

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

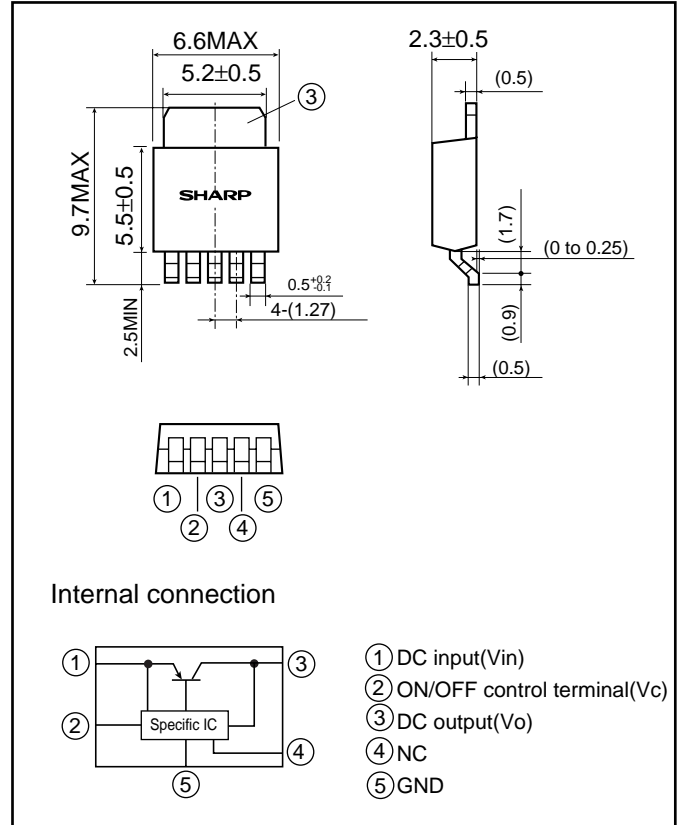
- (1) Personal computers
- (2) CD-ROM drives
- (3) Power supplies for various OA equipment

Absolute Maximum Ratings (Ta=25°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	°C
Operating temperature	T _{opr}	-20 to +80	°C
Storage temperature	T _{stg}	-40 to +150	°C
Soldering temperature	T _{sol}	260 (for 10s)	°C

- *1 All are open except GND and applicable terminals.
 *2 P_D : With infinite heat sink
 *3 Overheat protection may operate at 125≤T_J≤150°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

(Notice) • In the absence of device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP device shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.
 • 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/>)

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.