Contents

LOW DROPOUT CMOS VOLTAGE REGULATOR S-814 Series

The S-814 Series is a low dropout voltage, high output voltage accuracy and low current consumption positive voltage regulator developed utilizing CMOS technology.
Built-in low ON-resistance transistors provide low dropout voltage and large output current.
A power-OFF circuit ensures long battery life.
Various types of output capacitors can be used in the S-814 Series compared with the past CMOS voltage regulators. (i.e., small ceramic capacitors can also be used in the S-814 Series).
The SOT-23-5 miniaturized package and the SOT-89-5 package are recommended to be used for configuring portable devices and large output current applications, respectively.

■ Features

- Low current consumption
  During operation: Typ. 30 µA, Max. 40 µA
  During power off: Typ. 100 nA, Max. 500 nA
- Output voltage: 0.1 V steps between 2.0 and 6.0 V
- High accuracy output voltage: ±2.0%
- Output current;
  110 mA capable (3.0 V output product, V_{IN}=4 V) Note*
  180 mA capable (5.0 V output product, V_{IN}=6 V) Note*
- Low dropout voltage
  Typ. 170 mV (5.0 V output product, I_{OUT} = 60 mA)
- Built-in power-off circuit
- Built-in short current limit circuit
- Low ESR capacitor (e.g., a ceramic capacitor of 0.47 µF or more) can be used as the output capacitor.
- Compact package: SOT-23-5, SOT-89-5

Note*

Check power dissipation of the package when you use large output current.

■ Applications

- Power source for battery-powered devices
- Power source for personal communication devices
- Power source for home electric/electronic appliances

■ Block Diagram

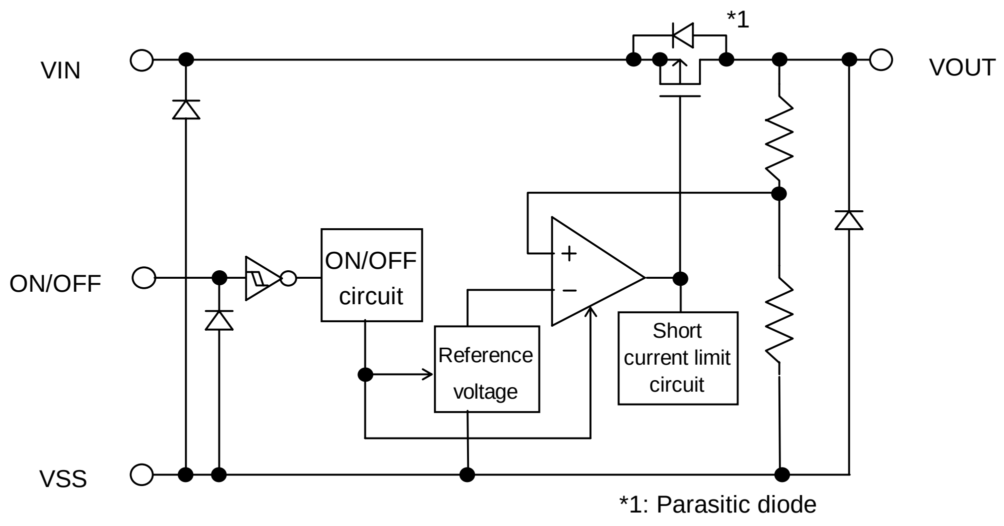


Figure 1 Block Diagram

■ Selection Guide

1. Product Name

S-814x xx A xx - xxx - T2

- T2: IC orientation for taped specifications
- xxx: Product symbol
- xx: Package type — MC : SOT-23-5; UC : SOT-89-5
- xx: Output voltage x 10
- x: Product type — A: ON/$\overline{\text{OFF}}$ pin positive logic; B: $\overline{\text{ON}}$/OFF pin negative logic

Table 1 Selection Guide

Output Voltage	SOT-23-5	SOT-89-5
2.0 V ± 2.0%	S-814A20AMC-BCK-T2	S-814A20AUC-BCK-T2
2.2 V ± 2.0%	—	S-814A22AUC-BCM-T2
2.4 V ± 2.0%	—	S-814A24AUC-BCO-T2
2.5 V ± 2.0%	S-814A25AMC-BCP-T2	S-814A25AUC-BCP-T2
2.7 V ± 2.0%	S-814A27AMC-BCR-T2	—
2.8 V ± 2.0%	S-814A28AMC-BCS-T2	S-814A28AUC-BCS-T2
3.0 V ± 2.0%	S-814A30AMC-BCU-T2	S-814A30AUC-BCU-T2
3.3 V ± 2.0%	S-814A33AMC-BCX-T2	S-814A33AUC-BCX-T2
3.8 V ± 2.0%	S-814A38AMC-BDC-T2	S-814A38AUC-BDC-T2
4.0 V ± 2.0%	S-814A40AMC-BDE-T2	S-814A40AUC-BDE-T2
5.0 V ± 2.0%	S-814A50AMC-BDO-T2	S-814A50AUC-BDO-T2

Note:
Contact our sales person for products with an output voltage other than those specified above or product type B.

■ Pin Configuration

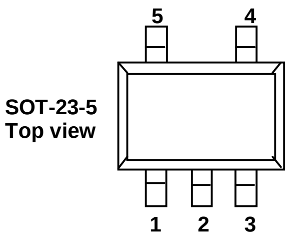


Figure 2 SOT-23-5

Table 2-1 Pin Assignment (1)

Pin No.	Symbol	Description
1	VIN	Voltage input pin
2	VSS	GND pin
3	ON/OFF	Power off pin
4	NC[Note]*	No connection
5	VOUT	Voltage output pin

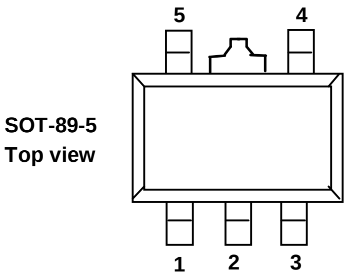


Figure 3 SOT-89-5

Table 2-2 Pin Assignment (2)

Pin No.	Symbol	Description
1	VOUT	Voltage output pin
2	VSS	GND pin
3	NC [Note]*	No connection
4	ON/OFF	Power off pin
5	VIN	Voltage input pin

[Note]*: Electrically open - - there is no problem even when connecting pin NC to VIN or VSS.

■ Absolute Maximum Ratings

Table 3 Absolute Maximum Ratings (25°C unless otherwise specified)

Item	Symbol	Absolute Maximum Rating	Unit
Input voltage	V_{IN}	12	V
	$V_{ON / OFF}$	V_{SS}-0.3 to 12	V
Output voltage	V_{OUT}	V_{SS}-0.3 to V_{IN}+0.3	V
Power dissipation	P_D	250 (SOT-23-5) 500 (SOT-89-5)	mW
Operating temperature range	Tope	-40 to +85	°C
Storage temperature range	Tstg	-40 to +125	°C

Note:

This IC has a protection circuit against static electricity. DO NOT apply high static electricity or high voltage that exceeds the performance of the protection circuit to the IC.

■ Electrical Characteristics

S-814AXXAMC/UC, S-814BXXAMC/UC

Table 4 Electrical Characteristics (25°C unless otherwise specified)

Item	Symbol	Conditions		Min.	Typ.	Max.	Units	Test circuits
Output voltage *1)	$V_{OUT}(E)$	$V_{IN}=V_{OUT}(S)+1V, I_{OUT}=30mA$		$V_{OUT}(S)\times 0.98$	$V_{OUT}(S)$	$V_{OUT}(S)\times 1.02$	V	1
Output current *2)	I_{OUT}	$V_{OUT}(S)+1V \le V_{IN} \le 10V$	$2.0V \le V_{OUT}(S) \le 2.9V$	100 *5)	–	–	mA	3
			$3.0V \le V_{OUT}(S) \le 3.9V$	110 *5)	–	–	mA	3
			$4.0V \le V_{OUT}(S) \le 4.9V$	135 *5)	–	–	mA	3
			$5.0V \le V_{OUT}(S) \le 6.0V$	180 *5)	–	–	mA	3
Dropout voltage *3)	Vdrop	I_{OUT} = 60mA	$2.0V \le V_{OUT}(S) \le 2.4V$	–	0.51	0.87	V	1
			$2.5V \le V_{OUT}(S) \le 2.9V$	–	0.38	0.61	V	1
			$3.0V \le V_{OUT}(S) \le 3.4V$	–	0.30	0.44	V	1
			$3.5V \le V_{OUT}(S) \le 3.9V$	–	0.24	0.33	V	1
			$4.0V \le V_{OUT}(S) \le 4.4V$	–	0.20	0.26	V	1
			$4.5V \le V_{OUT}(S) \le 4.9V$	–	0.18	0.22	V	1
			$5.0V \le V_{OUT}(S) \le 5.4V$	–	0.17	0.21	V	1
			$5.5V \le V_{OUT}(S) \le 6.0V$	–	0.17	0.20	V	1
Line regulation 1	$\frac{\Delta V_{OUT}1}{\Delta V_{IN} \bullet V_{OUT}}$	$V_{OUT}(S) + 0.5 V \le V_{IN} \le 10 V$, I_{OUT} = 30mA		—	0.05	0.2	%/V	1
Line regulation 2	$\frac{\Delta V_{OUT}2}{\Delta V_{IN} \bullet V_{OUT}}$	$V_{OUT}(S) + 0.5 V \le V_{IN} \le 10 V$, $I_{OUT} = 10\mu A$		—	0.05	0.2	%/V	1
Load regulation	$\Delta V_{OUT}3$	$V_{IN} = V_{OUT}(S) + 1 V$, $10\mu A \le I_{OUT} \le 80mA$		—	30	50	mV	1
Output voltage temperature coefficient *4)	$\frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}$	$V_{IN} = V_{OUT}(S) + 1 V$, I_{OUT} = 30mA, -40°C ≤ Ta ≤ 85°C			±100	—	ppm /°C	1
Current consumption during operation	$I_{SS}1$	$V_{IN} = V_{OUT}(S) + 1 V$, ON/OFF pin = ON, no load		—	30	40	μA	2
Current consumption when power off	$I_{SS}2$	$V_{IN} = V_{OUT}(S) + 1 V$, ON/OFF pin = OFF, no load		—	0.1	0.5	μA	2
Input voltage	V_{IN}			—	—	10	V	1
Power-off pin input voltage "H"	V_{SH}	$V_{IN} = V_{OUT}(S) + 1 V$, $R_L = 1k\Omega$, Check it at V_{OUT} level.		1.5	—	—	V	4
Power-off pin input voltage "L"	V_{SL}	$V_{IN} = V_{OUT}(S) + 1 V$, $R_L = 1k\Omega$, Check it at V_{OUT} level.		—	—	0.3	V	4
Power-off pin input current "H"	I_{SH}	$V_{IN} = V_{OUT}(S) + 1 V$, ON/OFF = 7 V		—	—	0.1	μA	4
Power-off pin input current "L"	I_{SL}	$V_{IN} = V_{OUT}(S) + 1 V$, ON/OFF = 0 V		—	—	-0.1	μA	4
Short current limit	I_{OS}	$V_{IN} = V_{OUT}(S) + 1 V$, V_{OUT} pin = 0 V		—	70	—	mA	3
Ripple rejection	|RR|	$V_{IN} = V_{OUT}(S) + 1 V$, f = 100Hz, ΔVrip = 0.5 Vrms, IOUT=30mA		—	45	—	dB	5

*1) $V_{OUT}(S)$=Specified output voltage
$V_{OUT}(E)$=Effective output voltage, i.e., the output voltage when fixing I_{OUT}(=30 mA) and inputting $V_{OUT}(S)$+1.0 V.

*2) Output amperage when output voltage goes below 95% of $V_{OUT}(E)$ after gradually increasing output current.

*3) Vdrop = $V_{IN}1-(V_{OUT}(E) \times 0.98)$
$V_{IN}1$ = Input voltage when output voltage falls 98% of $V_{OUT}(E)$ after gradually decreasing input voltage.

*4) A change in temperatures [mV/°C] is calculated using the following equation.

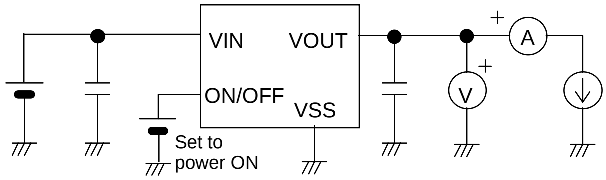
$$\frac{\Delta V_{OUT}}{\Delta Ta}[mV/^{\circ}C] = V_{OUT}(S)[V] \times \frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}[ppm/^{\circ}C] \div 1000$$

↑ Change in temperature of output voltage
↑ Specified output voltage
↑ Output voltage temperature coefficient

*5) Use load amperage not exceeding this value.

■ Test Circuits

1.



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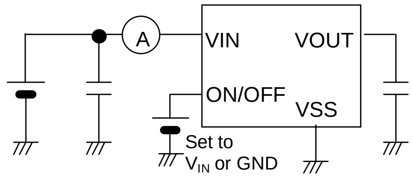

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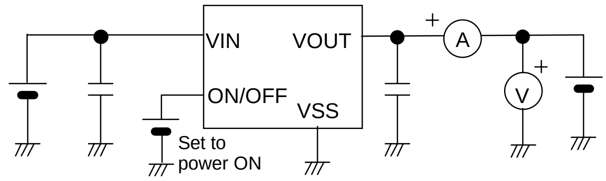

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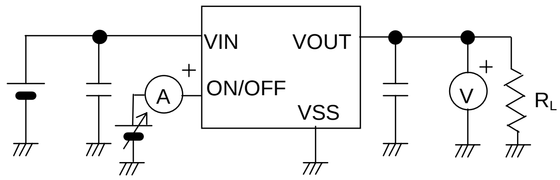

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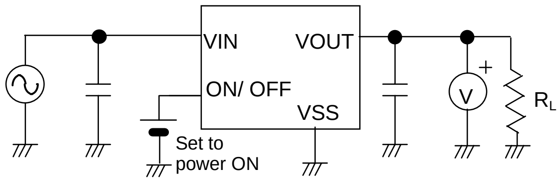
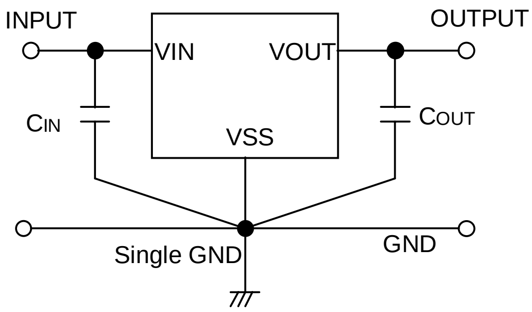


Figure 4 Test Circuits

■ Standard Circuit



In addition to a tantalum capacitor, a ceramic capacitor of 0.47 μF or more can be used in CL.
C_{IN} is a capacitor used to stabilize input.

Figure 5 Standard Circuit

■ Technical Terms

1. Low dropout voltage regulator
   The low dropout voltage regulator is a voltage regulator featuring a low dropout voltage characteristic due to its internal low ON-resistance characteristic transistors.

2. Low ESR
   ESR is the abbreviation for Equivalent Series Resistance.
   The low ESR output capacitor (CL) can be used in the S-814 Series.

3. Output voltage (V_{OUT})
   The accuracy of the output voltage is ensured at ± 2.0% under the specified conditions of input voltage, output current, and temperature, which differ depending upon the product items.

   Note:
   If you change the above conditions, the output voltage value may vary out of the accuracy range of the output voltage. See the electrical characteristics and characteristics data for details.

4. Line regulations 1 and 2 ($\Delta V_{OUT}1$, $\Delta V_{OUT}2$)
   Indicate the input voltage dependencies of output voltage. That is, the values show how much the output voltage changes due to a change in the input voltage with the output current remained unchanged.

5. Load regulation ($\Delta V_{OUT}3$)
   Indicates the output current dependencies of output voltage. That is, the values show how much the output voltage changes due to a change in the output current with the input voltage remained unchanged.

6. Dropout voltage (Vdrop)
   Indicates a difference between input voltage (V_{IN1}) and output voltage when output voltage falls by 98 % of V_{OUT} (E) by gradually decreasing the input voltage.
   Vdrop = $V_{IN}1-[V_{OUT}(E) \times 0.98]$

7. Temperature coefficient of output voltage [$\Delta V_{OUT}/(\Delta Ta \bullet V_{OUT})$]
   The shadowed area in Figure 6 is the range where V_{OUT} varies in the operating temperature range when the temperature coefficient of the output voltage is ±100 ppm/°C.

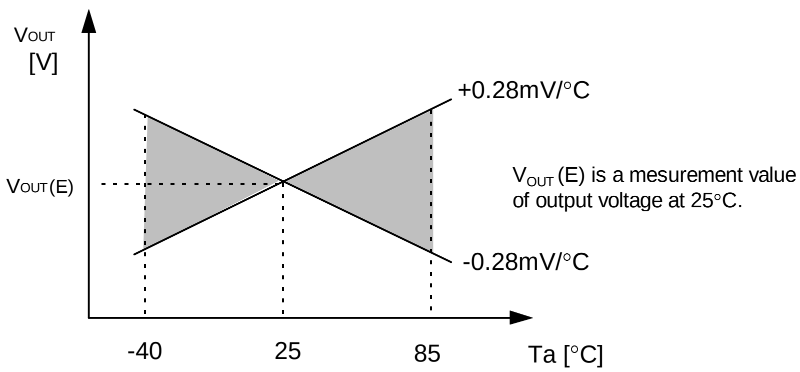


Figure 6 Typical Example of the S-814A28A

A change in temperatures of output voltage [mV/°C] is calculated using the following equation.

$$\frac{\Delta V_{OUT}}{\Delta Ta}[\text{mV/°C}] = V_{OUT}(S)[\text{V}] \times \frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}[\text{ppm/°C}] \div 1000$$

↑ Change in temperatures of output voltage

↑ Specified output voltage

↑ Output voltage temperature coefficient

■ Operation

1. Basic operation
   Figure 7 shows the block diagram of the S-814 Series.
   The error amplifier compares a reference voltage V_{REF} with part of the output voltage divided by the feedback resistors Rs and Rf. It supplies the output transistor with the gate voltage, necessary to ensure certain output voltage free of any fluctuations of input voltage and temperature.

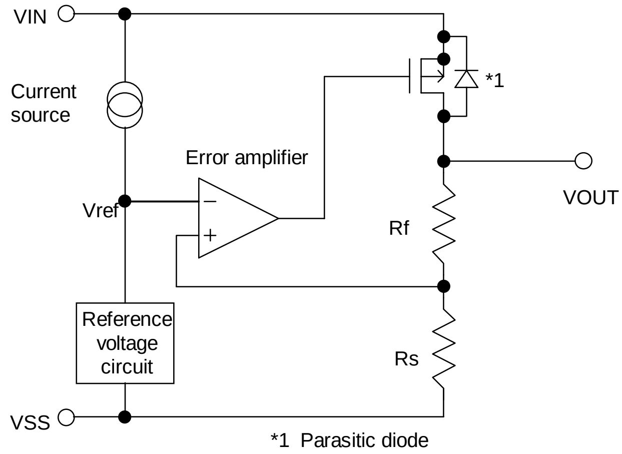


Figure 7 Typical Circuit Block Diagram

2. Output transistor
   The S-814 Series uses a low on-resistance Pch MOS FET as the output transistor.
   Be sure that VOUT does not exceed VIN+0.3 V to prevent the voltage regulator from being broken due to inverse current flowing from VOUT pin through a parasitic diode to VIN pin.

3. Power Off Pin (ON/OFF Pin)
   This pin starts and stops the regulator.
   When the ON/OFF pin is switched to the power off level, the operation of all internal circuits stops, the built-in Pch MOSFET output transistor between pins VIN and VOUT is switched off, allowing current consumption to be drastically reduced. The VOUT pin enters the Vss level due to internally divided resistance of several MΩ between pins VOUT and VSS.
   Furthermore, the structure of the ON/OFF pin is as shown in Figure 8. Since the ON/OFF pin is neither pulled down nor pulled up internally, do not use it in the floating state. In addition, please note that current consumption increases if a voltage of 0.3 V to VIN-0.3 V is applied to the ON/OFF pin. Connect the power off pin to the VIN pin when not in use.

Product type	ON/OFF pin	Internal circuit	VOUT pin voltage	Current consumption
A	“H” : Power on	Operating	Set value	Iss1
A	“L” : Power off	Stop	Vss level	Iss2
B	“H” : Power off	Stop	Vss level	Iss2
B	“L” : Power on	Operating	Set value	Iss1

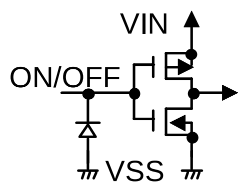


Figure 8 ON/OFF Pin

4. Short Current Limit Circuit
   The S-814 Series incorporates a short current limit circuit to protect the output transistor against shortcircuiting between pins VOUT and VSS. The short current limit circuit controls output current as shown in (1) OUTPUT VOLTAGE versus OUTPUT CURRENT curve, and prevents output current of approx. 70 mA or more from flowing even if VOUT and VSS pins are shorted.
   However, the short current limit circuit does not protect thermal shutdown.
   Be sure that input voltage and load current do not exceed the specified power dissipation level.
   When output current is large and a difference between input and output voltages is large even if not shorted, the short current limit circuit may start functioning and the output current may be controlled to the specified amperage.
   For details, refer to (3) MAXIMUM OUTPUT CURRENT versus INPUT VOLTAGE curve (page 10).

■ Selection of Output Capacitor (CL)

Mount an output capacitor between VOUT and VSS pins for phase compensation.

The S-814 Series enables customers to use a ceramic capacitor as well as a tantalum or an aluminum electrolytic capacitor.

- A ceramic capacitor or an OS capacitor:
  Use a capacitor of 0.47 μF or more.
- A tantalum or an aluminum electrolytic capacitor:
  Use a capacitor of 0.47 μF or more and ESR of 10 Ω or less.
  Pay special attention not to cause an oscillation due to an increase in ESR at low temperatures, when you use the aluminum electrolytic capacitor.

Evaluate the capacitor taking into consideration its performance including temperature characteristics.

Overshoot and undershoot characteristics differ depending upon the type of the output capacitor you select. Refer to “Output Capacitor Dependencies of Overshoot and Undershoot” in transient response characteristic examples (page 13).

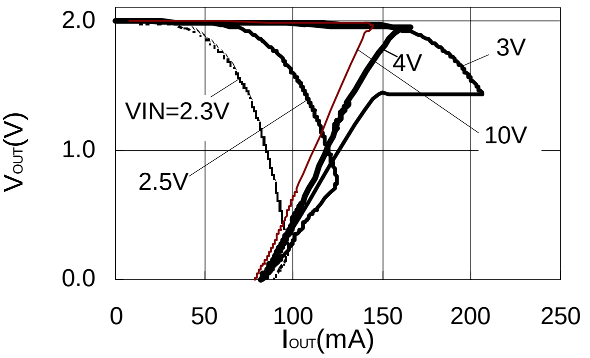
■ Design Considerations

- Design wiring patterns for VIN, VOUT and GND pins to decrease impedance.
  When mounting the output capacitor, connect pins VOUT and VSS as close as possible.
- Note that output voltage may be increased at low load current (less than 10 μA).
- To prevent oscillation, it is recommended to use the external components under the following conditions.
  * Output capacitor (CL): 0.47 μF or more
  * Equivalent Series Resistance (ESR): 10 Ω or less
  * Input series resistance (R_{IN}): 10 Ω or less
- The voltage regulator may oscillate when power supply impedance is high and input capacitor is low or not connected.
- Be sure that input voltage and load current do not exceed the power dissipation level of the package.
- SII claims no responsibility for any and all disputes arising out of or in connection with any infringement of the products including this IC upon patents owned by a third party.
- Determine necessary output amperage, taking into consideration the minimum value of output current and Note *5) of Table 4 “Electrical Characteristics” (page 4).

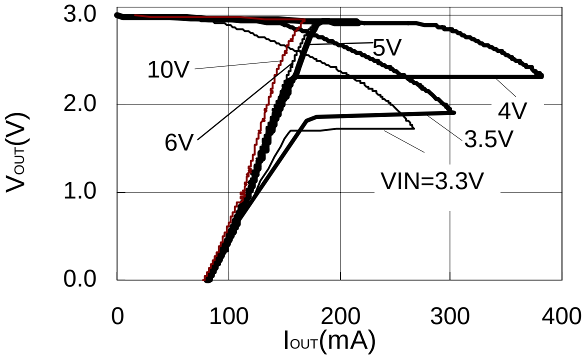
■ Typical Performance Curves

(1) OUTPUT VOLTAGE versus OUTPUT CURRENT (When load current increases)

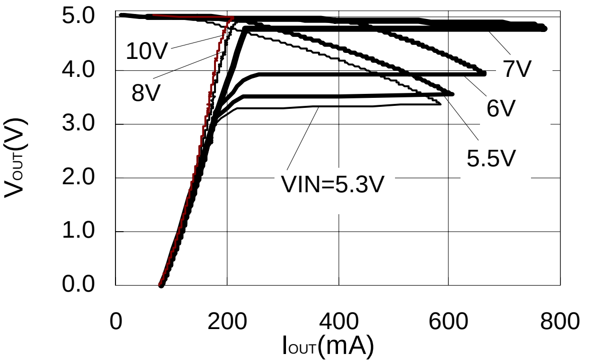
S-814A20A(Ta=25°C)



S-814A30A(Ta=25°C)



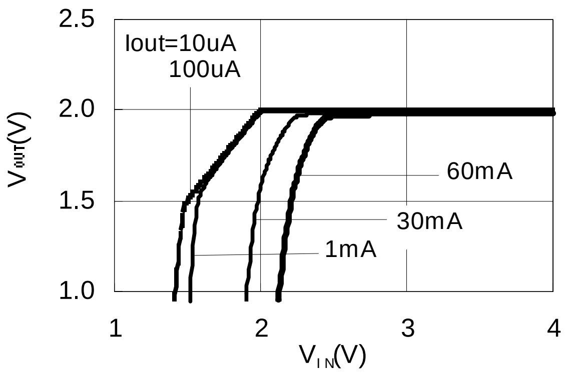
S-814A50A(Ta=25°C)



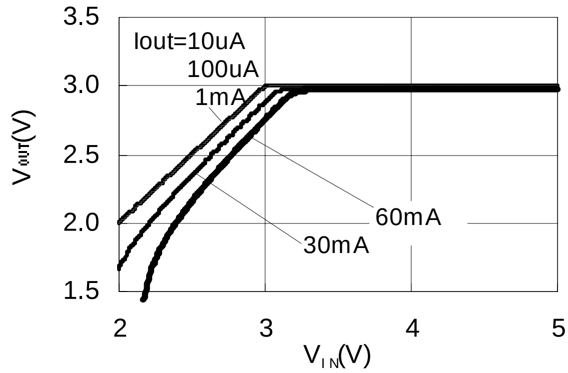
* Determine necessary output amperage, taking into consideration the following parameters:
- Minimum value of output current of Table 4 "Electrical Characteristics" and Note *5) (page 4);
- Power dissipation of the package

(2) OUTPUT VOLTAGE versus INPUT VOLTAGE

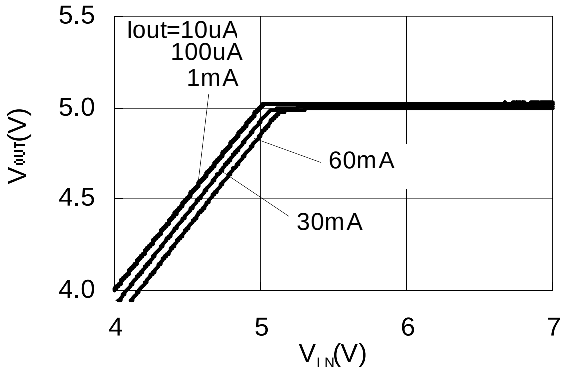
S-814A20A (Ta=25°C)



S-814A30A (Ta=25°C)

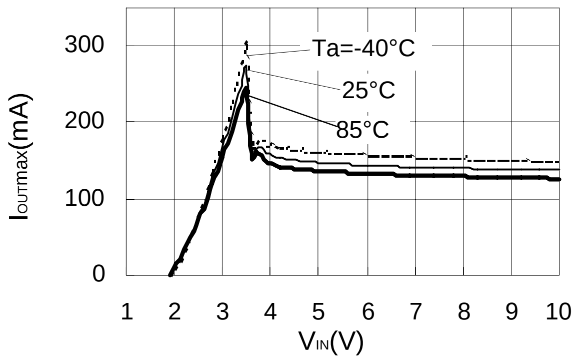


S-814A50A (Ta=25°C)

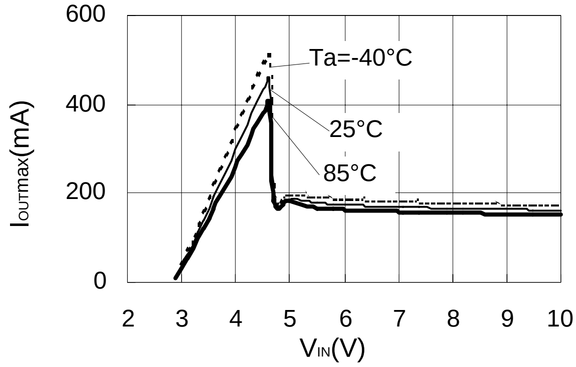


(3) MAXIMUM OUTPUT CURRENT versus INPUT VOLTAGE

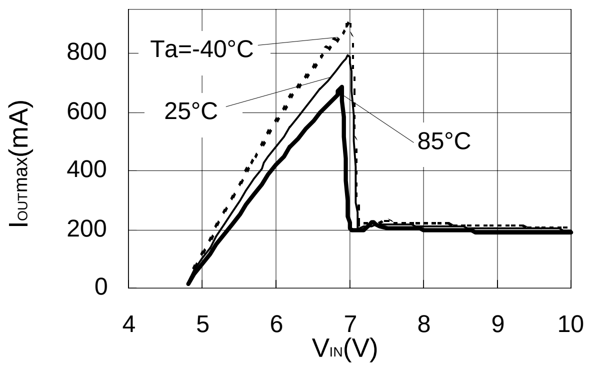
S-814A20A



S-814A30A



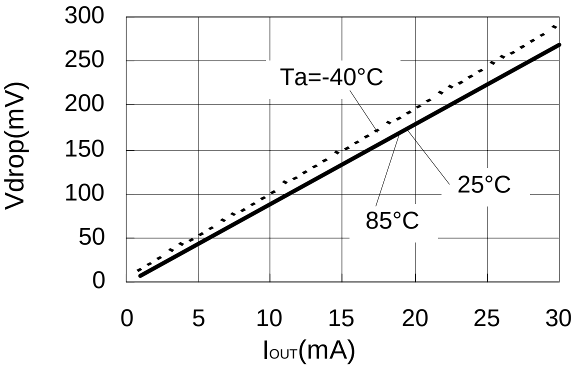
S-814A50A



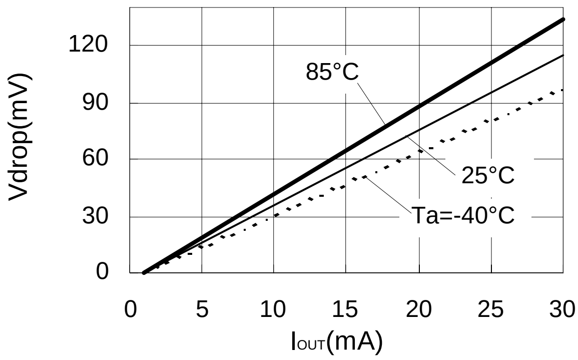
* Determine necessary output amperage, taking into consideration the following parameters:
  - Minimum value of output current of Table 4 “Electrical Characteristics” and Note *5) (page 4);
  - Power dissipation of the package

(4) OUTPUT CURRENT versus DROPOUT VOLTAGE

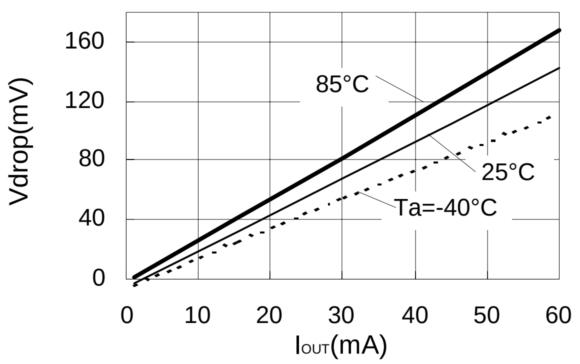
S-814A20A



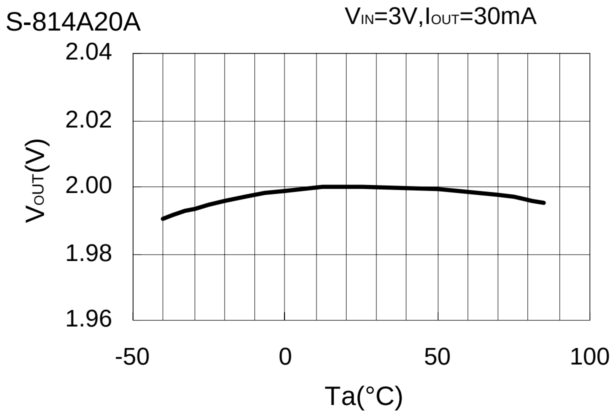
S-814A30A

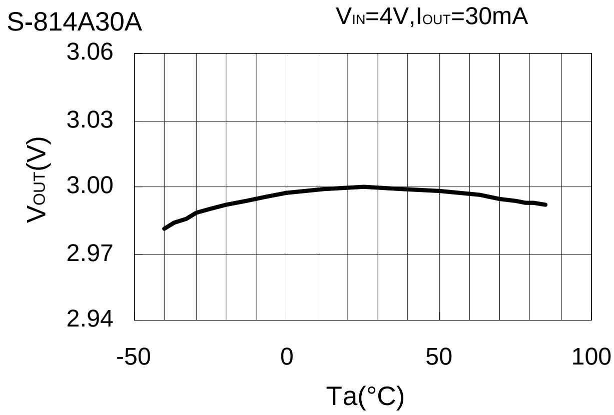


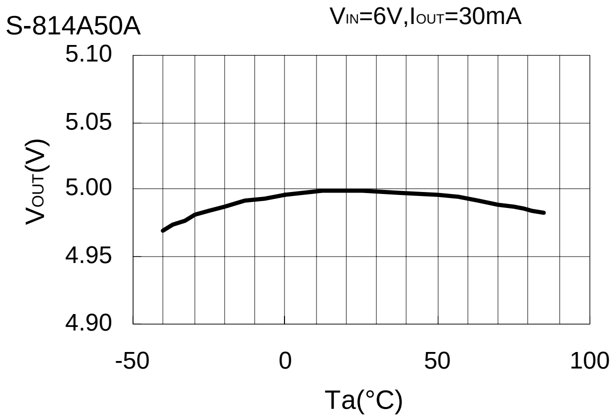
S-814A50A



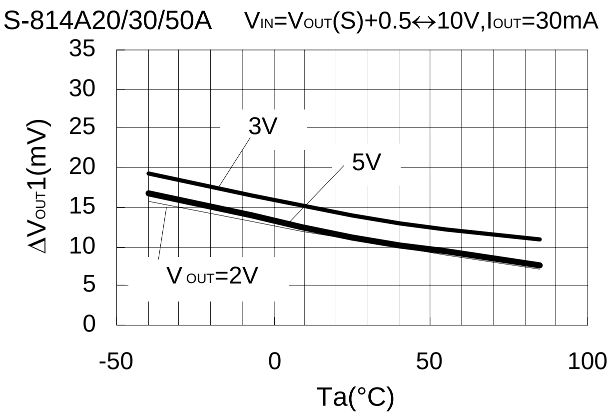
(5) OUTPUT VOLTAGE versus AMBIENT TEMPERATURE



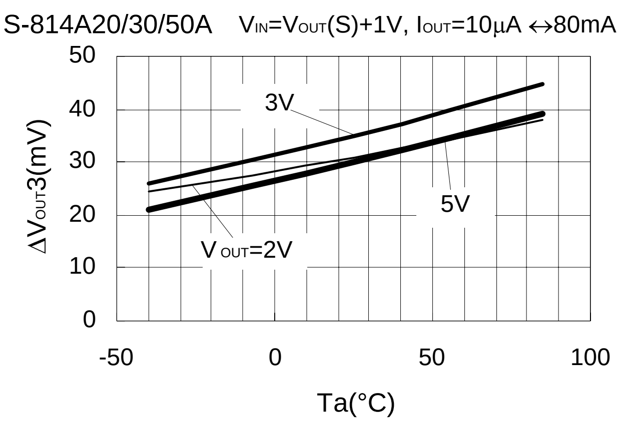




(6) LINE REGULATION versus AMBIENT TEMPERATURE

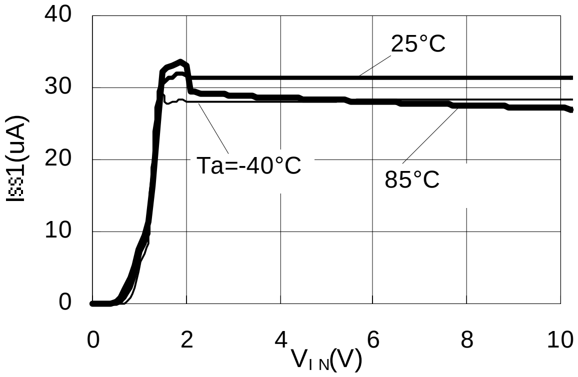


(7) LOAD REGULATION versus AMBIENT TEMPERATURE

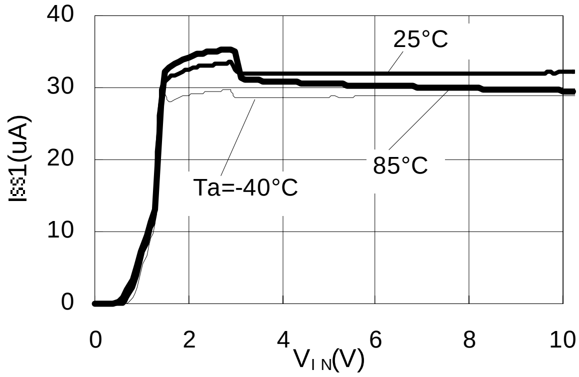


(8) CURRENTCONSUMPTION versus INPUT VOLTAGE

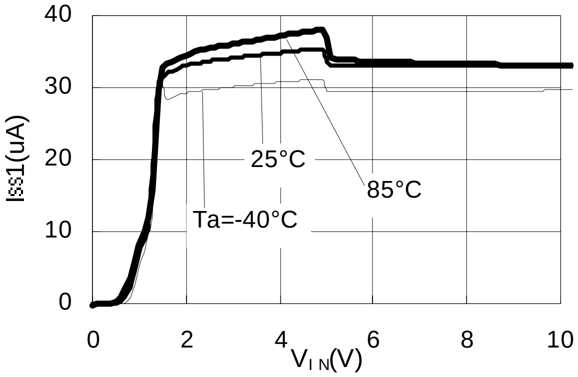
S-814A20A



S-814A30A

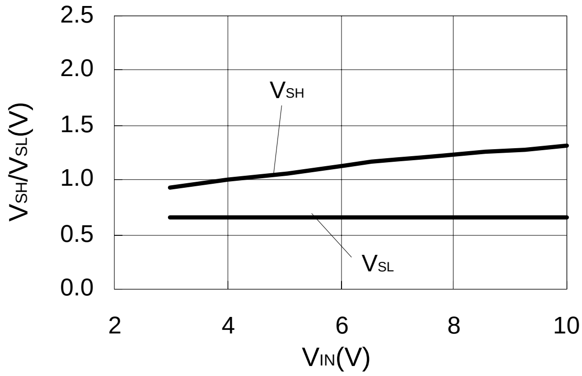


S-814A50A

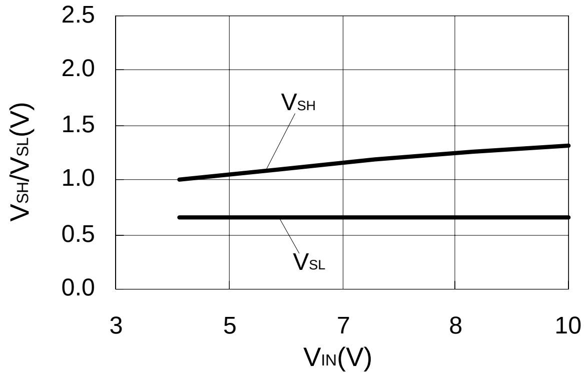


(9) THRESHOLD VOLTAGE OF POWER OFF PIN versus INPUT VOLTAGE

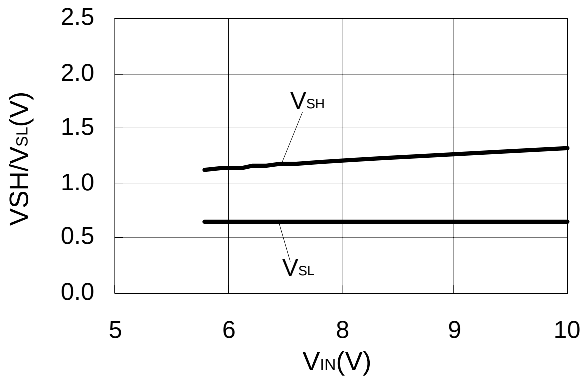
S-814A20A



S-814A30A

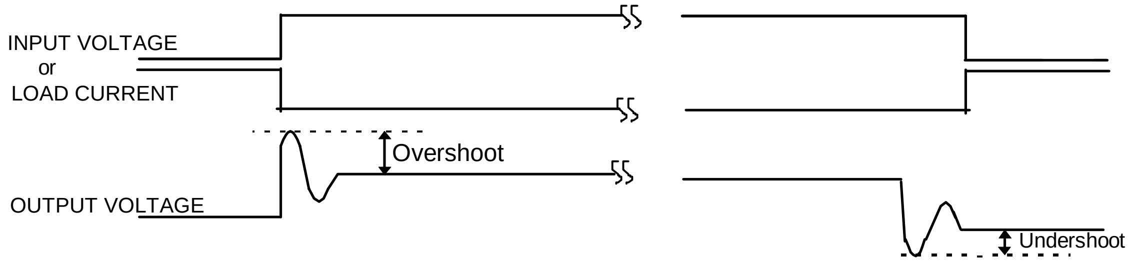


S-814A50A



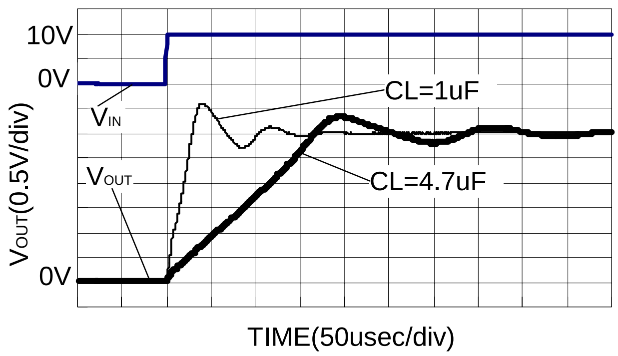
REFERENCE DATA

■ TRANSIENT RESPONSE CHARACTERISTICS (S-814A30A, Typical data: Ta=25°C)



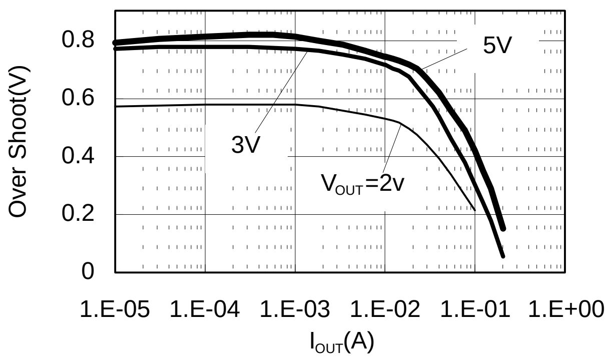
(1) At power on

V_{IN}=0→10V I_{OUT}=30mA



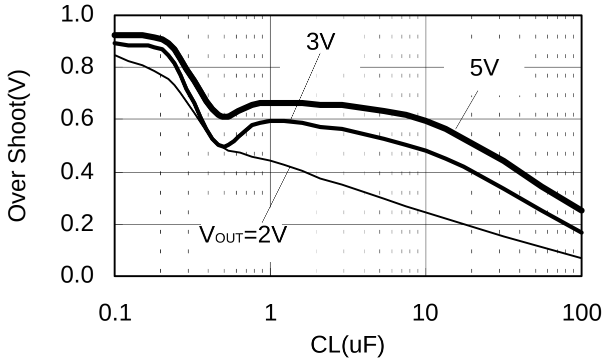
Load dependencies of overshoot

V_{IN} =0→V_{OUT}(S)+1V, CL=1μF



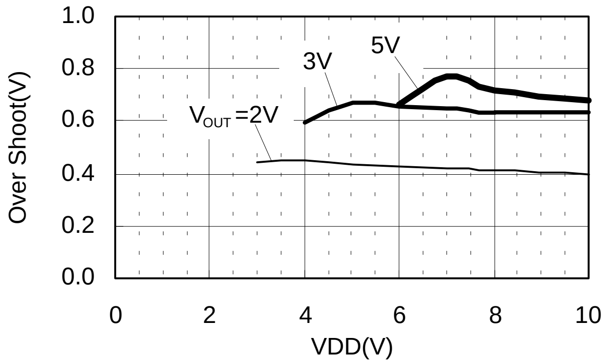
Output capacitor (CL) dependencies of overshoot

V_{IN} =0→V_{OUT}(S)+1V I_{OUT} =30mA



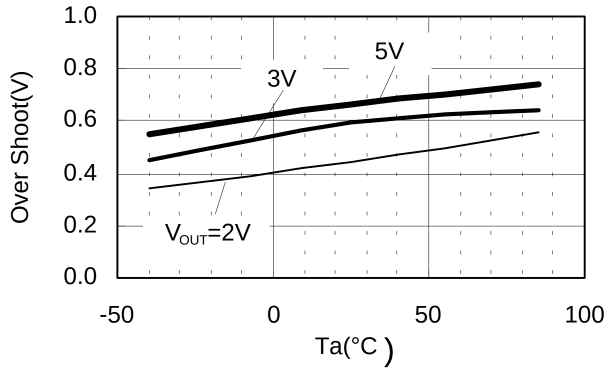
VDD dependencies of overshoot

V_{IN} =0→VDD, I_{OUT}=30mA,CL=1μF



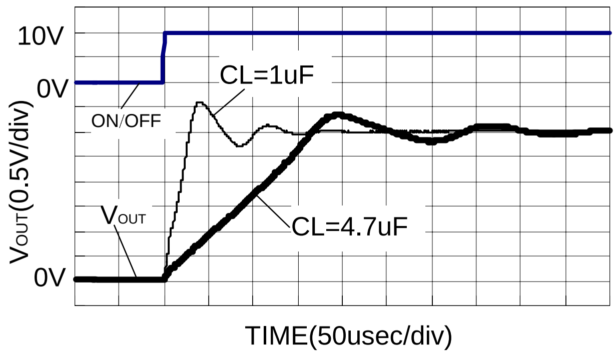
Temperature dependencies of overshoot

V_{IN} =0→V_{OUT}(S)+1V, I_{OUT}=30mA,CL=1μF



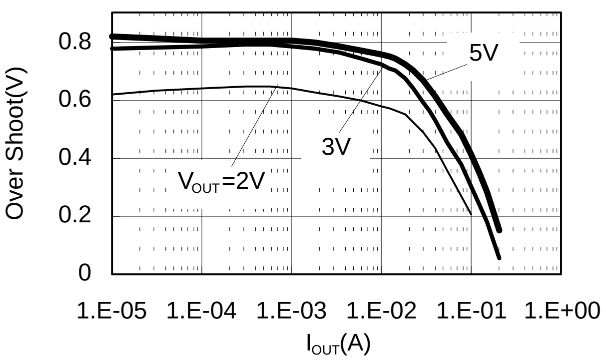
(2) At power on/off control by the power on/off pin

V_{IN}=10V ON/OFF=0→10V I_{OUT}=30mA



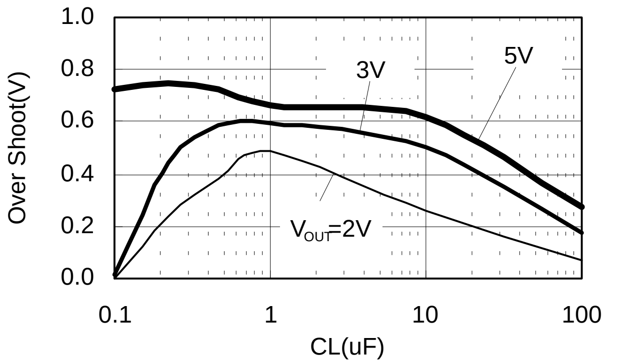
Load dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V,CL=1μF, ON/OFF=0 →V_{OUT}(S)+1V



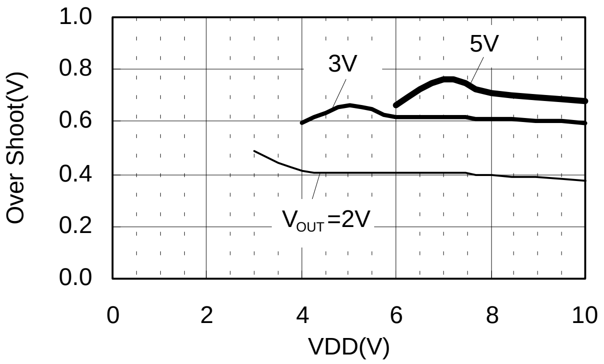
Output capacitor (CL) dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V, I_{OUT}=30mA, ON/OFF=0 →V_{OUT}(S)+1V



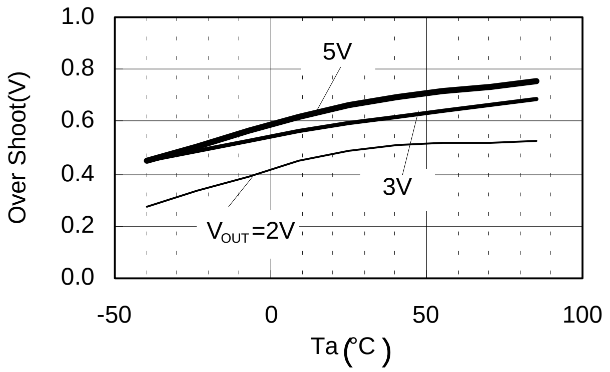
VDD dependencies of overshoot

V_{IN}=VDD ,I_{OUT} =30mA, CL=1μF, ON/OFF=0→VDD



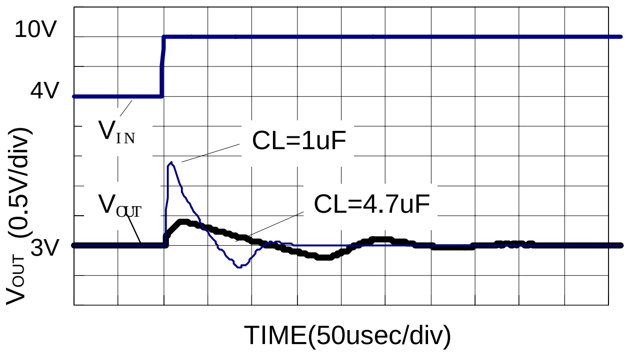
Temperature dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V,I_{OUT}=30mA, CL=1μF, ON/OFF=0→V_{OUT}(S)+1V

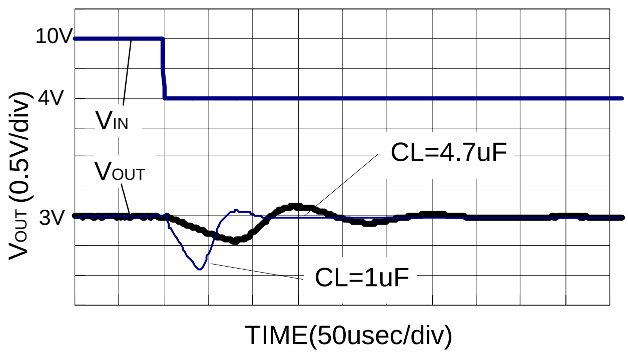


(3) At power fluctuation

V_{IN}=4.0→10V, I_{OUT}=30mA

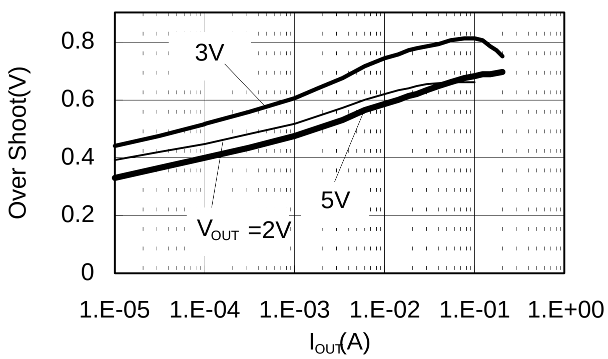


V_{IN}=10→4.0V, I_{OUT}=30mA



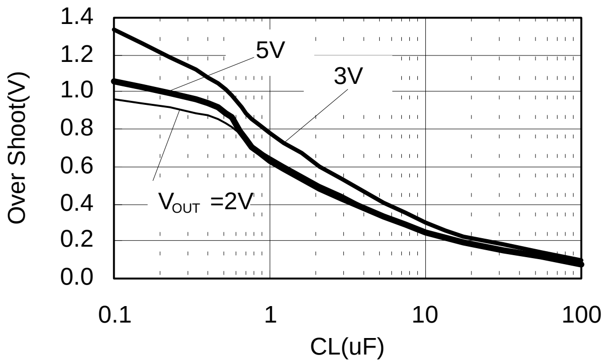
Load dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V→V_{OUT}(S)+2V, CL=1μF



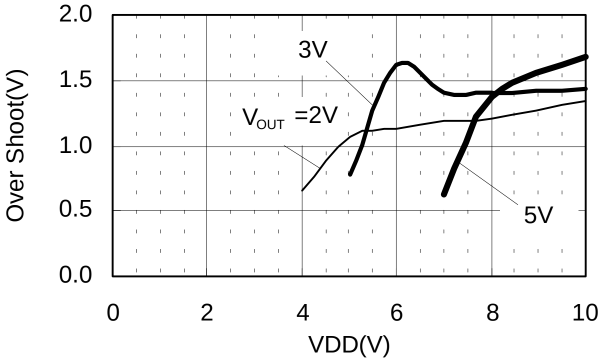
Output capacitor (CL) dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V→V_{OUT}(S)+2V, I_{OUT}=30mA



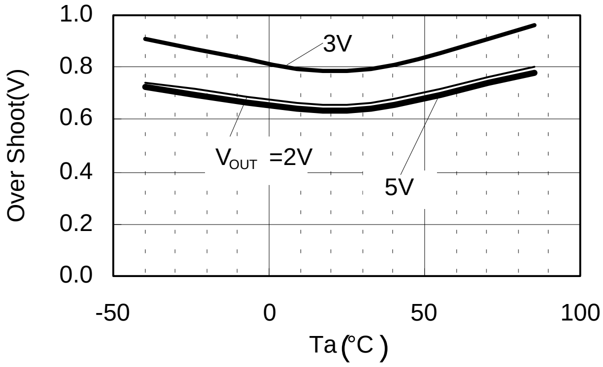
VDD dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V→VDD, I_{OUT}=30mA, CL=1μF



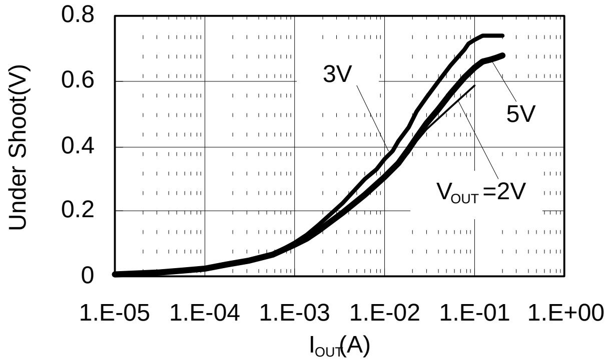
Temperature dependencies of overshoot

V_{IN}=V_{OUT}(S)+1V→V_{OUT}(S)+2V, I_{OUT}=30mA, CL=1μF



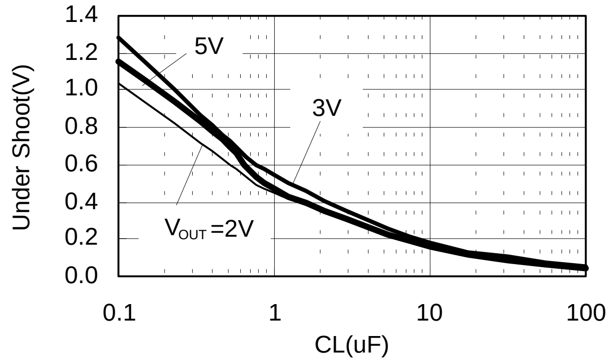
Load dependencies of undershoot

$V_{IN}=V_{OUT}(S)+2V \rightarrow V_{OUT}(S)+1V$, CL=1µF



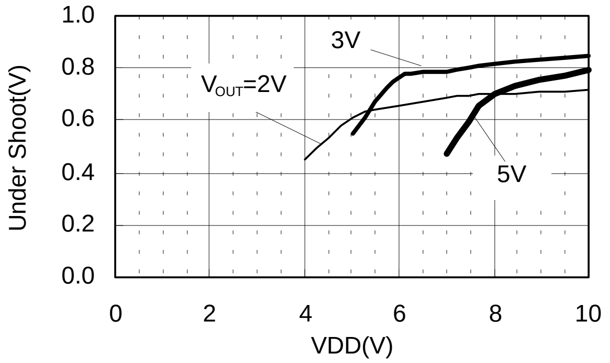
Output capacitor (CL) dependencies of undershoot

$V_{IN}=V_{OUT}(S)+2V \rightarrow V_{OUT}(S)+1V$, I_{OUT}=30mA



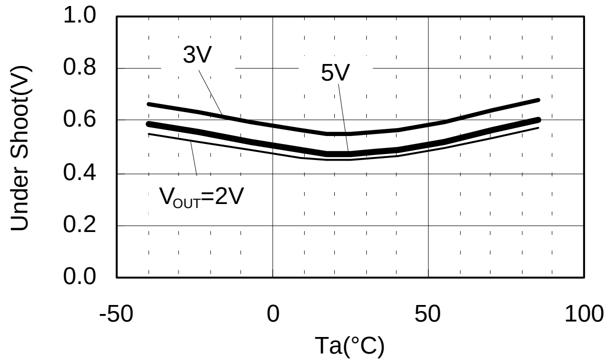
VDD dependencies of undershoot

V_{IN}=VDD→$V_{OUT}(S)$+1V, I_{OUT}=30mA,CL=1µF



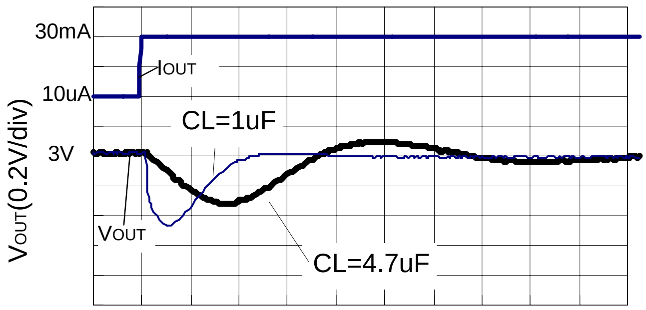
Temperature dependencies of undershoot

$V_{IN}=V_{OUT}(S)+2V \rightarrow V_{OUT}(S)+1V$, I_{OUT}=30mA, CL=1µF



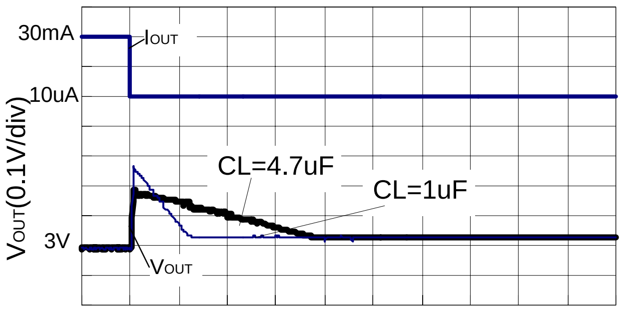
(4) At load fluctuation

I_{OUT}=10uA→30mA V_{IN}=4V



TIME(20usec/div)

I_{OUT}=30mA→10uA V_{IN}=4V

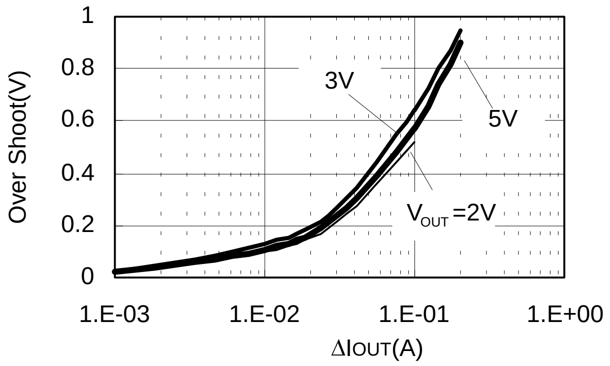


TIME(20msec/div)

Load current dependencies of overshoot

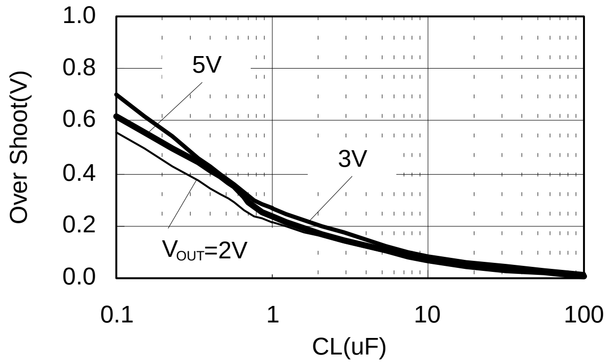
ΔI_{OUT} shows larger load current at load current fluctuation. Smaller current at load current fluctuation is fixed to 10 µA.
(i.e.)
ΔI_{OUT}=1.E-02 (A) means load current fluctuation from 10 mA to 10 µA

V_{IN} =V_{OUT}(S)+1V, CL=1µF



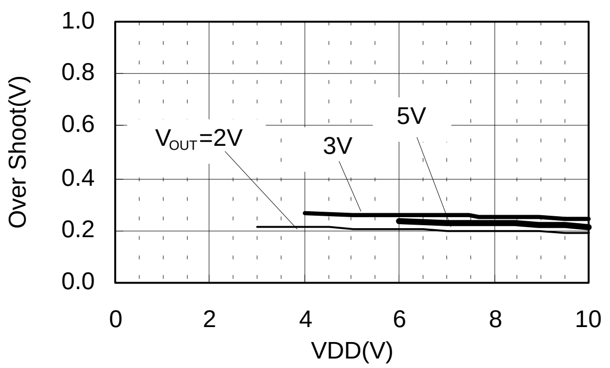
Output capacitor (CL) dependencies of overshoot

V_{IN} =V_{OUT}(S)+1V ,I_{OUT}=30mA→10µA



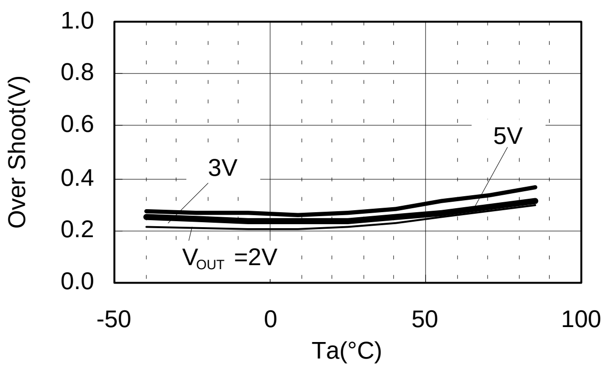
VDD dependencies of overshoot

V_{IN}=VDD, I_{OUT}=30mA→10µA ,CL=1µF



Temperature dependencies of overshoot

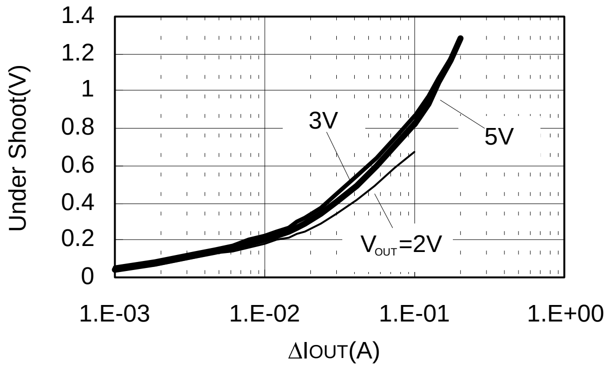
V_{IN} =V_{OUT}(S)+1V ,I_{OUT} =30mA→10µA,CL=1µF



Load current dependencies of undershoot

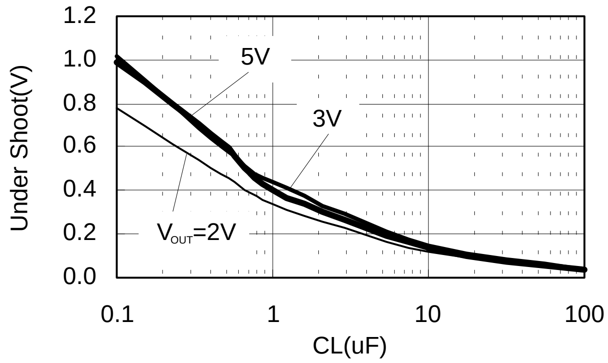
ΔI_{OUT} shows larger load current at load current fluctuation. Lower current at load current fluctuation is fixed to 10 µA.
(i.e.)
ΔI_{OUT}=1.E-02 (A) means load current fluctuation from 10 µA to 10 mA

$V_{IN}=V_{OUT}(S)+1V$,CL=1µF



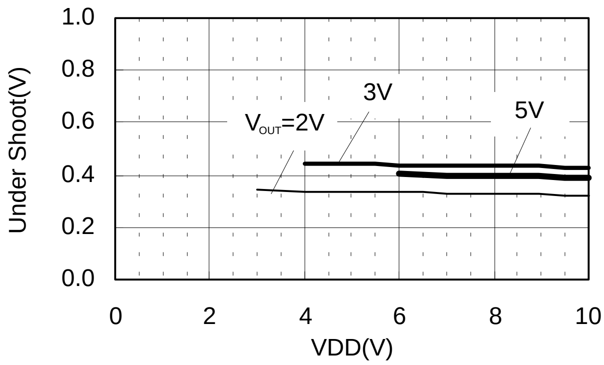
Output capacitor (CL) dependence of undershoot

$V_{IN}=V_{OUT}(S)+1V$,I_{OUT}=10µA→30mA



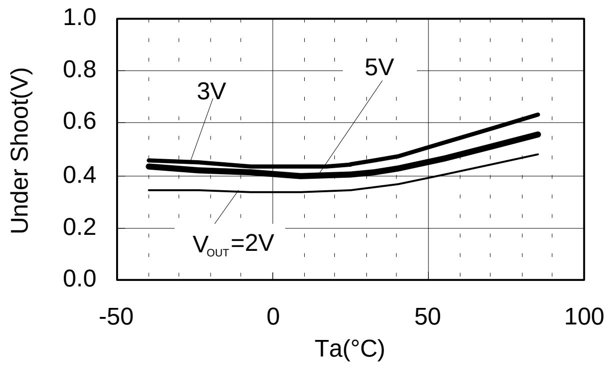
VDD dependencies of undershoot

V_{IN}=VDD, I_{OUT}=10µA→30mA,CL=1µF



Temperature dependencies of undershoot

$V_{IN}=V_{OUT}(S)+1V$,I_{OUT}=10µA→30mA,CL=1µF

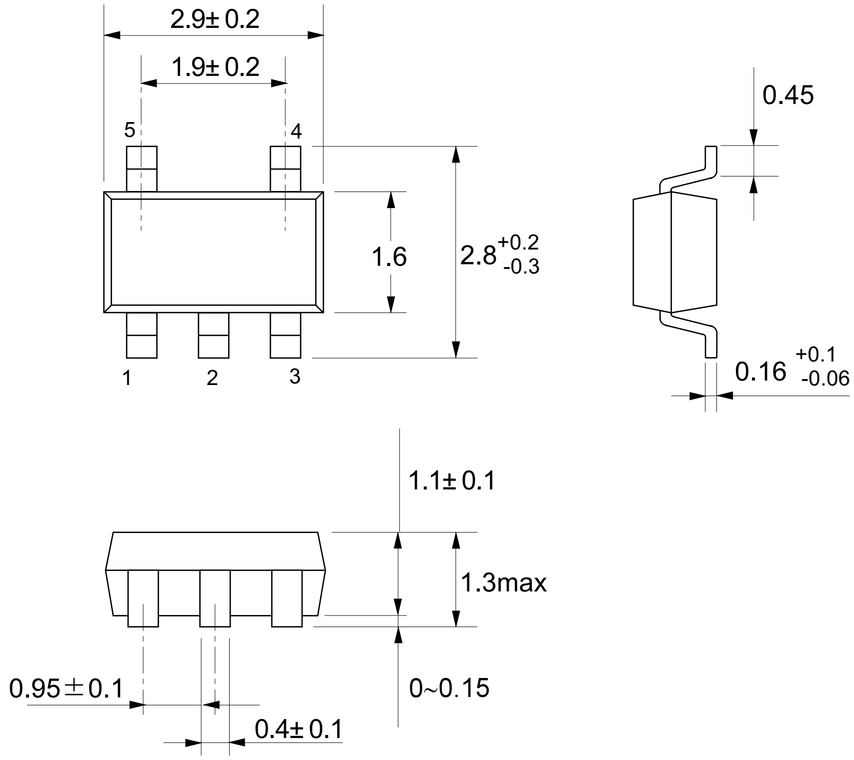


■ SOT-23-5

MP005-A 990531

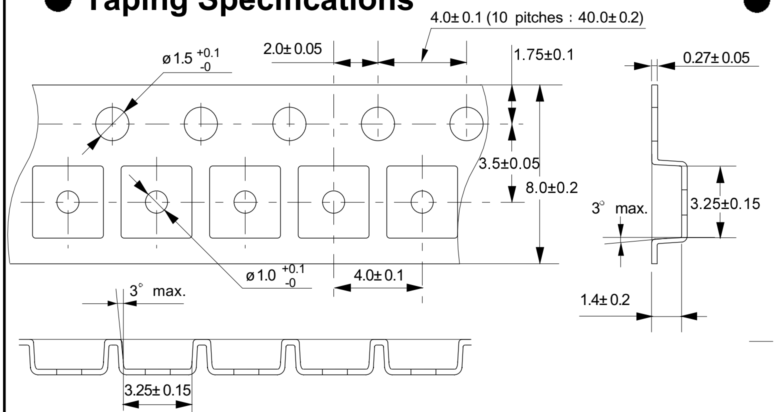
Unit : mm

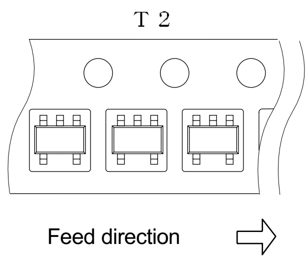
● Dimensions



No. : MP005-A-P-SD-1. 0

● Taping Specifications

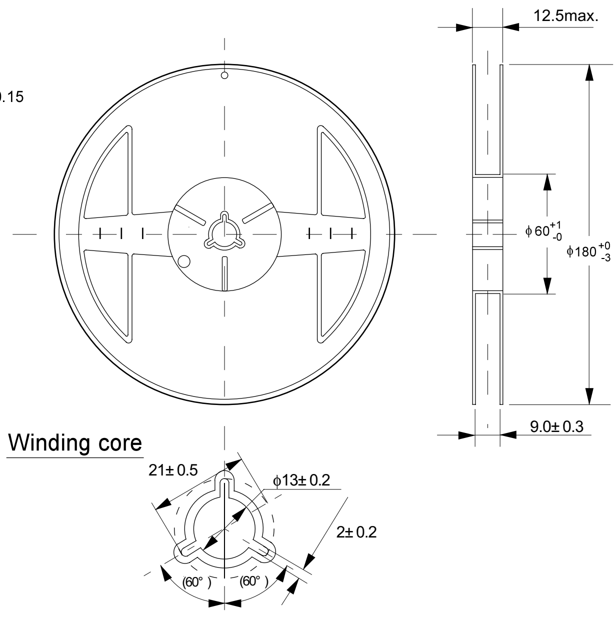




No. : MP005-A-C-SD-1. 0

● Reel Specifications

1 reel holds 3000 ICs.



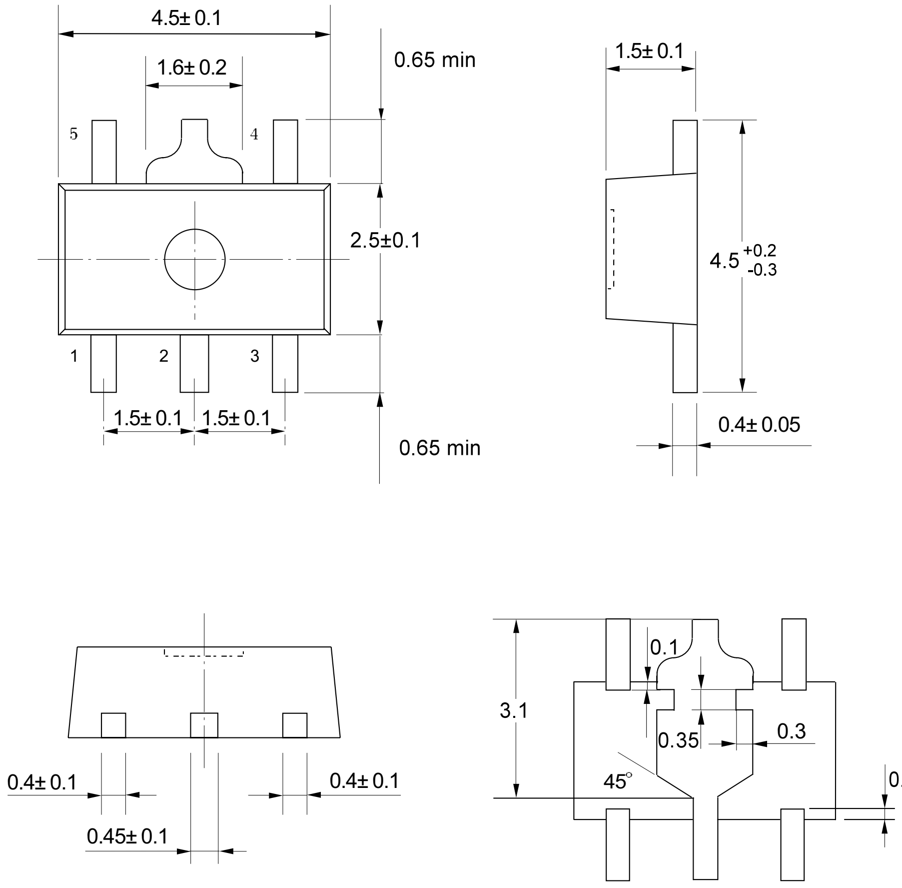
No. : MP005-A-R-SD-1. 0

■ SOT-89-5

UP005-A 990531

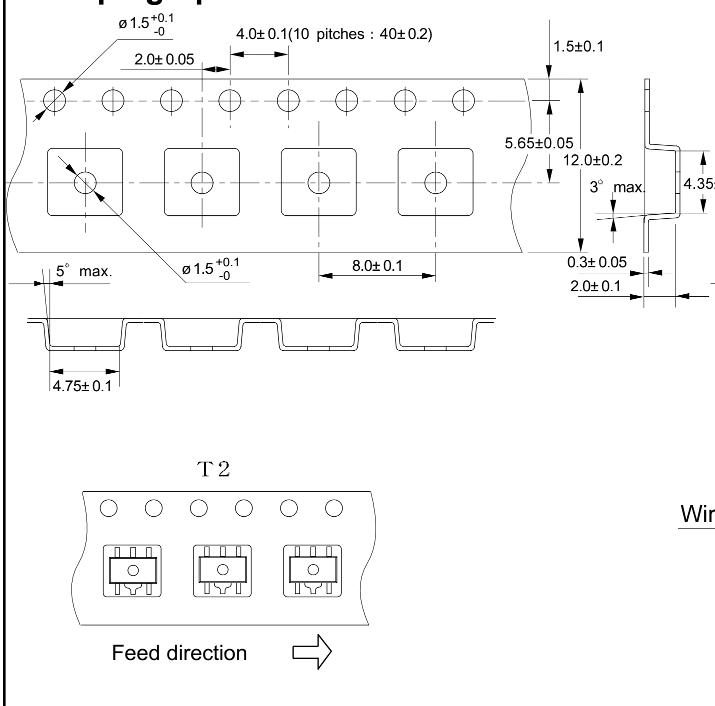
Unit : mm

● Dimensions



No. : UP005-A-P-SD-1. 1

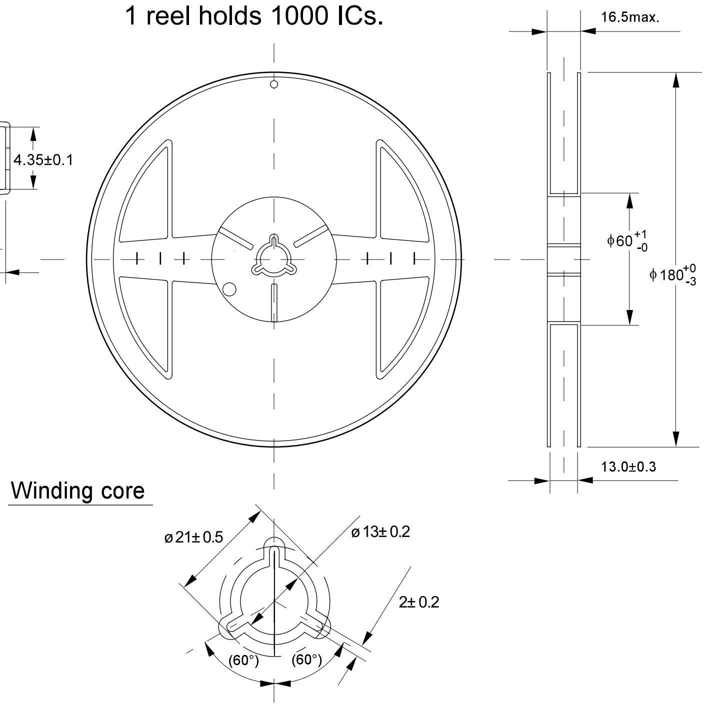
● Taping Specifications



No. : UP005-A-C-SD-1. 0

● Reel Specifications

1 reel holds 1000 ICs.



No. : UP005-A-R-SD-1. 0

Collection of Product FAQs

Author: Imura Yukihiro Date : 99/05/31 (Monday) 10:35 (Modified:)

<Information level>

A: Public (Printing O.K.)

Index: A: General

<Product>

Division name: 01 IC

Category 1: 11 Power Supply

Category 2: 2. Voltage Regulators

Cal No.: S-814

Related Documents:

Question:

Which are LDOs most representative market players?

Answer:

The first one that occurs to us is the LP2980 manufactured by National Semiconductor Corp. (NS). It comes housed in the SOT-23-5, and its dropout voltage is 120 mV at an output current of 50 mA. The ON resistance can be converted to 2.4 Ω, which is lower than that of the S-814. It also has an excellent ripple rejection of 63 dB at 1 kHz. Other low-dropout-voltage regulators available are Toko's TK111XX, TK112XX, and TK113XX; Ricoh's RN5RZ, RN1111N, and RN1121N; and others.

<Remarks>

FAQ No.: 11S814005

Collection of Product FAQs

Author: Imura Yukihiro Date: 99/05/31 (Monday) 10:31 (Modified:)

<Information level>

A: Public (Printing O.K.)

Index: A: General

<Product>

Division name: 01 IC

Category 1: 11 Power Supply

Category 2: 2. Voltage Regulators

Cal No.: S-814

Related Documents:

Question:

Which are SII's low-dropout voltage regulators?

Answer:

The S-814 Series comprises products related to low-dropout voltage regulators. The dropout voltage produced when a current of 60 mA is applied is 0.17 V in the 5-V-output products (S-814A50A), and 0.30 V in the 3-V-output products (S-814A30A).

The S-813 Series products can also be treated as low-dropout voltage regulators. The dropout voltage of this Series is 0.12 V in the 5-V-output products (S-81350HG) at a current of 40 mA, and 0.14 V in the 3-V-output products (S-81330HG) at a current of 30 mA.

<Remarks>

FAQ No.: 11S814003

Collection of Product FAQs

Author: Imura Yukihiro Date: 99/05/31 (Monday) 10:24

<Information level>

A: Public (Printing O.K.)

Index: A: General

<Product>

Division name: 01 IC

Category 1: 11 Power Supply

Category 2: 2. Voltage Regulators

Cal No.: S-814

Related Documents:

Question:

Where would the low-dropout voltage regulators be employed?

Answer:

The low-dropout voltage regulators are employed where the difference between the input voltage and the output voltage is small, and the required current is large. For instance, a low-dropout voltage regulator is adopted when it is desired to fully use a battery. This is due to the fact that a constant current can be supplied even when the battery voltage has fallen to near the output voltage. A lower dropout voltage means longer service life of the battery.

<Remarks>

FAQ No.: 11S814002

Collection of Product FAQs

Author: Imura Yukihiro Date: 99/5/31 (Monday) 10:21 (Modified:)

<Information level>

A:	Public (Printing O.K.)
Index:	A:General

<Product>

Division name:	01 IC
Category 1:	11 Power Supply
Category 2:	2. Voltage Regulators
Cal No.:	S-814

Related Documents:

Question:

What is the Low-Dropout Voltage Regulator?

Answer:

The low-dropout voltage regulator is a type of voltage regulator with a built-in low-on-resistance transistor that causes extremely little voltage dropout. The S-814 Series consists of low-dropout voltage regulators. The S-81450A with 5-V output produces a dropout voltage of 0.17 V (Typ.) when a current of 60 mA is applied to it.

<Remarks>

FAQ No.: 11S814001

Collection of Product FAQs

Author: Imura Yukihiro Date: 99/05/31 (Monday) 11:50 (Modified:)

<Information level>

A:	Public (Printing O.K.)
Index:	A: General

<Product>

Division name:	01 IC
Category 1:	11 Power Supply
Category 2:	2. Voltage Regulators
Cal No.:	Overall

Related Documents:

Question:

Why do people dislike using electrolytic capacitors?

Answer:

Because electrolytic capacitors may cause failure due to short-circuit or even burn when subjected to an overcurrent or overvoltage, an increasing number of users are declining to use electrolytic capacitors, as UL and other safety standards require that such products be incombustible. As a result, ceramic capacitors of no short-circuit and made of nonflammable materials attract most users.

<Remarks>

FAQ No.: 11S814005