General Description

The AP2205R series is a set of low voltage differential (LDO converters) with a wide voltage input range of 3.0V to 24V, low voltage differential, low power consumption, and miniaturized packaging.The output voltage range is 3.0-5.0V, and the AP2205R has low static current characteristics as low as 8uA. The circuit also has a CE enable control port, which can put the circuit into sleep mode. It is particularly suitable for battery powered and long-term standby system equipment applications, helping to reduce standby power consumption of system equipment, effectively extending standby time and battery life.

Features

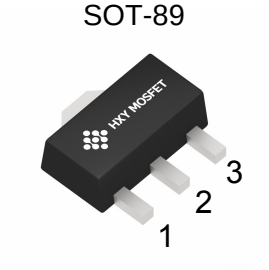
- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 24V
- Quiescent Current 3.0μA
- Output Voltage Accuracy: tolerance ±2%
- High output current: 300mA

Application

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments

Pin Configuration And Descriptions

SOT-89



No.	Name	Functions Description
1	V_{IN}	Input
2	GND	Ground
3	V_{OUT}	Output

Order Information

Orderable Device	Package	Output Voltage	Packing Option
AP2205-30Y-13	SOT-89	3.0V	3000/Reel
AP2205-33Y-13	SOT-89	3.3V	3000/Reel
AP2205-50Y-13	SOT-89	5.0V	3000/Reel

Absolute Maximum Ratings

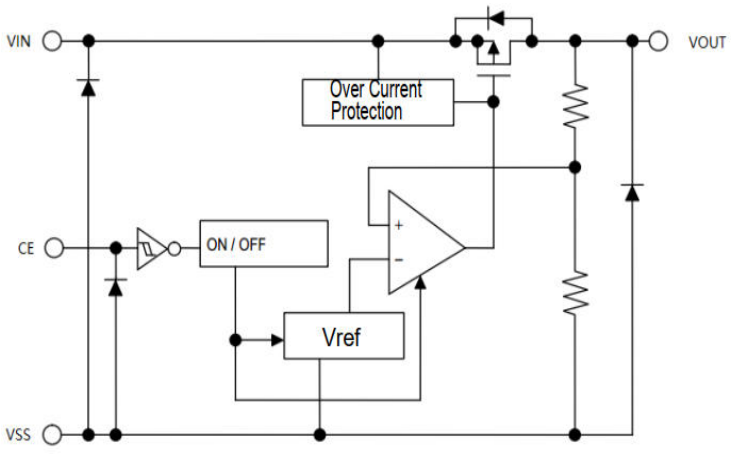
Description	Symbol	Value Range	Unit
Limit Power Voltage	V_{IN}	-0.3～+26	V
Storage Temperature Range	T_{STG}	-50～+125	°C
Operating Free-air Temperature Range	T_A	-40～+85	°C

Note:Stresses greater than those listed under "Absolute Maximum Ratingsmay" 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 under "Recommended Operating Conditionsis" not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Heat Dissipation

Description	Symbol	Package	Value Range	Unit
Thermal resistance	θ_{JA}	SOT-89	200	°C/W
Power dissipation	P_W	SOT-89	500	mW

Block Diagram



DC Characteristics (unless otherwise noted T_A= 25°C)

(V_{IN}= V_{OUT}+2.0V，C_{IN}=C_L=10uF，Ta=25°C, unless otherwise noted)

Series +3.0V OUTPUT

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA	2.94	3.00	3.06	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V		300		mA
Load Regulation	△V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤50mA		15		mV
Voltage Drop	V_{DIF}	I_{OUT}=1mA，△V_{OUT}=2%		200		mV
Quiescent Current	I_{SS}	No Load		3.0	5.0	uA
Line Regulation	△V_{OUT}/V_{OUT}* △V_{IN}	V_{OUT}+1.0V≤V_{IN}≤30V，I_{OUT}=1mA			0.2	%/V
Input Voltage	V_{IN}				24	V
Temperature Coefficient	△V_{OUT}/ △T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA，-40℃≤T_A≤85℃		100		ppm/°C
Output Short Circuit Current	Ilim	V_{OUT}=0V		400		mA

Note:When V_{IN}=V_{OUT}+2.0V,as the output voltage declined 2%,the V_{DIF}=V_{IN}-V_{OUT}.

Series +3.3V OUTPUT

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA	3.234	3.30	3.366	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V		300		mA
Load Regulation	△V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤50mA		15		mV
Voltage Drop	V_{DIF}	I_{OUT}=1mA，△V_{OUT}=2%		200		mV
Quiescent Current	I_{SS}	No Load		3.0	5.0	uA
Line Regulation	△V_{OUT}/V_{OUT}* △V_{IN}	V_{OUT}+1.0V≤V_{IN}≤30V，I_{OUT}=1mA			0.2	%/V
Input Voltage	V_{IN}				24	V
Temperature Coefficient	△V_{OUT}/ △T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V，I_{OUT}=10mA，-40℃≤T_A≤85℃		100		ppm/°C
Output Short Circuit Current	Ilim	V_{OUT}=0V		400		mA

Note:When V_{IN}=V_{OUT}+2.0V,as the output voltage declined 2%,the V_{DIF}=V_{IN}-V_{OUT}.

Series +5.0V OUTPUT

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V, I_{OUT}=10mA	4.9	5.0	5.1	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V		300		mA
Load Regulation	△V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤50mA		15		mV
Voltage Drop	V_{DIF}	I_{OUT}=1mA，△V_{OUT}=2%		200		mV
Quiescent Current	I_{SS}	No Load		3.0	5.0	uA
Line Regulation	△V_{OUT}/V_{OUT}* △V_{IN}	V_{OUT}+1.0V≤V_{IN}≤30V, I_{OUT}=1mA			0.2	%/V
Input Voltage	V_{IN}				24	V
Temperature Coefficient	△V_{OUT}/ △T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V, I_{OUT}=10mA, -40℃≤T_A≤85℃		100		ppm/°C
Output Short Circuit Current	Ilim	V_{OUT}=0V		400		mA

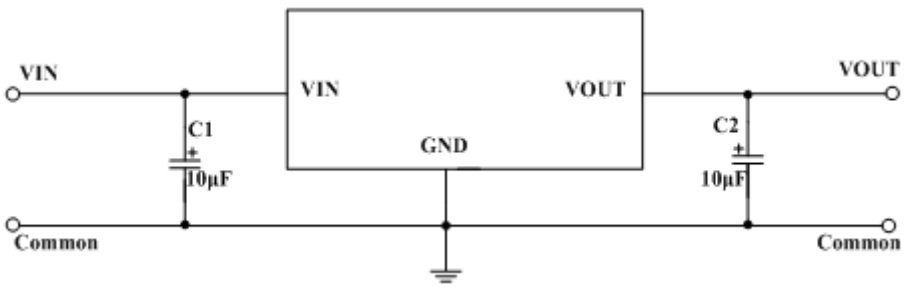
Note:When V_{IN}=V_{OUT}+2.0V,as the output voltage declined 2%,the V_{DIF}=V_{IN}-V_{OUT}.

Function Description

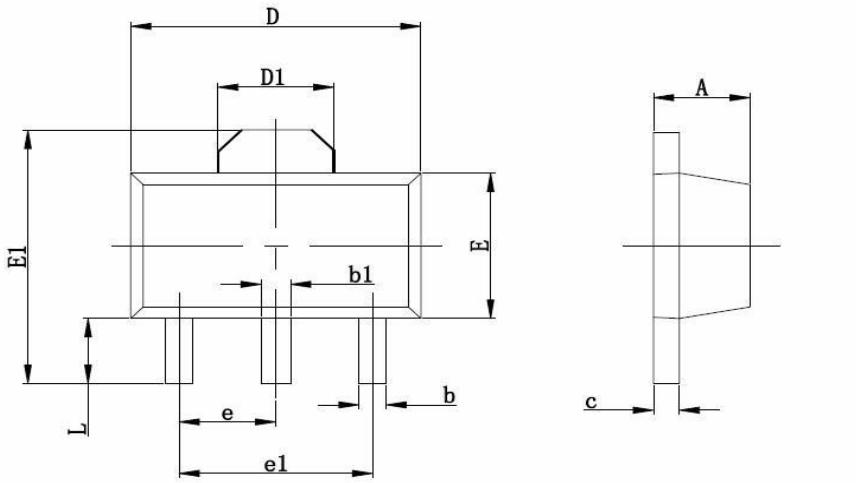
AP2205R series are linear voltage regulator ICs withstanding 24V voltage. The series IC consists of a voltage reference, an error amplifier, a current limiter and a phase compensation circuit plus a driver transistor. The output stabilization capacitor is also compatible with low ESR ceramic capacitors. The over current protection circuit and the over voltage protection circuit are built-in. The protection circuit will operate wheb the output current or input voltage reaches limit level.

Application Circuit

Basic Circuits



SOT-89 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
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	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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