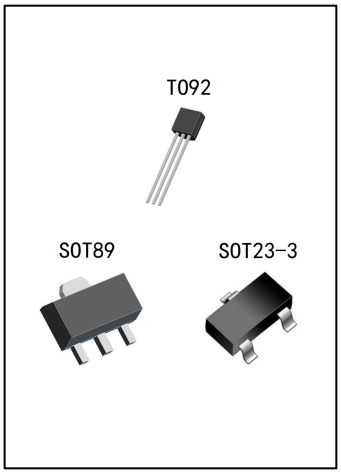
100mA Current、40V Input Voltage LDO

H75XX-H#

General Description

The H75XX-H# series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 40V. They are available with several fixed output voltages ranging from 1.8V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.



Features

- Quiescent Current: 4.2uA@12V
- PSRR:60dB@100Hz
- Voltage drop:600mV@100mA
- ESD HBM:8KV
- High input voltage (up to 40V)
- Output voltage accuracy: tolerance ±2%
- Output current:100mA(Typ.)
- TO92, SOT89 and SOT23-3 package

Applications

- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

Order specification

Part No	Package	Manner of Packing	Devices per bag/reel
H75XX-H#TX	TO92	Bag	1000PCS/bag
H75XX-H#PX	SOT89	Reel	1000PCS/reel
H75XX-H#MX	SOT23-3	Reel	3000PCS/reel

Description of selection

Part No	Output Voltage	Output Voltage Accuracy
H7525-H#XX	2.5V	±2%
H7527-H#XX	2.7V	±2%
H7528-H#XX	2.8V	±2%
H7530-H#XX	3.0V	±2%
H7533-H#XX	3.3V	±2%
H7536-H#XX	3.6V	±2%
H7540-H#XX	4.0V	±2%
H7544-H#XX	4.4V	±2%
H7550-H#XX	5.0V	±2%

Print rules

Package	Marking
TO92	75XX-H#
SOT89	75XX-H#
SOT23-3	XXH

Note:"XX" stands for output voltages. Other voltages can be specially customized.

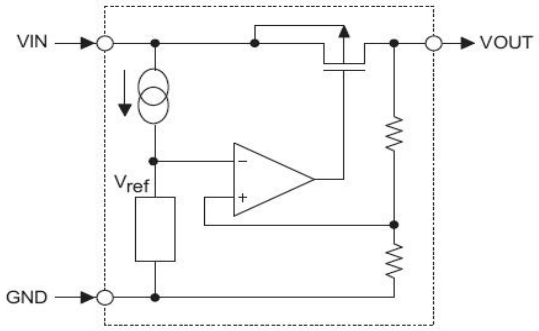
TO92 & SOT89 packages will add a "#" mark at the end of the marking.

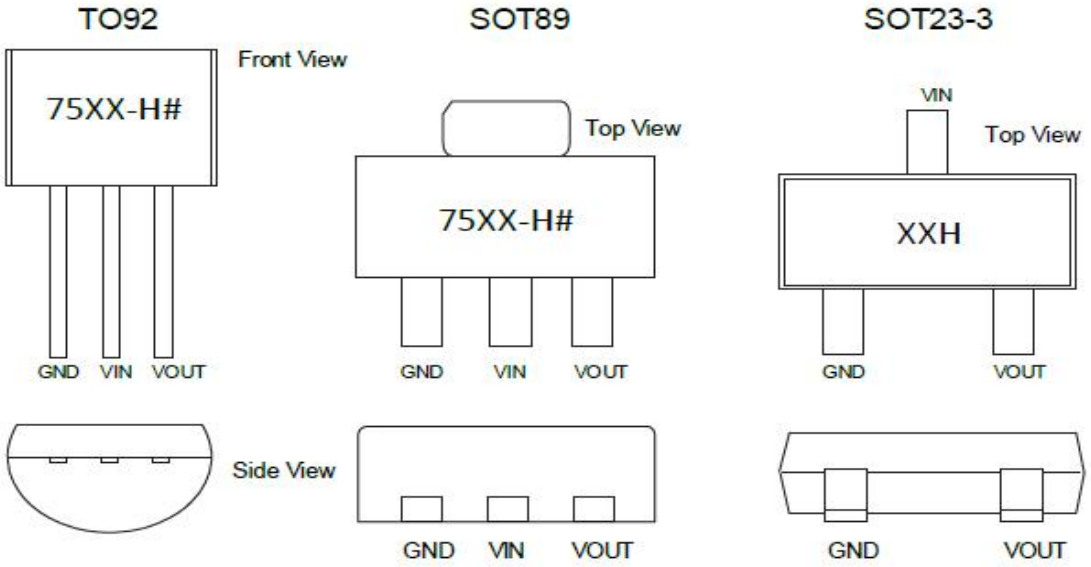
Type selection guide

H75①②③④⑤

Designator	Symbol	Description
①②	Integer	Output Voltage(1.8V~5.0V)
③	-H#	Standard
④	T	Package:TO-92
	P	Package:SOT89
	M	Package:SOT23-3
⑤	R	RoHS / Pb Free
	G	Halogen Free

Block Diagram and Pin Arrangement Diagram





Pin Assignment

Pin No.	Pin Name	Description
1	GND	Ground connection.
2	VIN	Supply Voltage Input.
3	VOUT	Output.

Functional Description

The H75XX-H# series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 40V. They are available with several fixed output voltages ranging from 1.8V to 5.0V.

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage Input	VIN	-0.3~45	V
Operating Temperature	Tamb	-40~85	℃
Storage Temperature	Tstg	-50~125	℃

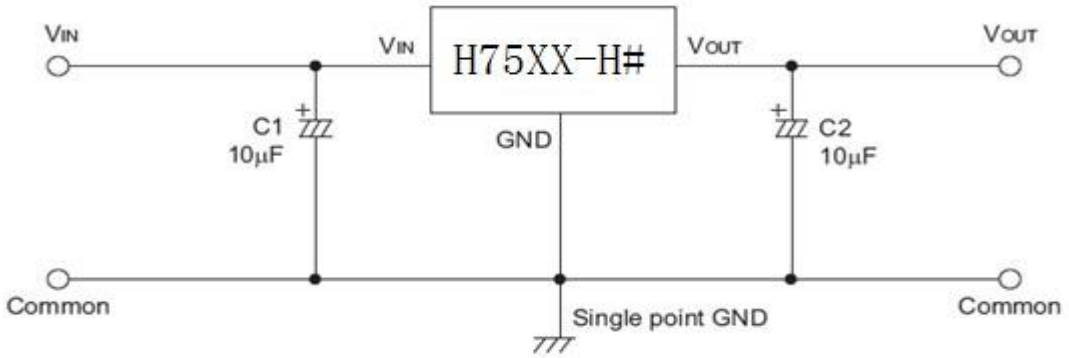
Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Thermal Information

Parameter	Symbol	Package	Max.	Unit
Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink)	θ_{JA}	SOT23-3	500	℃/W
		SOT89	200	℃/W
		TO92	200	℃/W
Power Dissipation	P_D	SOT23-3	0.20	W
		SOT89	0.50	W
		TO92	0.50	W

Note: P_D is measured at Ta= 25℃

Basic Circuits



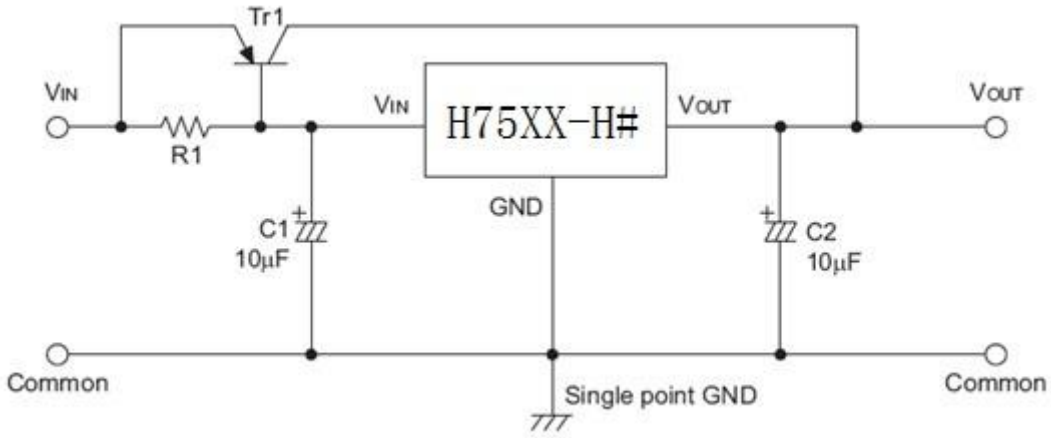
Electrical Characteristics

The following specifications apply for VIN = 12V, TA=25℃, C_{IN}=C_{OUT}=10μF, unless specified otherwise.

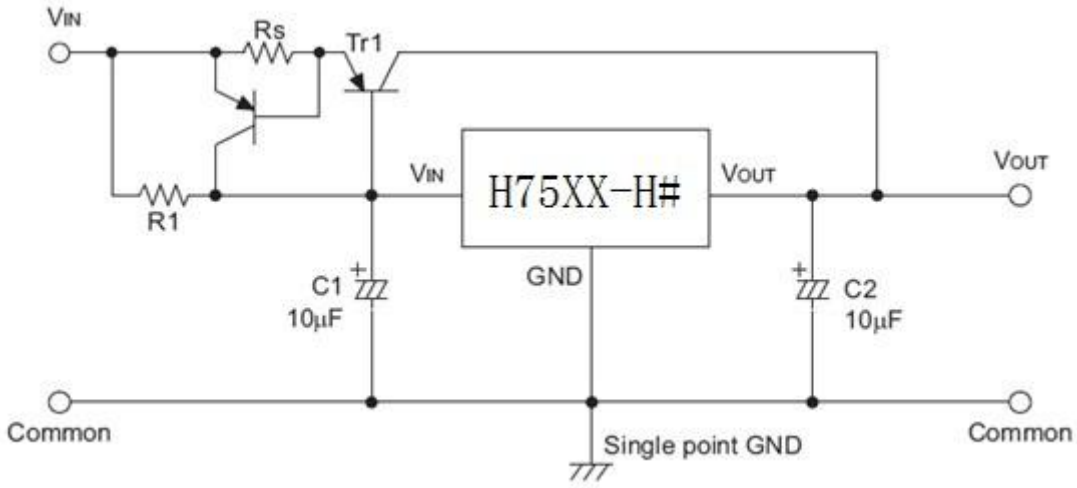
Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Input Range	V_{IN}	I_{OUT}=10mA		4.75	-	40	V
Output Range	V_{OUT}	I_{OUT}=10mA		V_{OUT}x0.98	V_{OUT}	V_{OUT}x1.02	V
Output Voltage	△V_{OUT}	V_{IN}=12V, I_{OUT}=10mA		4.9	5	5.1	V
				3.234	3.3	3.366	V
				2.94	3.0	3.06	V
Quiescent Current	I_Q	V_{IN}=7V, I_{OUT}=0		-	4	6	μA
		V_{IN}=24V, I_{OUT}=0		-	4.6	6.7	μA
		V_{IN}=40V, I_{OUT}=0		-	5.4	8.2	μA
Maximum Output Current	I_{OUT_PK}	V_{IN}=12V, R_L=1Ω		-	190	-	mA
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		-	60	90	mV
		I_{OUT}=100mA		-	600	900	mV
Line Regulation	△V_{LINE}	V_{IN}=7~24V,V_{OUT}=5V, I_{OUT}=1mA		-	0.02	0.03	%/V
		V_{IN}=7~45V,V_{OUT}=5V, I_{OUT}=1mA		-	0.08	0.1	%/V
Load Regulation	△V_{LOAD}	V_{IN}=7V,I_{OUT}=1~100mA		-	19	37	mV
Short Current	I_{SHORT}	V_{OUT} Short to GND with 1 Ω (1ms pulse), V_{IN}=40V		-	180	-	mA
Power Supply Rejection Rate	PSRR	V_{IN}= 10V, V_{PP}=0.5V, I_{OUT}=1mA	F=100Hz	-	60	-	dB
			F=1kHz	-	50	-	dB
			F=10kHz	-	40	-	dB
Output Noise Voltage	e_{NO}	10Hz to 100kHz, C_{OUT}=10 μF, I_{OUT}=10mA		-	±100	-	μV_{RMS}
Thermal Shutdown Protection	T_{SD}	V_{IN}=12V, I_{OUT}=1mA		-	165	-	℃
Temperature Coefficient	$\frac{\Delta V_O}{\Delta T}$			-	±0.5	-	mV/℃

Application Circuits

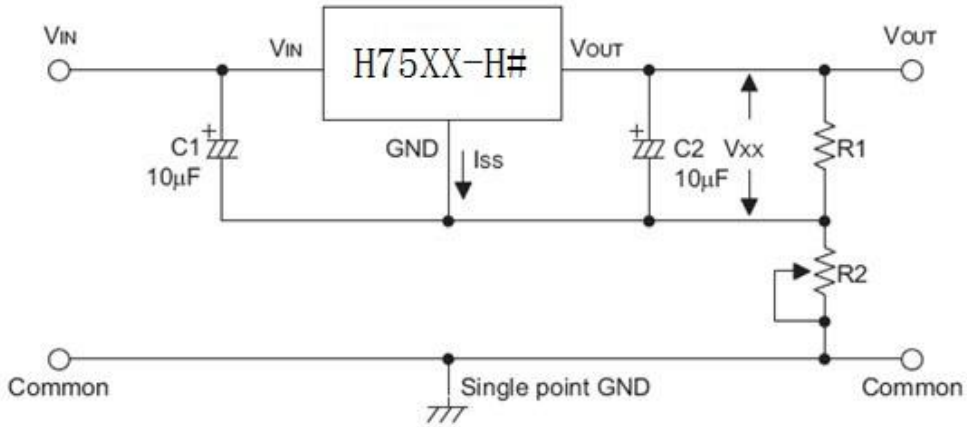
High Output Current Positive Voltage Regulator



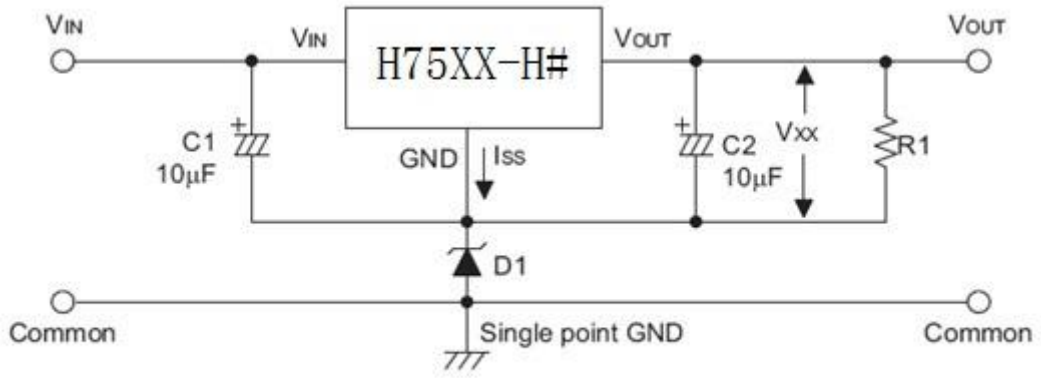
Short-Circuit Protection by Tr1



Circuit for Increasing Output Voltage

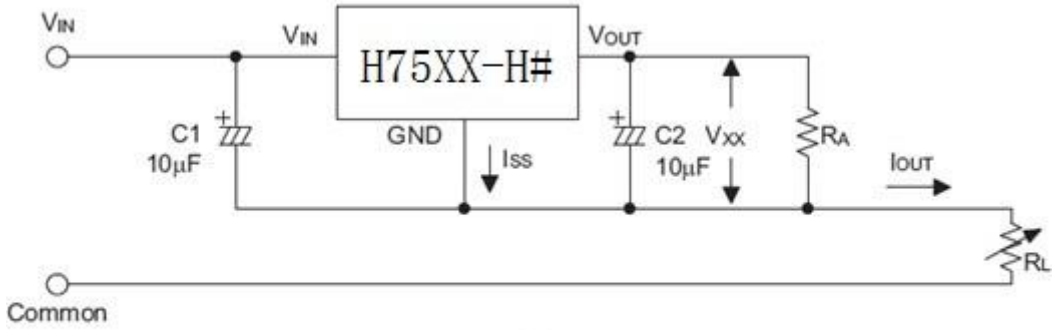


Circuit for Increasing Output Voltage



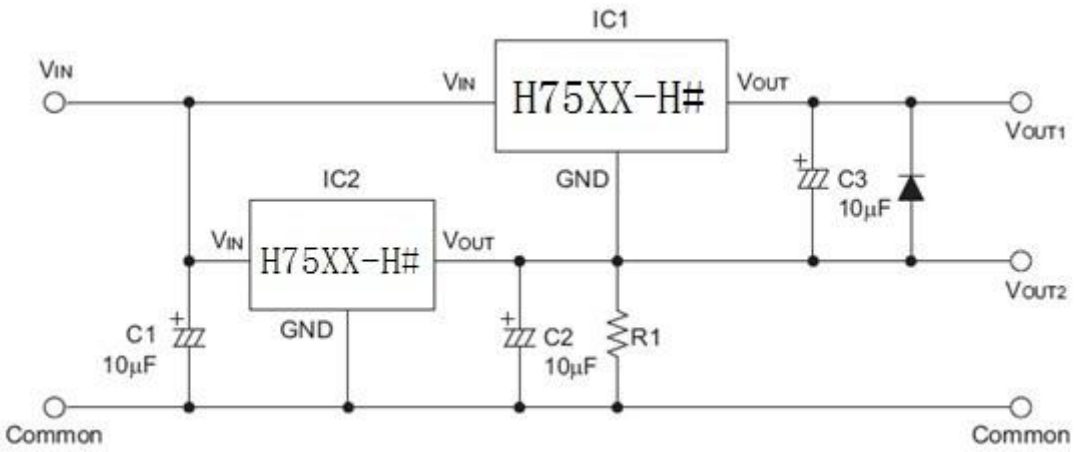
$V_{OUT}=V_{XX}+V_{D1}$

Constant Current Regulator



$$I_{OUT} = \frac{V_{XX}}{R_A} + I_{SS}$$

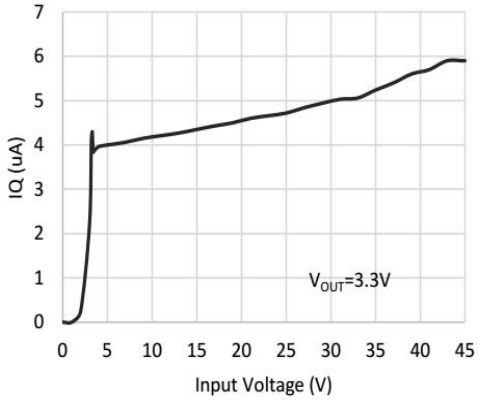
Dual Supply



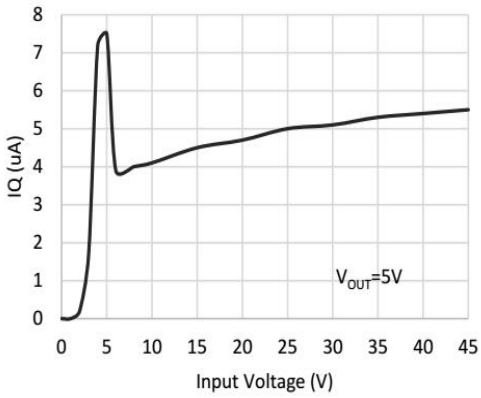
Typical Performance Characteristics

C_{IN}=10μF,C_{OUT}=10μF,T_{OPT}=25℃,unless specified otherwise.(Package:SOT89)

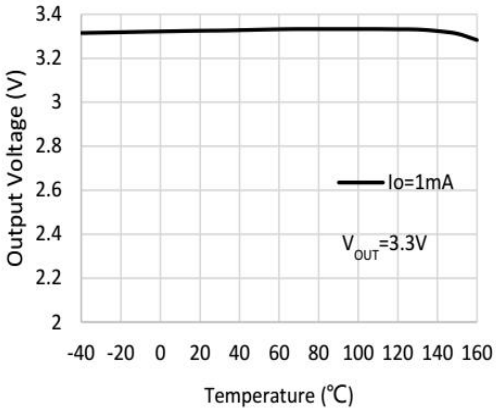
IQ vs. Input Voltage



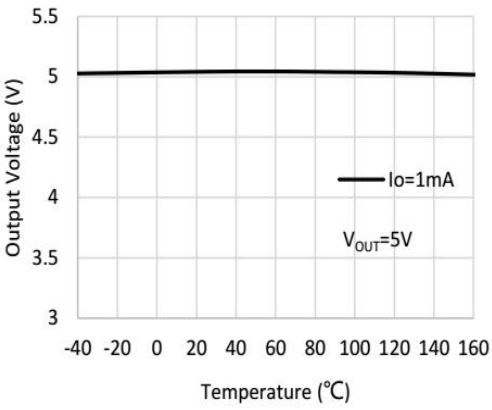
IQ vs. Input Voltage



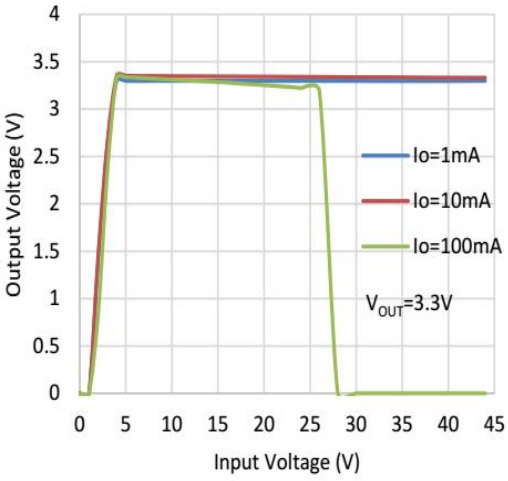
Output Voltage vs. Temperature



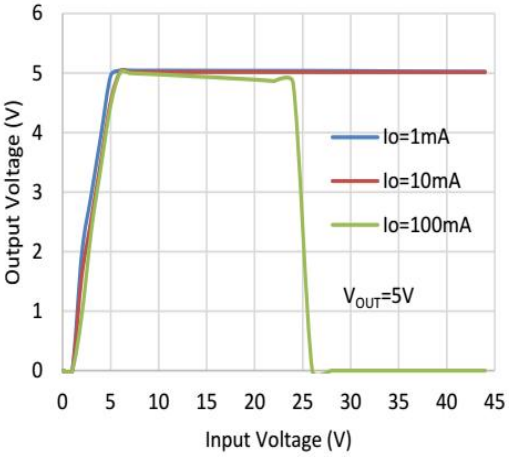
Output Voltage vs. Temperature



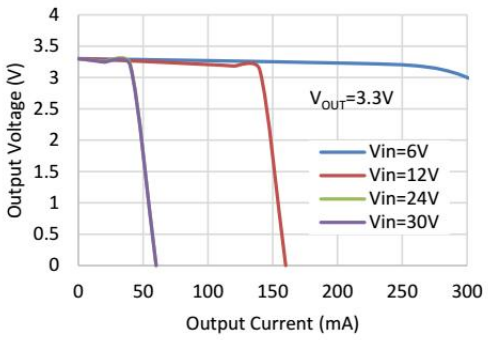
Output Voltage vs. Input Voltage



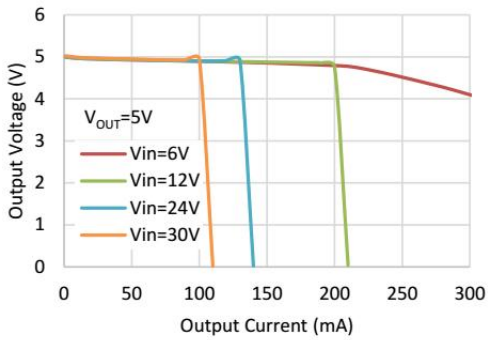
Output Voltage vs. Input Voltage



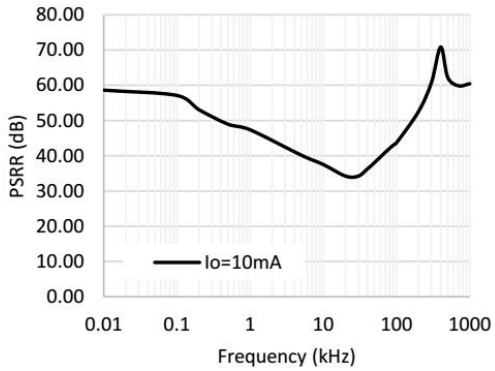
Output Voltage vs. Output Current



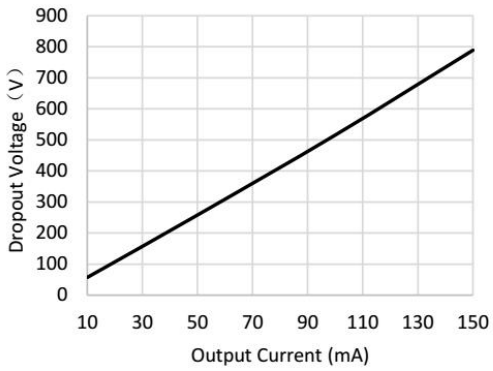
Output Voltage vs. Output Current



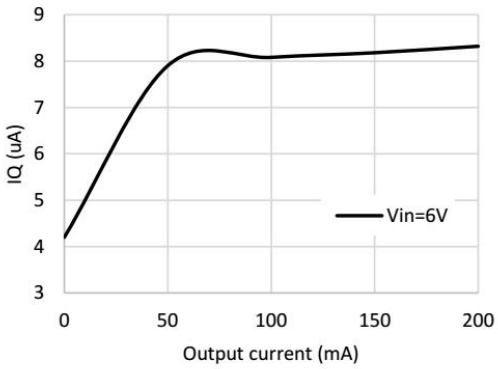
PSRR vs. Frequency



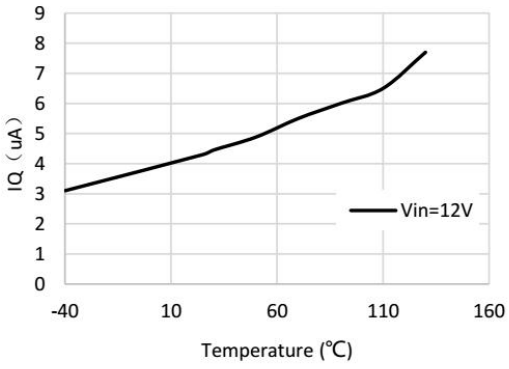
Dropout Voltage vs. Output Current



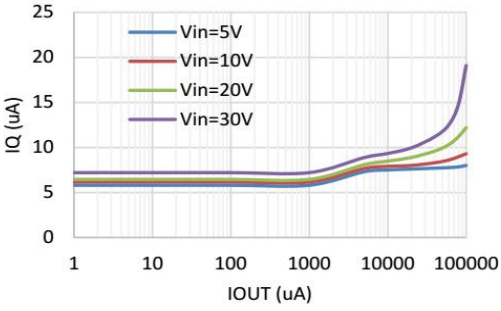
IQ vs. Output current



IQ vs. Temperature



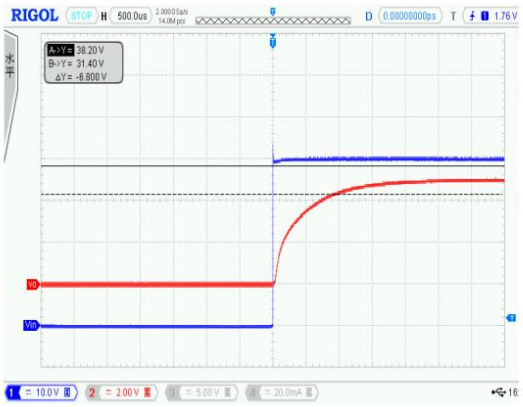
IQ vs. IOUT

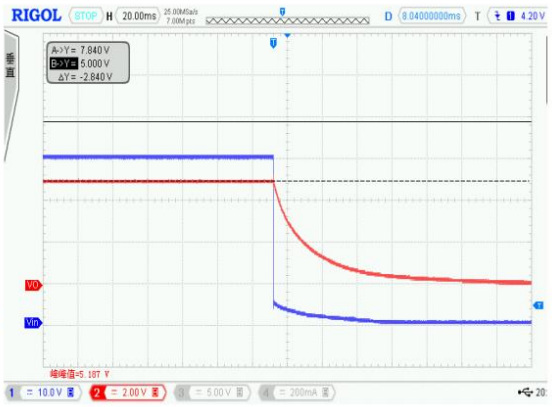


Power ON/OFF

CH1：V_{IN} **CH2：V_{OUT}**

V_{IN}=40V I_{OUT}=1mA V_{OUT}=5V

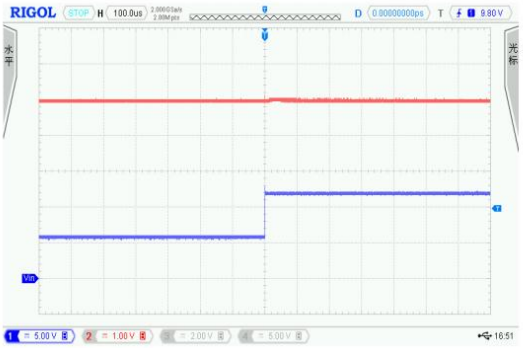




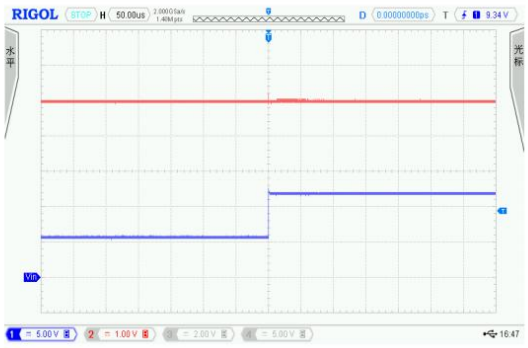
Line Transient

CH1：V_{IN} **CH2：V_{OUT}**

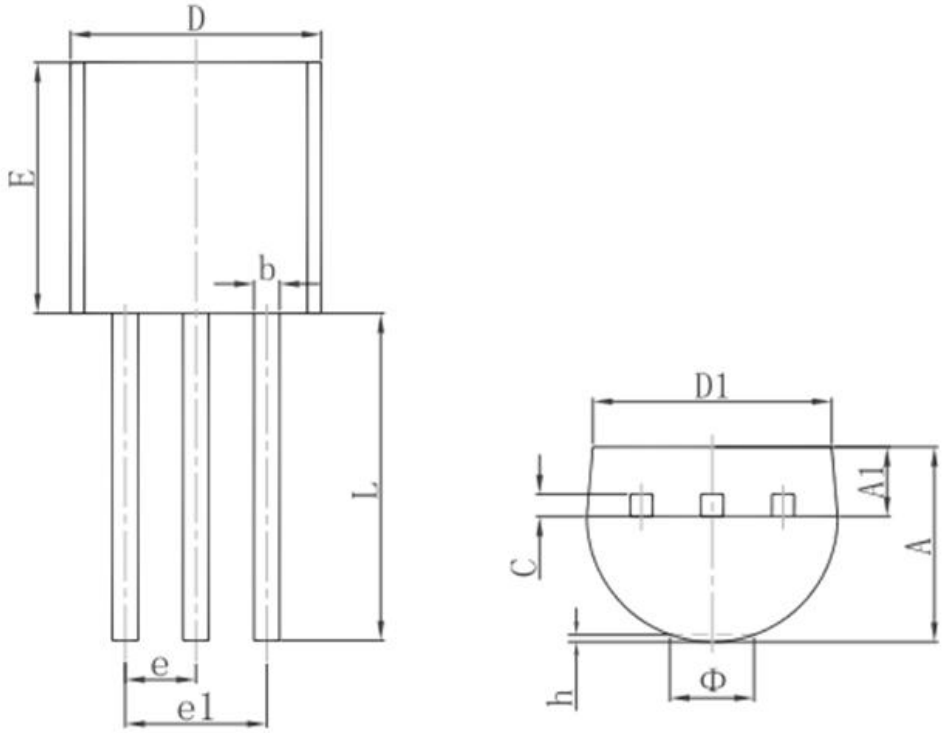
V_{IN}=6V-12V I_{OUT}=1mA V_{OUT}=5V



V_{IN}=6V-12V I_{OUT}=10mA V_{OUT}=5V

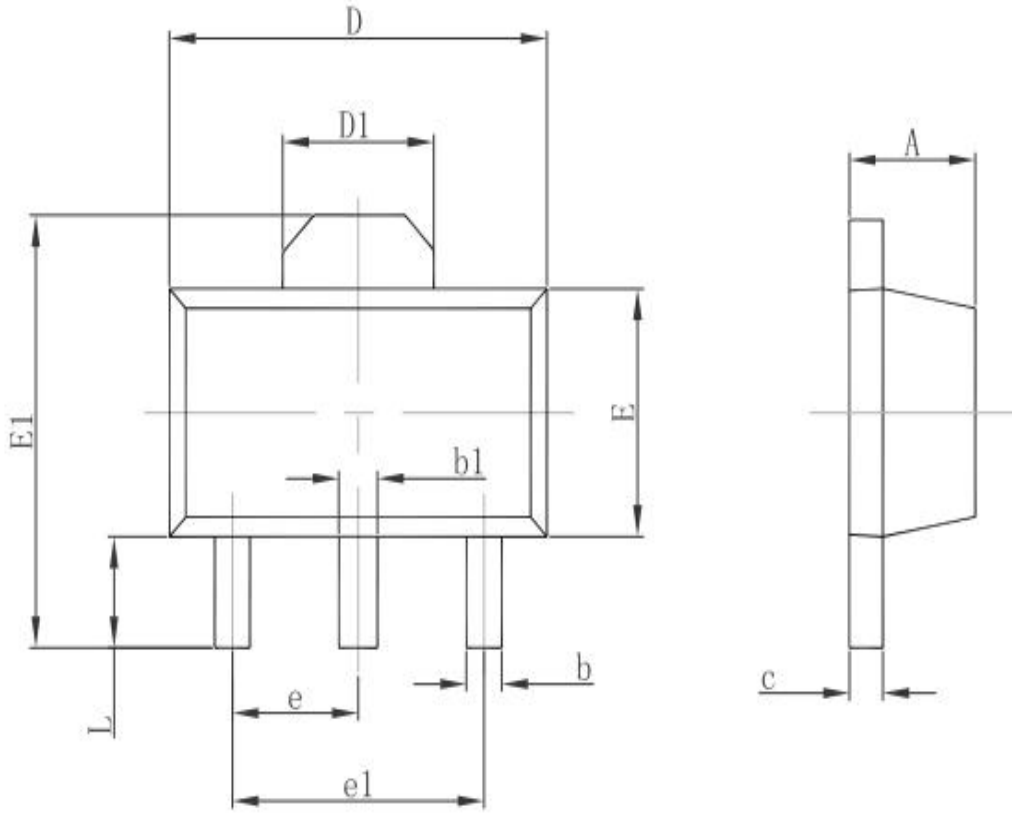


Package Information（TO92）



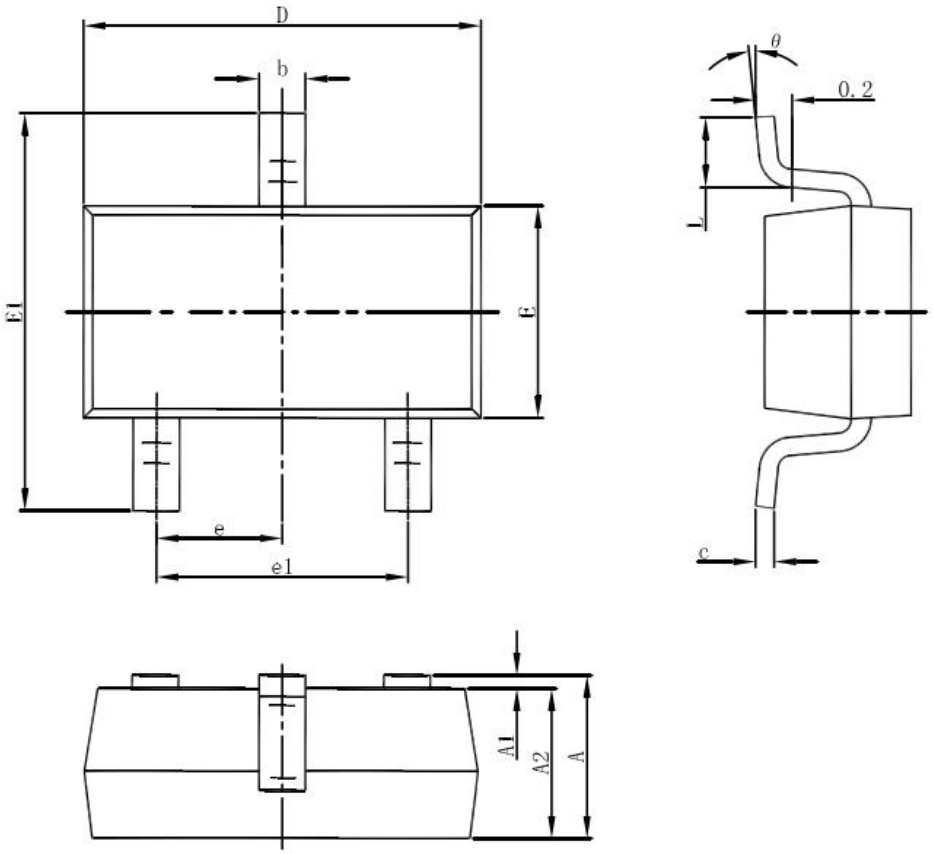
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270TYP.		0.050TYP.	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

Package Information（SOT89）



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	1.550REF.		0.061REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP.		0.060TYP.	
e1	3.000TYP.		0.118TYP.	
L	0.900	1.200	0.035	0.047

Package Information（SOT23-3）



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°

Special Instructions

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

Version Change Description

Version：V2.2	Author：Yangyang	Time：2021.11.5

Modify the record：

1. Re-typesetting the manual and checking some data