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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

PQ7DV10

Variable Output, (1.5 to 7V) 10A Output Low Power-loss Voltage Regulator

■ Feature

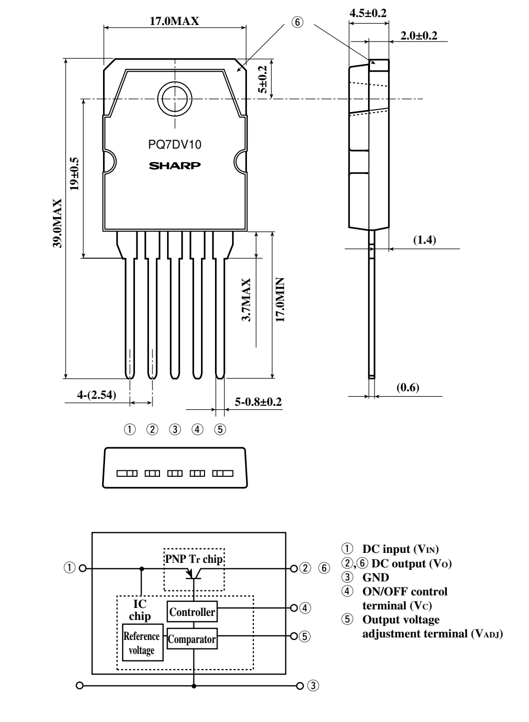
- 10A output type
- Low power-loss (Dropout voltage : MAX.0.5V at Io= 10A)
- Variable output type (1.5 to 7V)
- Low operating voltage (Minimum input voltage : 3.0V)
- High-precision reference voltage type (Reference voltage precision : ±2.0%)
- TO-3P package
- Built-in ON/OFF control function
- Built-in overcurrent protection, overheat protection function

■ Applications

- Power supplies for various electronic equipment such as personal computers

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(T_a=25˚C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	10	V
*1 ON/OFF control terminal voltage	V_C	10	V
*1 Output adjustment terminal voltage	V_{ADJ}	5	V
Output current	I_O	10	A
Power dissipation (No heat sink)	P_{D1}	2.2	W
Power dissipation (With infinite heat sink)	P_{D2}	60	W
*2 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 Overheat protection may operate at 125<=T_j<=150˚C.

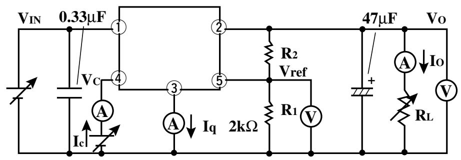
■ Electrical Characteristics

(Unless otherwise specified, conditions shall be V_{IN}=5V, Io=5A, Vo=3V(R_1=2kΩ) T_a=25°C)

Parameter	Symbol	Conditions	NIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	-	3	-	10	V
Reference voltage	V_O	-	1.5	-	7	V
Reference voltage	V_{ref}	-	1.225	1.25	1.275	V
Load regulation	$R_{eg}L$	I_O=5mA to 10A	-	0.5	2	%
Line regulation	$R_{eg}I$	V_{IN}=4 to 10V	-	0.5	2.5	%
Temperature coefficient of output voltage	T_CV_O	T_j=0 to 125°C	-	±0.01	-	%/°C
Ripple rejection	RR	-	45	55	-	dB
Dropout voltage	V_{i-o}	V_{IN}=3V, Io=10A	-	-	0.5	V
*3 ON-state voltage for control	$V_{C(ON)}$	-	2	-	-	V
ON-state current for control	$I_{C(ON)}$	V_C=2.7V	-	-	20	μA
OFF-state voltage for control	$V_{C(OFF)}$	-	-	-	0.8	V
OFF-state current for control	$I_{C(OFF)}$	V_C=0.4V	-	-	- 0.4	mA
Quiescent current	I_q	I_O=0A	-	-	17	mA

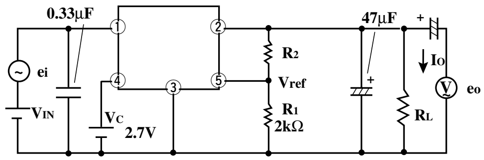
*3 In case of opening control terminal ④,output voltage turns on.

Fig.1 Test Circuit



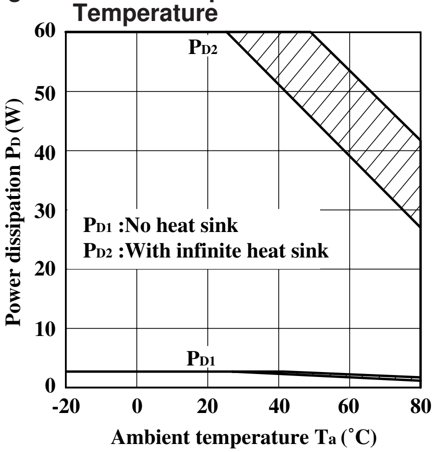
$V_o=V_{ref}\times(1+R_2/R_1)$
$\fallingdotseq 1.25\times(1+R_2/R_1)$
$[R_1=2k\Omega, V_{ref}\fallingdotseq 1.25V]$

Fig.2 Test Circuit for Ripple Rejection



f=120Hz (sine wave)
ei=0.5Vrms
V_{IN}=5V
V_O=3V (R_1=2kΩ)
I_O=0.5A
RR=20 log (ei/eo)

Fig.3 Power Dissipation vs. Ambient Temperature



Note) Oblique line portion:Overheat protection may operate in this area.

Fig.4 Overcurrent Protection Characteristics(Typical Value)

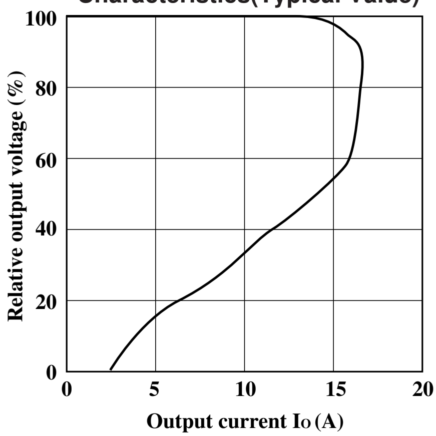


Fig.5 Output Voltage Adjustment Characteristics

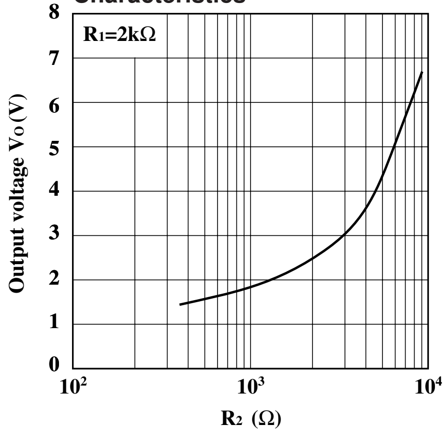


Fig.6 Output Voltage Deviation vs. Junction Temperature

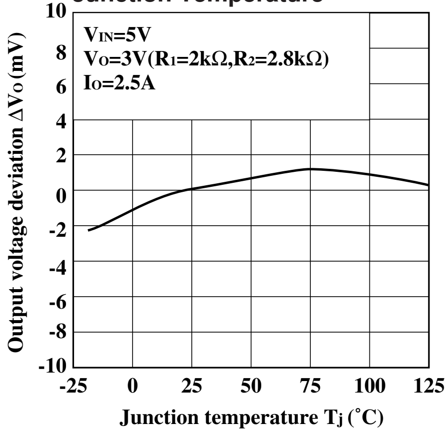


Fig.7 Output Voltage vs. Input Voltage

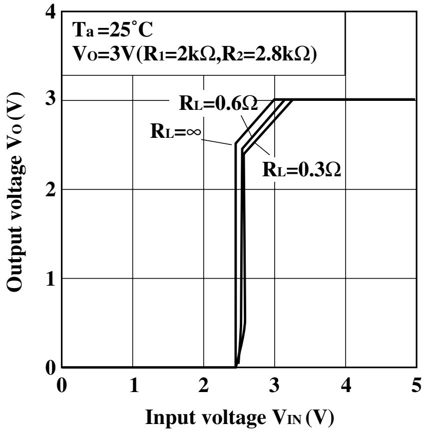


Fig.8 Circuit Operating Current vs. Input Voltage

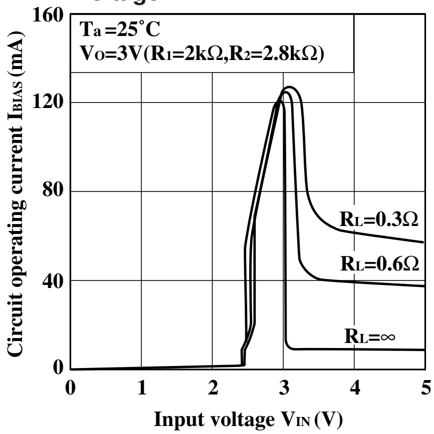


Fig.9 Dropout Voltage vs. Junction Temperature

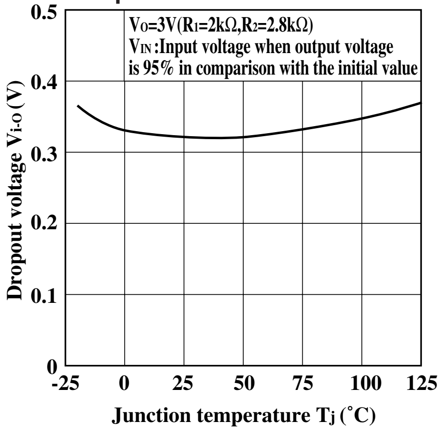


Fig.10 Ripple Rejection vs. Junction Temperature

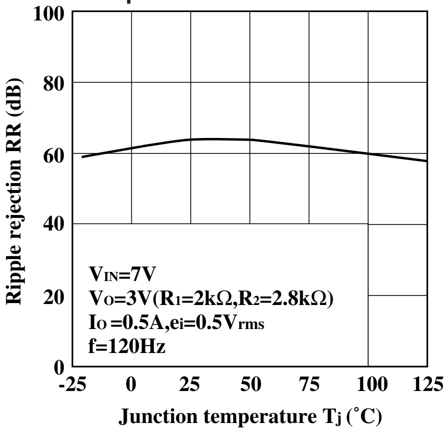


Fig.11 Quiescent Current vs. Junction Temperature

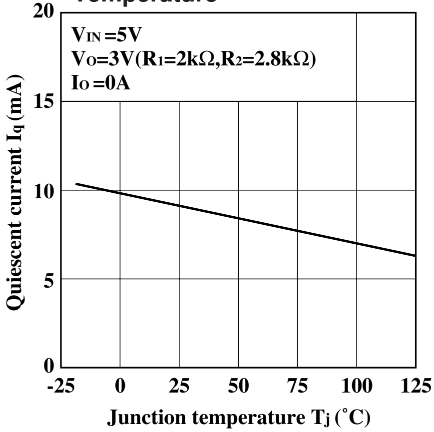
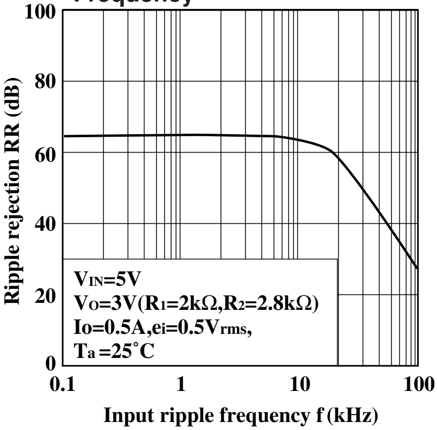
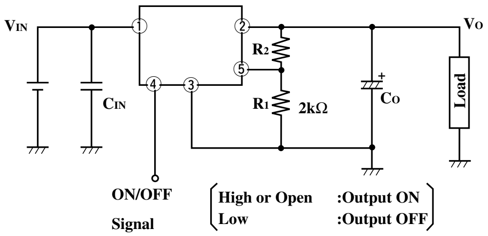


Fig.12 Ripple Rejection vs. Input Ripple Frequency



■ Typical Application



NOTICE