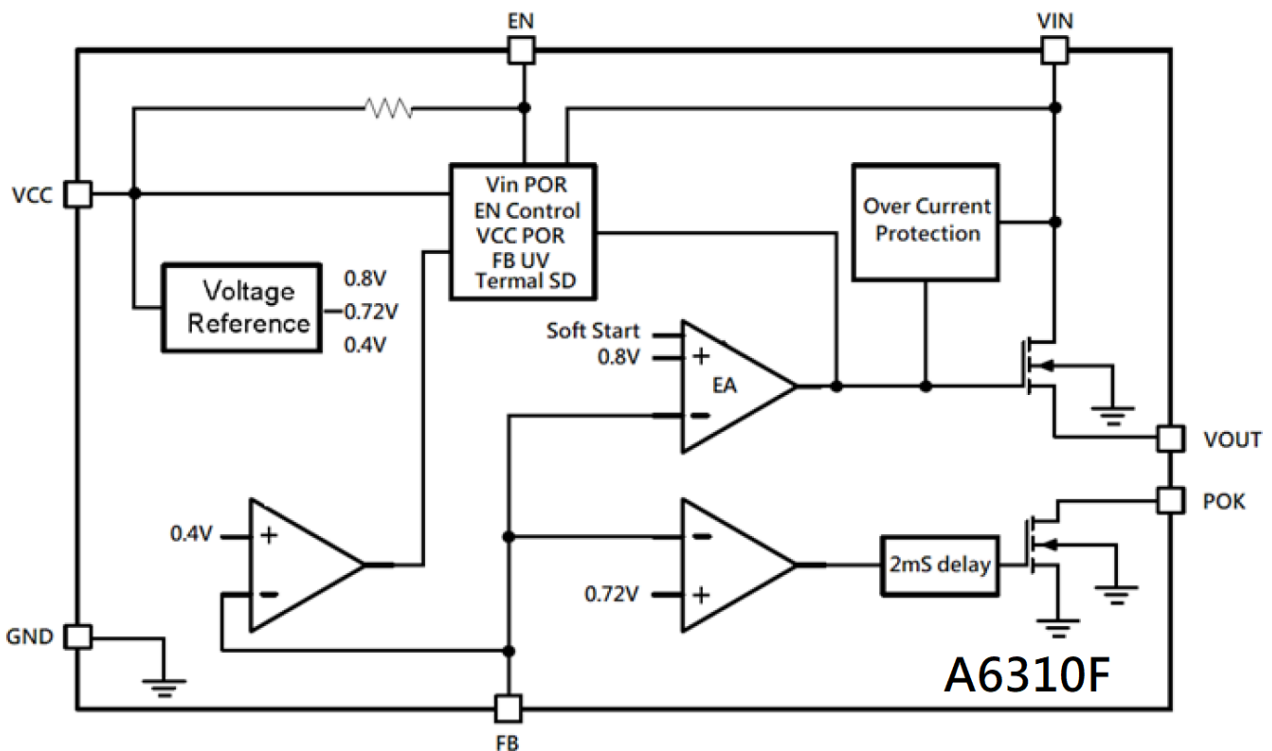


Fig 8. Quiescent Current vs. Temperature



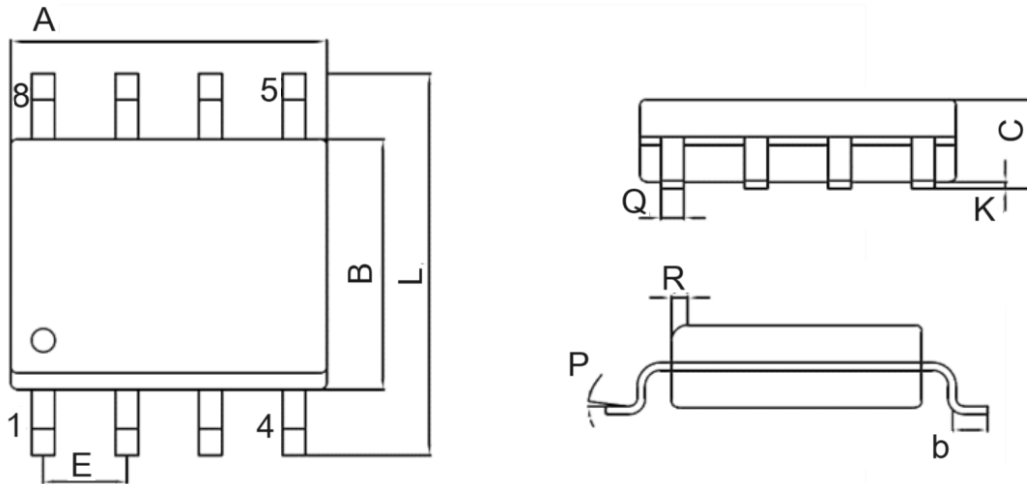
BLOCK DIAGRAM





PACKAGE INFORMATION

Dimension in PSOP8 (Unit: mm)



Symbol	MILLIMETERS	
	Min.	Max.
A	4.700	5.100
B	3.700	4.100
b	0.400	1.250
C	1.350	1.750
E	1.270 BSC.	
K	0.100	0.220
L	5.800	6.200
P	0°	7°
Q	0.350	0.490
R	0.300	0.600



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