

# PQ6CU11X1APQ

CMOS Step-up  
Chopper Regulator

## ■ Features

- 1.High switching voltage :MAX.30V  
(capable of driving max 4LEDs in series connection)
- 2.Switching current: 250mA
- 3.High frequency PWM control :1.2MHz
- 4.High efficiency(efficiency : 85%)
- 5.Built-in overheat, overcurrent protection functions
- 6.Built-in soft start function
- 7.RoHS directive compliant

## ■ Applications

- 1.Mobile phone
- 2.DSC
- 3.PDA

## ■ Absolute Maximum Ratings

(Ta=25°C)

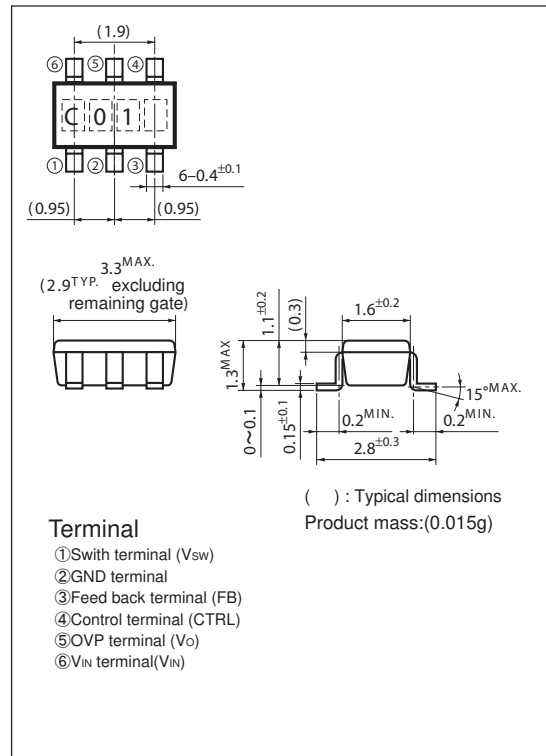
Parameter	Symbol	Rating	Unit
Input voltage	V <sub>IN</sub>	6	V
Output voltage	V <sub>O</sub>	30	V
Switching voltage	V <sub>SW</sub>	30	V
Control voltage	CTRL	V <sub>IN</sub>	V
Feed back voltage	FB	6	V
Switching current	I <sub>SW</sub>	250	mA
Power dissipation	P <sub>d</sub>	350	mW
Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	T <sub>opr</sub>	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +150	°C
Soldering temperature	T <sub>sol</sub>	260(10s)	°C

## ■ Operating conditions

Parameter	Symbol	Rating	Unit
Operating Junction temperature	T <sub>j</sub>	-40 to +125	°C

## ■ Outline Dimensions

(Unit:mm)



### Terminal

- ①Switch terminal (V<sub>sw</sub>)
- ②GND terminal
- ③Feed back terminal (FB)
- ④Control terminal (CTRL)
- ⑤OVP terminal (V<sub>o</sub>)
- ⑥V<sub>IN</sub> terminal(V<sub>IN</sub>)

Lead finish:Lead-free solder plating  
(Composition: Sn2Bi)

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In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

## Electrical Characteristics

(Unless otherwise specified, condition shall be  $V_{IN}=V_{CTRL}=3.6V, V_o=10V, I_o=20mA, T_a=25^\circ C$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input-output voltage range	$V_{IN}$	-	2.7	-	5.5	V
Overvoltage detecting level	OVP	5pin	26	28	30	V
Overvoltage detecting hysteresis level	OVP(hys)	5pin	-	2	-	V
Quiescent current	$I_q$	Switching, $I_o=0mA$	-	0.8	1.6	mA
Stand-by current	$I_{SD}$	$V_{CTRL}=0V$	-	0.1	1	$\mu A$
Efficiency	$\eta$	3 LEDs	-	90	-	%
<b>Error amplifier</b>						
Reference voltage	$V_{REF}$	-	86	95	104	mV
FB pin bias current	$I_{FB}$	-	-	30	100	nA
<b>Oscillator</b>						
Oscillation frequency	$f_o$	-	1	1.2	1.4	MHz
Maximum duty	$D_{MAX}$	$V_{IN}=3V$	85	-	-	%
<b>Power switch</b>						
Overcurrent detection level	$I_L$	DUTY=70%, Switching current peak	260	-	-	mA
On-resistance	$R_{ON}$	$I_{SW}=250mA$	-	1.7	2.5	$\Omega$
Leakage current	$I_{LEAK}$	$V_{SW}=28V, V_{IN}=V_{CTRL}=0V$	-	0.05	1	$\mu A$
<b>Control terminal</b>						
ON-state voltage for control	$V_{C(ON)}$	-	1	-	-	V
OFF-state voltage for control	$V_{C(OFF)}$	-	-	-	0.4	V
CTRL pin bias current	$I_{CTRL}$	-	-	-	50	$\mu A$

Fig.1 Standard measuring circuit

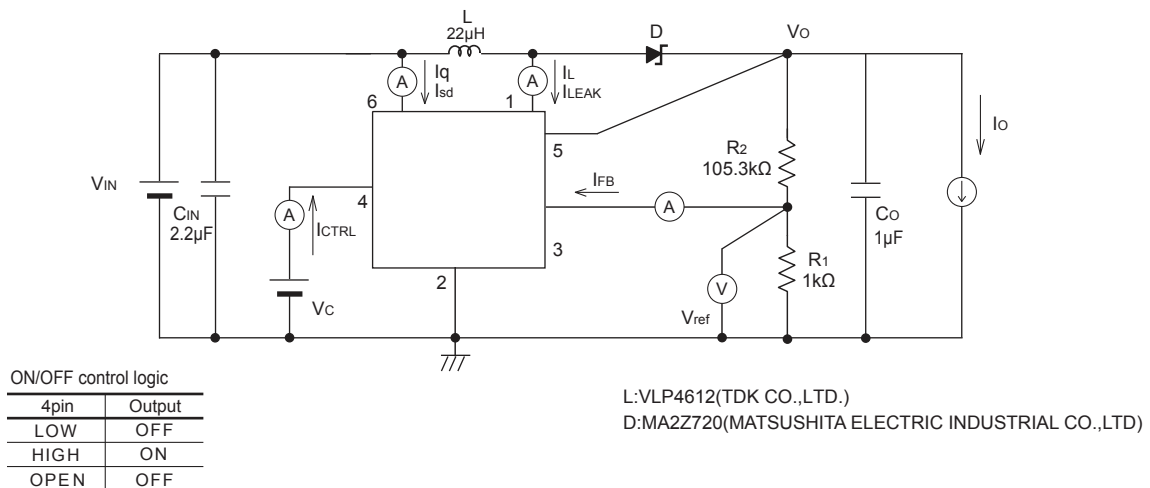


Fig.2 Power Dissipation vs. Ambient Temperature

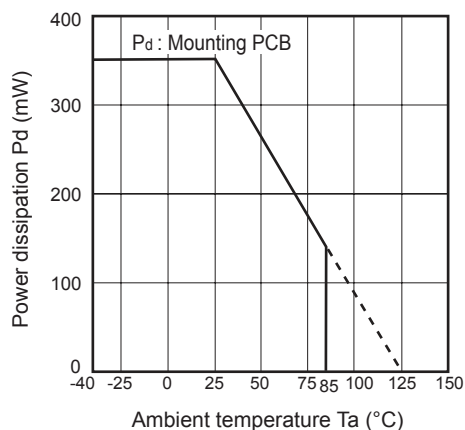


Fig.3 Reference Voltage Fluctuation vs. Junction Temperature

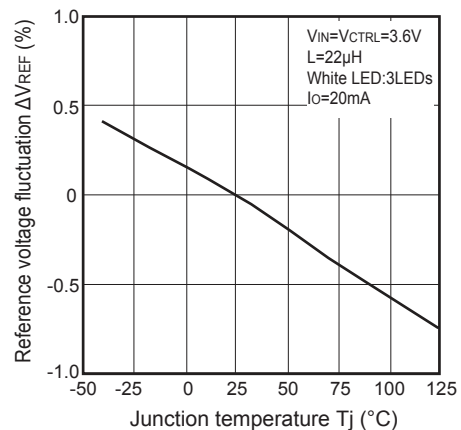


Fig.4 Reference Voltage Fluctuation vs. Input voltage

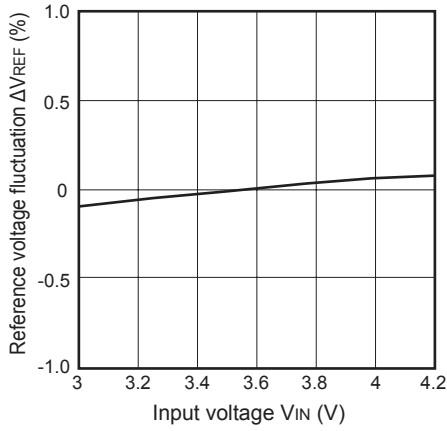


Fig.5 Efficiency vs. LED Current

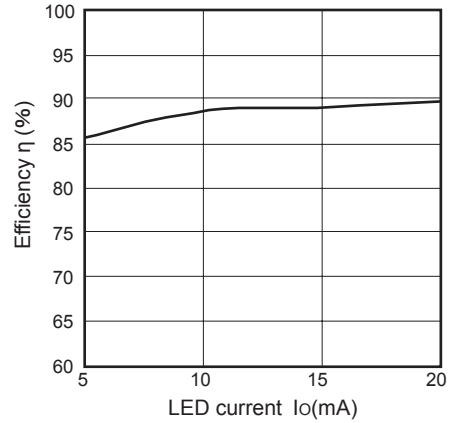


Fig.6 Efficiency vs. Input Voltage

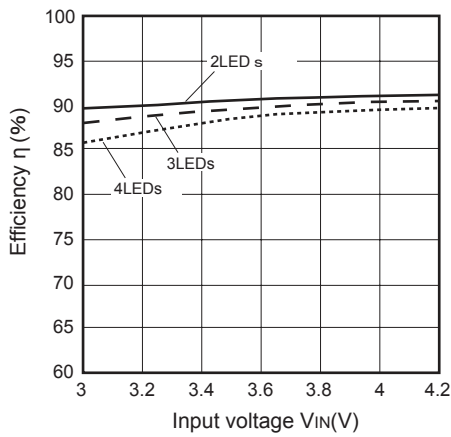


Fig.7 Oscillation Frequency Fluctuation vs. Junction Temperature

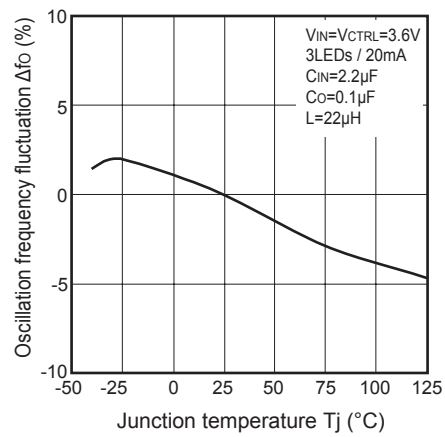


Fig.8 On-Resistance vs. Junction Temperature

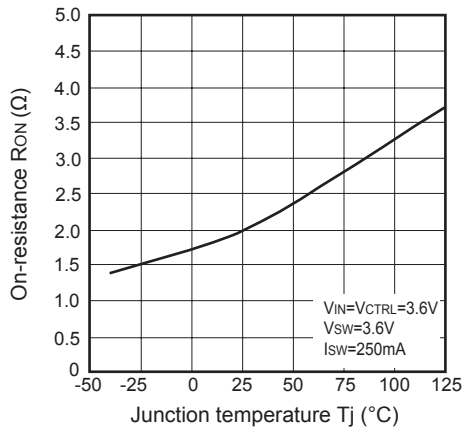


Fig.9 ON/OFF-state Voltage for Control vs. Junction Temperature

