

PQ05DZ51/11 series

Low Power-Loss Voltage Regulator

0.5A/1.0A Output, General Purpose, Surface Mount Type Low Power-Loss Voltage Regulator

General Description

SHARP's **PQ05DZ51/11 series** are 0.5A/1.0A output, general purpose, low power-loss voltage regulators which employ compact surface mount package. They contribute to low voltage operation and suitable for power supplies of various electronic equipment.

Features

- (1) Low power-loss
(Dropout voltage : MAX. 0.5V)
- (2) Surface mount package (equivalent to SC-63)
- (3) Available 3.3V, 5V, 9V, 12V output type
- (4) Output current (0.5A : **PQ05DZ51 series**)
(1.0A : **PQ05DZ11 series**)
- (5) Output voltage precision : $\pm 3.0\%$
- (6) Built-in ON/OFF control function
- (7) Built-in overcurrent protection, overheat protection function
- (8) Available tape-packaged products
($\phi 330\text{mm}$ reel : 3000 pcs., **PQ05DZ5U/1U**)

Applications

- (1) Personal computers
- (2) CD-ROM drives
- (3) Power supplies for various OA equipment

Absolute Maximum Ratings

($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	24	V
*1 ON/OFF control terminal voltage	V_C	24	V
Output current	I_O	0.5	A
		1	
*2 Power dissipation	P_D	8	W
*3 Junction temperature	T_j	150	$^\circ\text{C}$
Operating temperature	T_{opr}	-20 to +80	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$
Soldering temperature	T_{sol}	260 (for 10s)	$^\circ\text{C}$

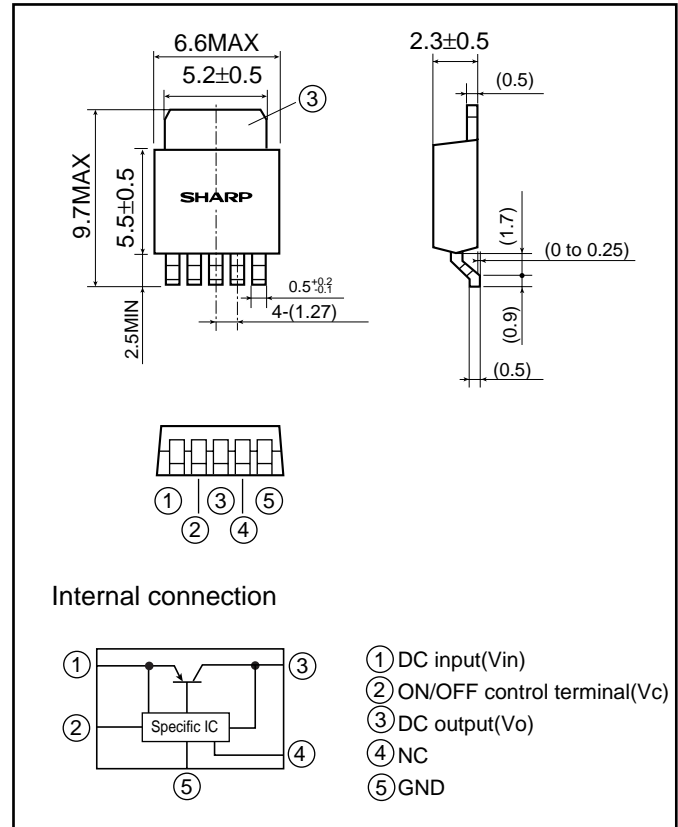
*1 All are open except GND and applicable terminals.

*2 P_D : With infinite heat sink

*3 Overheat protection may operate at $125 \leq T_j \leq 150^\circ\text{C}$

Outline Dimensions

(Unit : mm)



Model Line-up

0.5A output	3.3V output	PQ3DZ53
	5.0V output	PQ05DZ51
	9.0V output	PQ09DZ51
	12.0V output	PQ12DZ51
1.0A output	3.3V output	PQ3DZ13
	5.0V output	PQ05DZ11
	9.0V output	PQ09DZ11
	12.0V output	PQ12DZ11

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• Specifications are subject to change without notice for improvement.

(Internet) • Data for SHARP's optoelectronic/power device is provided on internet. (Address <http://www.sharp.co.jp/ecg/>)

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Electrical Characteristics

(Unless otherwise specified, conditions shall be $I_o=0.3A$ [PQ05DZ51 series], $I_o=0.5A$ [PQ05DZ11 series]*4, $T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Output voltage	PQ3DZ53/PQ3DZ13	-	3.201	3.3	3.399	V	
	PQ05DZ51/PQ05DZ11		4.85	5.0	5.15		
	PQ09DZ51/PQ09DZ11		8.73	9.0	9.27		
	PQ12DZ51/PQ12DZ11		11.64	12.0	12.36		
Load regulation	PQ05DZ51 series	RegL	$I_o=5mA$ to 0.5A	-	-	2.0	%
	PQ05DZ11 series		$I_o=5mA$ to 1.0A				
Line regulation	RegI	*5, $I_o=5mA$	-	-	2.5	%	
Temperature coefficient of output voltage	TcVo	$T_j=0$ to $125^\circ C$, $I_o=5mA$	-	± 0.01	-	$\%/^\circ C$	
Ripple rejection	RR	-	45	-	-	dB	
Dropout voltage	PQ05DZ51 series	Vi-o	*6, $I_o=0.3A$	-	-	0.5	V
	PQ05DZ11 series		*6, $I_o=0.5A$				
*7 ON-state voltage for control	$V_{C(on)}$	-	2.0	-	-	V	
ON-state current for control	$I_{C(on)}$	-	-	-	200	μA	
OFF-state voltage for control	$V_{C(off)}$	-	-	-	0.8	V	
OFF-state current for control	$I_{C(off)}$	$V_c=0.4V$	-	-	2	μA	
Quiescent current	I_q	$I_o=0A$	-	-	10	mA	
Output OFF-state consumption current	I_{qs}	$V_c=0.4V$, $I_o=0A$	-	-	5	μA	

*4 PQ3DZ53/13: $V_{in}=5V$, PQ05DZ51/11: $V_{in}=7V$, PQ09DZ51/11: $V_{in}=11V$, PQ12DZ51/11: $V_{in}=14V$

*5 PQ3DZ53/13: $V_{in}=4$ to $10V$, PQ05DZ51/11: $V_{in}=6$ to $16V$, PQ09DZ51/11: $V_{in}=10$ to $20V$,
PQ12DZ51/11: $V_{in}=13$ to $23V$

*6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value. PQ3DZ51/11: $V_{in}=3.7V$

*7 In case of opening control terminal ②, output voltage turns off.