



General Description

The MD53xx series is a group of positive voltage output,three-pin regulators,it provide a high current even when the input/output voltage differential is small.low power consumption and high accuragy is achieved through CMOS and laser trimming technologies.

The MD53xx consists of a high-precision voltage reference,an error amplification circuit,and a current limited output driver.Load Transient response has improved in comparidon to the existing series.SOT-89 package.

Features

- Low voltage drop:0.26v@100mA &VOUT=3.3V
- High input voltage:15V
- Low temperature coefficient
- Large Output Current:500mA
- Low Quiescent Current:2.0uA
- Output Voltage Accuracy: tolerance $\pm 2\%$
- Built-in current limiter
- SOT-89 package

Application

- Battery-powered Equipments
- Hand-Hold Equipment
- GPS Receivers
- Wireless LAN

Pin Configuration And Descriptions

SOT-89

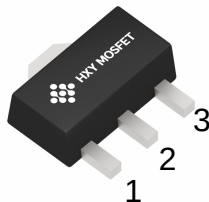


Table1: MD53xx series (SOT-89 PKG)

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

Order Information

Orderable Device	Package	Output Voltage	Packing Option
MD53xx	SOT-89	2.8V,3.0V,3.3V,3.6V, 4.0V,4.5V,5.0V	1000/Reel

xx:From 28-50

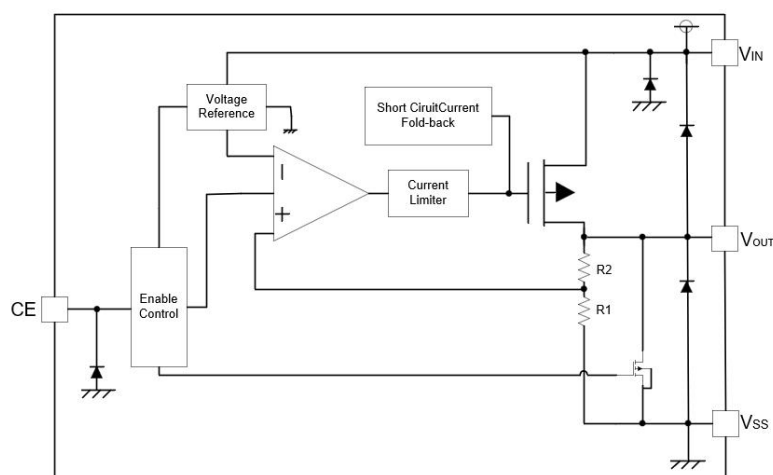


Absolute Maximum Ratings

Description	Symbol	Value Range	Unit
Supplu Voltage	V _{IN}	3.5 ~ 18	V
Storage Temperature Range	T _{STG}	-40 ~ +150	°C
Operating Free-air Temperature Range	T _A	-40 ~ +125	°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.

Block Diagram





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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V _{out}	V _{in} =V _{out} +1V 1.0mA≤I _{out} ≤30mA	V _{out} ×0.98	--	V _{out} ×1.02	V
Output Current*1	I _{out}	V _{in} -V _{out} =1.5V	--	500	--	mA
Low dropout*2	V _{drop}	Refer to the next table				
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	4.3V≤V _{in} ≤8V I _{out} =100mA	--	0.75	0.9	%/V
Load Regulation	ΔV _{out}	V _{in} = V _{out} +1V 1.0mA≤I _{out} ≤100mA	--	12	30	mV
Output voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	I _{out} =30mA 0°C≤T _a ≤70°C	--	±100	--	Ppm/°C
PSRR	PSRR	F=1KHz V _{in} =V _{out} +1V	--	40	--	dB
Supply Current	I _{ss1}	--	--	1	2	uA
Input Voltage	V _{in}	--	3.5	--	15	V

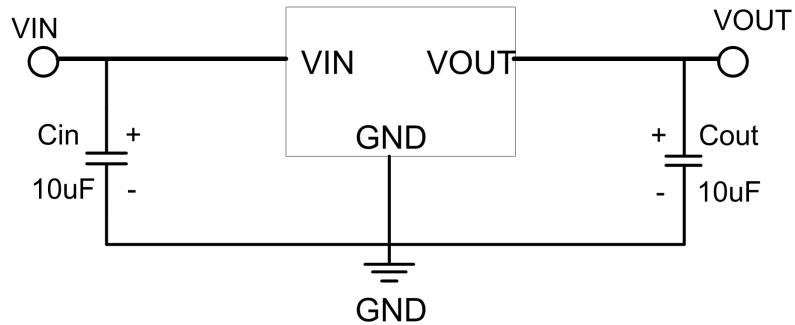
Electrical Characteristics by Output Voltage:

Output Voltage V _{out} (V)	Dropout Voltage V _{dif} (V)		
	Conditions	Typ.	Max.
2.0 < V _{out} ≤ 2.8	I _{out} =80 mA	0.4	0.6
2.8 < V _{out} ≤ 4.0	I _{out} =100 mA	0.26	0.46
4.0 < V _{out} ≤ 5.0		0.23	0.42
2.8 < V _{out} ≤ 4.0	I _{out} =200 mA	0.53	0.82
4.0 < V _{out} ≤ 5.0		0.42	0.76
3.0 < V _{out} ≤ 4.0	I _{out} =500 mA	1.5	1.8
4.0 < V _{out} ≤ 5.0		1.2	1.5



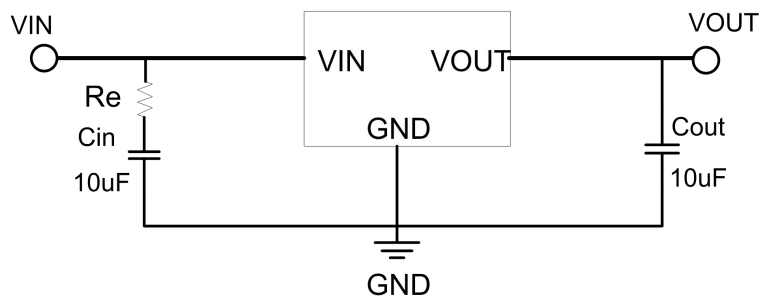
Application Circuit

Basic Circuits

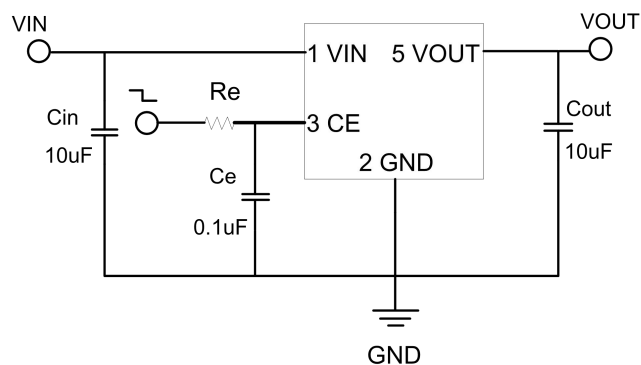


Note1: $C_{in}=C_{out}=10\mu F$. (10uF Electrolytic capacitor is recommended).

Note2: If the input and output capacitors are ceramic, add a resistor at the input, as follows.



Note: $R_e = (1.2 \sim 1.8) \Omega$.



Note1: Input capacitor $C_{IN}=10\mu F$.

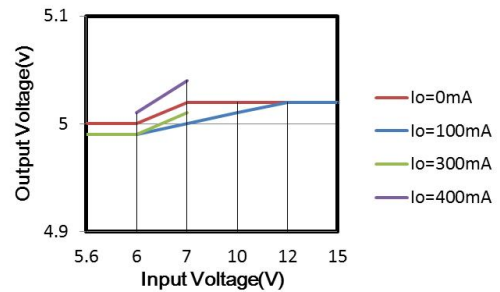
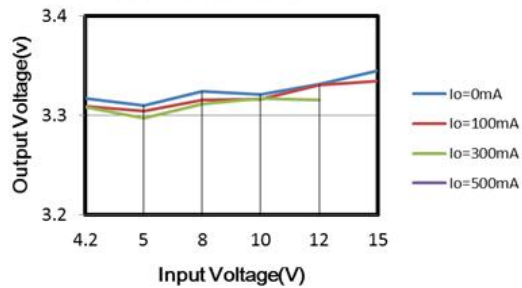
Note2: Output capacitor $C_{OUT}=10\mu F/6.8\mu F$ (1uF Tantalum capacitor or 6.8uF ceramic capacitor is recommended).

Note3: The CE port is recommended to connect the current limiting resistor R_e . The recommended resistance is 10K~47K. When the input voltage is larger than or equal to 12V, it is recommended to add a 0.01uF capacitor C_e .

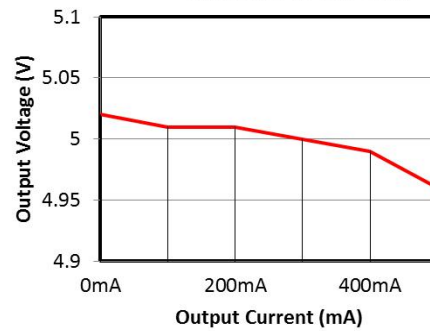
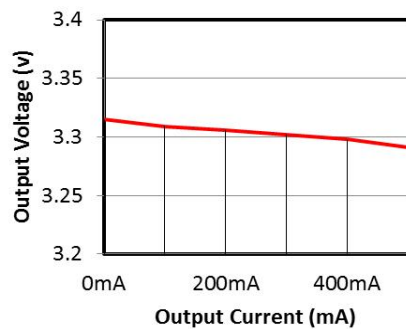


Typical Characteristics

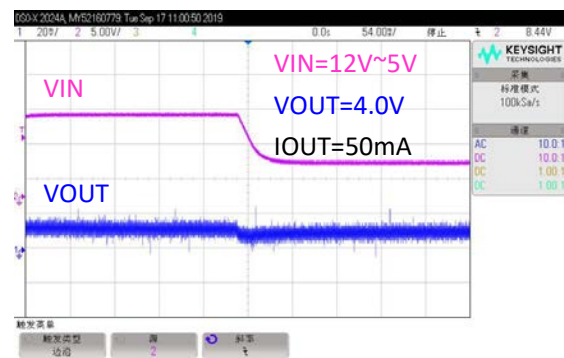
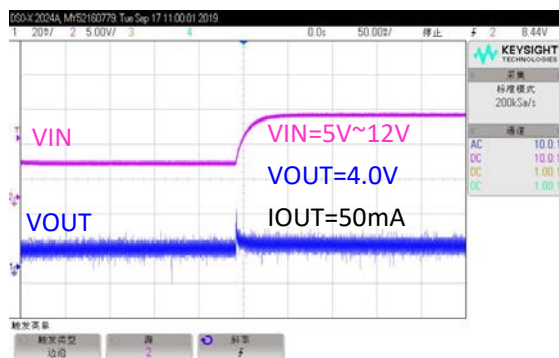
(1) Output Voltage vs Input voltage



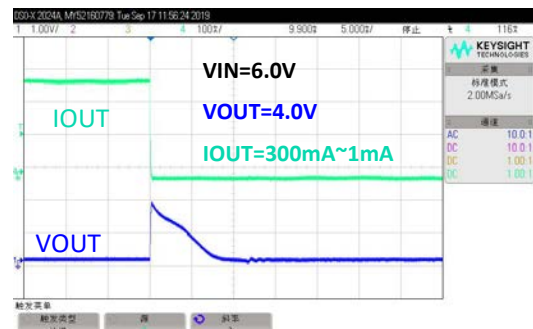
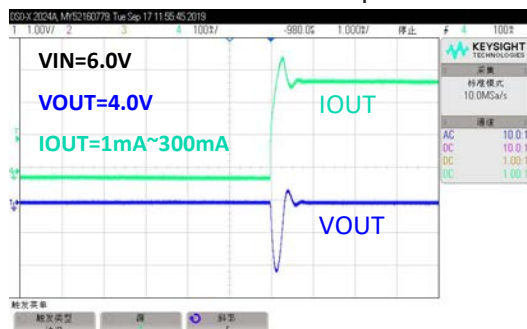
(2) Output Voltage vs. Output Current



(3) Input Transient Response

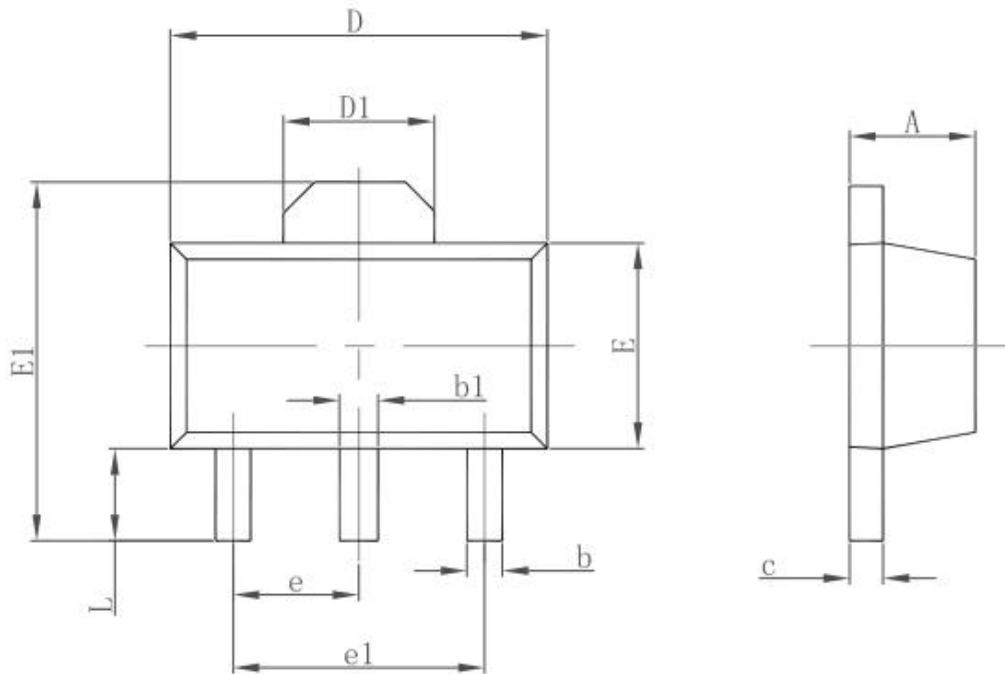


(4) Load Transient Response





Package Outline Dimensions SOT-89



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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