

300mA Current、6V Input Voltage LDO

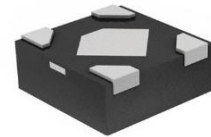
H7211

General Description

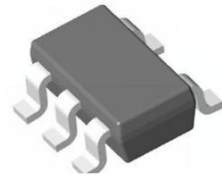
The H7211 series are highly accurate, low noise, CMOS LDO Voltage Regulators. Offering low output noise, high ripple rejection ratio, low dropout and very fast turn-on times.

The H7211 has excellent performance and provides ultra-low noise and very low static current for the battery supply system. H7211 shutdown mode, power consumption is less than 0.1 μ A, fast opening time is less than 50 μ s.

The H7211 only needs to be configured with low ESR value ceramic capacitors, suitable for high-power applications, especially in handheld wireless equipment and RF products, which can effectively reduce the required circuit board space of the product.



DFN1 \times 1-4



SOT23-5

Features

- Low output noise: 50 μ Vrms(10Hz~100kHz)
- Low voltage drop: 150mV@Iout=150mA
- Low quiescent current: 30 μ A
- High PARR: 75dB@1kHz
- Input voltage range: 2.0V~6.0V
- Maximum output current: 300mA
- Output voltage range: 1.0V~5.0V
- Output voltage accuracy: tolerance \pm 2%
- SOT23-5 and DFN1 \times 1-4 package

Applications

- Battery-powered equipment
- Mobile phones
- Portable consumer equipment
- Handheld computer, laptop computer
- Radio control equipment

Order information

Product model	Package	Manner of packing	Minimum packing quantity
H7211-XXM5R	SOT23-5	Reel	3000
H7211-XXDR	DFN1 \times 1-4	--	--

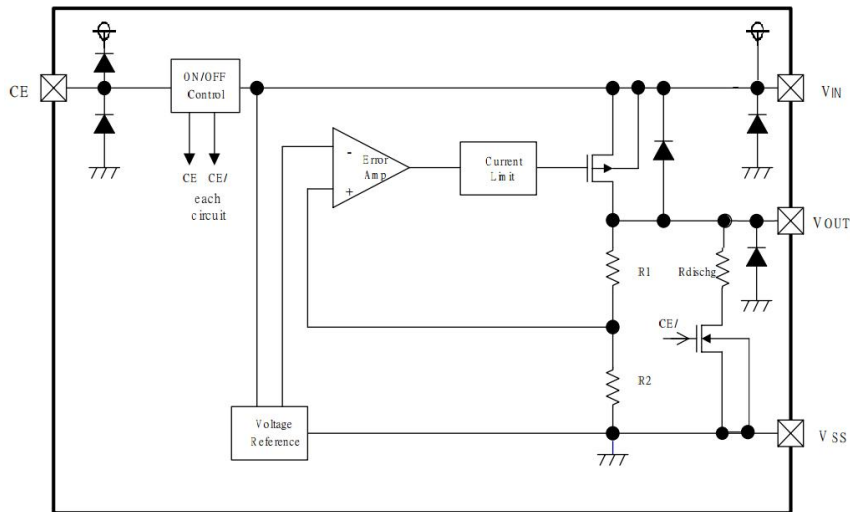
Note: xx represents the output voltage value.

Order Information

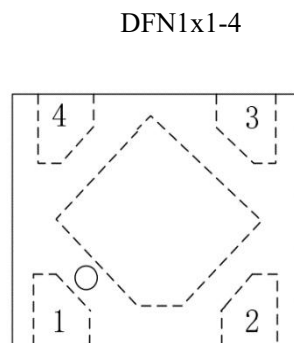
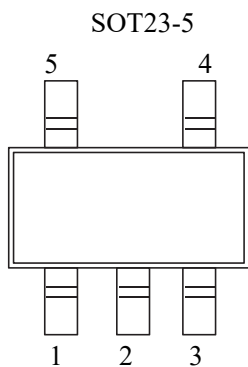
H7211-①②③④

Designator	Symbol	Description
①②	Integer	Output voltage Example: 1.2V=①:1,②:2
③	M5	SOT23-5
	D	DFN1×1-4
④	R	RoHS / Pb Free

Block Diagram

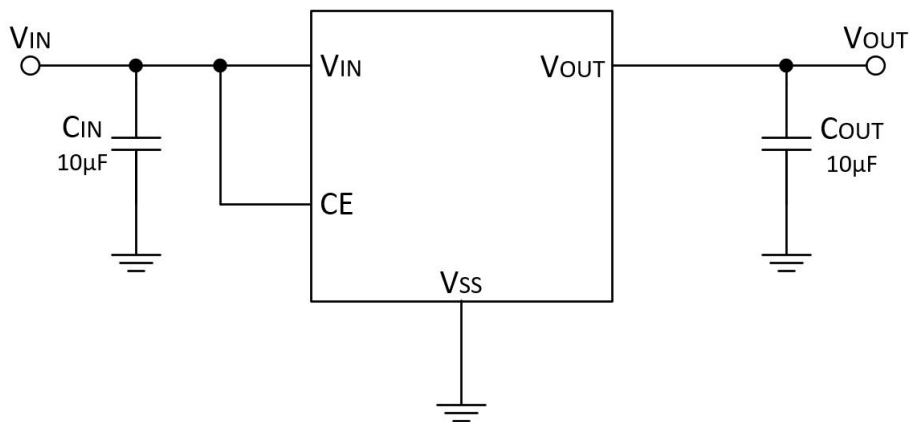


Package and Pin assignment



PIN NUMBER		SYMBOL	FUNCTION
SOT23-5	DFN1×1-4		
1	4	V _{in}	Power Input Pin
2	2	V _{ss}	Ground
3	3	CE	Chip Enable Pin
4	—	NC	No Connection
5	1	V _{out}	Output Pin

Typical Application Circuit



Absolute Maximum Ratings

(unless otherwise indicated, TA = 25 ° C.)

Parameter		Symbol	Ratings	Units
Input Voltage ⁽²⁾		Vin	-0.3~ 7	V
Output Voltage ⁽²⁾		Vout	-0.3~VIN+0.3	V
Output Current		Iout	300	mA
Power Dissipation	SOT23-5	PD	400	mW
	DFN1x1-4		400	mW
Operating Temperature Range ⁽³⁾		Ta	-40~85	°C
Junction Temperature Range ⁽⁴⁾		Tj	-40~125	°C
Storage Temperature Range		Tstg	-40~125	°C
Welding temperature and time		Tsolder	260°C, 10s	
ESD		HBM	4	kV
		MM	200	V

Note:

- (1) These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.
- (2) All voltage values are obtained by reference.
- (3) H7211 can meet the performance specifications within the operating temperature range of 0°C to 85°C. Beyond the operating temperature range of -40°C to 85°C, the design and related parameters should be controlled to ensure.
- (4) H7211 in order to prevent damage to the product caused by overload current heating, built-in overtemperature protection circuit. When the node temperature rises to 125°C(typical value), the overtemperature protection circuit starts to work and stops the regulator. If the long-term work at the highest junction temperature will shorten the life of the product.

Electrical Characteristics

(unless otherwise indicated, $V_{in}=V_{out}+1V$, $C_{in}=C_{out}=1\mu F$, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	$V_{out} (E)^{(7)}$	$I_{out}=1mA$	$V_{out}^{(8)}$ *0.98	$V_{out}^{(8)}$	$V_{out}^{(8)}$ *1.02	V
Quiescent Current	I_{ss}	$I_{out}=0$		30	60	μA
Shutdown Current	ISTBY	CE = VSS			0.1	μA
Output Current	I_{out}	-			300	mA
Voltage Drop	VDO ⁽⁹⁾	$I_{out}=150mA$ $V_{out}\geq 2.8V$		150		mV
Load Regulation	ΔV_{out}	$V_{IN}=V_{outT}+1V$, $1mA\leq I_{out}\leq 100mA$		10		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	$I_{out}=10mA$ $V_{out}+1V\leq V_{in}\leq 6V$		0.01	0.2	%/V
Output voltage Temperature Characteristic	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	$I_{out}=10mA$ $-40\leq T\leq +85$		100		ppm/°C
Short-circuit current	I_{Short}	$V_{out}=V_{SS}$		100		mA
Output Voltage	V_{IN}	-	2.0		6.0	V
PSRR F=217Hz	PSRR	$I_{OUT}=50mA$		80		dB
PSRR F=1kHz				75		dB
PSRR F=10kHz				70		dB
CE=HIGH	VCE"H"		1.5		V_{IN}	V
CE=LOW	VCE"L"				0.3	V
Output Capacitor Discharge Resistor	RDISCHRG	$V_{IN}=5V$, $V_{out}=3.0V$, $V_{CE}=V_{SS}$		80		Ω

Description:

(6) Typical values are values at 25 °C and represent the most likely specifications.

(7) $V_{out} (E)$: effective output voltage (when I_{out} keeps a certain value, $V_{IN}=(V_{out}+1.0V)$ output voltage).

(8) V_{out} : specified output voltage.

(9) VDO: $V_{in1} - V_{out} (E)'$.

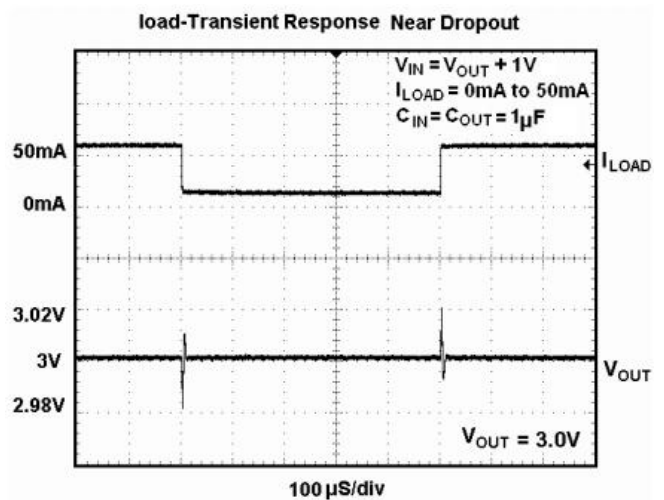
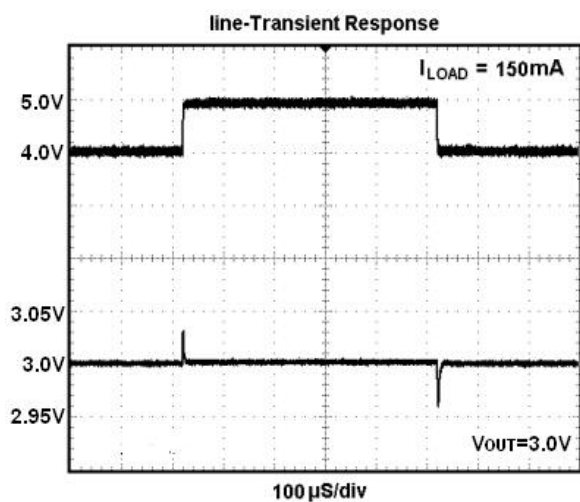
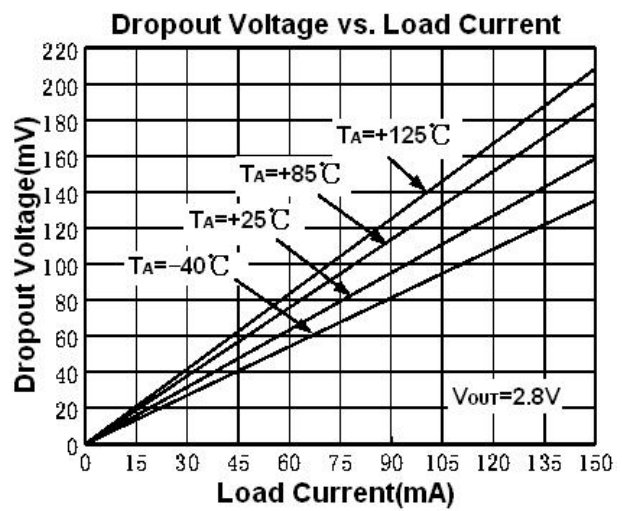
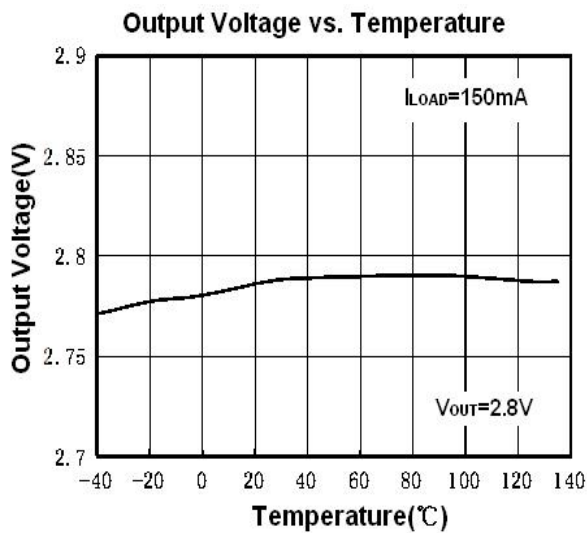
V_{in1} : The input voltage that gradually decreases when the output voltage drops to 98% of $V_{out} (E)$

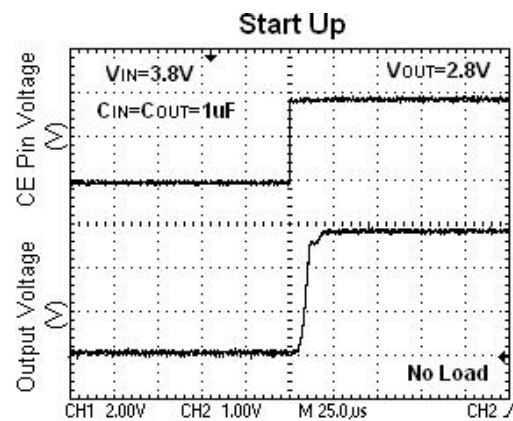
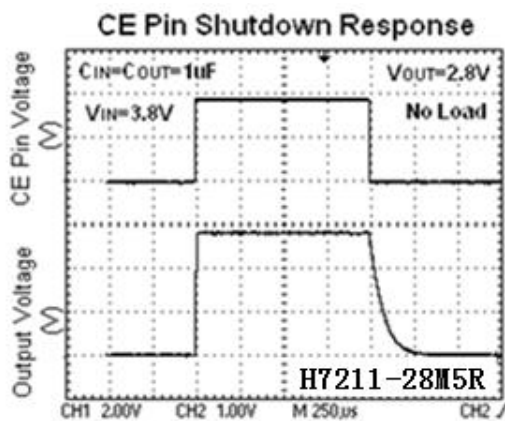
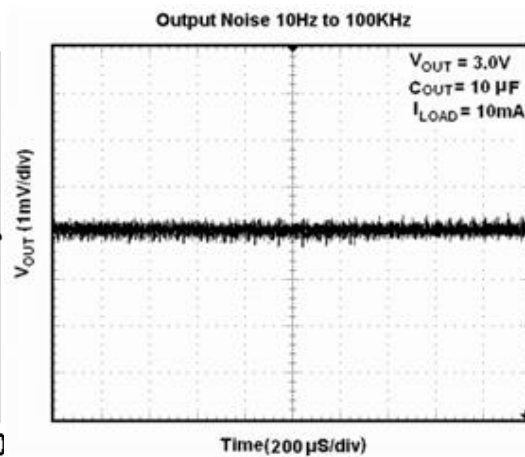
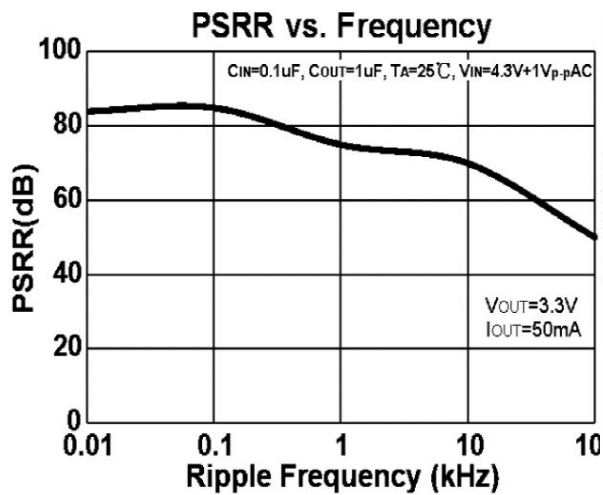
$V_{out} (E)' = V_{out} (E) * 98\%$

Electrical characteristics of voltage drop by output voltage:

Output Voltage	VDO(mV)@ Iout=150mA	
Vout (V)	Typical(mV)	Max(mV)
1.2	380	600
1.5	270	600
1.8	230	600
2.5	180	400
2.8	160	220
3.0	155	220
3.3	150	220

Typical performance characteristics





Cout discharge shunt function

H7211 has a built-in discharge shunt to discharge the output capacitor C_{out}. After discharging the output capacitor, the V_{out} terminal becomes V potential as follows.

- (1) Set the CE terminal as low potential.
- (2) Turn off the output transistor.
- (3) Open discharge shunt.
- (4) Make output capacitor C_{OUT} discharge to 80 ω discharge resistance R_{DISCHRG} (V_{out}=3.0V @v_{in}=5.0V typical value).

The value of V potential is obtained by the following formula:

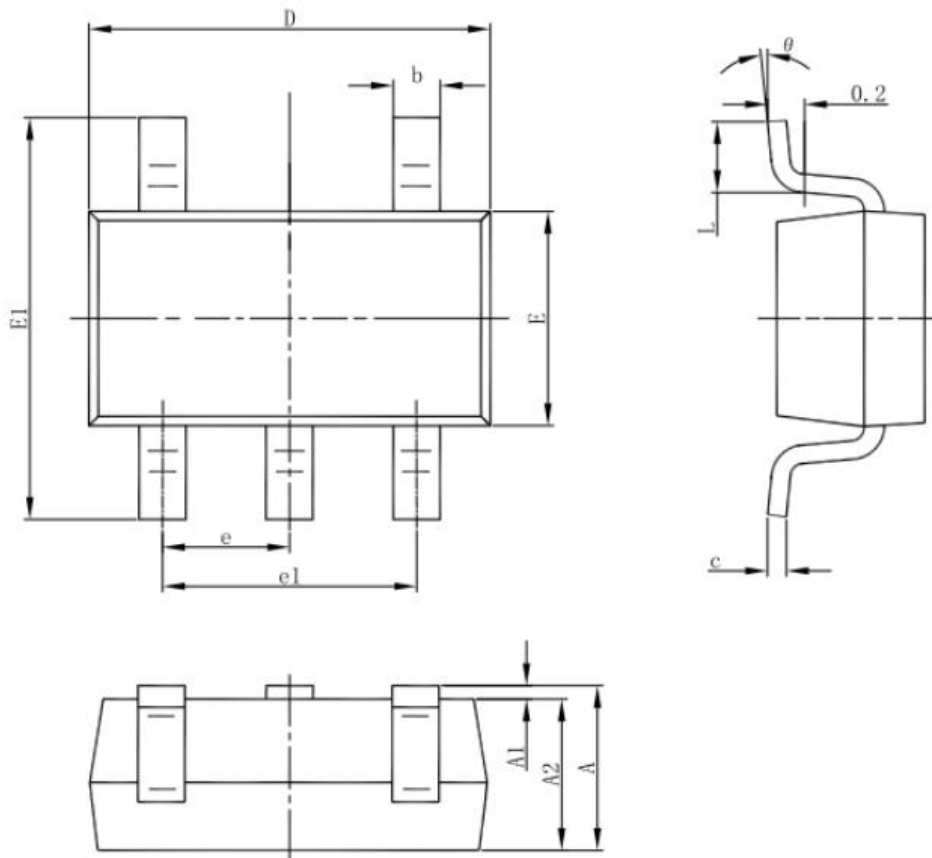
$$V = V_{OUT(E)} * e^{\frac{-t}{\tau}} \quad \text{or} \quad t = -\tau \ln\left(\frac{V}{V_{OUT(E)}}\right)$$

(V: output voltage after discharge;

V_{OUT(E)}: output voltage before discharge;

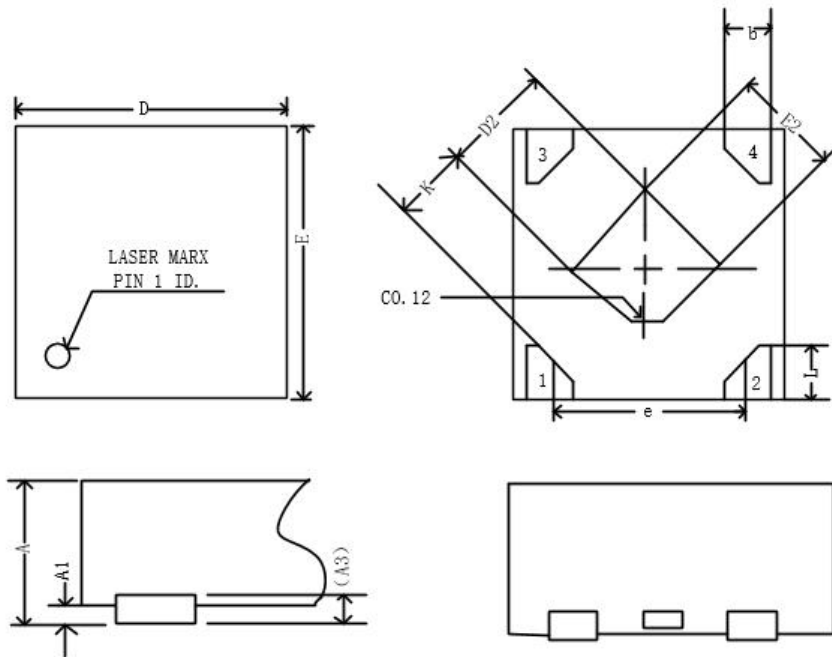
T: discharge time;

τ: RC time constant, R_{DISCHRG}×C_{OUT}.)

Packaging Information (SOT23-5)


Symbol	Dimensions In Millimeters		Dimensions In 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°

Packaging Information (DFN1×1-4)



Dimensions In Millimeters

Symbol	Min	Typical	Max
A	0.34	0.37	0.40
A1	0.00	0.02	0.05
A3	0.100REF		
b	0.17	0.22	0.27
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D2	0.43	0.48	0.53
E2	0.43	0.48	0.53
L	0.20	0.25	0.30
e	-	0.65	-
K	0.15	-1.05	-

Special Version

The company reserves the right of final interpretation of this specification.

Version Change Description

Versions: V1.6	Writer: Yang yang	Time: 2021.10.29
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Modify the record:

1. Re-typesetting the manual and checking some data.

Versions: V1.7	Writer: Yang yang	Time: 2022.4.27
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Modify the record:

1. Update the maximum output current and the typical application circuit.
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Statement

The information in the usage specification is correct at the time of publication, Shanghai Siproin Microelectronics Co. has the right to change and interpret the specification, and reserves the right to modify the product without prior notice. Users can obtain the latest version information from our official website or other effective channels before confirmation, and verify whether the relevant information is complete and up to date.

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