



DESCRIPTION

The A6304A series are highly precise, low noise, positive voltage LDO regulators manufactured using CMOS processes. The series achieves high ripple rejection and low dropout and consists of a standard voltage source, an error correction, current limiter and a phase compensation circuit plus a driver transistor. Output voltage is selectable in 100mV increments within a range of 1.5V~5.0V. The series is also compatible with low ESR ceramic capacitors which give added output stability. This stability can be maintained even during load fluctuations due to the excellent transient response of the series.

The current limiter's feedback circuit also operates as a short protect for the output current limiter and the output pin. The EN function enables the output to be turned off, resulting in greatly reduced power consumption.

The A6304A are available in SOT-25 and SC70-5 packages.

ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ : 3,000pcs/Reel	E5	A6304AE5R-XX
		A6304AE5VR-XX
SC70-5 SPQ : 3,000pcs/Reel	C5	A6304AC5R-XX
		A6304AC5VR-XX
Note	XX: Output Voltage V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

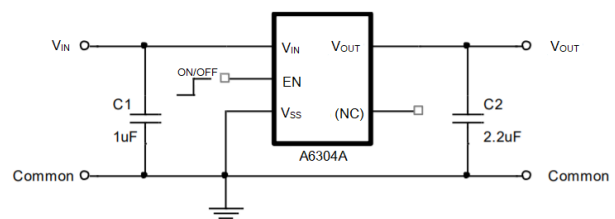
FEATURES

- Output Voltage Range: 1.0V to 5.0V (selectable in 100mV steps)
- Highly Accurate: $\pm 2\%$
- Dropout Voltage: 300mV @ 100mA (3.0V type)
- High Ripple Rejection 70dB (10kHz)
- Low Power Consumption: 70 μ A (TYP.)
- Maximum Output Current: 300mA
- Standby Current less than: 2 μ A
- Internal protector: current limiter
- Internal discharge MOS
- Available in SOT-25 and SC70-5 packages

APPLICATION

- Mobile phones
- Cordless phones
- Cameras, Video cameras
- Portable games
- Portable AV equipment
- Reference voltage
- Battery powered equipment

TYPICAL APPLICATION



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



PIN DESCRIPTION

<p style="text-align: center;">Top View</p>		<p style="text-align: center;">Top View</p>	
Pin #		Symbol	Function
SOT25	SC70-5		
1	1	V _{IN}	Supply Power
2	2	V _{SS}	Ground
3	3	EN	Enable Pin
4	4	NC	NC
5	5	V _{OUT}	Voltage Output



ABSOLUTE MAXIMUM RATINGS

V_{IN} , Input Voltage	$V_{SS}-0.3V \sim V_{SS}+8V$	
$V_{ON/OFF}$, Input Voltage	$V_{SS}-0.3V \sim V_{IN}+0.3V$	
V_{OUT} , Output Current	$V_{SS}-0.3V \sim V_{IN}+0.3V$	
P_D , Power Dissipation	SOT-25 /SC70-5	250mW
T_{OPR} , Operating Ambient Temperature	$-40^{\circ}C \sim +85^{\circ}C$	
T_{STG} , Storage Temperature	$-40^{\circ}C \sim +125^{\circ}C$	

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.

THERMAL RESISTANCE

Package	θ_{JA}	θ_{JC}
SOT-25	250°C/W	130°C/W
SC70-5	333°C/W	170°C/W

NOTE: Thermal Resistance is specified with approximately 1 square of 1 oz copper.



ELECTRICAL CHARACTERISTICS

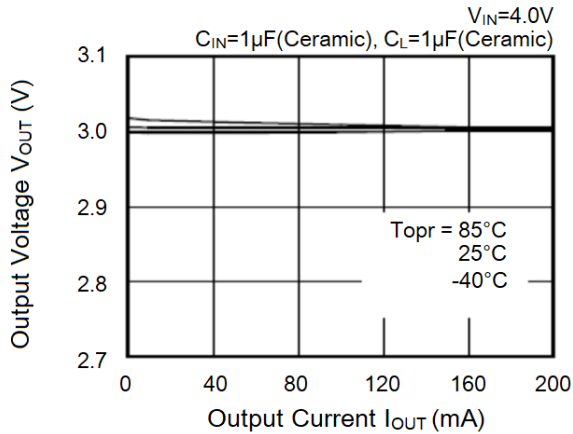
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	$V_{OUT(E)}$	$V_{IN} = V_{OUT(S)} + 1.0V$, $I_{OUT} = 30mA$	$V_{OUT(S)}$ $\times 0.98$	$V_{OUT(S)}$	$V_{OUT(S)}$ $\times 1.02$	V
Output Current	I_{OUT}	$V_{IN} \geq V_{OUT(S)} + 1.0V$	300	-	-	mA
Dropout Voltage	V_{DROP}	$I_{OUT} = 50mA$	-	0.12	0.20	V
		$I_{OUT} = 100mA$		0.30	0.45	
Line Regulations	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \times V_{OUT}}$	$V_{OUT(S)} + 0.5V \leq V_{IN} \leq 7V$ $I_{OUT} = 30mA$	-	0.10	0.2	%/V
Load Regulation	ΔV_{OUT2}	$V_{IN} = V_{OUT(S)} + 1.0V$ $1.0mA \leq I_{OUT} \leq 100mA$	-	50	100	mV
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T_A \times V_{OUT}}$	$V_{IN} = V_{OUT(S)} + 1.0V$, $I_{OUT} = 10mA$ $-40^\circ C \leq T_A \leq 85^\circ C$	-	± 100	-	ppm/ $^\circ C$
Supply Current	I_{SS1}	$V_{IN} = V_{OUT(S)} + 1.0V$	-	70	-	μA
Input Voltage	V_{IN}		2.0	-	7	V
Ripple-Rejection	PSRR	$V_{IN} = V_{OUT(S)} + 1.0V$, $f = 10kHz$, $V_{rip} = 0.5V_{rms}$, $I_{OUT} = 50mA$	-	70	-	dB
Short-circuit Current	I_{SHORT}	$V_{IN} = V_{OUT(S)} + 1.0V$, V_{EN} on $V_{OUT} = GND$	-	40	-	mA
EN "High" Voltage	V_{ENH}		1.6	-	V_{IN}	V
EN "Low" Voltage	V_{ENL}		-	-	0.25	V
EN "High" Current (no resistor built in)	I_{ENH}	$V_{IN} = V_{EN} = V_{OUT(T)} + 1.0V$	-0.1	-	0.1	μA
EN "Low" Current (no resistor built in)	I_{ENL}	$V_{IN} = V_{OUT(T)} + 1.0V$, $V_{EN} = V_{SS}$	-0.1	-	0.1	μA



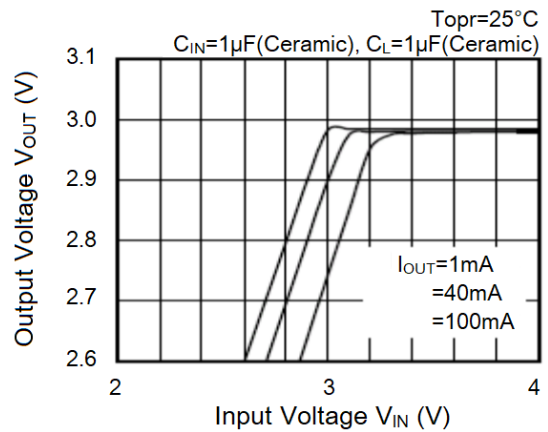
TYPICAL PERFORMANCE CHARACTERISTICS

3.0V Output

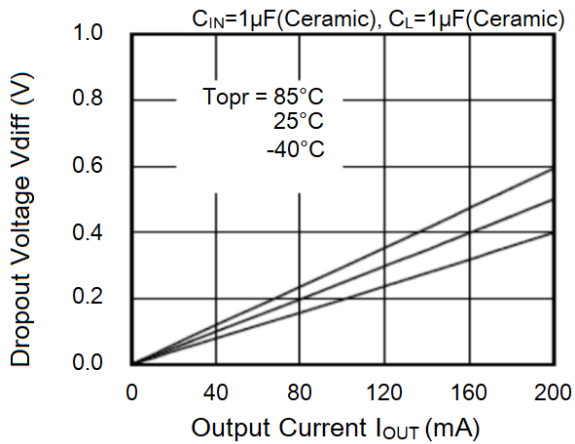
1. Output Voltage vs. Output Current



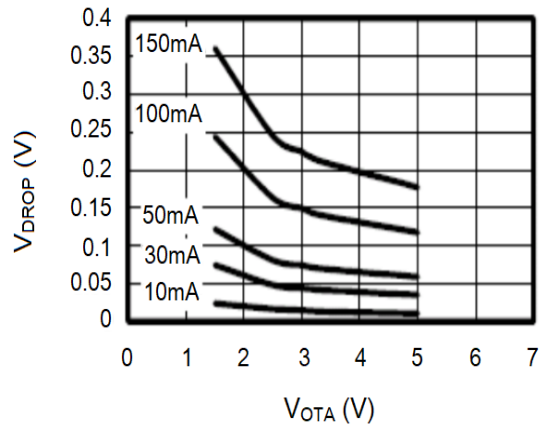
2. Output Voltage vs. Input Voltage(Contd.)



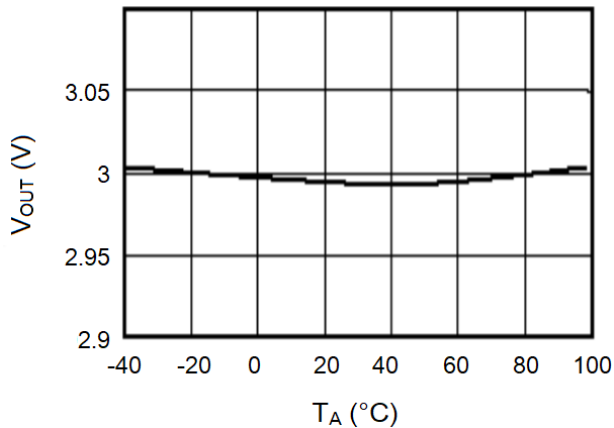
3. Dropout Voltage vs. Output Current



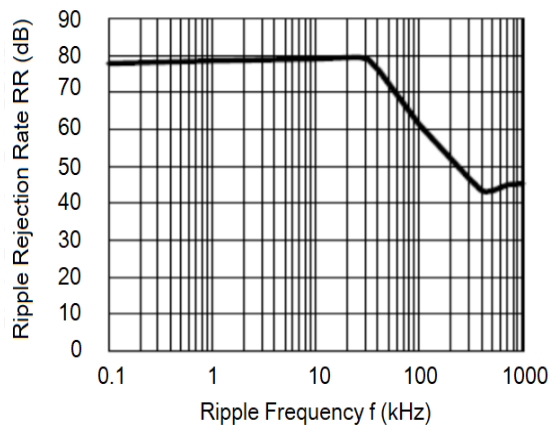
4. Dropout Voltage vs. Output Voltage



5. Output Voltage vs. Ambient Temperature

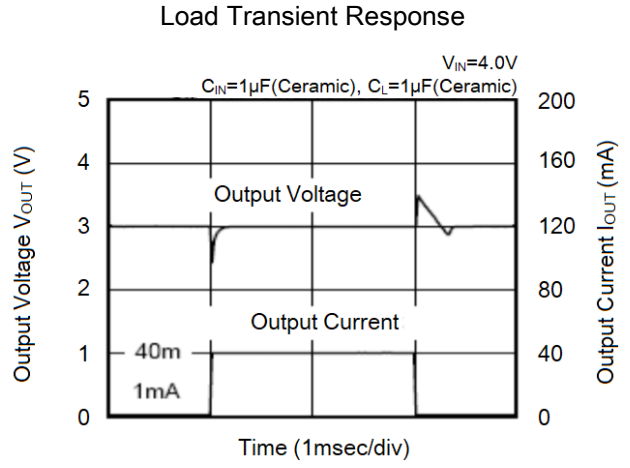
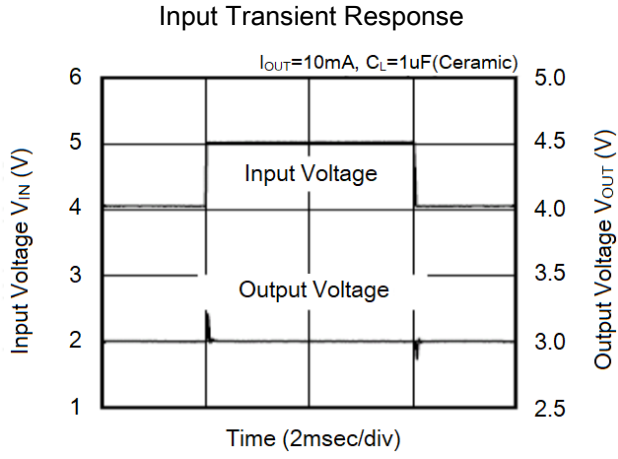


6. Ripple Rejection Rate



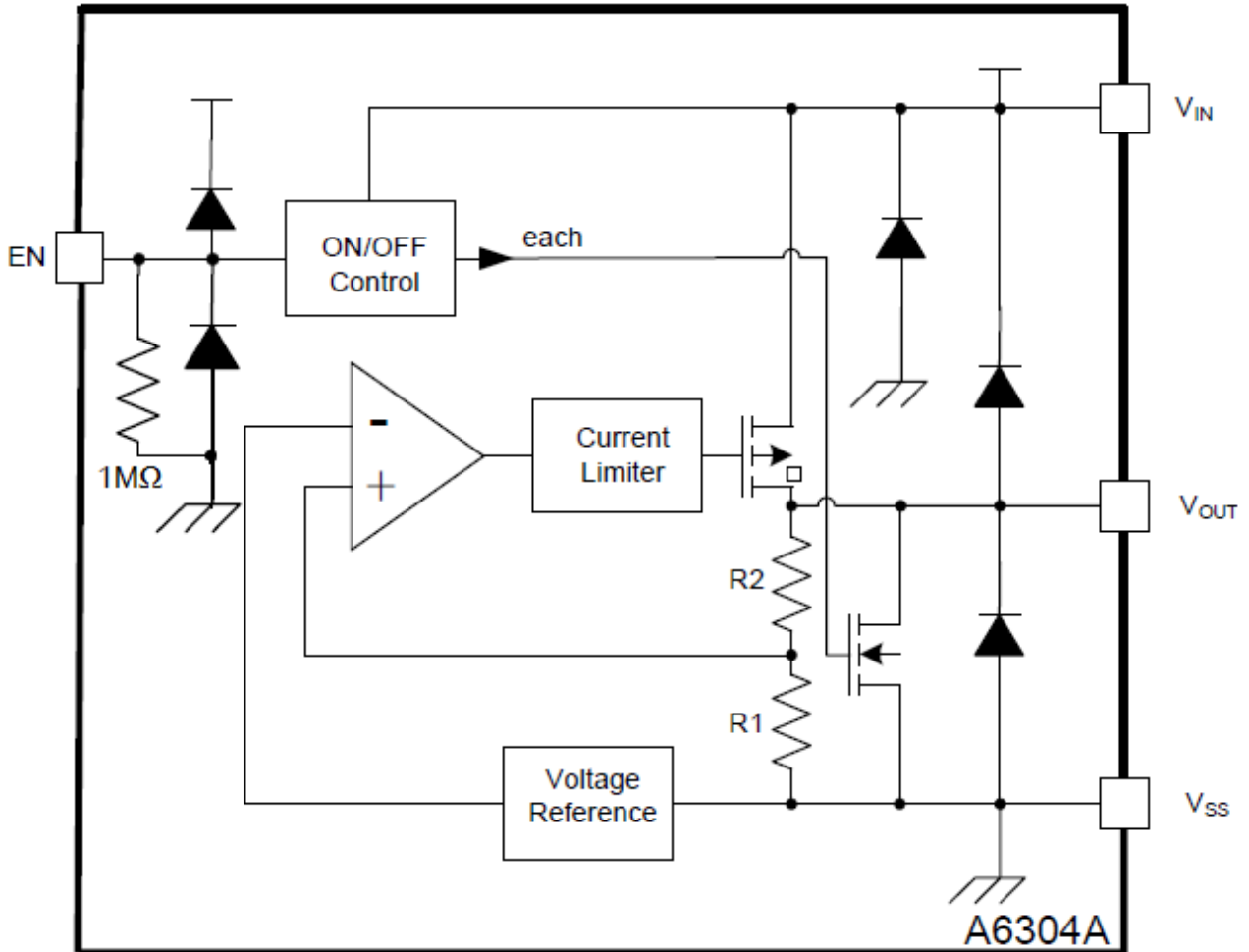


7. Transient Response





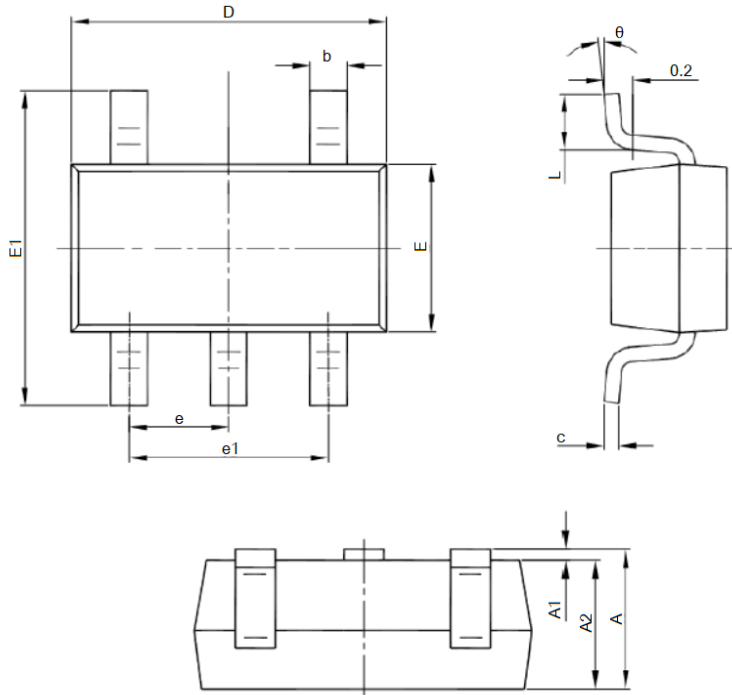
BLOCK DIAGRAM





PACKAGE INFORMATION

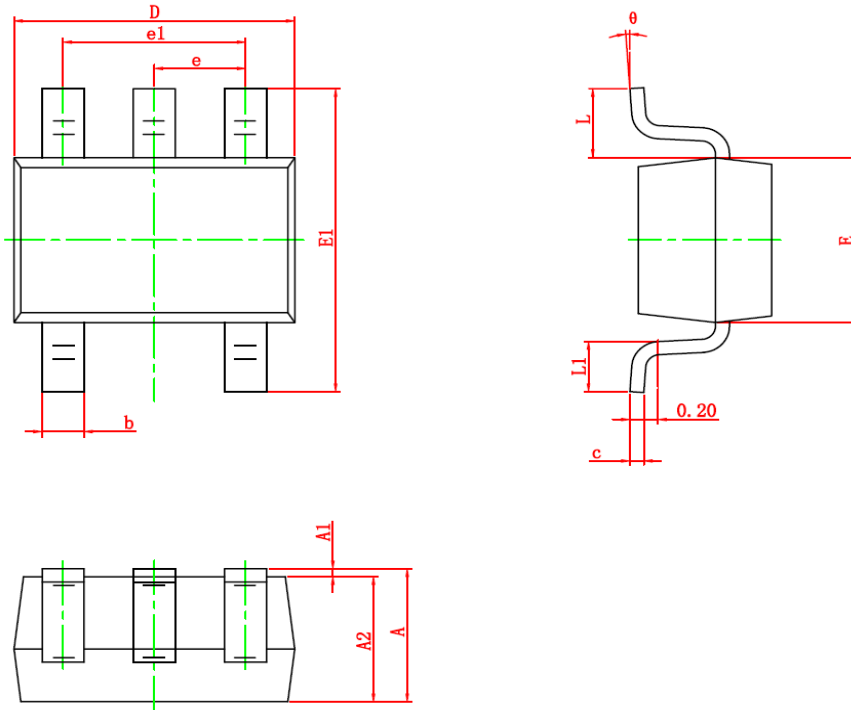
Dimension in SOT-25 (Unit: mm)



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°



Dimension in SC70-5 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°



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