EPSON

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.

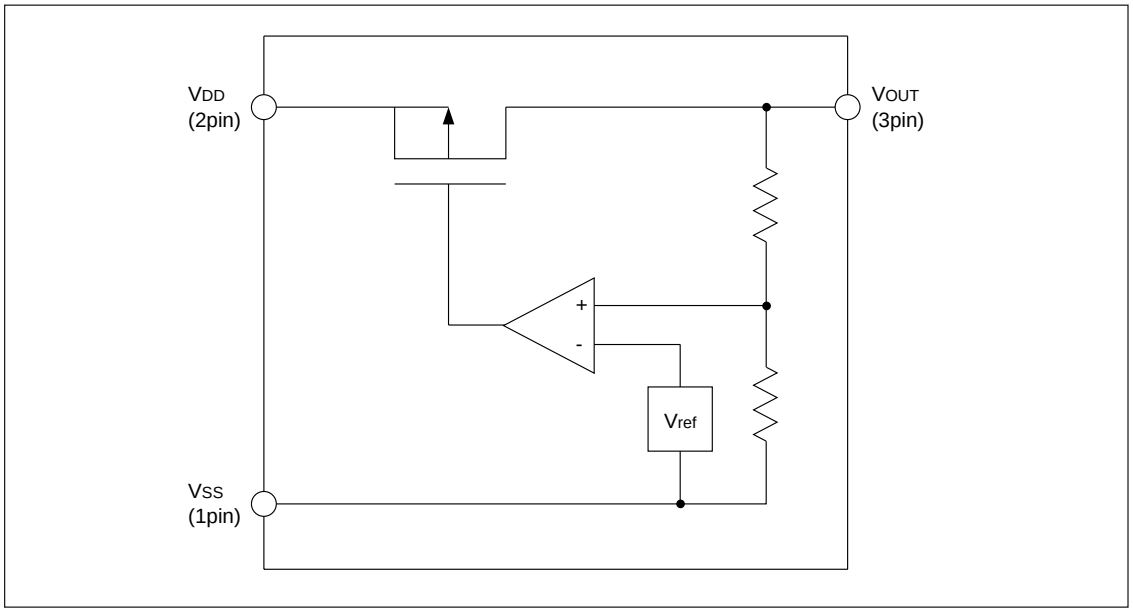
FEATURES

●Low operating current	Typically, 1.5 μA (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/˚C
●Larger operating voltage range	15V maximum
●Higher output voltage regulation capability	±2.0% (V_{DD}=7.0V, I_P=10mA, V_{OUT} = 5.0V, Ta=25˚C)
●Package	SOT89-3pin

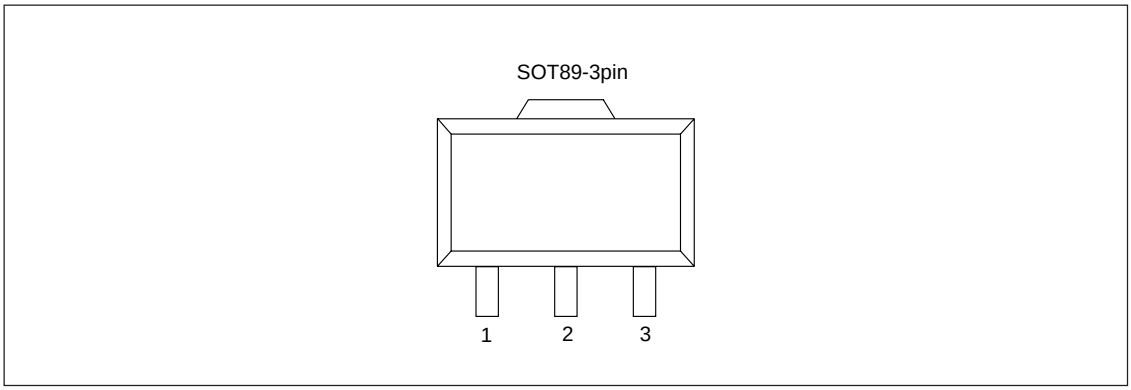
MODEL TYPES

Model names	Input voltage (V)	Output voltage (V)			Output current (Max.) (mA)	Operating current (μA)
		Min.	Typ.	Max.		
SCI7810YHA	15	1.45	1.50	1.55	10 at VI = 3V	1.5
SCI7810YGA		1.75	1.80	1.85	10 at VI = 3V	
SCI7810YFA		2.15	2.20	2.25	10 at VI = 3V	
SCI7810YLA		2.53	2.60	2.67	30 at VI = 5V	
SCI7810YRA		2.73	2.80	2.87	30 at VI = 5V	
SCI7810YDA		2.93	3.00	3.07	30 at VI = 5V	
SCI7810YCA		3.13	3.20	3.27	30 at VI = 5V	
SCI7810YTA		3.23	3.30	3.37	30 at VI = 5V	
SCI7810YNA		3.43	3.50	3.57	30 at VI = 5V	
SCI7810YKA		3.80	3.90	4.00	40 at V = 6V	
SCI7810YPA		3.90	4.00	4.10	40 at VI = 6V	
SCI7810YMA		4.40	4.50	4.60	40 at VI = 6V	
SCI7810YBA		4.90	5.00	5.10	50 at VI = 7V	
SCI7810YAA		5.75	6.00	6.25	50 at VI = 8V	

BLOCK DIAGRAM



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 Soldering temperature	T_{sol}	260˚C 10 sec. (at lead)	–

■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$_{BA}$

(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

●SCI7810YKA

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

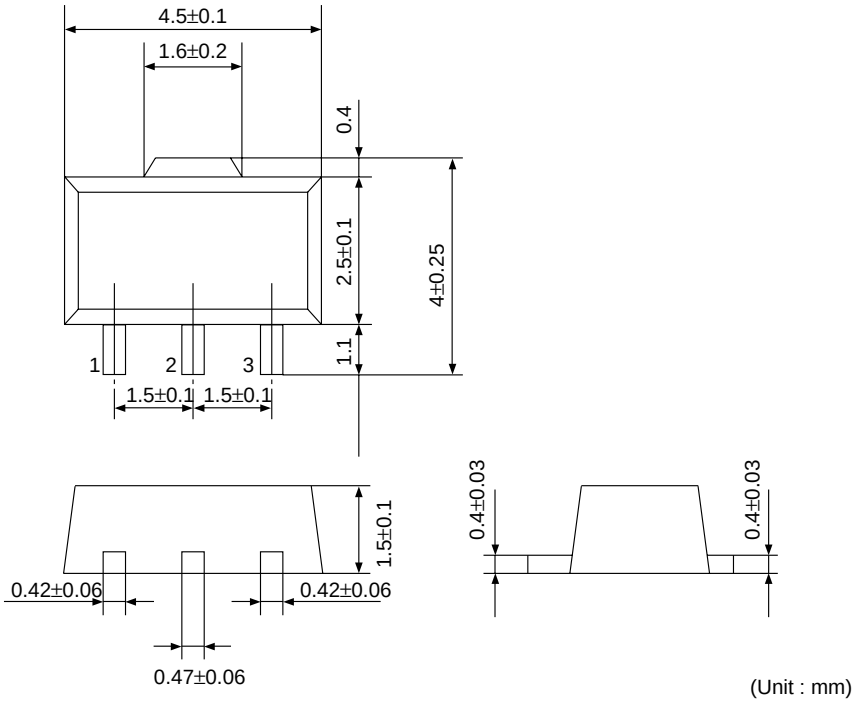
Items	Symbols	Condition (V_{SS} = 0.0V)	Min.	Typ.	Max.	Unit
Input voltage	V_I	———	—	—	15	V
Output voltage	V_O	V_{DD} = 6.0V, I_O = -10mA Ta = 25˚C	3.80	3.90	4.00	V
Operating current	I_{OP}	V_{DD} = 3.9V to 15.0V No load	—	1.5	5.0	μA
Voltage difference between input and output voltages	V_I–V_O	V_{OUT} = 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

● $SCI7810Y_{DA}$

(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

OVERALL DIMENSION DIAGRAM



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

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