

PQ1MX55M2SPQ

Compact Surface Mount Type
Low Power-Loss Voltage Regulators

Features

1. Compact surface mount package (4.5×4.3×1.5mm)
2. Output current : MAX.500mA
3. Power dissipation : MAX.900mW
4. Low power-loss
(Dropout voltage : MAX. 0.7V at $I_o=500mA$)
5. Built-in ON/OFF control function
6. Built-in overcurrent, overheat protection functions
7. Use of ceramic capacitor is possible as output smooth capacitor
8. RoHS directive compliant

Applications

1. DVD player
2. Optical disk drives

Absolute Maximum Ratings

($T_a=25^\circ C$)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V_{IN}	9	V
*1 Output control voltage	V_C	9	V
*1 Output adjustment pin voltage	V_{adj}	5	V
Output current	I_o	500	mA
*2 Power dissipation	P_D	900	mW
*3 Junction temperature	T_j	150	$^\circ C$
Operating temperature	T_{opr}	-30 to +85	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$
Soldering temperature	T_{sol}	270(10s)	$^\circ C$

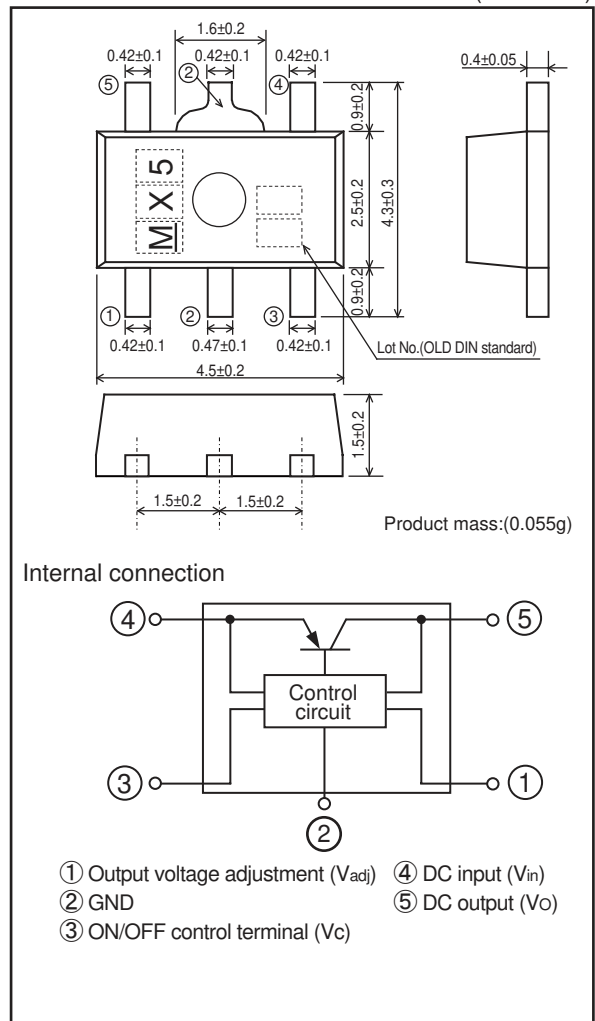
*1 All are open except GND and applicable terminals.

*2 At surface-mounted condition

*3 Overheat protection may operate at $T_j:125^\circ C$ to $150^\circ C$

Outline Dimensions

(Unit : mm)



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

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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 $V_{IN}=3.5V, V_O=2.44V(R_1=R_2=100k\Omega), I_O=30mA, V_C=1.8V, T_a=25^\circ C$

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating input voltage	V_{IN}	-	2.6	-	9.0	V
Output voltage	V_O	-	1.3	-	5.0	V
Reference voltage	V_{ref}	-	1.196	1.22	1.244	V
Load regulation	Reg_L	$I_O=5mA$ to $500mA$	-	10	100	mV
Line regulation	Reg_l	$V_{IN}=3.5V$ to $8.5V$	-	6.0	20	mV
Dropout voltage	V_{i-o}	$V_{IN}=2.6V, I_O=500mA$	-	-	0.7	V
Temperature coefficient of output voltage	TcV_O	$I_O=10mA, T_j=-25$ to $+75^\circ C$	-	± 0.1	-	mV/ $^\circ C$
Ripple rejection	RR	Refer to Fig.2	-	55	-	dB
Output noise voltage	$V_{no(rms)}$	$10Hz < f < 100kHz$	-	100	-	μV
*4 ON-state voltage for control	$V_{C(ON)}$	-	1.8	-	-	V
ON-state current for control	$I_{C(ON)}$	$V_C=1.8V$	-	20	70	μA
OFF-state voltage for control	$V_{C(OFF)}$	-	-	-	0.4	V
Quiescent current	I_q	$I_O=0mA$	-	0.8	1.2	mA
Output OFF-state dissipation current	I_{qs}	$V_C=0.2V$	-	-	1	μA

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

Fig.1 Test Circuit

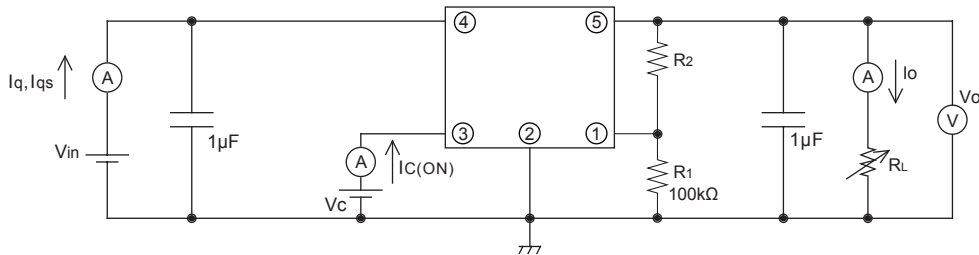


Fig.2 Test Circuit for Ripple Rejection

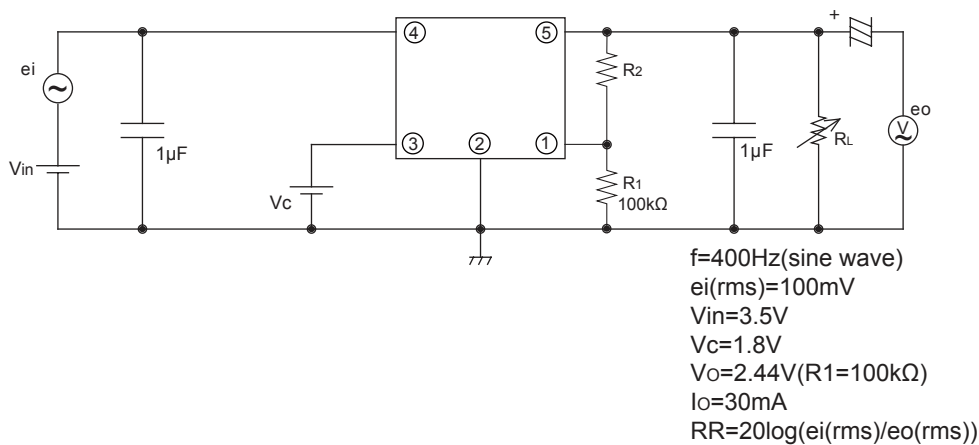
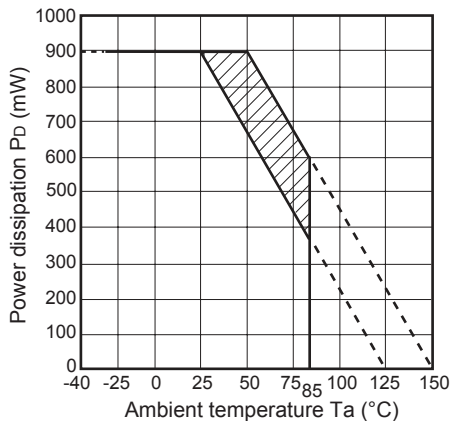
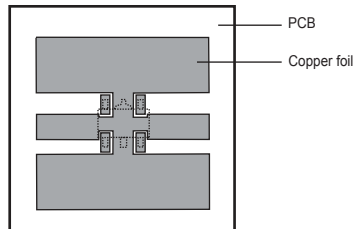


Fig.3 Power Dissipation vs. Ambient Temperature



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

Mounting PCB



Material : Glass-cloth epoxy resin
 PCB Size : 20mm × 20mm × 1.0mm
 Copper foil area : 180mm²
 Thickness of copper : 35μm

Fig.4 Overcurrent Protection Characteristics (Typical Value)

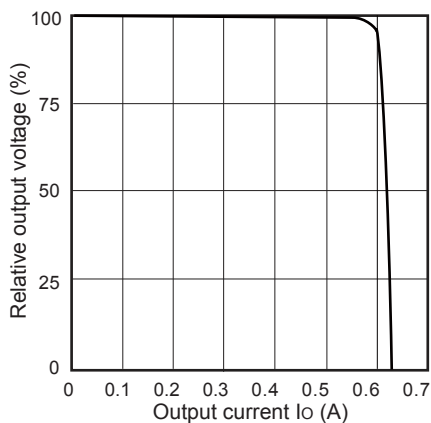


Fig.5 Output Voltage vs. Input Voltage (Typical Value)

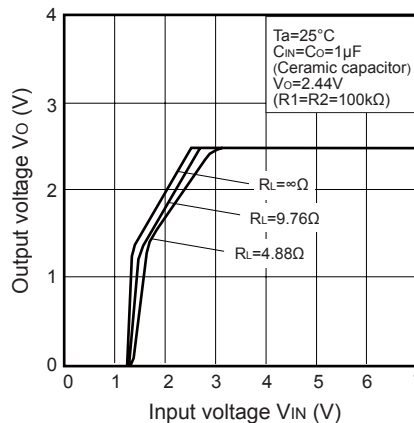


Fig.6 Circuit Operating Current vs. Input Voltage (Typical Value)

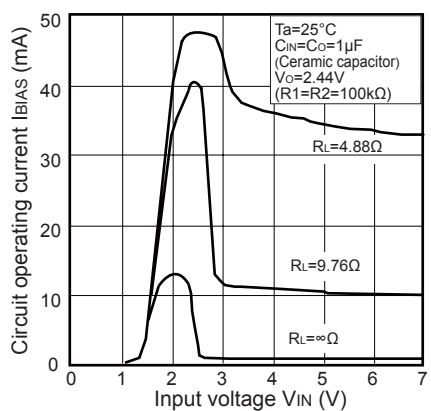


Fig.7 Quiescent Current vs. Junction Temperature (Typical Value)

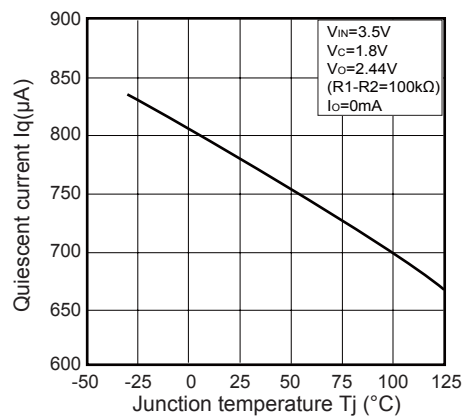


Fig.8 Dropout Voltage vs. Junction Temperature (Typical Value)

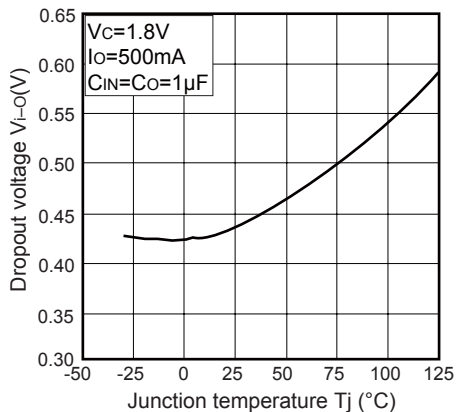


Fig.9 Output Voltage Deviation vs. Junction Temperature (Typical Value)

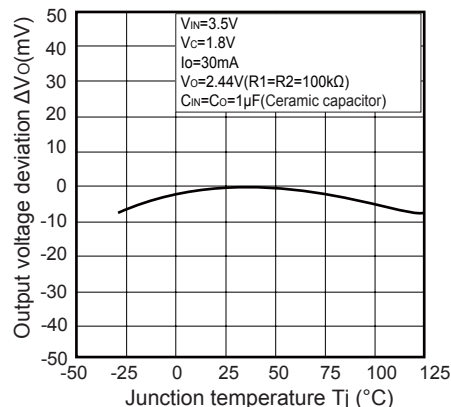


Fig.10 Reference Voltage Deviation vs. Junction Temperature (Typical Value)

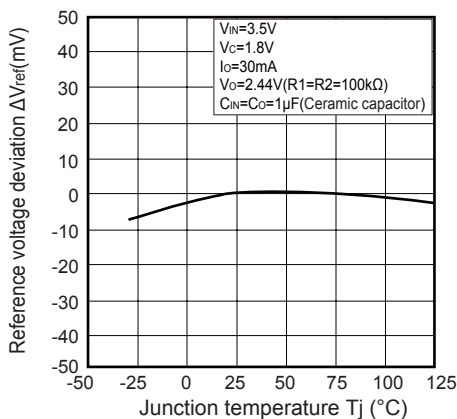


Fig.11 Dropout Voltage vs. Output Current (Typical Value)

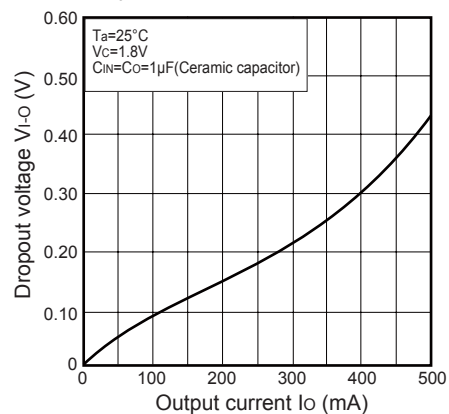


Fig.12 Ripple Rejection vs. Input Ripple Frequency (Typical Value)

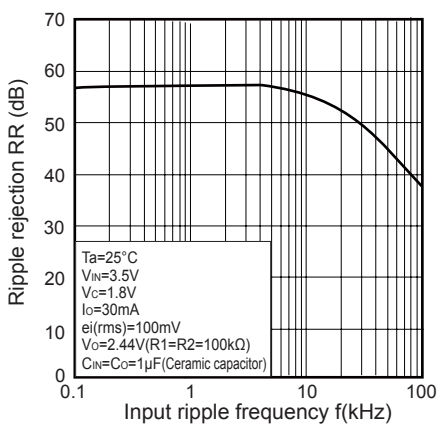
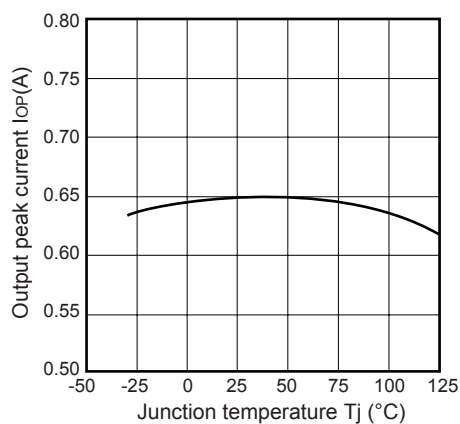


Fig.13 Output Peak Current vs. Junction Temperature (Typical Value)



■ Example of application

