SHARP

PQ1S30 series Low Power-Loss Voltage Regulator

Low Output Current, Compact Surface Mount Type Low Power-Loss Voltage Regulators

■ General Description

Sharp's **PQ1S30 series** are 180mA output, compact resin mold surface mount package type low power-loss voltage regulators. They contribute to improve the performance of analog circuit due to high ripple rejection. They are suitable for energy and space saving of battery drive compact equipment such as portable equipment, personal information tools.

■ Features

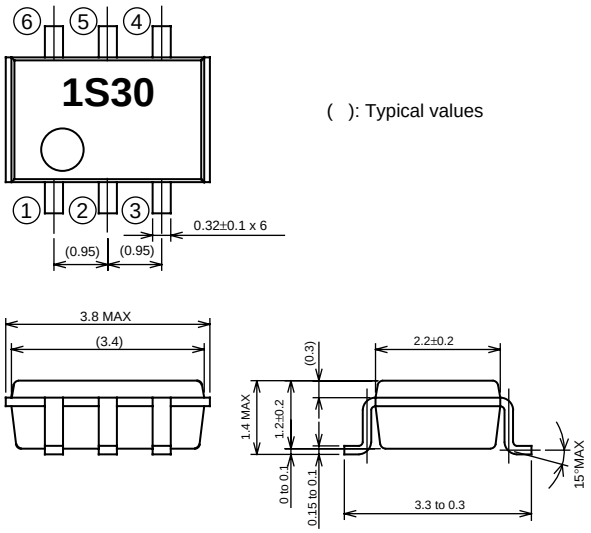
(1) Compact surface mount package(3.4 x 2.2 x 1.2mm)
(2) Low power-loss
(Dropout voltage: TYP.0.1V/MAX. 0.2V at Io=60mA)
(3) High ripple rejection(TYP.60dB)
(4) Low current operation type
(Dissipation current at no load: TYP. 170μA)
(5) Built-in ON/OFF control function
(Dissipation current at OFF-state: MAX. 0.1μA)
(6) Low voltage operation type
(Input voltage: MIN. 1.8V)
(7) Overcurrent, overheat protection functions

■ Applications

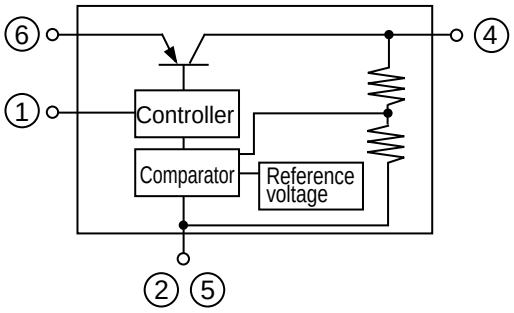
(1) Cellular phones
(2) Cordless phones
(3) Personal information tools(PDA)
(4) Cameras/Camcoders
(5) PCMCIA cards for notebook PCs

■ Outline Dimensions

(Unit: mm)



Internal connection



① ON/OFF control terminal(Vc) ④ DC output(Vo)
②⑤ GND ⑥ DC input(Vin)
③ NC

■ Output Voltage Line-up

Output voltage	Model No.	Output voltage	Model No.
2.2V	**PQ1S22**	3.0V	**PQ1S30**
2.3V	**PQ1S23**	3.1V	**PQ1S31**
2.5V	**PQ1S25**	3.2V	**PQ1S32**
2.7V	**PQ1S27**	3.3V	**PQ1S33**
2.8V	**PQ1S28**	4.7V	**PQ1S47**
2.9V	**PQ1S29**	5.0V	**PQ1S50**

* It is available for every 0.1V(1.8V to 5.5V)

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■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
*1 Input voltage	Vin	16	V
*1 ON/OFF control terminal voltage	Vc	16	V
Output current	Io	240	mA
*2 Power dissipation	Pd	400	mW
*3 Junction temperature	Tj	150	°C
Operating temperature	Topr	- 30 to +80	°C
Storage temperature	Tstg	- 55 to +150	°C
Soldering temperature	Tsol	260(for 10s)	°C

*1 All are open except GND and applicable terminals.
*2 At surface-mounted condition
*3 Overheat protection may operate at 125<=Tj<=150°C.

■ Electrical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage		Vo	-	Refer to the next page.			V
Output current		Io	*4	180	240	-	mA
Recommended output current		-	-	-	-	150	mA
Load regulation		RegL1	Io=5mA to 60mA	-	10	30	mV
		RegL2	Io=5mA to 100mA	-	20	80	mV
		RegL3	Io=5mA to 150mA	-	90	150	mV
Line regulation		RegI	Vi=Vo+1V to Vo+6V	-	5	20	mV
Temperature coefficient of output voltage		TcVo	Io=10mA,Tj= - 25 to 75°C	-	0.05	-	%/°C
Ripple rejection		RR	-	-	60	-	dB
Output noise voltage	Vo=3V series	Vno	10Hz<f<100kHz, Cn=0.1µF, Io=30mA	-	30	-	µV
	Vo=5V series			-	50	-	
Dropout voltage		Vi-o1	Io=60mA,*5	-	0.1	0.2	V
		Vi-o2	Io=150mA,*5	-	0.29	0.4	
*6 ON-state voltage for control		Vc(on)	-	1.8	-	-	V
ON-state current for control		Ic(on)	Vc=1.8V	-	12	30	µA
OFF-state voltage for control		Vc(off)	-	-	-	0.6	V
Quiescent current		Iq	Io=0mA	-	150	200	µA
Output OFF-state dissipation current		Iqs	Vin=8V,Vc=0.4V	-	-	0.1	µA
Response time(Rise time)		Tr	Io=30mA,Vc=0→1.8V, Co=10µF	-	0.3	-	ms
Noise control terminal voltage		-	-	-	1.25	-	V

*4 Output current shall be the value when output voltage lowers 0.3V from the voltage at Io=30mA.
*5 Dropout voltage when output voltage lowers 100mV from the voltage at Vin=Vo+1V.
*6 In case of opening control terminal, output voltage turns off.

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■ Output Voltage Line-up

(Ta=25°C)

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit
Output voltage	**PQ1S22**	Vo	-	2.12	2.2	2.28	V
	PQ1S23			2.22	2.3	2.38	
	PQ1S25			2.42	2.5	2.58	
	PQ1S27			2.62	2.7	2.78	
	PQ1S28			2.72	2.8	2.88	
	PQ1S29			2.82	2.9	2.98	
	PQ1S30			2.92	3.0	3.08	
	PQ1S31			3.02	3.1	3.18	
	PQ1S32			3.12	3.2	3.28	
	PQ1S33			3.215	3.3	3.385	
	PQ1S47			4.58	4.7	4.82	
	PQ1S50			4.88	5.0	5.12	

* It is available for every 0.1V (1.8V to 5.5V).