

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

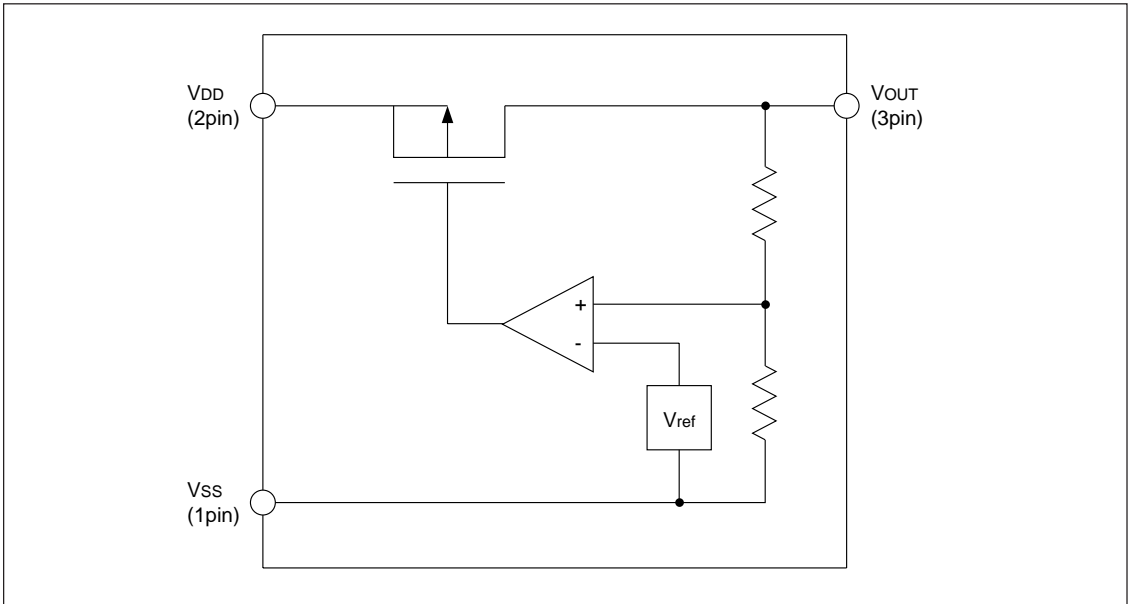
- Low operating current
Typically, 1.5 μ A ($V_{DD} = 5.0V$)
- Smaller temperature difference between output and input voltages
Typically 0.17V ($I_O = 10mA, V_{OUT} = 5.0V$)
- Smaller output voltage temperature coefficient
Typically, -100ppm/ $^{\circ}C$
- Larger operating voltage range
15V maximum
- Higher output voltage regulation capability
 $\pm 2.0\%$ ($V_{DD}=7.0V, I_P=10mA, V_{OUT} = 5.0V, T_a=25^{\circ}C$)
- Package
SOT89-3pin

MODEL TYPES

Model names	Input voltage (V)	Output voltage (V)			Output current (Max.) (mA)	Operating current (μ A)
		Min.	Typ.	Max.		
SCI7810YHA	15	1.45	1.50	1.55	10 at $V_I = 3V$	1.5
SCI7810YGA		1.75	1.80	1.85	10 at $V_I = 3V$	
SCI7810YFA		2.15	2.20	2.25	10 at $V_I = 3V$	
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 $V_I = 8V$	

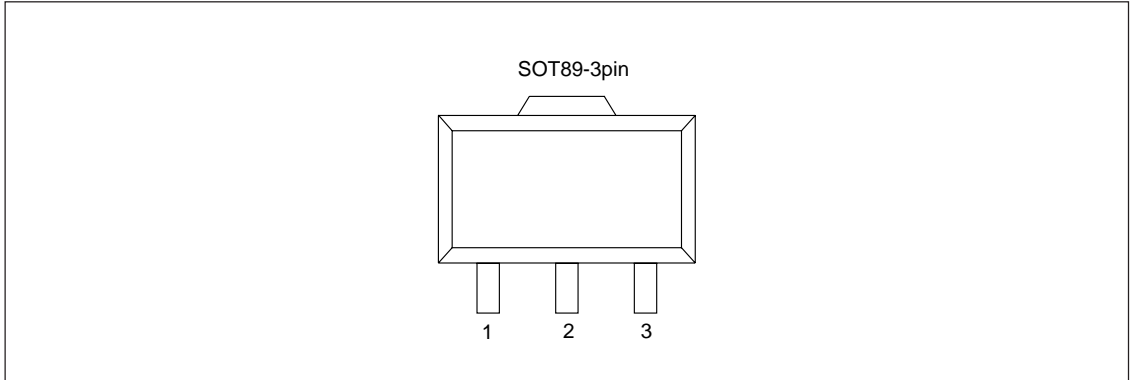
SCI7810Y Series

■ 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)	

SCI7810Y Series

■ ELECTRIC CHARACTERISTICS

● SCI7810Y_{AA}

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

Items	Symbols	Condition (V _{SS} = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V _I	—————	—	—	15	V
Output voltage	V _O	V _{DD} = 8.0V, I _O = -10mA Ta = 25°C	5.75	6.00	6.25	V
Operating current	I _{OP}	V _{DD} = 6.0V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V _I -V _O	V _{OUT} = 6.0V, I _O = -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 _{DD} = 7.0V to 15.0V I _O = -10mA	—	0.1	—	%/V
Load stability	ΔV _O	Ta = -30°C to +85°C (Same temperature condition) V _{DD} = 8.0V I _O = -1mA to -50mA	—	50	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V _{DD} = 8.0V, f _{in} = 50kHz C _L = 10μF, I _{OUT} = -10mA	—	-40	—	dB

SCI7810Y Series

● SCI7810Y_{BA}

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

Items	Symbols	Condition (V _{SS} = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V _I	—————	—	—	15	V
Output voltage	V _O	V _{DD} = 7.0V, I _O = -10mA Ta = 25°C	4.90	5.00	5.10	V
Operating current	I _{OP}	V _{DD} = 5.0V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V _I -V _O	V _{OUT} = 5.0V, I _O = -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 _{DD} = 6.0V to 15.0V I _O = -10mA	—	0.1	—	%/V
Load stability	ΔV _O	Ta = -30°C to +85°C (Same temperature condition) V _{DD} = 7.0V I _O = -1mA to -50mA	—	50	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V _{DD} = 7.0V, f _{in} = 50kHz C _L = 10μF, I _{OUT} = -10mA	—	-40	—	dB

● SCI7810Y_{KA}

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

Items	Symbols	Condition (V _{SS} = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V _I	—————	—	—	15	V
Output voltage	V _O	V _{DD} = 6.0V, I _O = -10mA Ta = 25°C	3.80	3.90	4.00	V
Operating current	I _{OP}	V _{DD} = 3.9V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V _I -V _O	V _{OUT} = 3.9V, I _O = -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 _{DD} = 5.0V to 15.0V I _O = -10mA	—	0.1	—	%/V
Load stability	ΔV _O	Ta = -30°C to +85°C (Same temperature condition) V _{DD} = 6.0V I _O = -1mA to -40mA	—	40	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V _{DD} = 6.0V, f _{in} = 50kHz C _L = 10μF, I _{OUT} = -10mA	—	-40	—	dB

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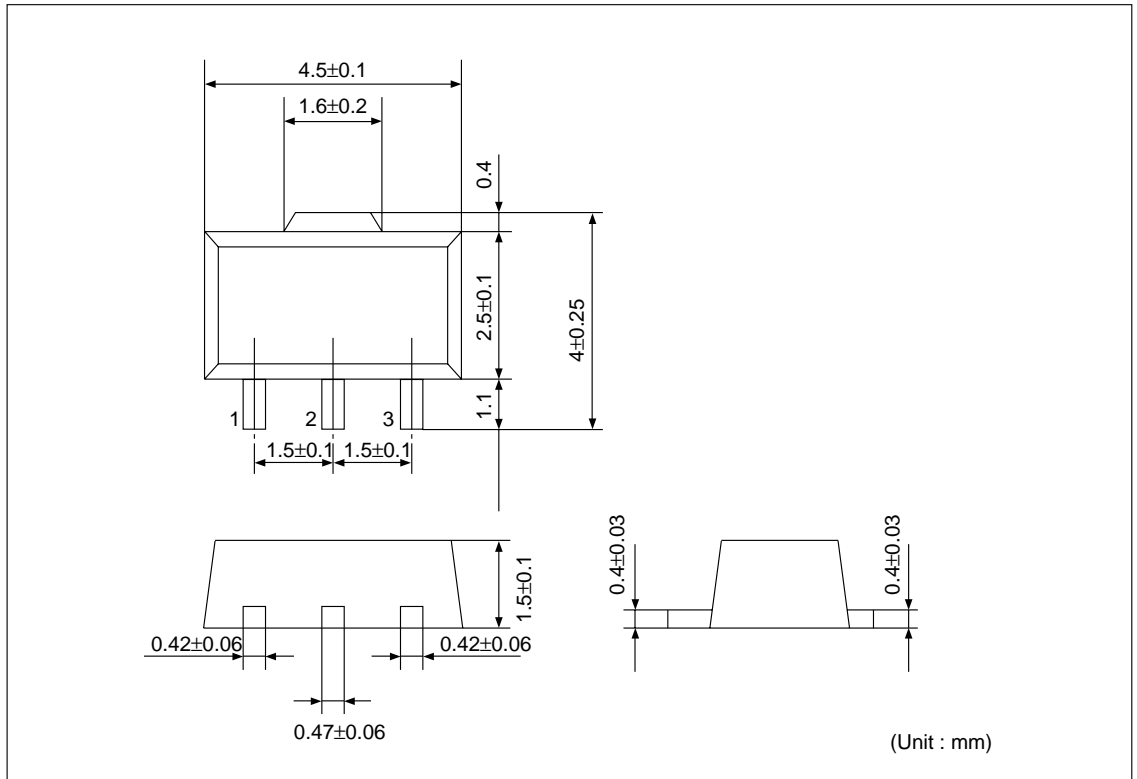
● SCI7810Y_{DA}

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

Items	Symbols	Condition (V _{SS} = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V _I	—————	—	—	15	V
Output voltage	V _O	V _{DD} = 5.0V, I _O = -10mA Ta = 25°C	2.93	3.00	3.07	V
Operating current	I _{OP}	V _{DD} = 3.0V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V _I -V _O	V _{OUT} = 3.0V, I _O = -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 _{DD} = 4.0V to 15.0V I _O = -10mA	—	0.1	—	%/V
Load stability	ΔV _O	Ta = -30°C to +85°C (Same temperature condition) V _{DD} = 5.0V I _O = -1mA to -30mA	—	30	—	mV
Supply voltage fluctuation elimination ratio	PSRR	V _{DD} = 5.0V, f _{in} = 50kHz C _L = 10μF, I _{OUT} = -10mA	—	-40	—	dB

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OVERALL DIMENSION DIAGRAM



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

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