

300mA CMOS Voltage Regulators

Features

- Quiescent Current: 5μA(Max.)
- Input Voltage Range: 8V(Max.)
- Output Current: 300mA
- Low Dropout Voltage: 190mV@100mA ($V_{OUT} = 3.3V$)
- Output Voltage: 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 3.6V, 5.0V
- Output Voltage Accuracy: $\pm 2\%$ (Typ.)
- Low Power Consumption

Applications

- Mobile phones
- Battery powered equipment
- Portable game consoles
- Reference voltage sources

General Description

The HR6206A Series consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin.

Reference News

Marking:

HR6206A12T3: 65BX HR6206A15T3: 65E9

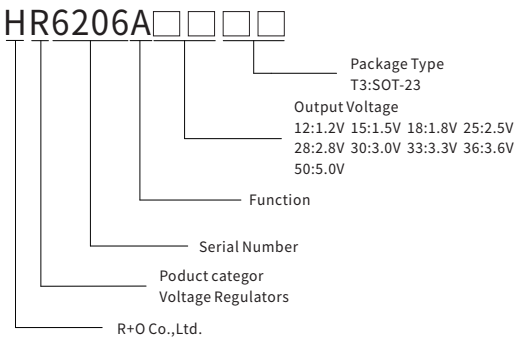
HR6206A18T3: 65K5 HR6206A25T3: 65T5

HR6206A28T3: 65X5 HR6206A30T3: 65Z5

HR6206A33T3: 662K HR6206A36T3: 665K

HR6206A50T3: 66MX

Part Numbering

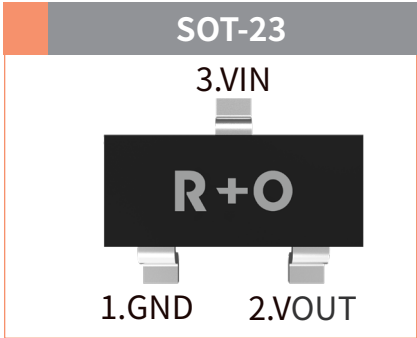


Ordering Information

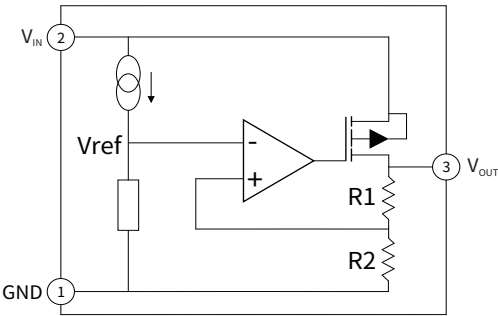
Package	Package Code	Unit Weight(g)	Reel(pcs)	Box(pcs)	Carton(pcs)	Delivery Mode	MSL
SOT-23	R1	0.008	3000	30000	180000	7"	3

Output Current
300mA

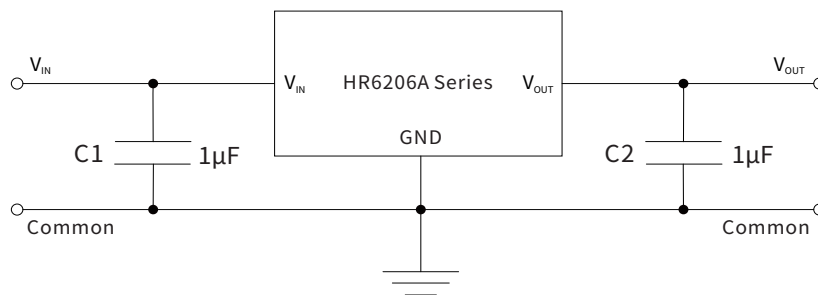
Input Voltage
8V(Max.)



Block Diagram



Typical Application Circuit



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)

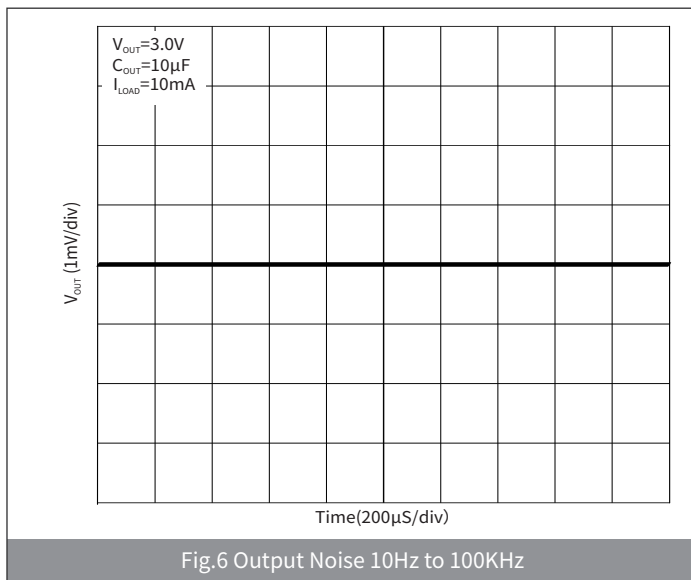
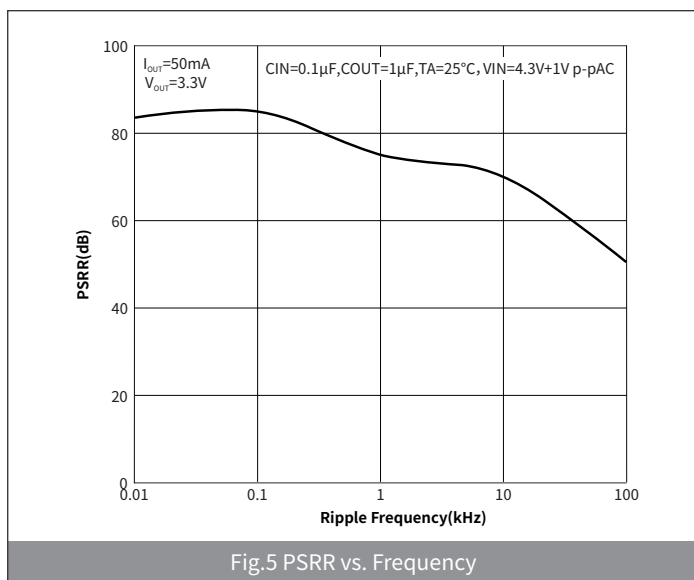
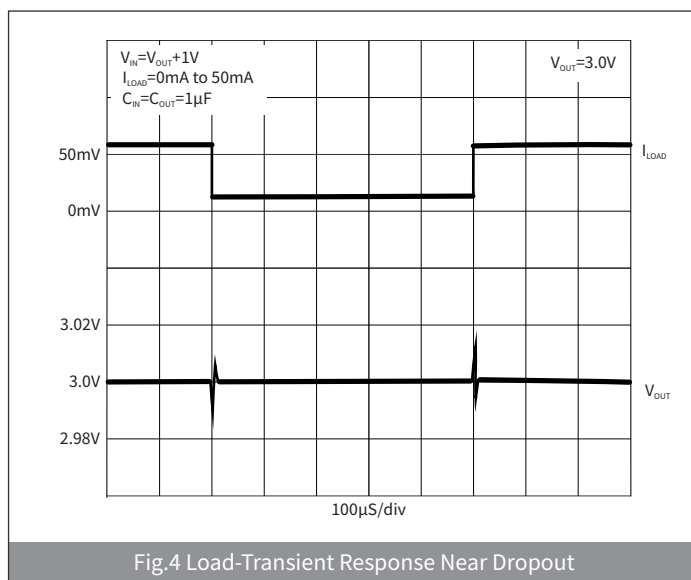
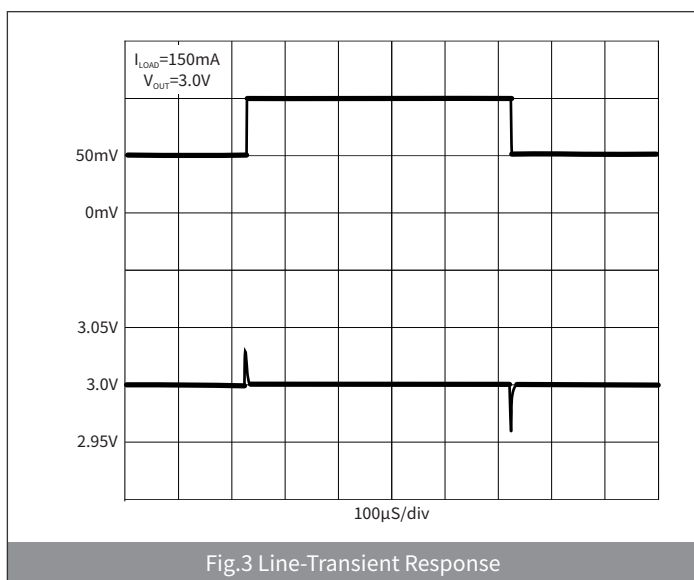
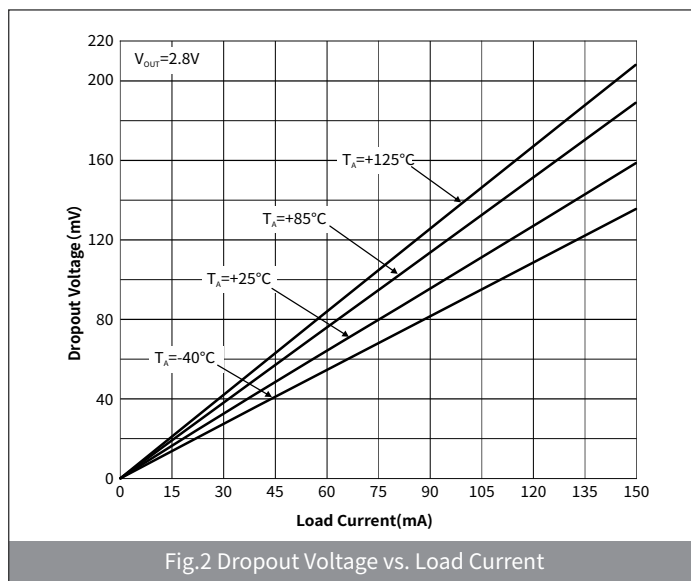
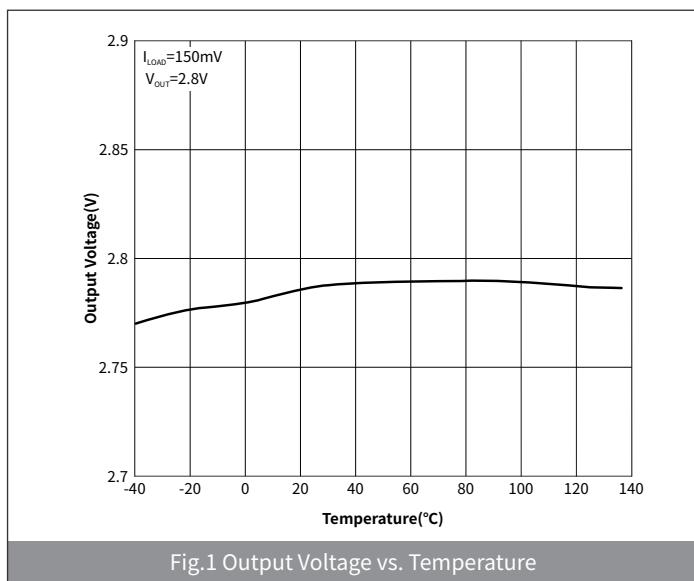
Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	$V_{OUT}+0.3 \sim V_{OUT}+7$	V
Output Voltage	V_{OUT}	1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.3, 3.6, 5.0	V
Output Current	I_{OUT}	300	mA
Power Dissipation	P_D	300	mW
Operating Temperature Range	T_{opr}	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +125	$^\circ\text{C}$

Electrical Characteristics ($V_{IN} = V_{OUT}+1$, $C_{IN} = C_{OUT} = 1\mu\text{A}$, $T_A = 25^\circ\text{C}$ Unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}	$T_A = 25^\circ\text{C}$	1.8	6	8	V
Output Voltage ^{Note 1}	V_{OUT}	$V_{IN} = V_{OUT} + 1\text{V}$ $1.0\text{mA} \leq I_{OUT} \leq 30\text{mA}$	$V_{OUT} \times 0.98$	V_{OUT}	$V_{OUT} \times 1.02$	V
Output Voltage Accuracy	ΔV_{OUT}	$I_{OUT} = 30\text{mA}$	-2	--	+2	%
Output Current	I_{OUT}	$V_{IN} - V_{OUT} = 1\text{V}$	--	300	--	mA
Quiescent Current	I_Q	$I_{OUT} = 0\text{mA}$	--	3	5	μA
Dropout Voltage	V_{DROP}	$V_{OUT} \leq 1.5\text{V}, I_{OUT} = 100\text{mA}$	--	0.35	0.57	V
		$1.8\text{V} \leq V_{OUT} \leq 2\text{V}, I_{OUT} = 100\text{mA}$	--	0.28	0.42	
		$2.8\text{V} \leq V_{OUT} \leq 5.0\text{V}, I_{OUT} = 100\text{mA}$	--	0.19	0.35	
Line Regulation	ΔV_{LINE}	$V_{IN} = 1.6\text{V to } 8\text{V}$ $I_{OUT} = 40\text{mA}$	--	0.05	0.2	%/V
Load Regulation	ΔV_{LOAD}	$V_{IN} = V_{OUT} + 1\text{V}$ $1\text{mA} \leq I_{OUT} \leq 80\text{mA}$	--	12	30	mV
Output Voltage Temperature Coefficient	$TC_{V_{OUT}}$	$I_{OUT} = 30\text{mA}$ $T_A = 0 \sim 70^\circ\text{C}$	--	± 100	--	ppm/ $^\circ\text{C}$
Power Supply Rejection Rate	PSRR	$f = 1\text{KHz}, I_{OUT} = 10\text{mA}$	--	50	--	dB
Output Noise	E_{NO}	$BW = 10\text{Hz} \sim 100\text{KHz}$	--	30	--	μV_{RMS}

Note1. Unless otherwise stated, $V_{IN} = V_{OUT} + 1.0\text{V}$.

● **Ratings And Characteristics Curves** ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)



HR6206A Series

Low Dropout Linear Regulator

Package Outline Dimensions (SOT-23)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.80	-	0.031	-
K	-	0.90	-	0.035
M	2.00	-	0.078	-
N	-	1.90	-	0.074