DESCRIPTION

The A6307 is designed for portable RF and wireless applications with demanding performance and space requirements. The A6307 performance is optimized for battery-powered systems to deliver ultra low noise and low quiescent current. A noise bypass pin is available for further reduction of output noise. Regulator ground current increases only slightly in dropout, further prolonging the battery life. The A6307 also works with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications, critical in hand-held wireless devices. The A6307 consumes less than 0.01A in shutdown mode and has fast turn-on time less than 50s. The other features include ultra low dropout voltage, high output accuracy, current limiting protection, short-load protection, and high ripple rejection ratio.

The A6307 are available in SOT-25 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 3,000pcs/Reel	E5	A6307E5R-XX
		A6307E5VR-XX
Note	XX: Output Voltage V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

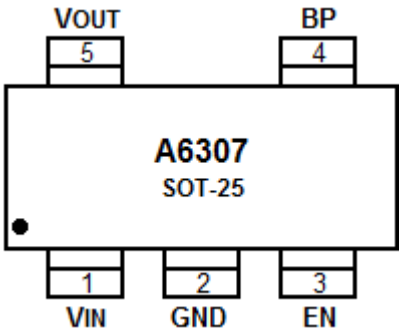
FEATURES

- Ultra-Low-Noise for RF Application
- Ultra-Fast Response in Line/Load Transient
- Quick Start-Up (Typically 50μs)
- < 0.01μA Standby Current When Shutdown
- Low Dropout : 300mV @ 100mA
- Output Voltage Range :1.0V to 5.0V (selectable in100mV steps)
- TTL-Logic-Controlled Shutdown Input
- Low Temperature Coefficient
- Current Limiting Protection
- Thermal Shutdown Protection
- Only 1μF Output Capacitor Required for Stability
- High Power Supply Rejection Ratio: 70dB (1kHz)
- Custom Voltage Available
- Available in SOT-25 Package

APPLICATION

- CDMA/GSM Cellular Handsets
- Battery-Powered Equipment
- Laptop, Palmtops, Notebook Computers
- Hand-Held Instruments
- PCMCIA Cards

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V_{IN}	Supply Power
2	GND	Ground
3	EN	Enable Pin
4	BP	Bypass
5	V_{OUT}	Voltage Output

ABSOLUTE MAXIMUM RATINGS

V_{IN}, Input Voltage		V_{SS}-0.3V ~ V_{SS}+8V
$V_{ON/OFF}$, Input Voltage		V_{SS}-0.3V ~ V_{IN}+0.3V
V_{OUT}, Output Voltage		V_{SS}-0.3V ~ V_{IN}+0.3V
P_D, Power Dissipation	SOT-25	400mW
T_{OPR}, Operating Ambient Temperature		-40°C ~ +85°C
T_{STG}, Storage Temperature		-40°C ~ +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.

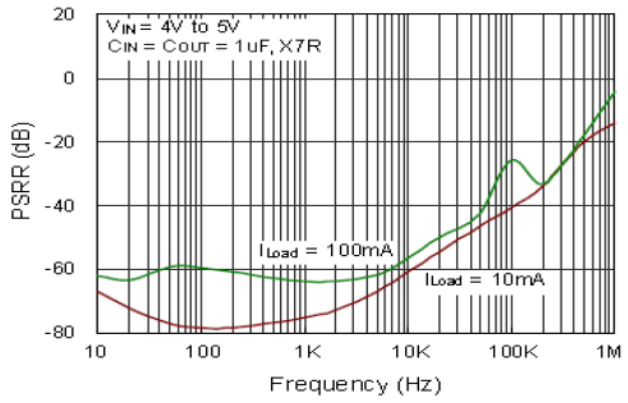
ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Circuit
Output Voltage	$V_{OUT(E)}$	V_{IN} = $V_{OUT(S)}$ + 1.0V, I_{OUT} = 30mA	$V_{OUT(S)}$ × 0.98	$V_{OUT(S)}$	$V_{OUT(S)}$ × 1.02	V	1
Output Current	I_{OUT}	V_{IN} ≥ $V_{OUT(S)}$ + 1.0V	300	-	-	mA	1
Dropout Voltage	V_{DROP}	I_{OUT} = 50mA	-	0.10	0.16	V	1
		I_{OUT} = 100mA	-	0.20	0.3		
Line Regulations	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \times V_{OUT}}$	$V_{OUT(S)}$+ 0.5V ≤ V_{IN} ≤ 6V, I_{OUT} = 30mA	-	0.10	0.3	%/V	
Load Regulation	ΔV_{OUT2}	V_{IN} = $V_{OUT(S)}$ + 1.0V, 1.0mA ≤ I_{OUT} ≤ 100mA	-	50	100	mV	
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T_A \times V_{OUT}}$	V_{IN} = $V_{OUT(S)}$ + 1.0V, I_{OUT} = 10mA, -40°C ≤ T_A ≤ 85°C	-	±100	-	ppm/°C	
Supply Current	I_{SS1}	V_{IN} = $V_{OUT(S)}$ + 1.0V	-	70	-	μA	2
Input Voltage	V_{IN}		2.0	-	6	V	-
Ripple-Rejection	|PSRR|	V_{IN} = $V_{OUT(S)}$ + 1.0V, f = 10kHz, V_{RIP} = 0.5Vrms, I_{OUT} = 50mA	-	50	-	dB	1
		V_{IN} = $V_{OUT(S)}$ + 1.0V, f = 100Hz, V_{RIP} = 0.5Vrms, I_{OUT} = 50mA	-	70	-		
Short-Circuit Current	I_{SHORT}	V_{IN} = $V_{OUT(S)}$ + 1.0V, V_{CE} on V_{OUT} = GND	-	40	-	mA	1
CE "High" Voltage	V_{CEH}		1.3	-	V_{IN}	V	1
CE "Low" Voltage	V_{CEL}		-	-	0.4	V	1
CE "High" Current	I_{CEH}	V_{IN} = V_{CE} = $V_{OUT(T)}$ + 1.0V	-0.1	-	0.1	μA	2
CE "Low" Current	I_{CEL}	V_{IN} = $V_{OUT(T)}$ + 1.0V, V_{CE} = V_{SS}	-0.1	-	0.1	μA	2

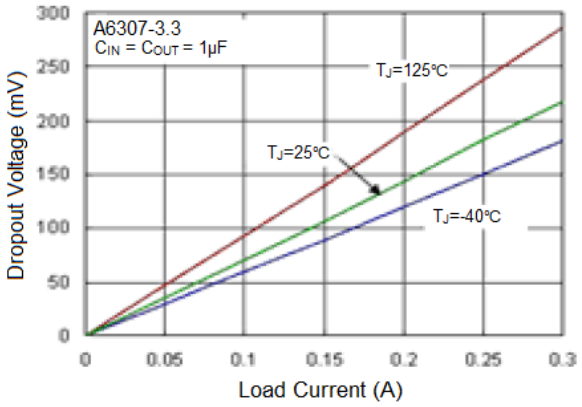
TYPICAL PERFORMANCE CHARACTERISTICS

3.0V Output

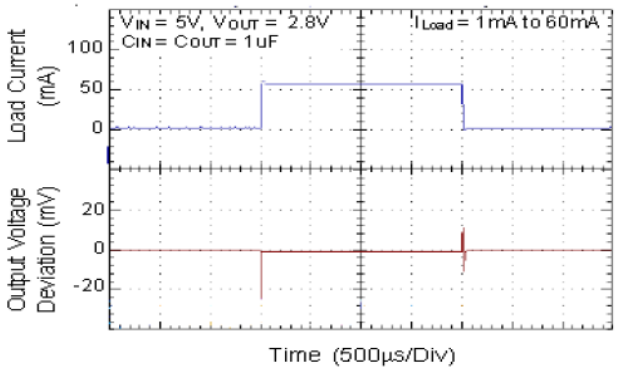
1. PSRR vs. Frequency



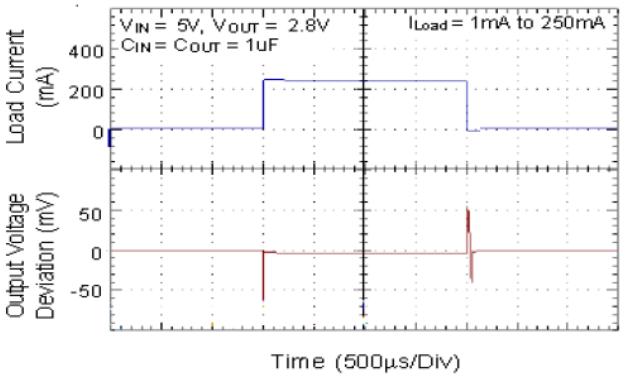
2. Dropout Voltage vs. Load Current



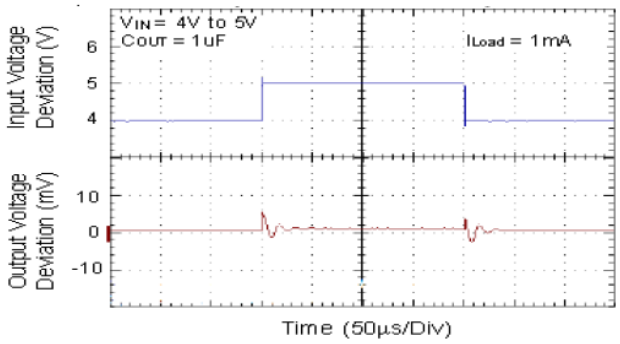
3. Load Transient Response



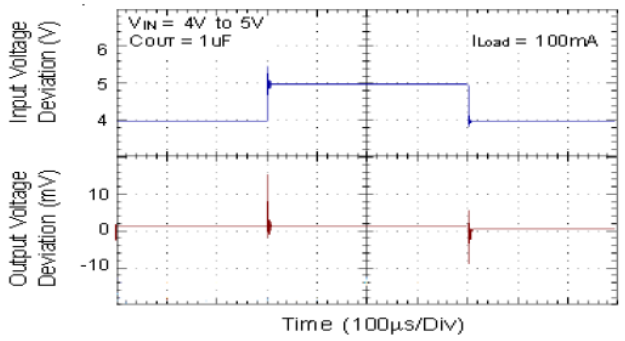
Load Transient Response



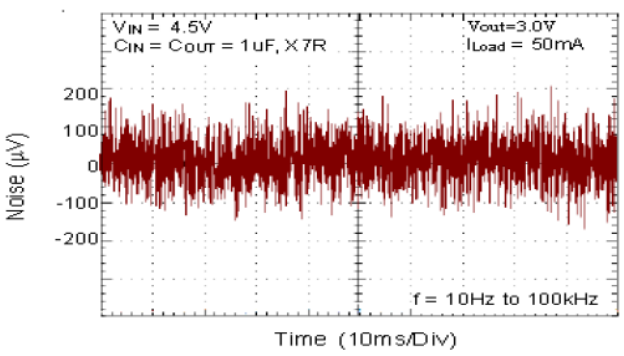
4. Line Transient Response



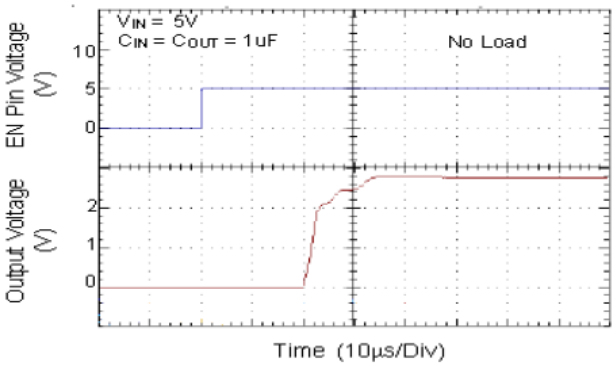
Line Transient Response



5. Noise

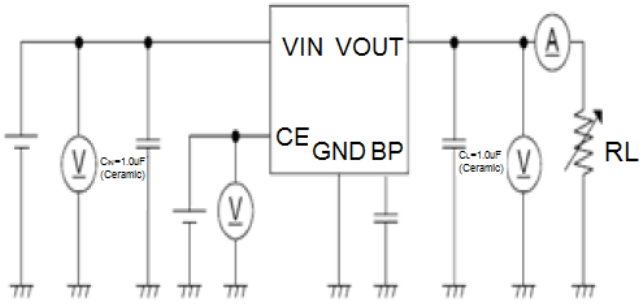


6. Start Up

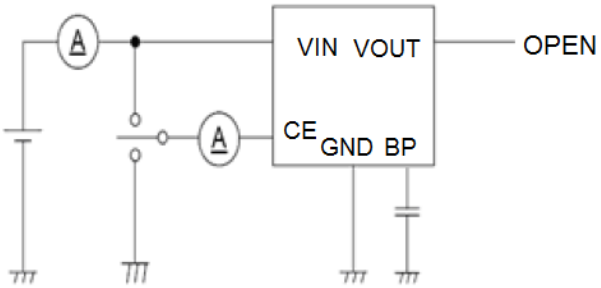


TEST CIRCUIT

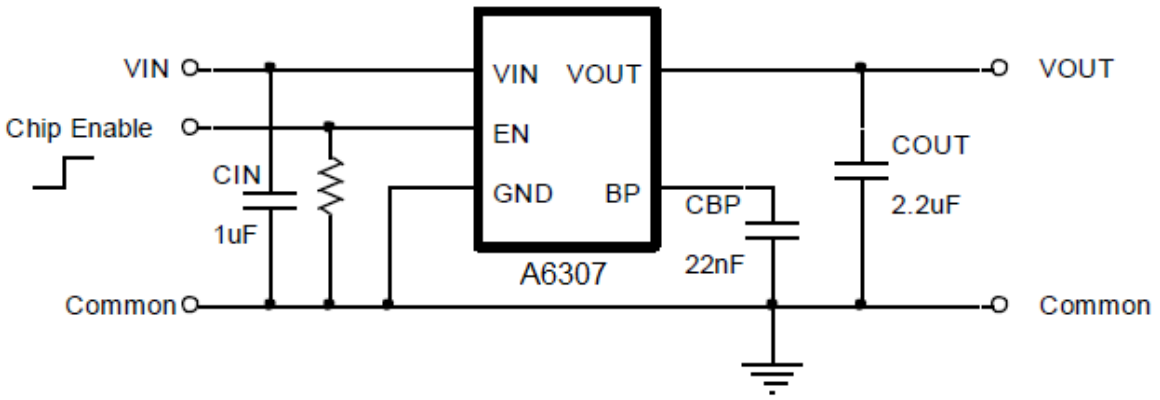
1. Test circuits



2. Test circuits



TYPICAL APPLICATION CIRCUIT



Caution: The above connection diagram and constant will not guarantee successful operation. Perform thorough evaluation using the actual application to set the constant.

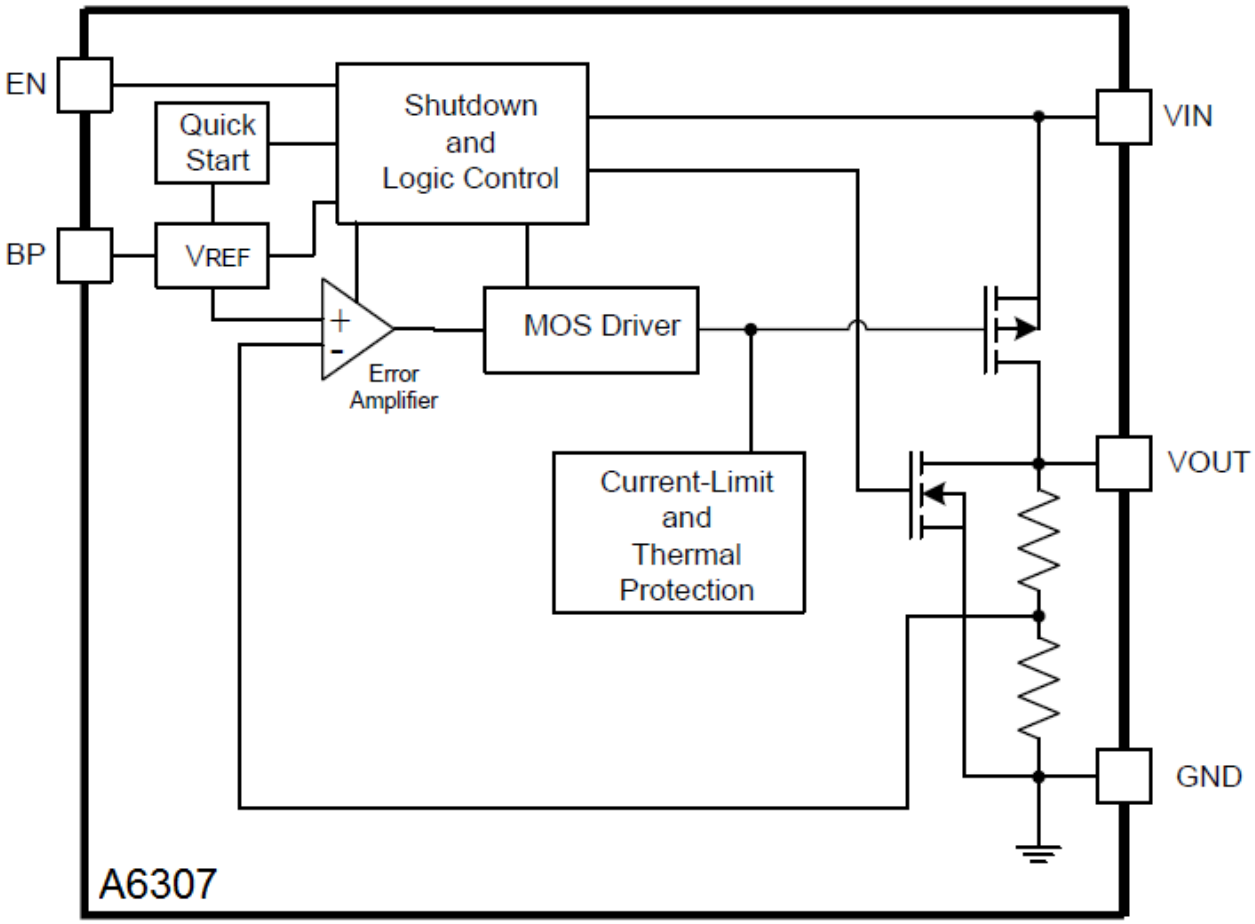
APPLICATION CONDITIONS

Input capacitor (C_{IN}): 1.0μF or more

Output capacitor (C_L): 2.2μF or more (tantalum capacitor)

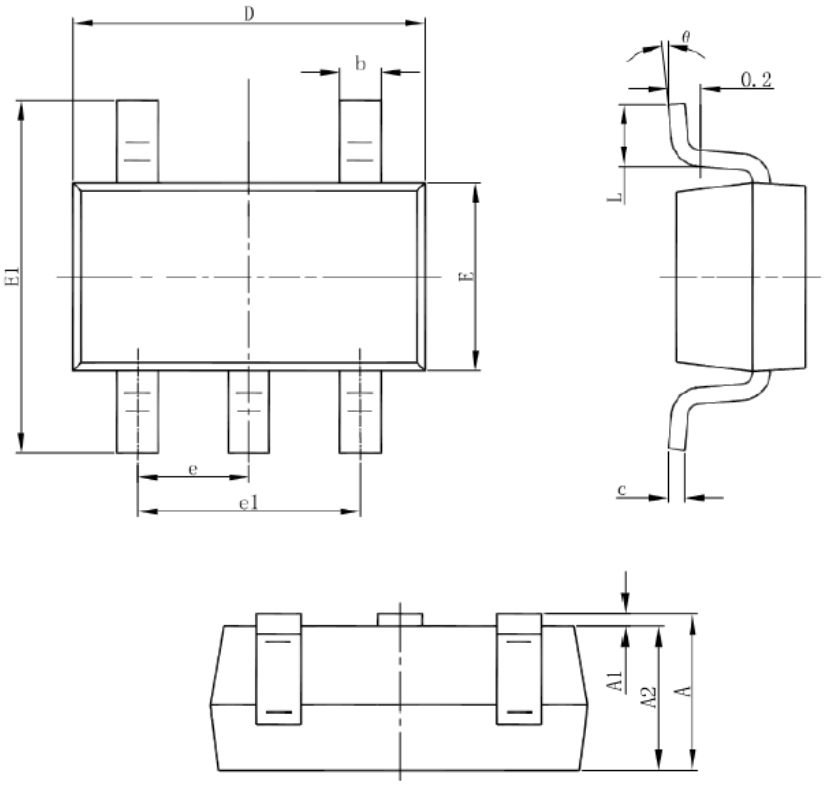
Caution: A general series regulator may oscillate, depending on the external components selected. Check that without oscillation occurs with the application using the above capacitor.

BLOCK DIAGRAM



PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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