



Low ESR Caps Compatible High Speed LDO Voltage Regulator with ON/OFF Switch

■ GENERAL DESCRIPTION

The AMS6221 series is a high accuracy, low noise, high speed, low dropout CMOS regulator with high ripple rejection. The series includes a reference voltage source, an error amplifier, a current limiter, and a phase compensation circuit.

The CE function enables the entire circuit to be in stand-by state by inputting low level signal. As for the AMS6221 stand-by mode, the electric charge at the output capacitor (C_L) will be discharged by the internal auto-discharge switch, and as a result the V_{OUT} pin quickly returns to the V_{SS} level. The output stabilization capacitor (C_L) is also compatible with low ESR ceramic capacitors.

Output voltage is selectable in 0.1V increments within a range of 2.0V~5.00V, using the laser trimming technology set in factory.

The current limiter's fold-back circuit also operates as a short circuit protection and an output current limiter at the output pin. The series achieves a fast response with only $45 \mu A$ of low power consumption. Also the series has low dropout voltage characteristics, which is 200mV at $I_{OUT}=100mA$.

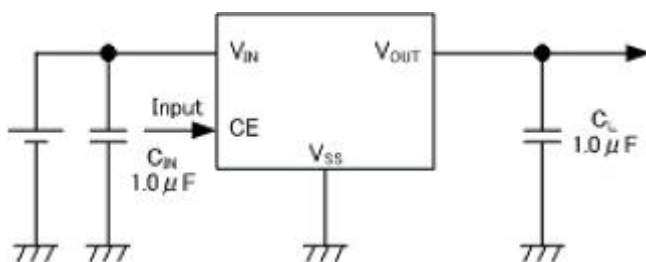
APPLICATIONS

- Cellular phones
- Cordless phones
- Wireless communication equipment
- Portable games
- Cameras, VCRs
- Portable AV equipment
- PDAs

■ FEATURES

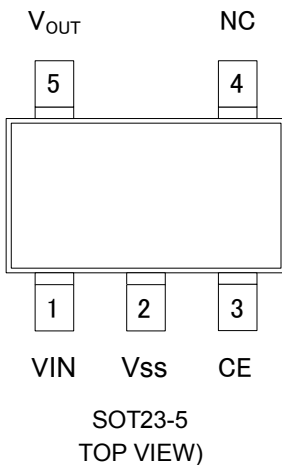
Maximum Output Current	: 300mA (TYP.)
Dropout Voltage	: 200mV@ $I_{OUT}=100mA$
Operating Voltage Range	: < 8V
Output Voltage Range	: 2.0V~5.0V
Accuracy	: $\pm 2\%$ (Standard)
Low Power Consumption	: 45uA (TYP.)
Stand-by Current	: Less than 1uA
High Ripple Rejection	: 70dB @ 1kHz
CE Function	: CE Active High
Stand-by Current	: Less than 0.1 μA
High Ripple Rejection	: 70dB @ 1kHz
Low ESR Capacitor	
Low Output Noise	
Packages	: SOT23-5
Environmentally Friendly	: EU RoHS Compliant, Pb Free
Operating Ambient Temperature	: -40°C~+85°C

■ TYPICAL APPLICATION CIRCUIT





■ PIN CONFIGURATION

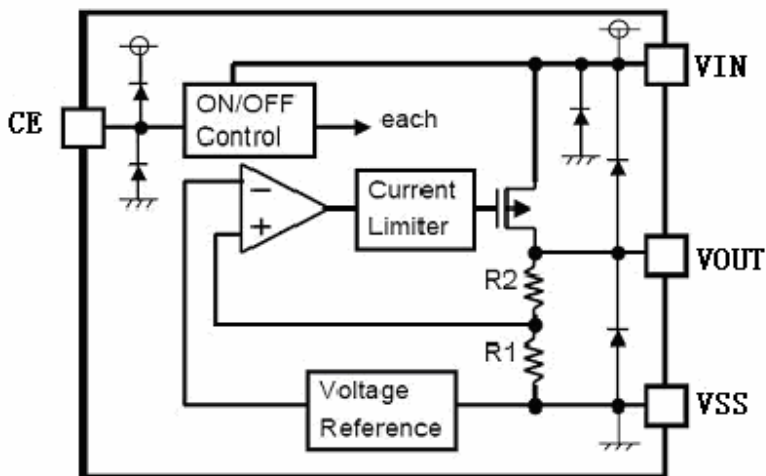


■ PIN ASSIGNMENT

PIN NUMBER				PIN NAME	FUNCTIONS
SOT23-5					
1				V _{IN}	Power Input
5				V _{OUT}	Output
2				V _{SS}	Ground
3				CE	ON/OFF Control
4				NC	No Connection

PIN NAME	DESIGNATOR	CONDITIONS
CE	H	$1.2V \leq V_{CE} \leq 6.0V$
	L	$V_{CE} \leq 0.3V$

■ BLOCK DIAGRAMS





■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage		V_{IN}	8	V
Output Current		I_{out}	500	mA
Output Voltage		V_{out}	$V_{ss}-0.3 \sim V_{out}+0.3$	V
Power Dissipation	SOT23	P_d	300	mW
	SOT89	P_d	500	mW
Operating Temperature		T_{Opr}	-25 ~ +85	°C
Storage Temperature		T_{stg}	-40 ~ +125	°C
Soldering Temp & Time		T_{solder}	260°C, 10s	

■ ELECTRICAL CHARACTERISTIC

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=40mA$, $V_{IN}=V_{out}+1V$	X 0.98	$V_{OUT(T)}$ (Note 1)	X 1.02	V
Input Voltage	V_{IN}				7.0	V
Maximum Output Current	I_{OUTmax}	$V_{IN}=V_{out}+1V$	300			mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{out}+1V$, $1mA \leq I_{OUT} \leq 100mA$		30		mV
Dropout Voltage (Note 3)	V_{dif1}	$I_{OUT} = 100mA$		200		mV
	V_{dif2}	$I_{OUT} = 200mA$		400		mV
Quiescent Current	I_{SS}	$V_{IN}=V_{out}+1V$		45		μA
CE Low Level Current	I_{CEL}	$V_{ce} = 0V$		0.1		μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 40mA$ $V_{out}+1V \leq V_{IN} \leq 8V$		0.05		%/V
Output Noise	en	$I_{OUT} = 40mA$, 300Hz~50kHz		50		μV_{rms}
	PSRR	$V_{in} = [V_{out}+1]V$ +1Vp-pAC $I_{OUT} = 40mA, f=1kHz$		70		dB

注：

- $V_{OUT(T)}$: Nominal output voltage
- $V_{OUT(E)}$: Effective output voltage
- V_{dif} : $V_{IN1} - V_{OUT(E)}$

V_{IN1} is the input voltage when V_{OUT1} appears at the V_{OUT} pin while input voltage is gradually decreased.

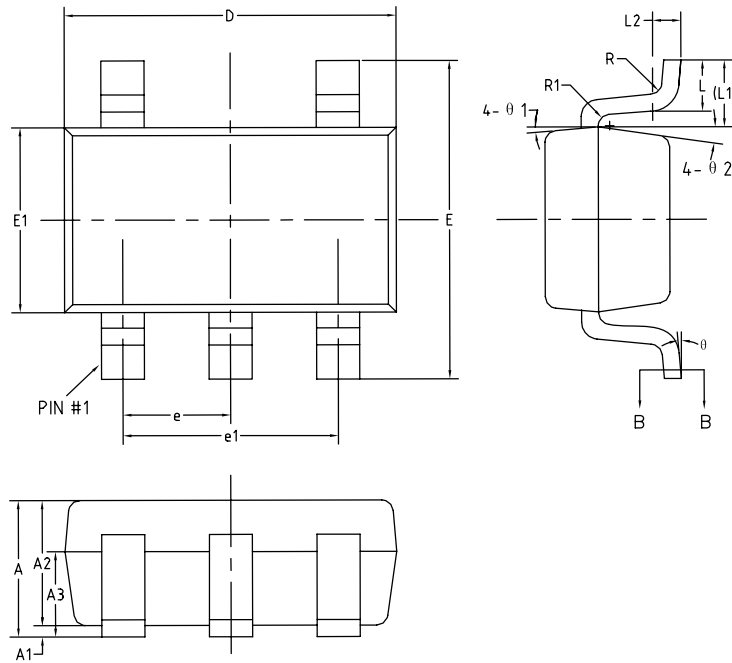
$V_{OUT(E)}$ is the voltage equal to 98% of the normal output voltage when apply stabilized $V_{OUT(T)} + 1.0V$ are input at the V_{IN} pin.



PACKAGING INFORMATION

● SOT23-5

(unit : mm)



Symbol	mm		
	MIN	TYPE	MAX
A	-	-	1.25
A1	0	-	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	-	0.50
b1	0.36	0.38	0.45
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.95BSC		
e1	1.90BSC		
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	-	8°
θ1	3°	5°	7°
θ2	6°	8°	10°

