

# SCI7810Y Series

- Positive output voltage regulator
- Lower operating current
- Higher output voltage regulation capability

## ■ OUTLINE

SCI7810Y series a fixed type voltage regulator developed utilizing CMOS silicon gate process. It is configured with a reference circuit, differential amplifier, output control transistor and voltage setting resistor of high accuracy and low operating current.

Output voltage is fixed in IC. This series supports a variety of output voltages.

## ■ FEATURES

- Low operating current
- Smaller temperature difference between output and input voltages
- Smaller output voltage temperature coefficient
- Larger operating voltage range
- Higher output voltage regulation capability
- Package

Typically, 1.5  $\mu$ A ( $V_{DD} = 5.0V$ )

Typically 0.17V ( $I_O = 10mA$ ,  $V_{OUT} = 5.0V$ )

Typically,  $-100ppm/^\circ C$

15V maximum

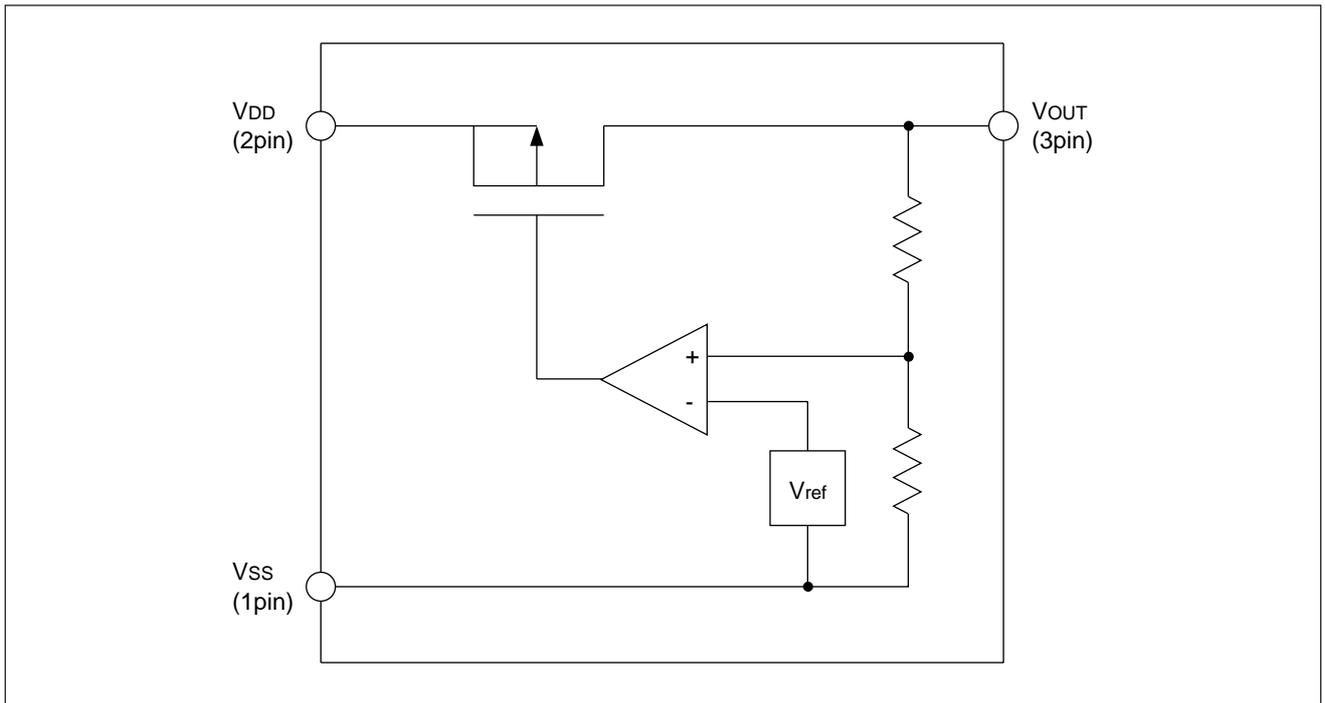
$\pm 2.0\%$  ( $V_{DD}=7.0V$ ,  $I_P=10mA$ ,  $V_{OUT} = 5.0V$ ,  $T_a=25^\circ C$ )

SOT89-3pin

## ■ MODEL TYPES

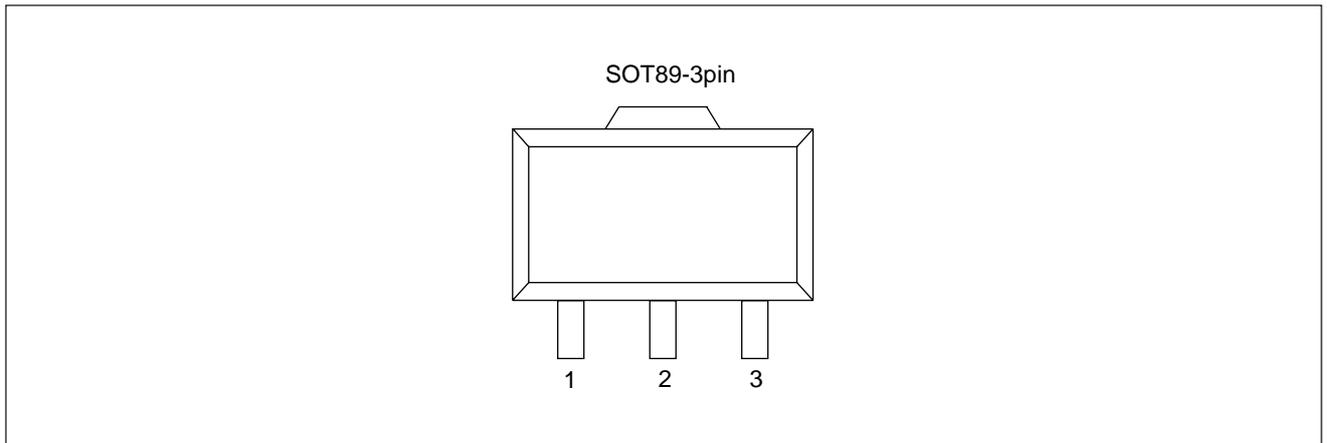
Model names	Input voltage (V)	Output voltage (V)			Output current (mA)	Operating current ( $\mu$ A)
		Min.	Typ.	Max.		
SCI7810YFA	15	2.15	2.20	2.25	10 at $V_I = 3V$	1.5
SCI7810YLA		2.53	2.60	2.67	30 at $V_I = 5V$	
SCI7810YRA		2.73	2.80	2.87	30 at $V_I = 5V$	
SCI7810YDA		2.93	3.00	3.07	30 at $V_I = 5V$	
SCI7810YCA		3.13	3.20	3.27	30 at $V_I = 5V$	
SCI7810YTA		3.23	3.30	3.37	30 at $V_I = 5V$	
SCI7810YNA		3.43	3.50	3.57	30 at $V_I = 5V$	
SCI7810YKA		3.80	3.90	4.00	40 at $V_I = 6V$	
SCI7810YPA		3.90	4.00	4.10	40 at $V_I = 6V$	
SCI7810YMA		4.40	4.50	4.60	40 at $V_I = 6V$	
SCI7810YBA		4.90	5.00	5.10	50 at $V_I = 7V$	
SCI7810YAA		5.75	6.00	6.25	50 at $V_I = 8V$	

## ■ BLOCK DIAGRAM



# SCI7810Y Series

## ■ PIN DIAGRAM



## ■ PIN DESCRIPTION

Pin No.	Pin names	Function
1	$V_{SS}$	Input voltage pin (negative side)
2	$V_{DD}$	Input voltage pin (positive side)
3	$V_{OUT}$	Output voltage pin

## ■ ABSOLUTE MAXIMUM RATINGS

Items	Symbols	Rating	Unit
Input voltage	$V_{DD}-V_{SS}$	18	V
Output voltage	$V_O$	$V_{DD} + 0.3$ to $V_{SS}-0.3$	
Output current	$I_O$	100	mA
Allowable loss	$P_D$	200	mW
Operating temperature	$T_{opr}$	-30 to +85	°C
Storage ambient temperature	$T_{stg}$	-65 to +150	
Soldering time	$T_{sol}$	260°C	-
Soldering temperature		10 sec. (At lead)	

## ■ ELECTRIC CHARACTERISTICS

### ● SCI7810Y<sub>AA</sub>

(Except where otherwise specified, Ta = -30°C to +85°C)

Items	Symbols	Condition (V <sub>SS</sub> = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I</sub>	—————	—	—	15	V
Output voltage	V <sub>O</sub>	V <sub>DD</sub> = 8.0V, I <sub>O</sub> = -10mA Ta = 25°C	5.75	6.00	6.25	V
Operating current	I <sub>OP</sub>	V <sub>DD</sub> = 6.0V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V <sub>I</sub> -V <sub>O</sub>	V <sub>OUT</sub> = 6.0V, I <sub>O</sub> = -10mA	—	0.16	0.32	V
Output voltage temperature characteristics	$\frac{\Delta V_{OUT}}{V_{OUT}}$	—————	-300	-100	+100	ppm/ °C
Input stability	$\frac{dV_O}{dV_I \cdot V_O}$	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 7.0V to 15.0V I <sub>O</sub> = -10mA	—	0.1	—	%/ V
Load stability	ΔV <sub>O</sub>	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 8.0V I <sub>O</sub> = -1mA to -50mA	—	50	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V <sub>DD</sub> = 8.0V, f <sub>in</sub> = 50kHz C <sub>L</sub> = 10μF, I <sub>OUT</sub> = -10mA	—	-40	—	dB

# SCI7810Y Series

## ● SCI7810Y<sub>BA</sub>

(Except where otherwise specified, Ta = -30°C to +85°C)

Items	Symbols	Condition (V <sub>SS</sub> = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I</sub>	—————	–	–	15	V
Output voltage	V <sub>O</sub>	V <sub>DD</sub> = 7.0V, I <sub>O</sub> = -10mA Ta = 25°C	4.90	5.00	5.10	V
Operating current	I <sub>OP</sub>	V <sub>DD</sub> = 5.0V to 15.0V No load	–	1.5	5.0	μA
Voltage difference between input and output voltages	V <sub>I</sub> -V <sub>O</sub>	V <sub>OUT</sub> = 5.0V, I <sub>O</sub> = -10mA	–	0.17	0.34	V
Output voltage temperature characteristics	$\frac{\Delta V_{OUT}}{V_{OUT}}$	—————	-300	-100	+100	ppm/ °C
Input stability	$\frac{dV_O}{dV_I \cdot V_O}$	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 6.0V to 15.0V I <sub>O</sub> = -10mA	–	0.1	–	%/ V
Load stability	ΔV <sub>O</sub>	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 7.0V I <sub>O</sub> = -1mA to -50mA	–	50	–	mV
Supply voltage fluctuation elimination ratio	PSRR	V <sub>DD</sub> = 7.0V, f <sub>in</sub> = 50kHz C <sub>L</sub> = 10μF, I <sub>OUT</sub> = -10mA	–	-40	–	dB

## ● SCI7810Y<sub>KA</sub>

(Except where otherwise specified, Ta = -30°C to +85°C)

Items	Symbols	Condition (V <sub>SS</sub> = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I</sub>	—————	–	–	15	V
Output voltage	V <sub>O</sub>	V <sub>DD</sub> = 6.0V, I <sub>O</sub> = -10mA Ta = 25°C	3.80	3.90	4.00	V
Operating current	I <sub>OP</sub>	V <sub>DD</sub> = 3.9V to 15.0V No load	–	1.5	5.0	μA
Voltage difference between input and output voltages	V <sub>I</sub> -V <sub>O</sub>	V <sub>OUT</sub> = 3.9V, I <sub>O</sub> = -10mA	–	0.19	0.38	V
Output voltage temperature characteristics	$\frac{\Delta V_{OUT}}{V_{OUT}}$	—————	-300	-100	+100	ppm/ °C
Input stability	$\frac{dV_O}{dV_I \cdot V_O}$	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 5.0V to 15.0V I <sub>O</sub> = -10mA	–	0.1	–	%/ V
Load stability	ΔV <sub>O</sub>	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 6.0V I <sub>O</sub> = -1mA to -40mA	–	40	–	mV
Supply voltage fluctuation elimination ratio	PSRR	V <sub>DD</sub> = 6.0V, f <sub>in</sub> = 50kHz C <sub>L</sub> = 10μF, I <sub>OUT</sub> = -10mA	–	-40	–	dB

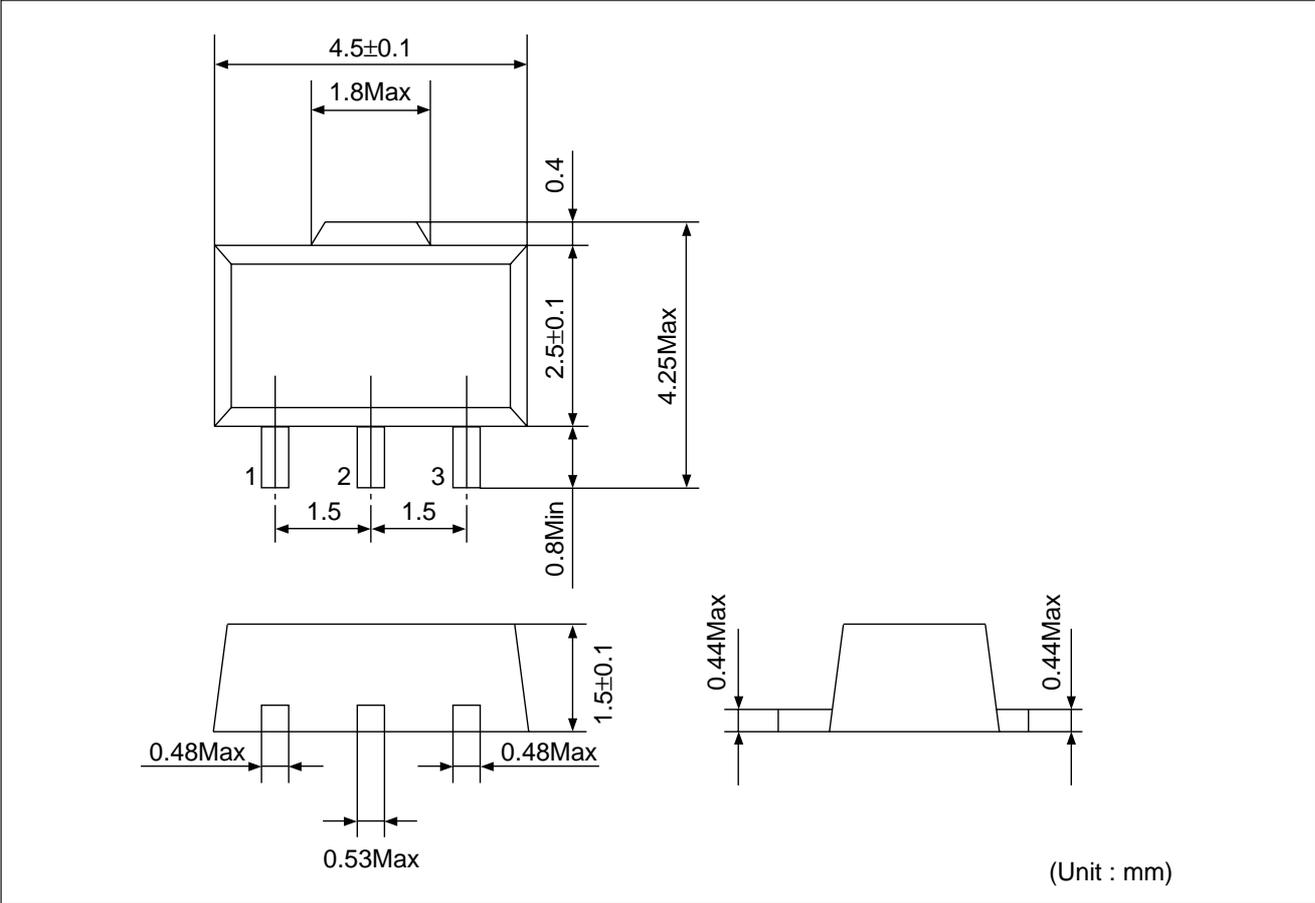
● SCI7810Y<sub>DA</sub>

(Except where otherwise specified, Ta = -30°C to +85°C)

Items	Symbols	Condition (V <sub>SS</sub> = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I</sub>	—————	—	—	15	V
Output voltage	V <sub>O</sub>	V <sub>DD</sub> = 5.0V, I <sub>O</sub> = -10mA Ta = 25°C	2.93	3.00	3.07	V
Operating current	I <sub>OP</sub>	V <sub>DD</sub> = 3.0V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V <sub>I</sub> -V <sub>O</sub>	V <sub>OUT</sub> = 3.0V, I <sub>O</sub> = -10mA	—	0.23	0.46	V
Output voltage temperature characteristics	$\frac{\Delta V_{OUT}}{V_{OUT}}$	—————	-300	-100	+100	ppm/ °C
Input stability	$\frac{dV_O}{dV_I \cdot V_O}$	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 4.0V to 15.0V I <sub>O</sub> = -10mA	—	0.1	—	%/ V
Load stability	ΔV <sub>O</sub>	Ta = -30°C to +85°C (Same temperature condition) V <sub>DD</sub> = 5.0V I <sub>O</sub> = -1mA to -30mA	—	30	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V <sub>DD</sub> = 5.0V, f <sub>in</sub> = 50kHz C <sub>L</sub> = 10μF, I <sub>OUT</sub> = -10mA	—	-40	—	dB

# SCI7810Y Series

## OVERALL DIMENSION DIAGRAM



Note:Dimensions are subject to change for the product innovation.

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