



DESCRIPTION

A6306 series is a group of positive voltage output, low power consumption, low dropout voltage regulator. A6306 can provide output value in the range of 1.0V~4.4V every 0.1V step. It also can be customized on command.

A6306 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

A6306 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

The A6306 is available in DFN4(1x1) packages.

ORDERING INFORMATION

Package Type	Part Number	
DFN4	J4	A6306J4R-XX
		A6306J4VR-XX
Note	R: Tape & Reel XX: Output Voltage V: Halogen free Package	
AiT provides all RoHS products Suffix "V" means Halogen free Package		

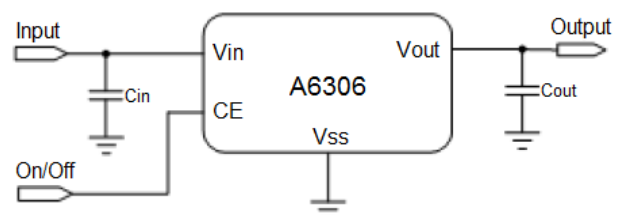
FEATURES

- Low Power Consumption: 25uA (Typ.)
- Low output noise (47uV_{RMS})
- Standby Mode: 0.1uA
- Low dropout Voltage: 360mV@300mA (Typ.)
- High Ripple Rejection: 74dB@100Hz (Typ.)
- Low Temperature Coefficient: $\pm 100\text{ppm}/^\circ\text{C}$
- Excellent Line regulation: 0.05%/V
- Build-in chip enable circuit
- Output Voltage Range: 1.0V~4.4V
(customized on command every 0.1V step)
- Highly Accurate: $\pm 2\%$
- Output Current Limit
- Available in DFN4 Packages

APPLICATION

- Power source for cellular phones and various kind of PCSs
- Battery Powered equipment
- Power Management of MP3, PDA, DSC, Mouse, PS2 Games
- Reference Voltage Source
- Regulation after Switching Power

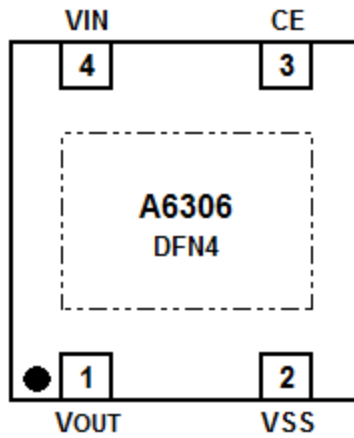
TYPICAL APPLICATION



NOTE: Input capacitor ($C_{IN}=1\mu\text{F}$) and Output capacitor ($C_{OUT}=1\mu\text{F}$) are recommended in all application circuit.



PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V _{OUT}	Output Voltage
2	V _{SS}	Ground Pin
3	CE	Chip Enable
4	V _{IN}	Supply Voltage Input



ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	8V
T _J , Operating Junction Temperature	125°C
Output Current	300mA
T _A , Ambient Temperature	-40°C - 85°C
Power Dissipation	600mW
T _S , Storage Temperature	-40°C -150°C
Lead Temperature & Time	260°C,10S

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.

NOTE: Heat Sink Area of PCB for DFN4 is recommended at least 2.5mmx4mm.

Exceed these limits to damage to the device.

Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Min	Max	Units
Input Voltage Range	2	6	V
Ambient Temperature	-40	85	°C



ELECTRICAL CHARACTERISTICS

$C_{IN}=1\mu F, C_{OUT}=1\mu F, T_A=25^\circ C$, unless otherwise specified.

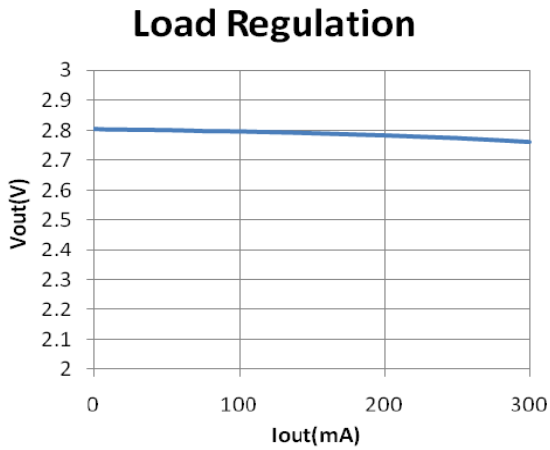
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}		2		6	V
Output Voltage	V_{OUT}	$V_{IN}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 30mA$	V_{OUT} $\times 0.98$	V_{OUT}	V_{OUT} $\times 1.02$	V
			V_{OUT} -0.03		V_{OUT} $+0.03$	
Maximum Output Current	$I_{OUT(MAX)}$	$V_{IN}-V_{OUT}=1V$	300			mA
Dropout Voltage, $V_{OUT} \geq 2.8V$	V_{DROP}^{NOTE1}	$I_{OUT}=100mA$		115	200	mA
		$I_{OUT}=300mA$		360	420	mA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$I_{OUT}=40mA$ $2.8V \leq V_{IN} \leq 6V$		0.05	0.2	%/V
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 300mA$		60	100	mV
Supply Current	I_{SS}	$V_{IN}=\text{Set } V_{OUT}+1V$		25	50	μA
Supply Current (Standby)	$I_{STANDBY}$	$V_{IN}=\text{Set } V_{OUT}+1V$ $V_{CE}=V_{SS}$		0.1	1.0	μA
Output Voltage Temperature Coefficiency	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	$I_{OUT}=30mA$		± 100		ppm/ $^\circ C$
Ripple Rejection	PSRR	$F=100Hz,$ Ripple=0.5V _{P-P} $V_{IN}=\text{Set } V_{OUT}+1V$		74		dB
Current Limit	I_{LIM}			500		mA
CE Input Voltage "H"	V_{CEH}		1.5		V_{IN}	V
CE Input Voltage "L"	V_{CEL}		0		0.25	V
Output Noise	e_n	BW=10Hz~100kHz		47		μV_{RMS}

NOTE: $V_{DROP}=V_{IN1}-(V_{OUT2} \times 0.98)$ V_{OUT2} is the output voltage when $V_{IN}=V_{OUT1}+1.0V$ and $I_{OUT}=300mA$. V_{IN1} is the input voltage at which the output voltage becomes 98% of V_{OUT1} after gradually decreasing the input voltage.

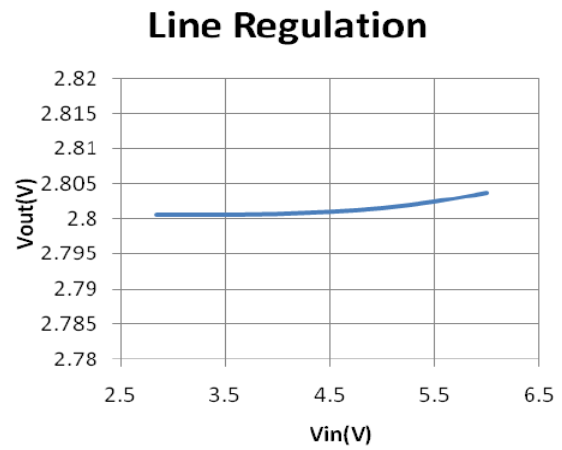


TYPICAL PERFORMANCE CHARACTERISTICS

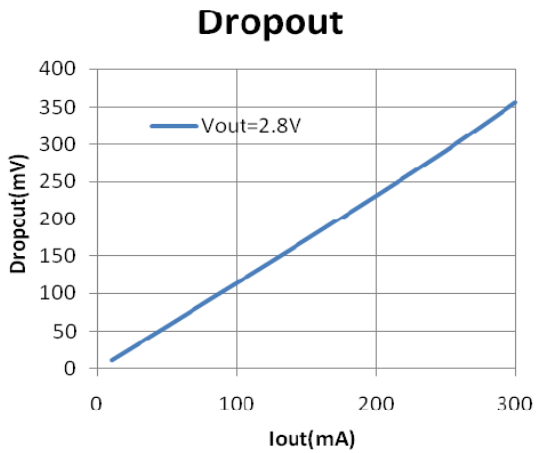
1. Output Voltage vs. Output Current



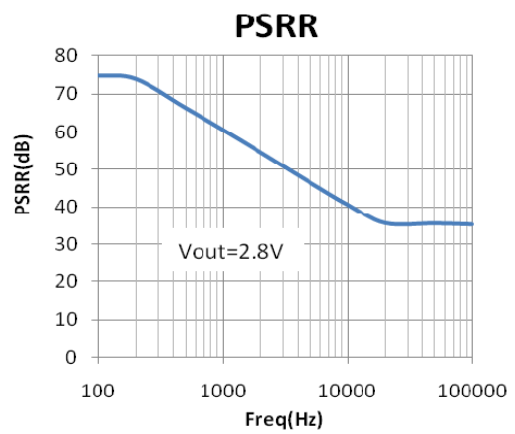
2. Output Voltage vs. Input Voltage



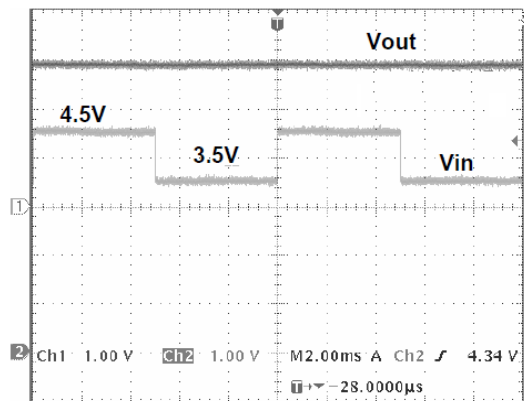
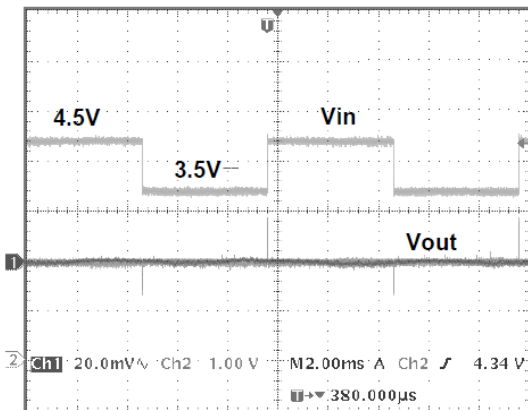
3. Dropout Voltage vs. Output Current



4. Ripple rejection vs. Frequency

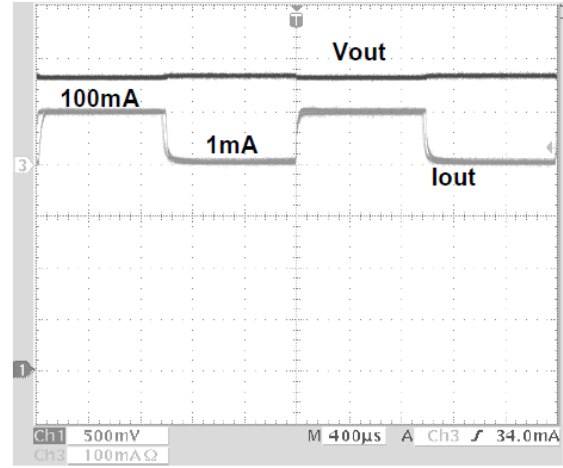
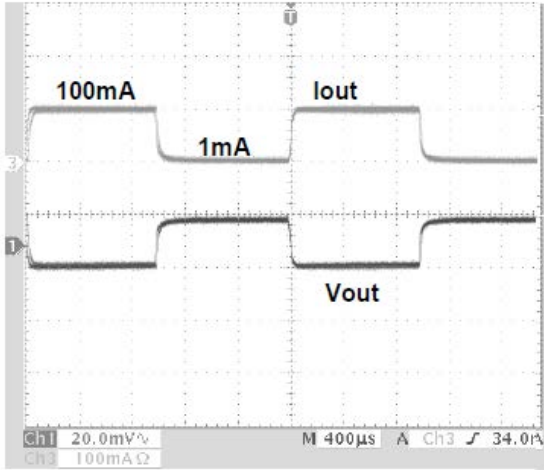


5. Line transient response, C_{IN}=C_{OUT}=1uF, I_{OUT}=10mA, V_{OUT}=2.8V

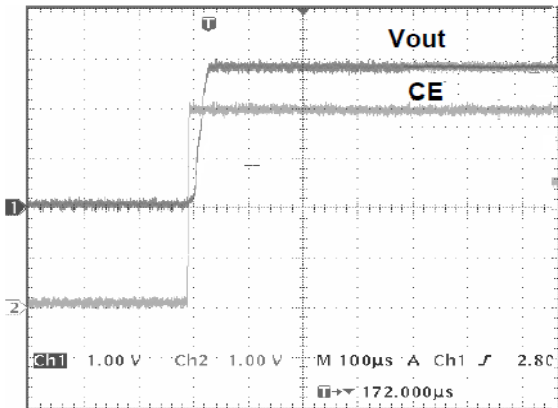




6. Load transient response, $C_{IN}=C_{OUT}=1\mu F, V_{IN}=4.0V, V_{OUT}=2.8V$

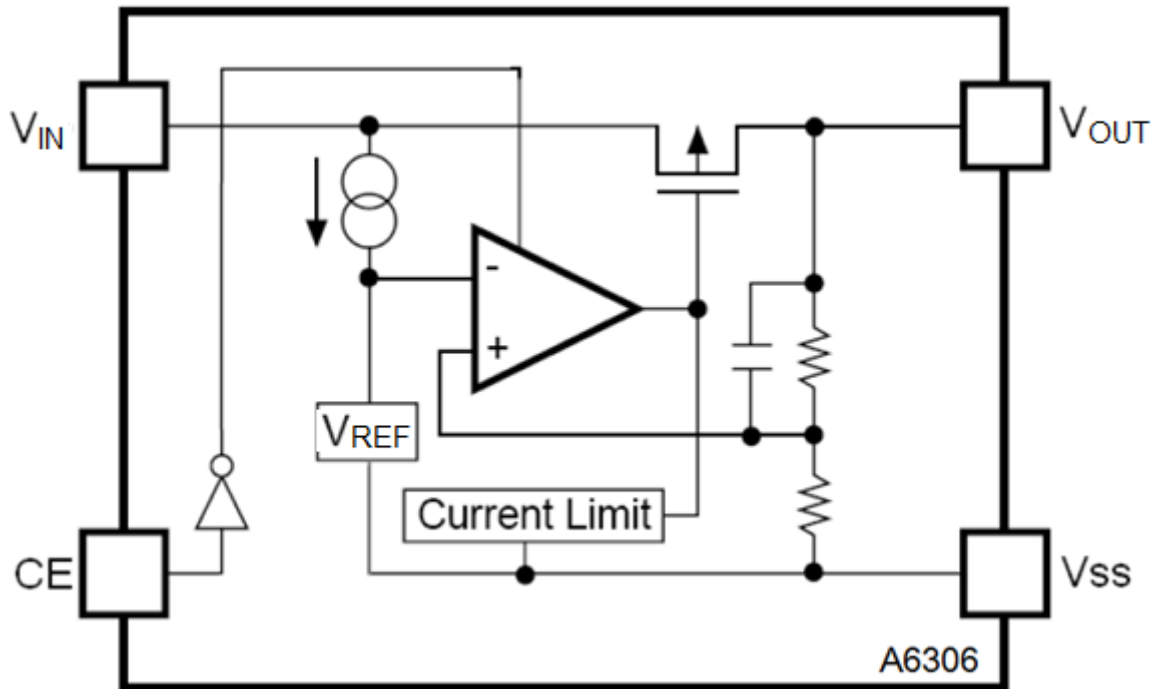


7. Start up from CE





BLOCK DIAGRAM





DETAILED INFORMATION

A6306 series is a group of positive voltage output, low noise, low power consumption, low dropout voltage regulator.

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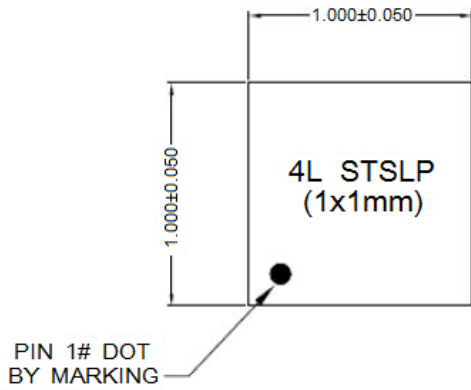
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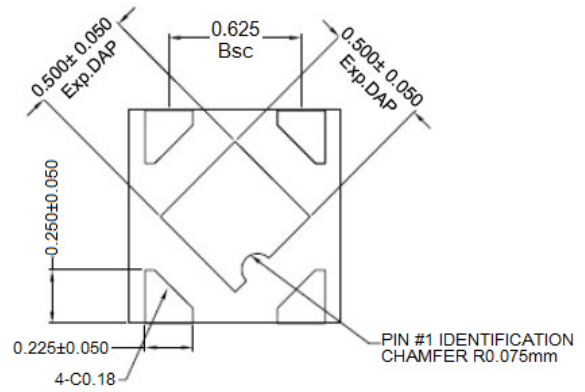


PACKAGE INFORMATION

Dimension in DFN4(1x1) (Unit: mm)



TOP VIEW

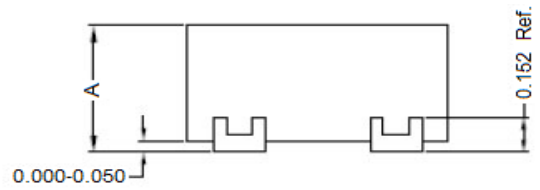


BOTTOM VIEW

NOTE:

1) 'A' DIMENSION AS BELOW TABLE

A	STSLP	
	MAX.	0.600
	NOM.	0.550
MIN.	0.500	



SIDE VIEW



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