PQ7DV1O

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

■ Feature

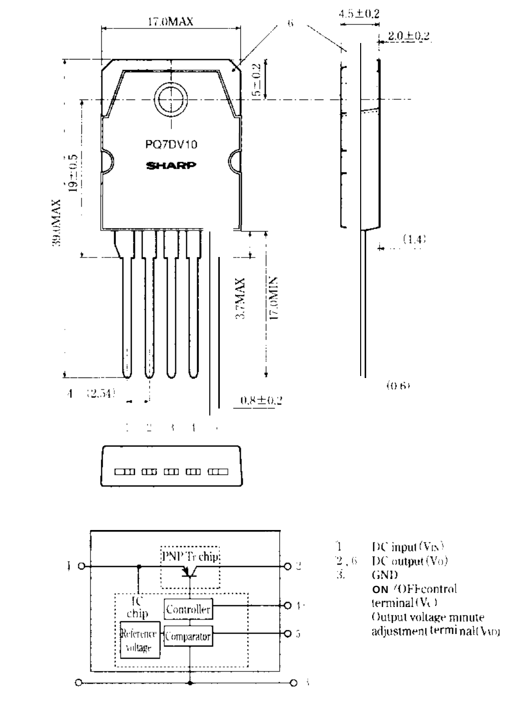
- 10A output type
- Low power-loss (Dropout voltage : MAX.0.5V at Io= 10A)
- Variable output type (1.5 to 7V)
- Low operating voltage (Minimum input voltage : 3.0V)
- High-precision reference voltage type (Reference voltage precision : ± 2.0%)
- TO-3P package
- Built-in ON/OFF control function
- Built-in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

■ Applications

- Power supplies for various electronic equipment such as personal computers

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta=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 $125 \leq T_j \leq 150$°C

Please refer to the chapter" Handling Precautions"

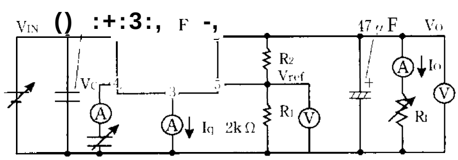
Electrical Characteristics

(Unless otherwise specified, conditions shall be V_{IN}=5V, I_O=5A, V_O=3V(R_1=2kΩ) T_a=25℃)

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	RegL	I_O=5mA to 10A		0.5	2	%
Line regulation	RegI	V_{IN}=4 to 10V		0.5	2.5	%
Temperature coefficient of output voltage	$T_C V_O$	T_j=0 to 125℃		±0.01		%/℃
Ripple rejection	RR		45	55		dB
Dropout voltage	Vi-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			-40	mA
Quiescent current	I_q	I_O=0A			17	mA

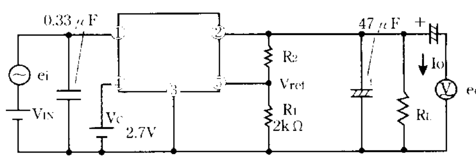
※3 In case of opening control terminal ④, output voltage turns on

Fig.1 Test Circuit



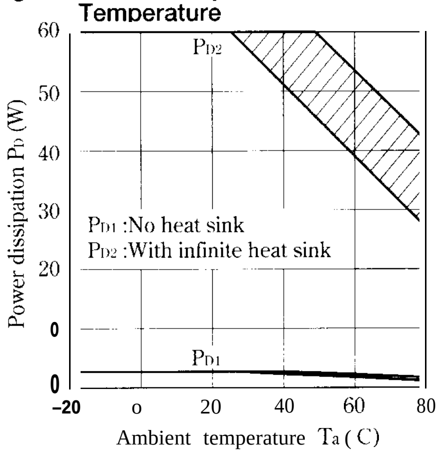
$V_O = V_{ref} \times (1+R_2/R_1)$
$\fallingdotseq 1.25 \times (1+R_2/R_1)$
[R_1=2kΩ, V_{ref}≒1.25V]

Fig.2 Test Circuit for Ripple Rejection



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

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)

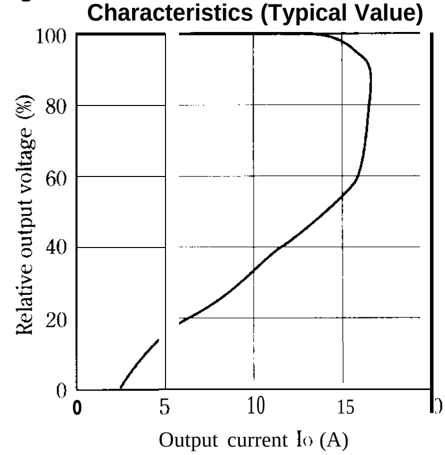


Fig.5 Output Voltage Adjustment Characteristics

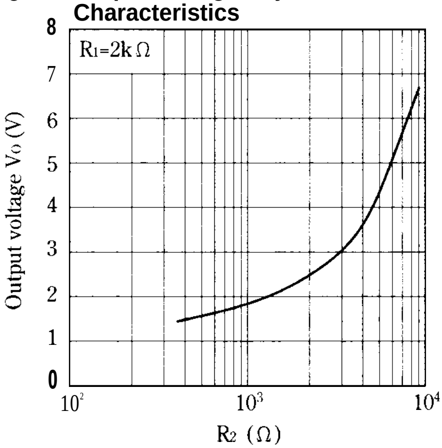


Fig.6 Output Voltage Deviation vs. Junction Temperature

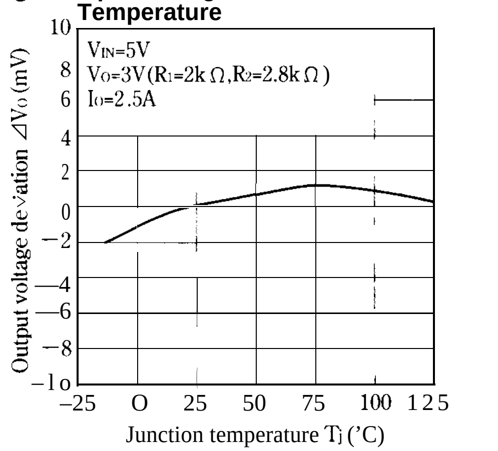


Fig.7 Output Voltage vs. Input Voltage

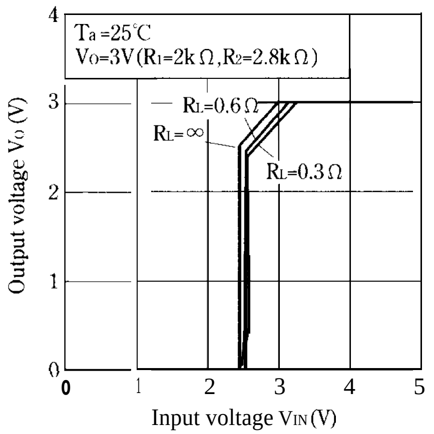


Fig.8 Circuit Operating Current vs. Input Voltage

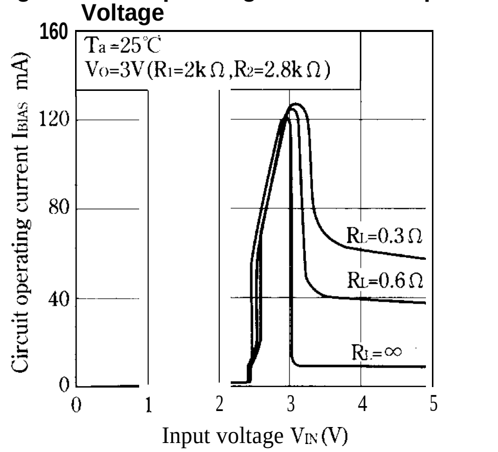


Fig.9 Dropout Voltage vs. Junction Temperature

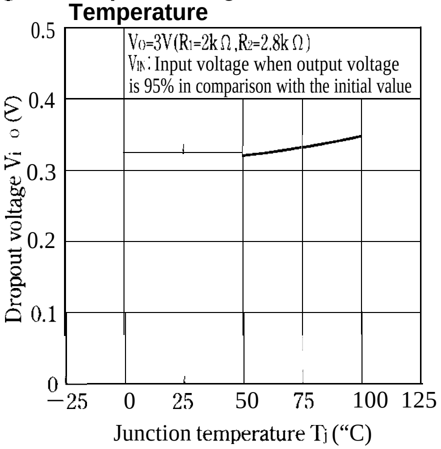


Fig.10 Ripple Rejection vs. Junction Temperature

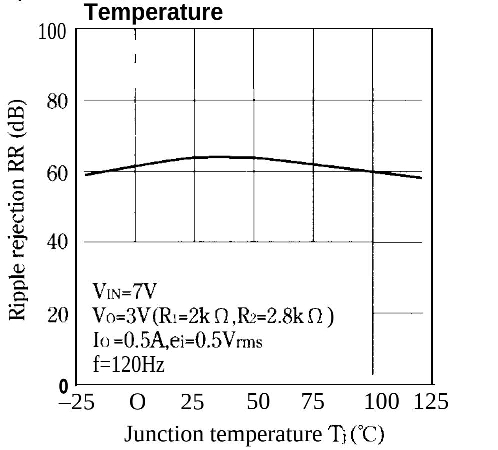


Fig.11 Quiescent Current vs. Junction Temperature

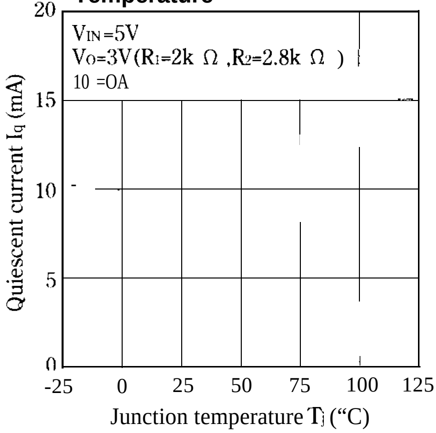
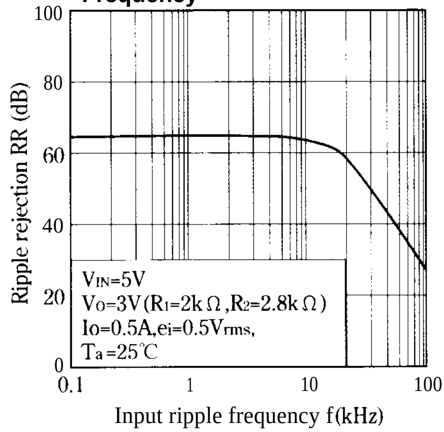


Fig.12 Ripple Rejection vs. Input Ripple Frequency



■ Typical Application