Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

PQ6CU11X1APQ

■ 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_{IN}	6	V
Output voltage	V_O	30	V
Switching voltage	V_{SW}	30	V
Control voltage	CTRL	V_{IN}	V
Feed back voltage	FB	6	V
Switching current	I_{SW}	250	mA
Power dissipation	Pd	350	mW
Junction temperature	T_j	150	°C
Operating temperature	T_{opr}	-40 to +85	°C
Storage temperature	T_{stg}	-40 to +150	°C
Soldering temperature	T_{sol}	260(10s)	°C

■ Operating conditions

Parameter	Symbol	Rating	Unit
Operating Junction temperature	T_j	-40 to +125	°C

■ Outline Dimensions

(Unit:mm)

( ) : Typical dimensions
Product mass:(0.015g)
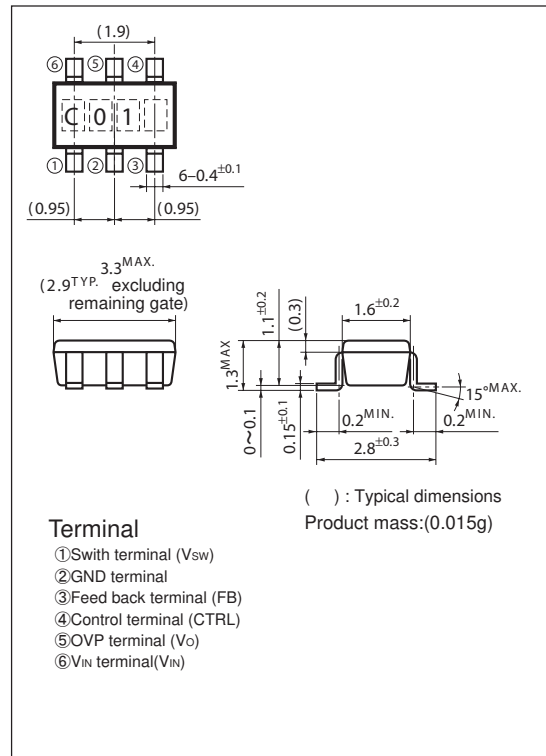
Terminal
① Swith terminal (V_{SW})
② GND terminal
③ Feed back terminal (FB)
④ Control terminal (CTRL)
⑤ OVP terminal (V_O)
⑥ V_{IN} terminal(V_{IN})

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

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■ Electrical Characteristics

(Unless otherwise specified,condition shall be V_{IN}=V_{CTRL}=3.6V,V_O=10V,I_O=20mA,Ta=25°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	µA
Efficiency	η	3 LEDs	–	90	–	%
Error amplifier						
Reference voltage	V_{REF}	–	86	95	104	mV
FB pin bias current	I_{FB}	–	–	30	100	nA
Oscillator						
Oscillation frequency	fo	–	1	1.2	1.4	MHz
Maximum duty	D_{MAX}	V_{IN}=3V	85	–	–	%
Power switch						
Overcurrent detection level	I_L	DUTY=70%,Switching current peak	260	–	–	mA
On-resistance	R_{ON}	I_{SW}=250mA	–	1.7	2.5	Ω
Leakage current	I_{LEAK}	V_{SW}=28V,V_{IN}=V_{CTRL}=0V	–	0.05	1	µA
Control terminal						
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	µA

Fig.1 Standard measuring circuit

ON/OFF control logic

4pin	Output
LOW	OFF
HIGH	ON
OPEN	OFF

L:VLP4612(TDK CO.,LTD.)
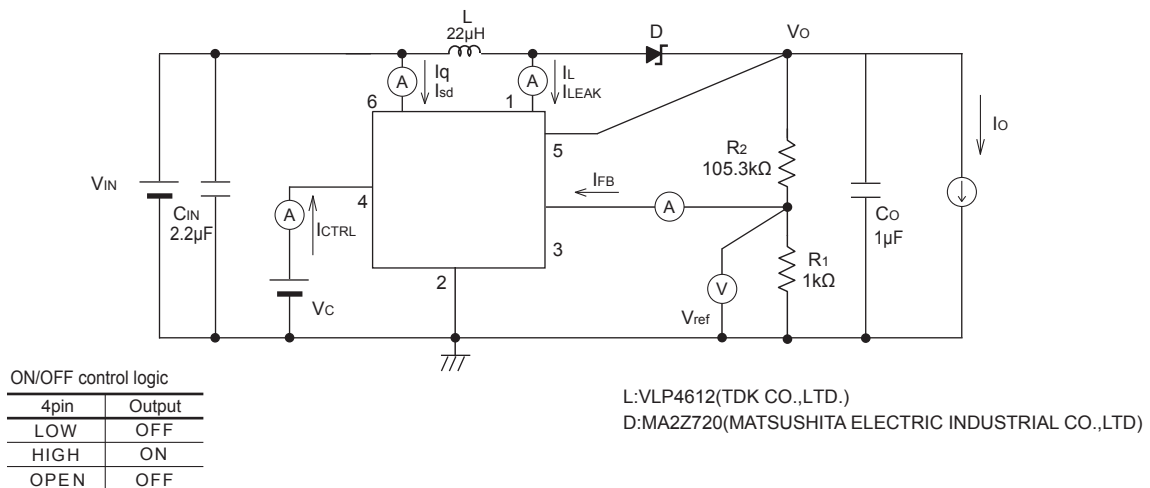D:MA2Z720(MATSUSHITA ELECTRIC INDUSTRIAL CO.,LTD)

Fig.2 Power Dissipation vs.Ambient
Temperature
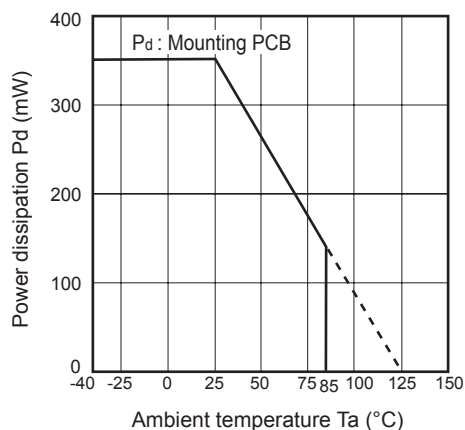
Fig.3 Reference Voltage Fluctuation vs.
Junction Temperature

Sheet No.: OP06059
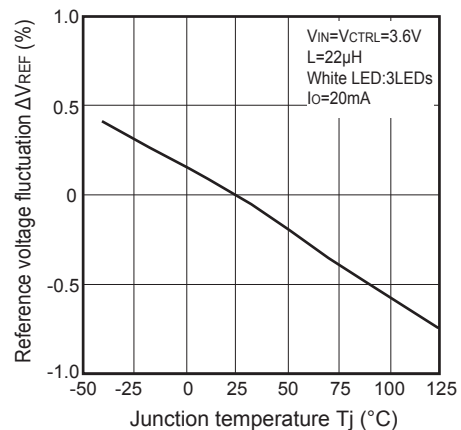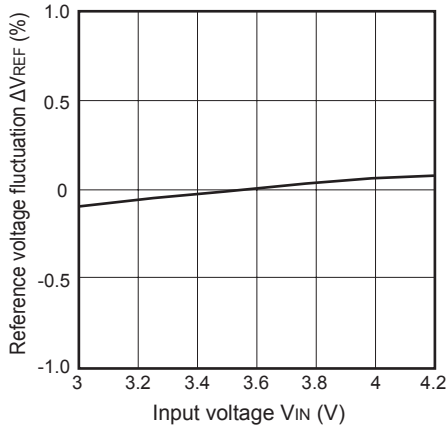
Fig.4 Reference Voltage Fluctuation vs. Input voltage

Reference voltage fluctuation ΔV_{REF} (%)

Input voltage V_{IN} (V)

Fig.5 Efficiency vs. LED Current

Efficiency η (%)

LED current I_O(mA)
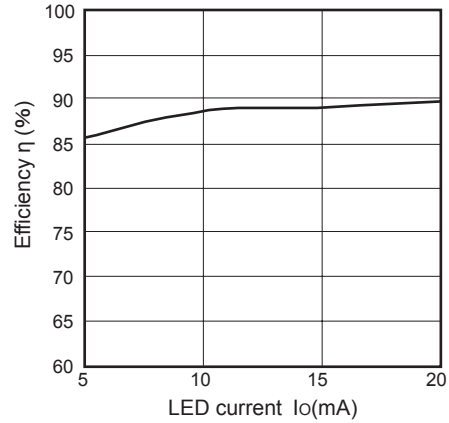
Fig.6 Efficiency vs. Input Voltage

Efficiency η (%)

2LED s

3LEDs

4LEDs

Input voltage V_{IN}(V)
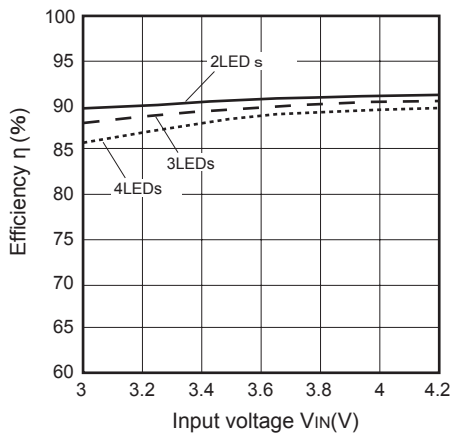
Fig.7 Oscillation Frequency Fluctuation vs. Junction Temperature

Oscillation frequency fluctuation Δf_0 (%)

$V_{IN}=V_{CTRL}=3.6V$
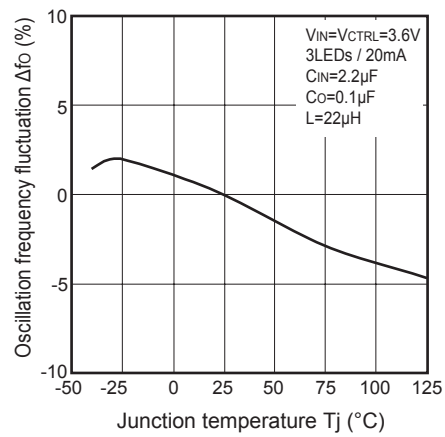3LEDs / 20mA
$C_{IN}=2.2\mu F$
$C_O=0.1\mu F$
L=22μH

Junction temperature T_j (°C)

Fig.8 On-Resistance vs. Junction Temperature

On-resistance R_{ON} (Ω)

$V_{IN}=V_{CTRL}=3.6V$
$V_{SW}=3.6V$
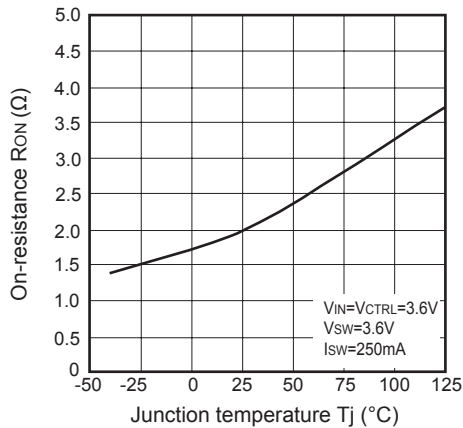$I_{SW}=250mA$

Junction temperature T_j (°C)

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

ON/OFF-state voltage for control V_C (V)

$V_{IN}=3.6V$
3LEDs / 5mA
$C_{IN}=2.2\mu F$
$C_O=0.1\mu F$
L=22μH
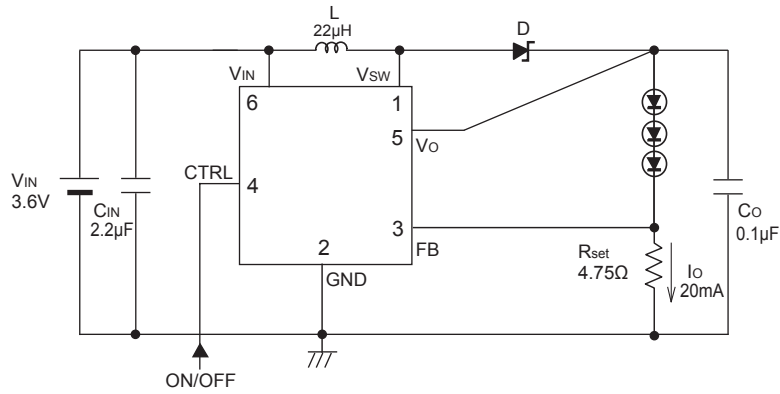
Junction temperature T_j (°C)
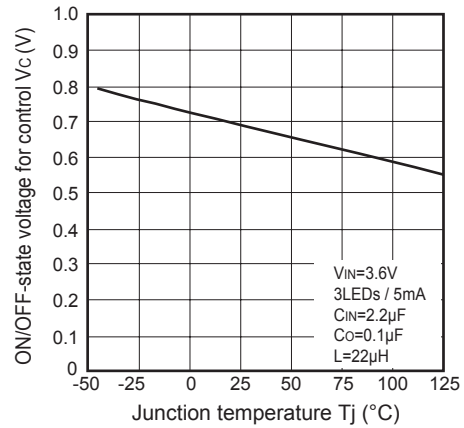
■ Block Diagram
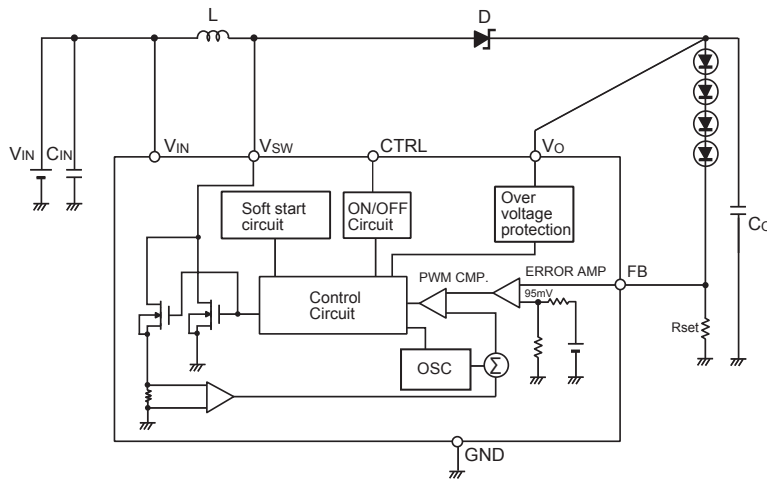
■ Example of application

■ Current-limit

This product monitors the switch current at every cycle and limits the switch current not to exceed the overcurrent detection level.
Please set the white LED current under the maximum LED current shown in the graph indicated below within the range of input voltage (V_{IN}) you use.

Fig.10 Use Range of White LED