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PQ7DV10

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

Feature

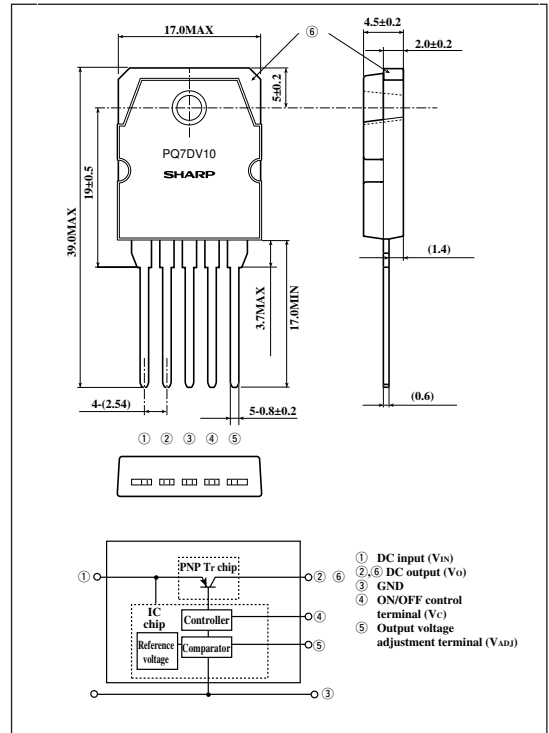
- 10A output type
- Low power-loss (Dropout voltage : MAX.0.5V at $I_o=10A$)
- Variable output type (1.5 to 7V)
- Low operating voltage (Minimum input voltage : 3.0V)
- High-precision reference voltage type (Reference voltage precision : $\pm 2.0\%$)
- TO-3P package
- Built-in ON/OFF control function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

SHARP

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■ Electrical Characteristics (Unless otherwise specified, conditions shall be $V_{IN}=5V$, $I_o=5A$, $V_o=3V(R_i=2k\Omega)$ $T_a=25^{\circ}C$)

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_{egL}	$I_o=5mA$ to 10A	-	0.5	2	%
Line regulation	R_{egI}	$V_{IN}=4$ to 10V	-	0.5	2.5	%
Temperature coefficient of output voltage	T_{CVo}	$T_j=0$ to $125^{\circ}C$	-	± 0.01	-	$\%/^{\circ}C$
Ripple rejection	RR	-	45	55	-	dB
Dropout voltage	V_{i-o}	$V_{IN}=3V$, $I_o=10A$	-	-	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

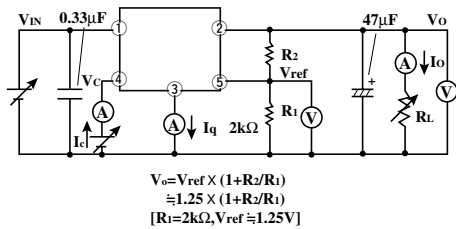


Fig.2 Test Circuit for Ripple Rejection

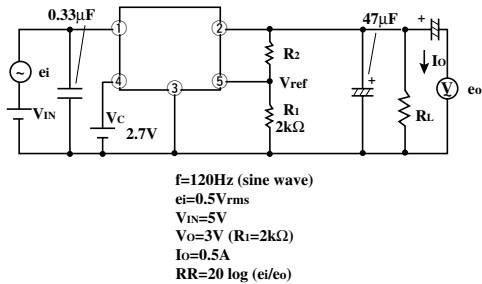
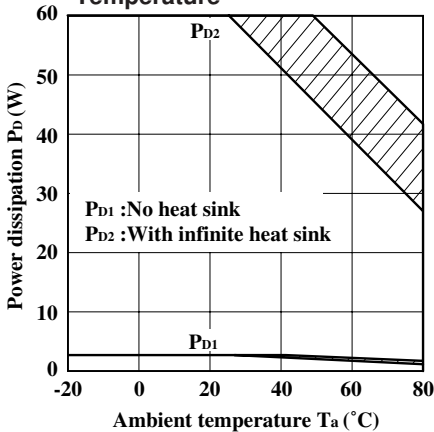


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics(Typical Value)

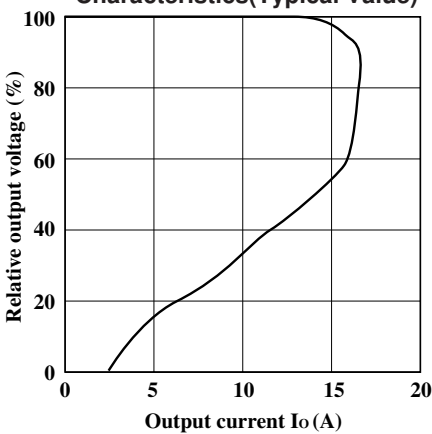


Fig.5 Output Voltage Adjustment Characteristics

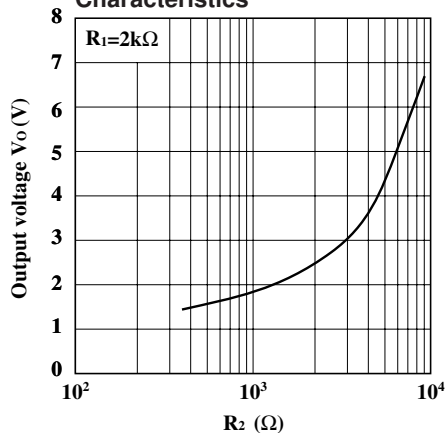


Fig.6 Output Voltage Deviation vs. Junction Temperature

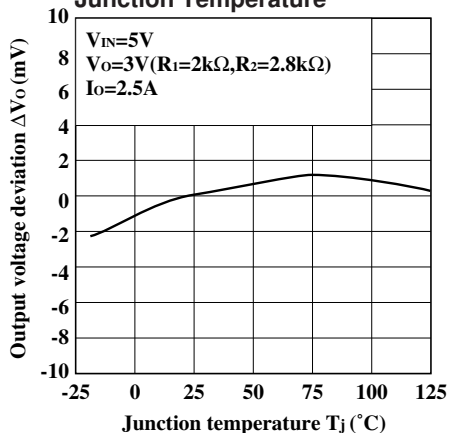


Fig.7 Output Voltage vs. Input Voltage

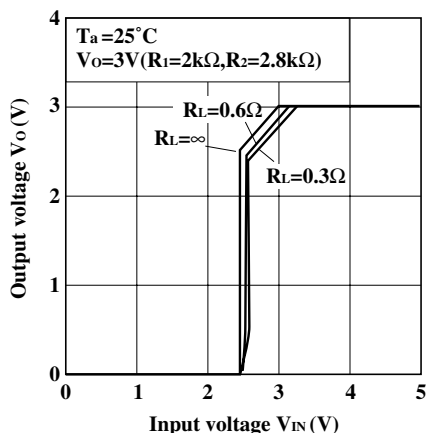


Fig.8 Circuit Operating Current vs. Input Voltage

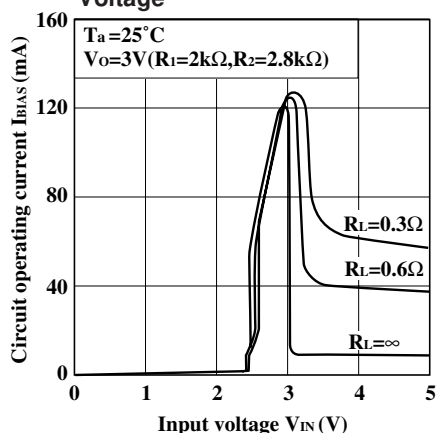


Fig.9 Dropout Voltage vs. Junction Temperature

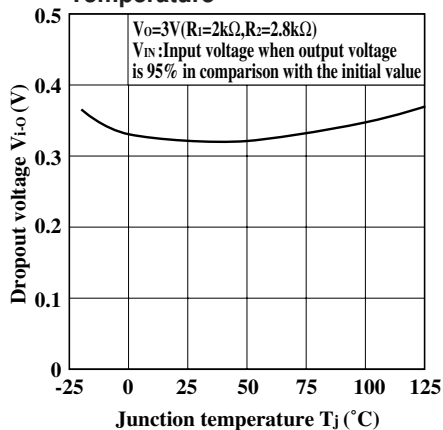


Fig.10 Ripple Rejection vs. Junction Temperature

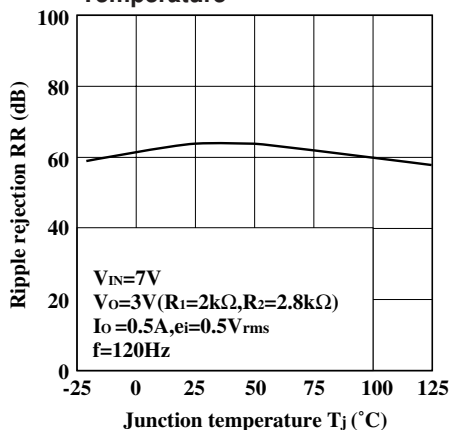
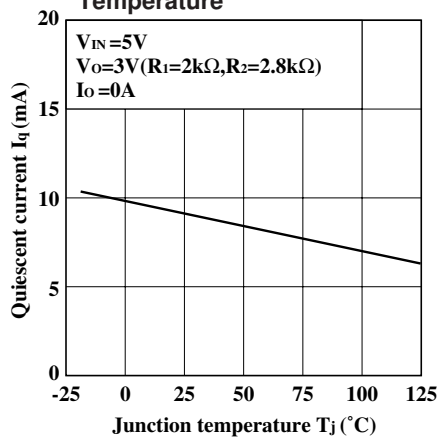
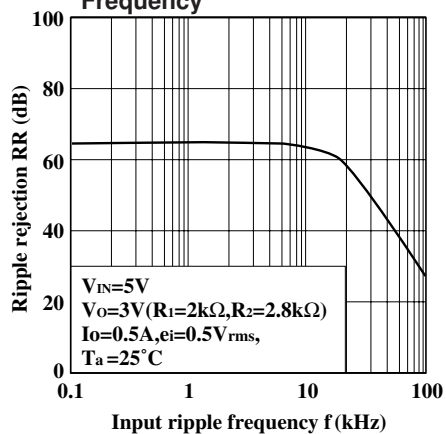
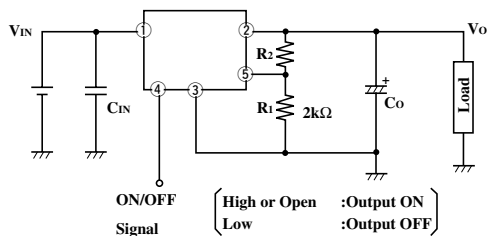


Fig.11 Quiescent Current vs. Junction Temperature**Fig.12 Ripple Rejection vs. Input Ripple Frequency**

■ Typical Application



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 - Test and measurement equipment
 - Industrial control
 - Audio visual equipment
 - Consumer electronics
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 - Traffic signals
 - Gas leakage sensor breakers
 - Alarm equipment
 - Various safety devices, etc.
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