DESCRIPTION

The A6110C series are highly accurate, low noise, low dropout and very fast turn-on times CMOS LDO Voltage Regulators. The A6110C includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators. The A6110C's current limiters' foldback circuit also operates as a short protect for the output current limiter and. the output pin. The A6110C series is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies. The EN function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

The A6110C is available in SOT-25 and SOT89-5 packages.

ORDER INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 3,000pcs/Reel	E5	A6110CE5R-XX
		A6110CE5VR-XX
SOT89-5 SPQ: 1,000pcs/Reel	K5	A6110CK5R-XX
		A6110CK5VR-XX
Note	XX: Output Voltage V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

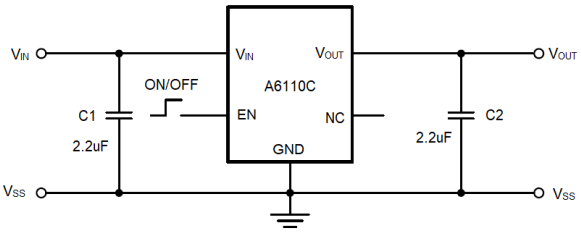
FEATURES

- High Ripple Rejection: 60dB (1kHz)
- Low noise: 50uV_{RMS}(I_{OUT}=30mA,10Hz-100kHz)
- Output Voltage Range: 0.9V to 5.0V (selectable in 100mV steps)
- Highly Accurate: ± 2%
- Dropout Voltage: 70mV @ 100mA (3.3V type)
- Low Power Consumption: 30μA (TYP.)
- Maximum Output Current : 1000mA
- Standby Current : less than 1μA (V_{IN}≥V_{OUT}+1V)
- Internal protector: current limiter
- Internal discharge MOS
- Available in SOT-25 and SOT89-5 packages.

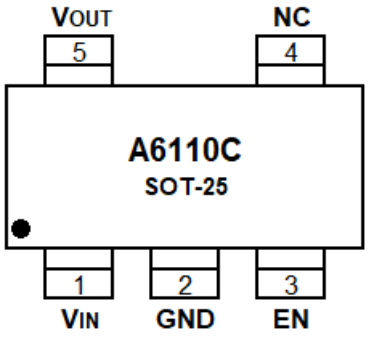
APPLICATION

- CD-ROMs, CD-R/RW Drivers
- DVD Drivers
- HDD Drivers
- Digital Camera, Video Card
- Portable AV Ses
- Battery supplied system

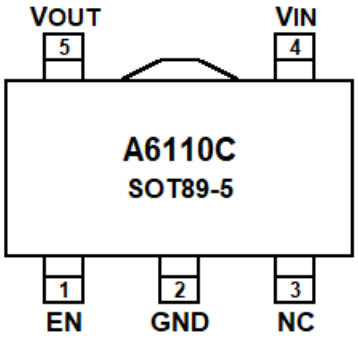
TYPICAL APPLICATION



PIN DESCRIPTION



Top View



Top View

Pin #		Symbol	Function
SOT-25	SOT89-5		
1	4	V_{IN}	Supply Power
2	2	GND	Ground
3	1	EN	Enable PIN
4	3	NC	NC
5	5	V_{OUT}	Output

ABSOLUTE MAXIMUM RATINGS

V_{IN}, Input Voltage		-0.3V ~ +8V
$V_{ON/OFF}$, Input Voltage		-0.3V ~ V_{IN}+0.3V
V_{OUT}, Output Voltage		-0.3V ~ V_{IN}+0.3V
P_D, Power Dissipation	SOT-25	300mW
	SOT89-5	500mW
T_{OPR}, Operating Ambient Temperature		-40°C ~ +85°C
T_{STG}, Storage Temperature		-40°C ~ +125°C

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is 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

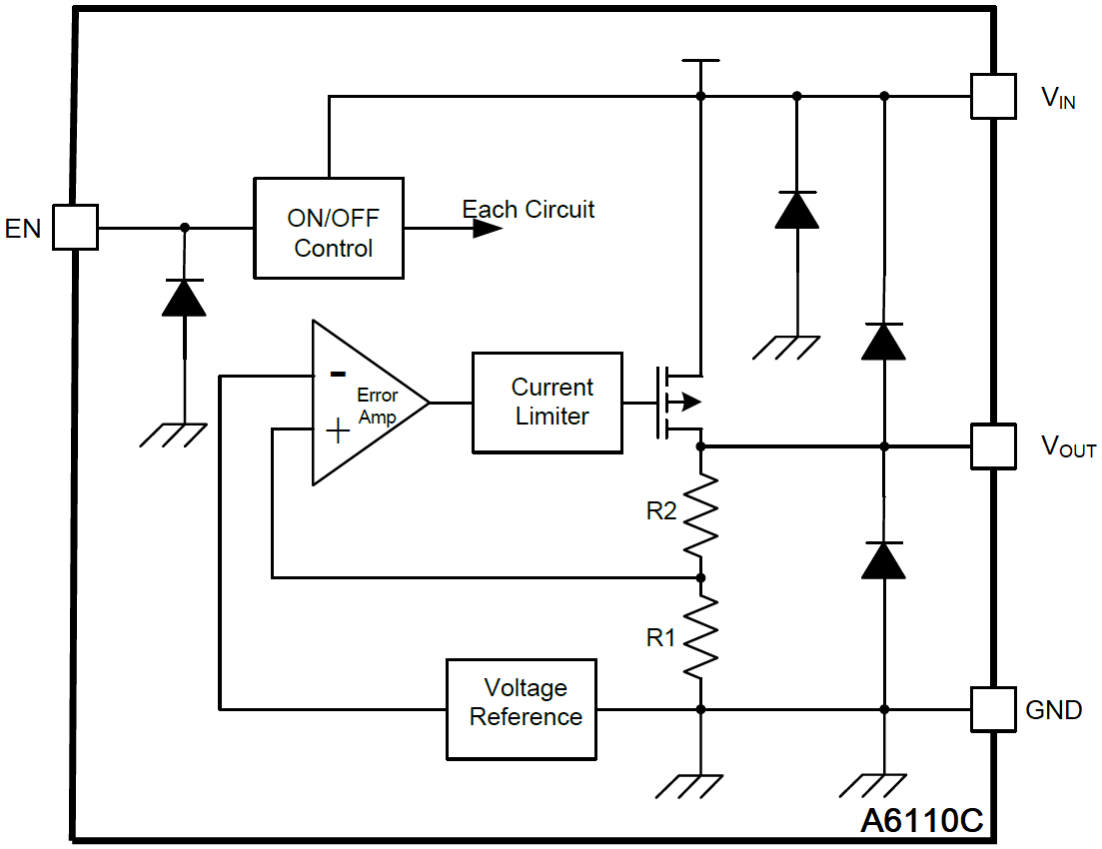
NOTE: Thermal Resistance is specified with approximately 1 square of 1 oz copper.

ELECTRICAL CHARACTERISTICS

T_A=25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Output Voltage	$V_{OUT(E)}$	V_{IN} = $V_{OUT(S)}$ + 1.0V, I_{OUT} = 30mA	$V_{OUT(S)}$ ×0.98	$V_{OUT(S)}$	$V_{OUT(S)}$ ×1.02	V
Output Current	I_{OUT}	V_{IN} ≥ $V_{OUT(S)}$ + 1.0V	0.7	1	1.5	A
Dropout Voltage	V_{DROP}	I_{OUT} = 30mA	-	0.015	0.023	V
		I_{OUT} = 100mA	-	0.070	0.085	
Line Regulation	$\frac{\Delta V_{OUT1}}{\Delta V_{IN} \times V_{OUT}}$	$V_{OUT(S)}$ + 0.5V ≤ V_{IN} ≤ 7V, I_{OUT} = 30mA	-	0.01	0.20	%/V
Load Regulation	ΔV_{OUT2}	V_{IN} = $V_{OUT(S)}$ + 1.0V 1.0mA ≤ I_{OUT} ≤100mA	-	15	60	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/℃
Supply Current	I_{SS1}	V_{IN} = $V_{OUT(S)}$ + 1.0V	-	30	-	μA
Input Voltage	V_{IN}		2.0	-	7.0	V
Ripple-Rejection	|PSRR|	V_{IN} = $V_{OUT(S)}$ + 1.0V, f = 1kHz V_{RIP} = 0.5Vrms, I_{OUT} = 50mA	-	60	-	dB
Output Noise	e_N	I_{OUT} = 30mA,10HZ-100kHz	-	50	-	uV_{RMS}
Output Short Current	I_{SHORT}	V_{IN} = V_{EN} = $V_{OUT(S)}$ + 1.0V, V_{OUT} = 0V	-	100	-	mA
Output Current Limited	I_{LIM}	V_{IN} = $V_{OUT(S)}$ + 1.0V, V_{EN} = ON	-	1.3	-	A
EN "High" Voltage	V_{ENH}		1.3	-	-	V
EN "Low" Voltage	V_{ENL}		-	-	0.25	V
EN "High Current	I_{ENH}	V_{IN} = V_{EN} = $V_{OUT(T)}$ + 1V	-0.1	-	0.1	μA
EN "Low Current	I_{ENL}	V_{IN} = $V_{OUT(T)}$ + 1V, V_{EN} = V_{SS}	-0.1	-	0.1	μA

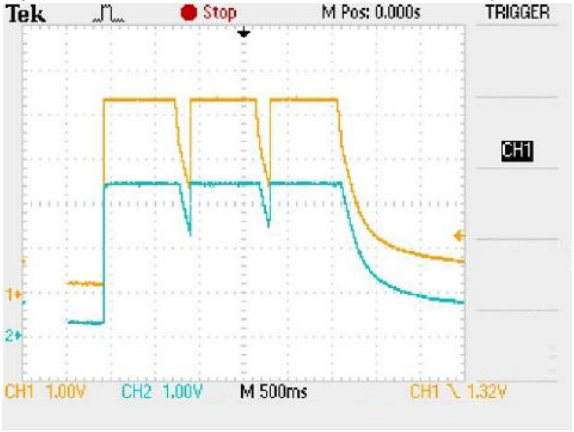
BLOCK DIAGRAM



TYPICAL PERFORMANCE CHARACTERISTICS

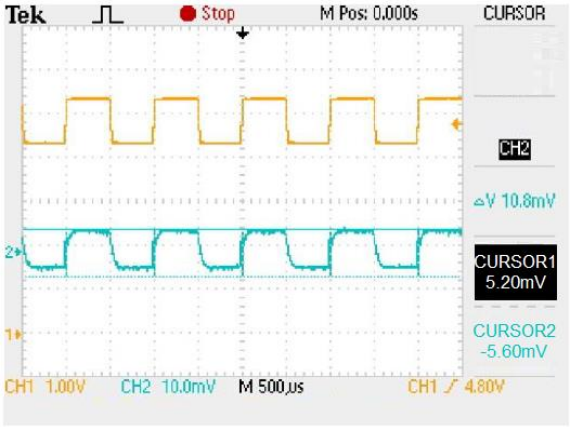
V_{OUT}=3.3V

1. Output overshoot
(V_{IN}=0V-4.3, I_{OUT}=0mA, C_{IN}=C_{OUT}=4.7uF)



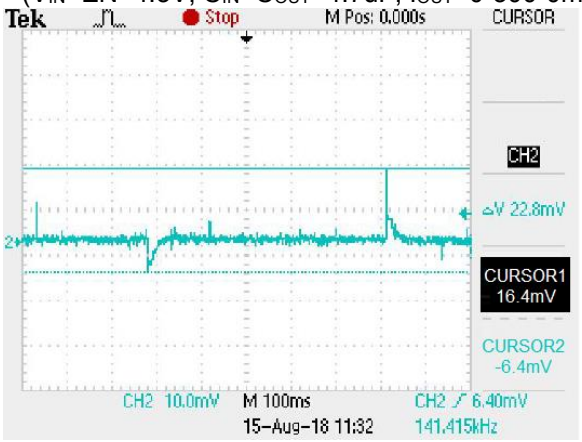
Channel 1: Input , Channel 2 : Output

2. Input voltage transient response
(V_{IN}=4.3V-5.3V, I_{OUT}=60mA, C_{IN}=C_{OUT}=4.7uF)

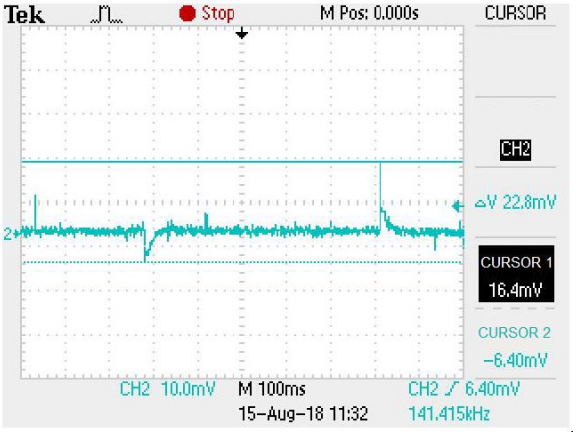


Channel 1: Input , Channel 2 : Output

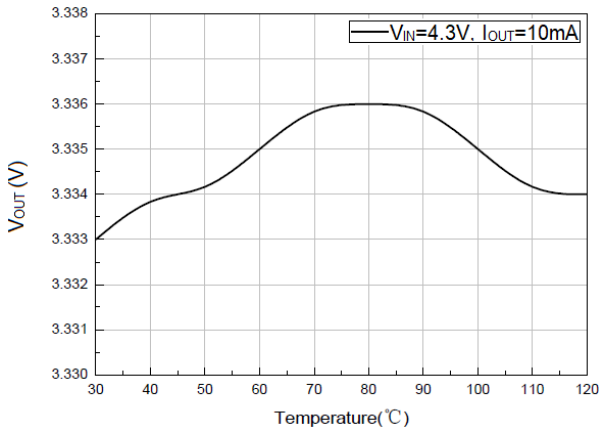
3. Load transient response
(V_{IN}=EN=4.3V, C_{IN}=C_{OUT}=4.7uF, I_{OUT}=0-300-0mA)



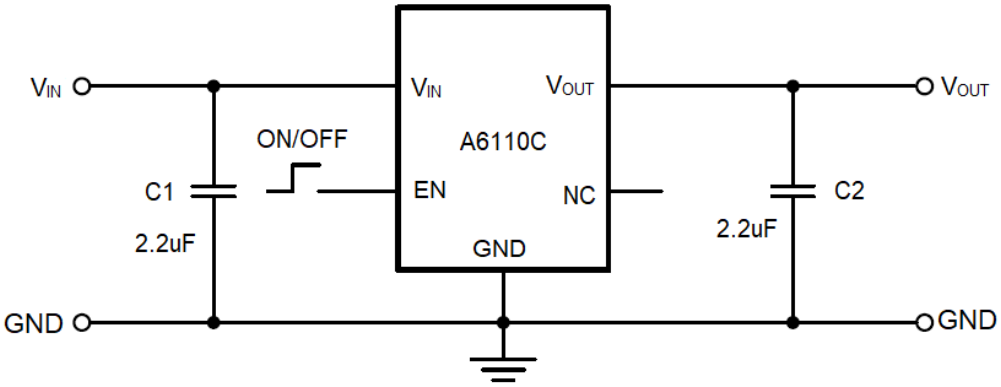
4. V_{IN}= EN =4.3V, C_{IN}=C_{OUT}=4.7uF,
I_{OUT}=10-300-10mA



5. Output Voltage vs. Temperature
(V_{IN}= EN =4.3V, C_{IN}=C_{OUT}=4.7uF ,I_{OUT}=10mA)



APPLICATION INFORMATION



Setting the Input Capacitor and the Output Capacitor

Input capacitors(C_{IN})and output capacitors(C_{OUT}) are recommended to use more than 1uF, which can ensure the stability of the system

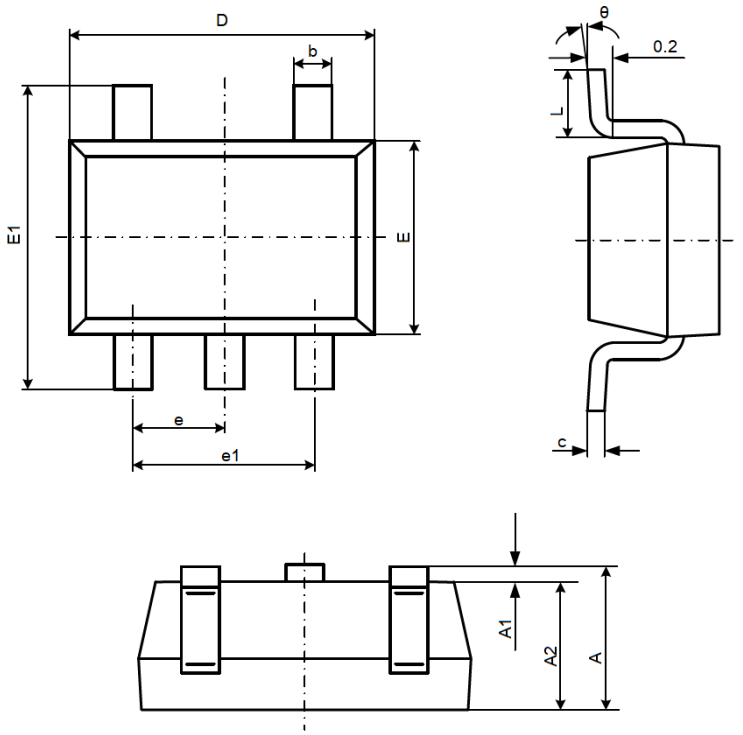
PCB Layout

In order to get better use effect, the main points for attention of PCB layout are as follows:

1. The input and output capacitors are as close as possible to the chip pins.
2. The wiring of V_{IN} and V_{OUT} should be as thick as possible to reduce the wiring resistance and improve the load performance.
3. The PCB needs to do heat dissipation to ensure the normal operation of the chip

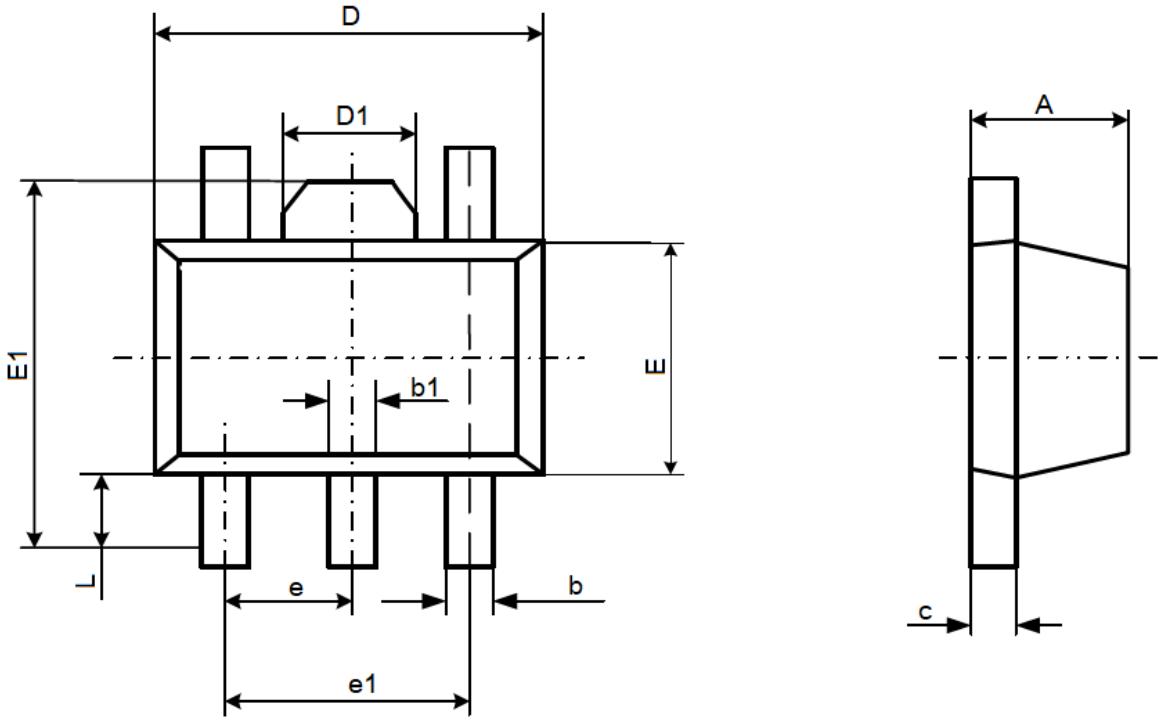
PACKAGE INFORMATION

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 SOT89-5 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.400	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

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