ACP1224

600mA,Low Dropout Linear Regulator

GENERAL DESCRIPTION

ACP1224 is a 600mA positive voltage output, low power consumption, low dropout voltage regulator. It can provide output voltage adjustable from 0.8V to 5.0V. ACP1224 has high performance features including high accuracy voltage reference, error amplifier, current limit circuit and output driver module with discharge capability. ACP1224 has excellent line transient response and good temperature characteristics, which can assure the stability of power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.The device is available in common SOT25 package.

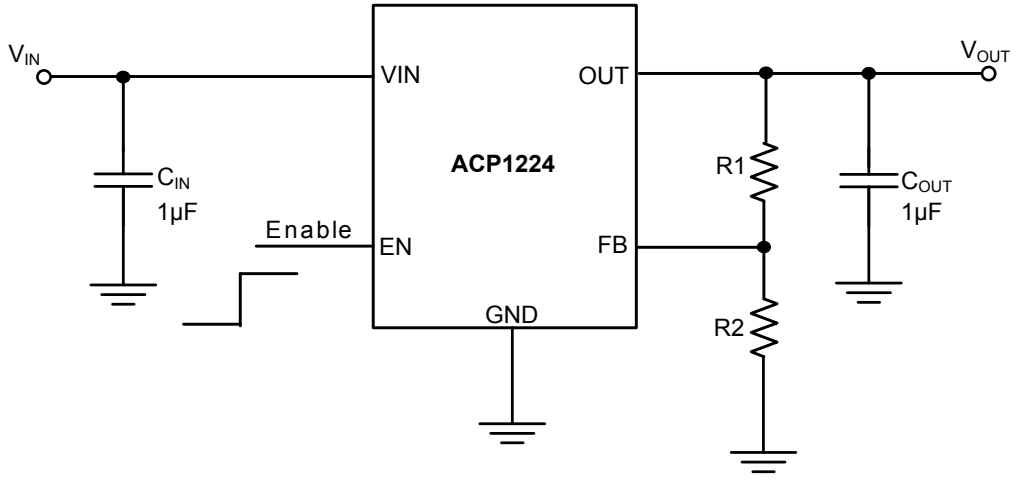
FEATURES

- 2.2~6.0V Input Voltage Range
- Adjustable 0.8~5.0V Output Voltage Range
- Maximum 100μA Low Power Consumption:
- 0.1μA Standby Mode Current
- Low Dropout Voltage:
  355mV@I_{OUT}=600mA,V_{OUT}=3.3V Typically
- Low Temperature Coefficient: ±100ppm/°C
- Build-in Discharge Circuit
- Output Voltage Accuracy: ±2%
- SOT25 Package

APPLICATION

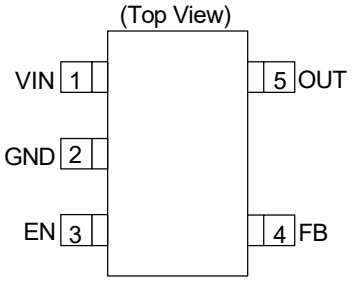
- Reference Voltage Source
- Regulation after Switching Power
- Battery Powered Equipment
- Data Communication

APPLICATION CIRCUIT



$$V_{OUT}=V_{FB}\{1+\frac{R1}{R2}\}\ \text{where}\ R2\le 80K\Omega$$

PIN CONFIGURATION

Pin Configuration	Pin Description		
SOT25	**Pin#**	**Symbol**	**Function**
	1	VIN	Power Input.
	2	GND	Ground
	3	EN	Enable Input.
	4	FB	Feedback Pin
	5	VOUT	Output Voltage

ORDERING INFORMATION

Standard Part NO.	Package	Packing	Min. Quantity
ACP1224-BAA	SOT25	Tape & Reel	3000PCS

ABSOLUTE MAXIMUM RATINGS(T_A = +25°C)

Symbol	Parameter	Rating	Unit
V_{IN}	Max Input Voltage	8	V
T_J	Junction Temperature	150	°C
I_{OUT}	Output Current	800	mA
T_A	Ambient Temperature	-40-+85	°C
P_D	Power Dissipation	400	W
T_S	Storage Temperature	-40-+150	°C
T_L	Lead Temperature	260	°C

RECOMMENDED WORK CONDITIONS

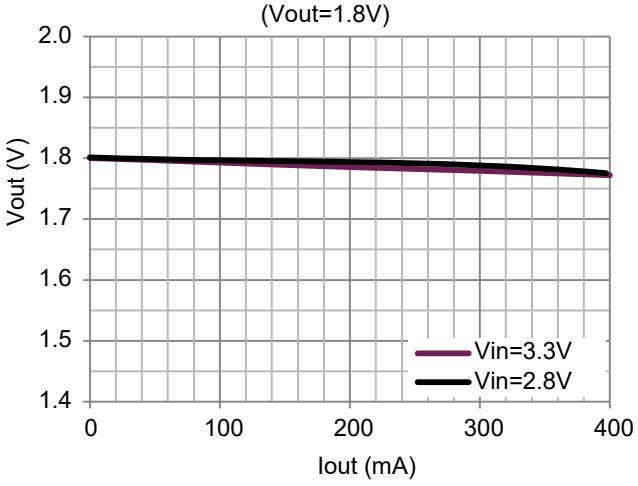
V_{IN}	Input Voltage Range	2.2-6	V
T_A	Ambient Temperature	-40-+85	°C

ELECTRICAL CHARACTERISTICS(T_A = +25°C)

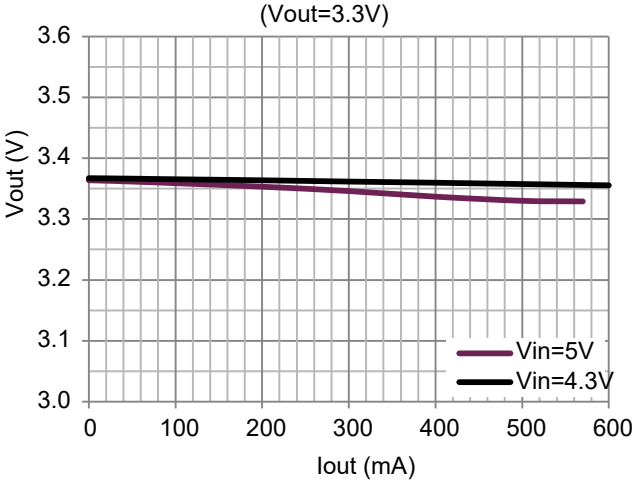
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Voltage	V_{IN}		2.2		6	V
Regulated Feedback Voltage	V_{FB}	V_{IN}=5V, I_{OUT}=10mA	0.784	0.8	0.816	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V		600		mA
Dropout Voltage	V_{DROP}*	V_{OUT}=1.8V,I_{OUT}=600mA		1050	1500	mV
		V_{OUT}=2.5V,I_{OUT}=600mA		550	900	
		V_{OUT}=3.3V,I_{OUT}=600mA		355	500	
Line Regulation	$\frac{\triangle V_{OUT}}{\triangle V_{IN}\cdot\triangle V_{OUT}}$	I_{OUT}=10mA, 2.2V≤V_{IN}≤6V		0.05	0.2	%/V
Load Regulation	$\triangle V_{OUT}/I_{OUT}$	V_{IN}=4.3V, V_{OUT}=3.3V 0mA≤ I_{OUT}≤ 600mA		50	80	mV
Supply Current	I_Q	V_{IN}=V_{OUT}+1V		40	100	μA
Supply Current	$I_{STANDBY}$	V_{IN}=V_{OUT}+1V, V_{EN}=GND		0.1	1	μA
Output Voltage Temperature Coefficiency		I_{OUT}=10mA		±100		ppm/°C
Ripple Rejection	PSRR	F=1KHz, Ripple=1Vp-p V_{IN}=V_{OUT}+1V		58		dB
Current Limit	I_{LIM}	V_{IN}=4.3V, V_{OUT}=3.3V		0.93	1.2	A
Short Current Limit	I_{SHORT}	V_{OUT}=0V		200		mA
Discharge Resistor	$R_{DISCHARGE}$	EN=0, VOUT=3V		280		ohm
EN Input Voltage “H”	V_{ENH}		1.3		V_{IN}	V
EN Input Voltage “L”	V_{ENL}		0		0.35	V
Thermal Shutdown Temp	T_{SD}			160		°C
Thermal Shutdown Hysteresis	T_{SH}			30		°C

PERFORMANCE CHARACTERISTIC

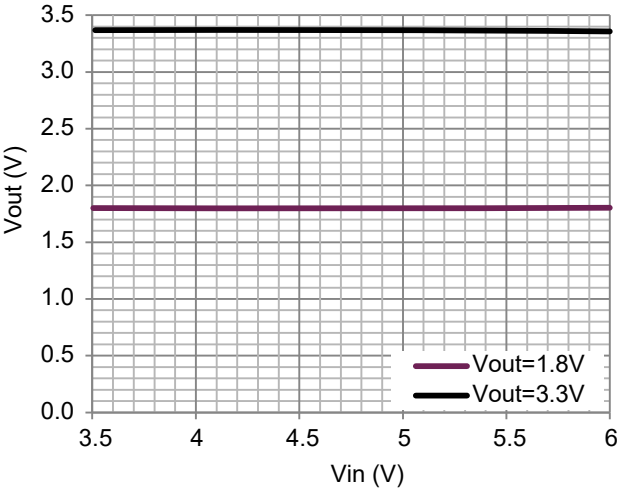
Load Regulation
(Vout=1.8V)



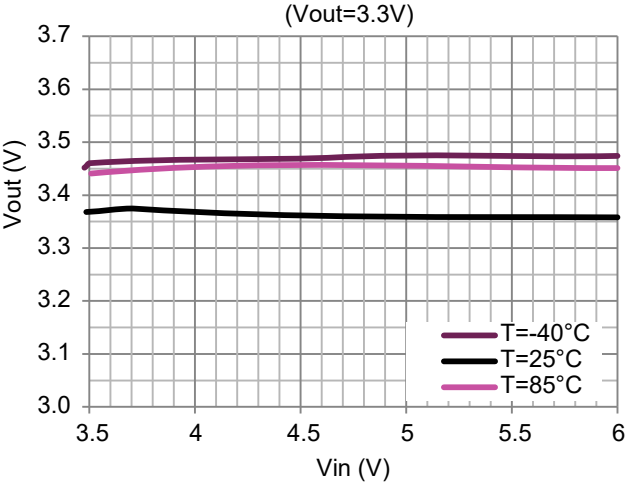
Load Regulation
(Vout=3.3V)



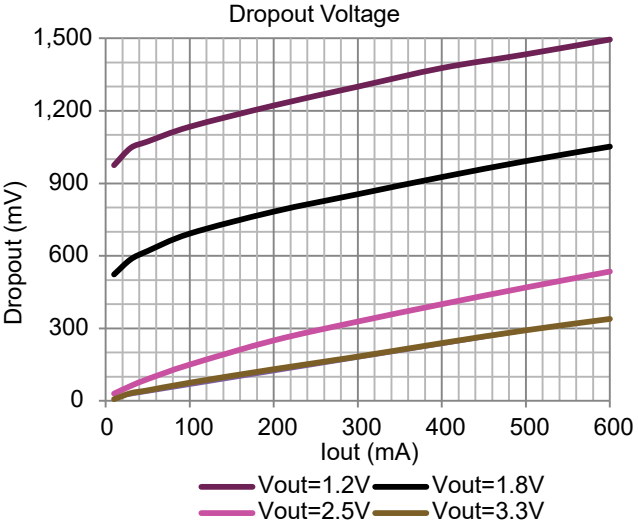
Line Regulation



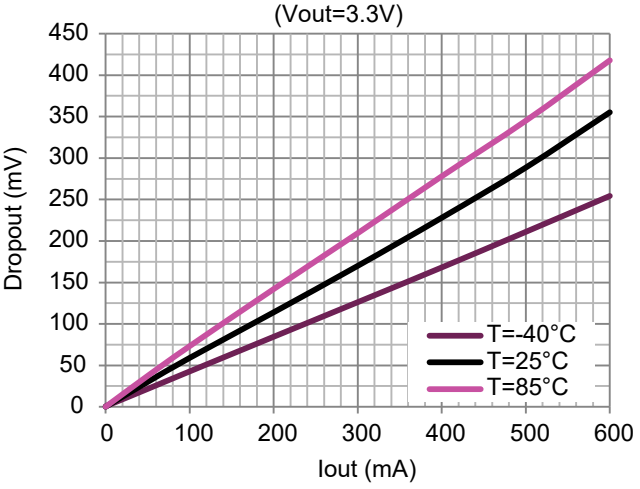
Line Regulation
(Vout=3.3V)



Dropout Voltage

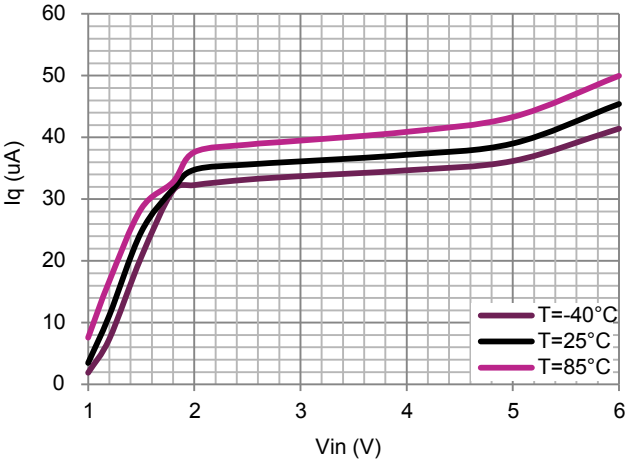


Dropout Voltage vs. Temp
(Vout=3.3V)

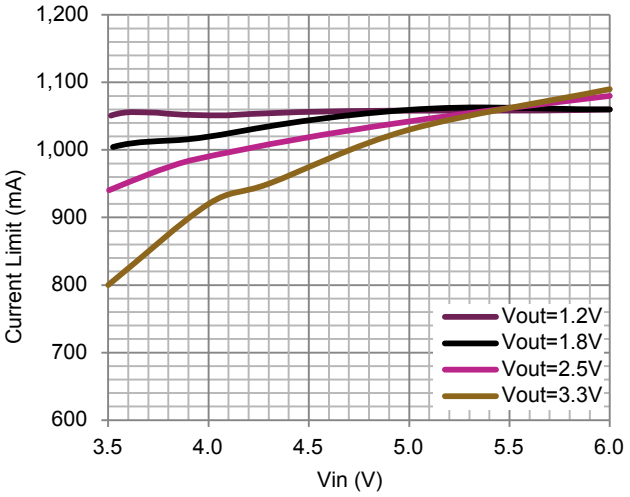


PERFORMANCE CHARACTERISTIC (Continued)

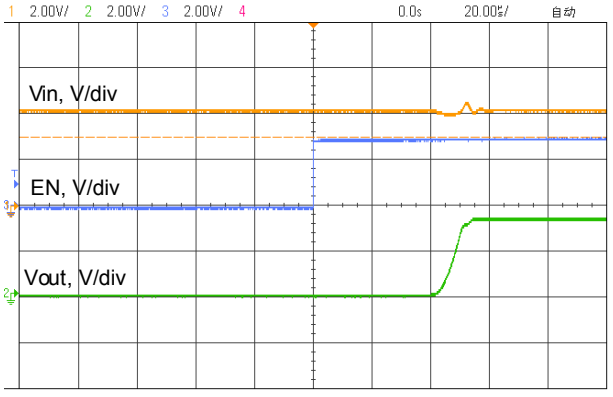
Iq
(Vout=1.8V)



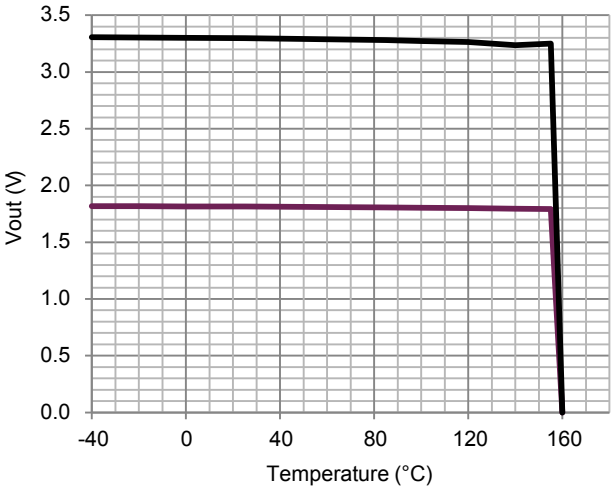
Current Limit vs. VIN



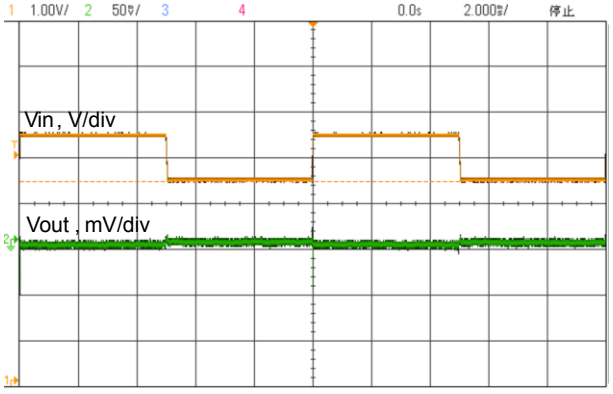
ENChip Enable Response
(Orange: Vin; Blue:EN Green Vout)



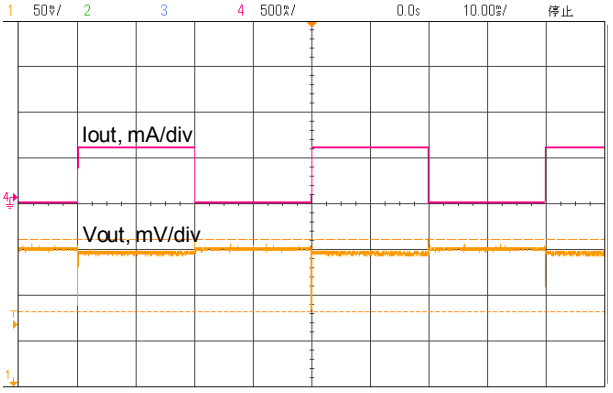
Vout vs. Temperature



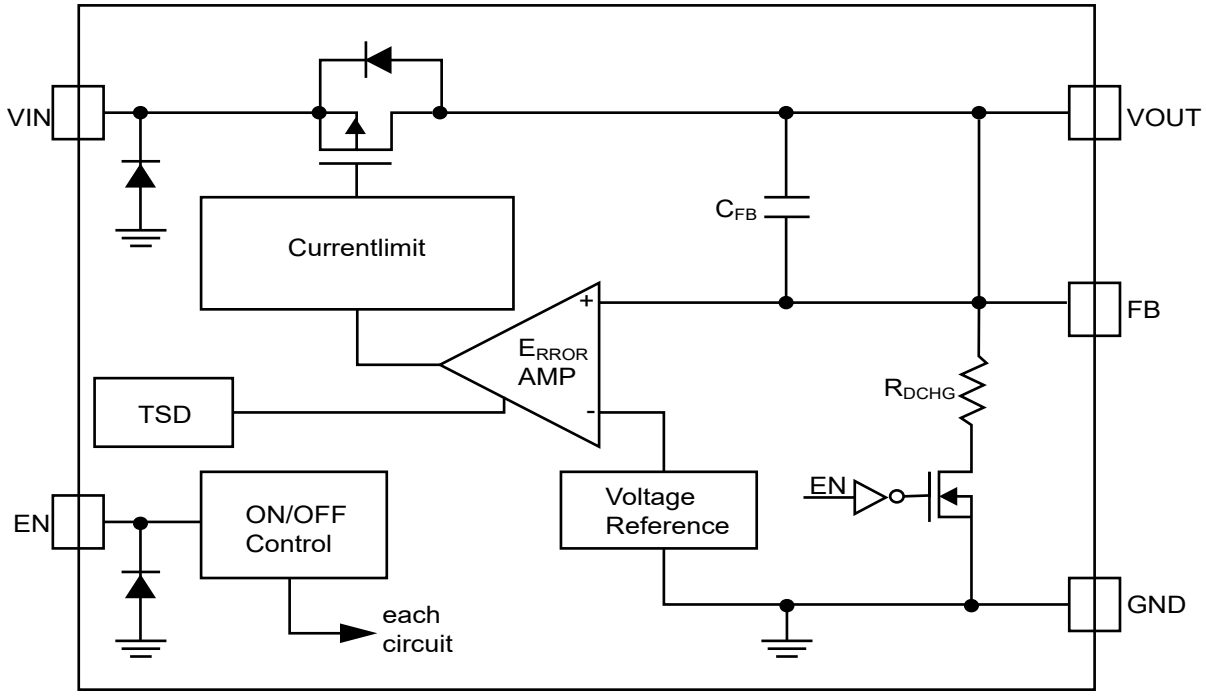
Line Transient Response
Vout=3.3V, Iout=10mA
Trise=1uS, Tfall=1uS, Vout p-p=78mV
(Orange: Vin; Green: Vout)



Load Transient Response
Vin=4.3V, Vout=3.3V, Iout=10-600mA
Trise=1uS, Tfall=1uS , Vout p-p=74mV
(Pink:Iout ; Orange: Vout)

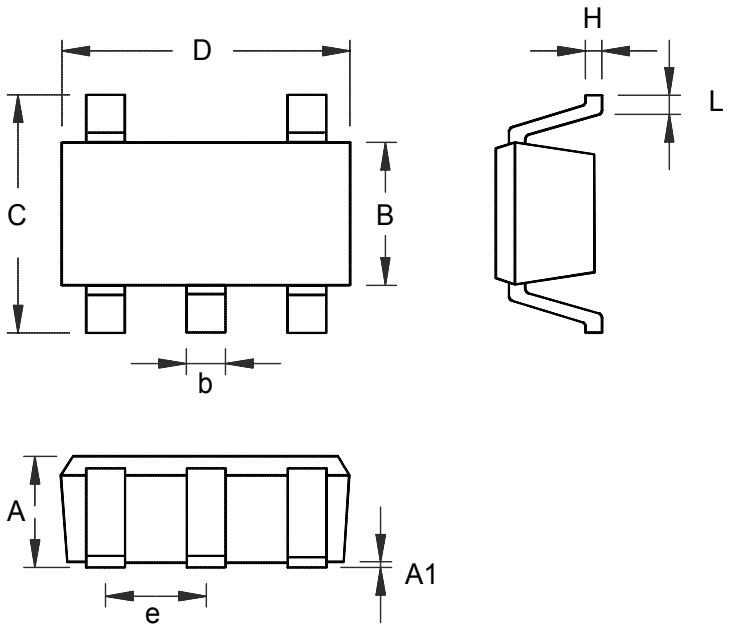


FUNCTION BLOCK



PACKAGE INFORMATION

- **SOT25**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.0.35	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024