

Low-Noise, Low-Saturation Three-Pin Regulator Monolithic IC MM1180, 1181

Outline

MM1180 series is high withstand voltage, low noise stabilized power supply with reduced reactive current at low input voltage and small input / output differential voltage 0.2V at 40mA output current. The output current is up to 100mA. MMP-4P package can control output ON / OFF by ON / OFF terminal.

Features

- | | |
|--|---|
| 1. Input voltage | 16V max. |
| 2. Input / output differential voltage | 0.2V typ. (I _o =40mA) |
| 3. Output noise voltage | 100μV _{RMS} typ. |
| 4. Maximum output current | 100mA max. |
| 5. No-load input current | 300μA typ. |
| 6. With thermal shutdown circuit | |
| 7. Output rank | G : 5.0V±4% J : 3.0V±4%
I : 4.0V±4% Z : 3.3V±4%
H : 4.5V±4% C : 4.8V±4% (MM1181) |
| 8. Output ON / OFF control function
(MMP-4A only) | |

On/Off Pin Level	Low	High
MM1180 output	ON	OFF
MM1181 output	OFF	ON

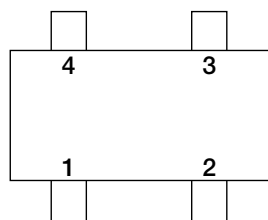
Package

- TO-92A (MM1180□T, MM1181□T)
- MMP-4A (MM1180□M, MM1181□M)
- *The output voltage rank appears in the boxes.

Applications

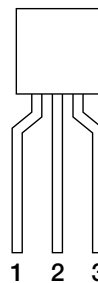
- Handheld computers
- Handy transceivers
- Cordless phones
- Portable equipment with battery

Pin Assignment



MMP-4A

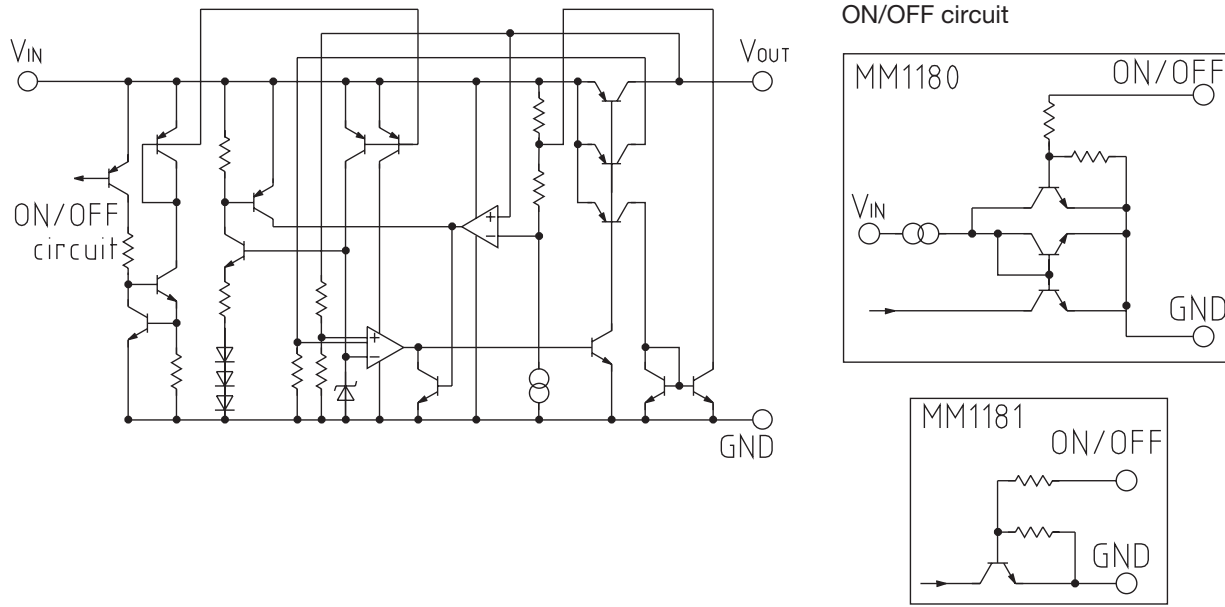
1	V _{OUT}
2	V _{IN}
3	ON/OFF terminal
4	GND



TO-92A

1	V _{IN}
2	GND
3	V _{OUT}

Equivalent Circuit Diagram



Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Storage temperature	T _{STG}	-40~+125	°C
Operating temperature	T _{OPR}	-20~+75	°C
Supply voltage	V _{CC} max.	-0.3~16	V
Output current	I _{OUT}	100	mA
Allowable loss	P _d	200 (MMP-4A), 300 (T0-92A)	mW

Electrical Characteristics (Ta=25°C)

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Units
Output voltage	V _o	V _{IN} =V _o +1V I _o =40mA	4.80	5.00	5.20	V
			4.32	4.50	4.68	
			3.84	4.00	4.16	
			2.88	3.00	3.12	
			3.17	3.30	3.43	
No-load input current	I _{ccq}	V _{IN} =V _o +1V, I _o =0μA		300	450	μA
Min Input / output differential voltage	V _d min.	V _{IN} =V _o min., I _o =40mA		0.2	0.3	V
Line regulation	ΔV ₂	V _{IN} =(V _o +1V)~16V, I _o =40mA		±0.01	±0.1	%/V
Load regulation	ΔV ₁	V _{IN} =V _o +1V, I _o =0~100mA		±0.01	±0.03	%/mA
Output voltage temperature coefficient	ΔV _o /T	T _a =-20~+75°C		±100		ppm/°C
Ripple rejection rate	RR	V _{IN} =V _o +2V, f=120Hz, I _o =40mA V _{RI} =1V	50	60		dB

MM1180

Off input current	I _{ccq2}	V _{IN} =V _O +1V		3	5	μA
On / Off terminal current	I _{ON}	V (ON/OFF) =2.4V		5	8	μA
On / Off terminal current	I _{OFF}	V (ON/OFF) =0.6V		1	2	μA

MM1181

Off input current	I _{ccq2}	V _{IN} =V _O +1V		3	5	μA
On / Off terminal current	I _{ON}	V (ON/OFF) =0.6V		1	2	μA
On / Off terminal current	I _{OFF}	V (ON/OFF) =2.4V		5	8	μA

ON / OFF Terminal Level

High			2.4		V _{IN} +0.3	V
Low			-0.3		0.6	V

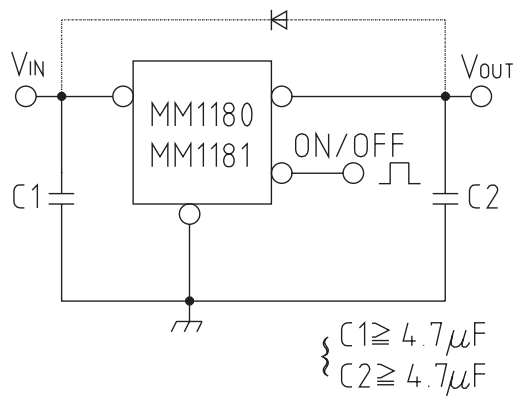
Thermal Shutdown

Fall		V _{IN} =V _O +1V	135	145	155	°C
Rise		V _{IN} =V _O +1V		80		°C

Current Limit (drooping type)

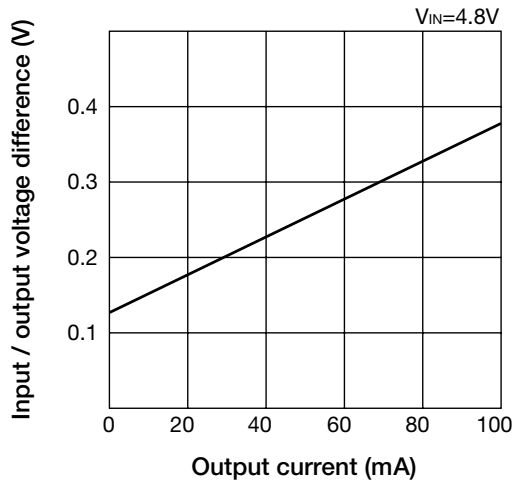
Current Limit		V _{IN} =V _O +1V	150	200		mA
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Measuring Circuit

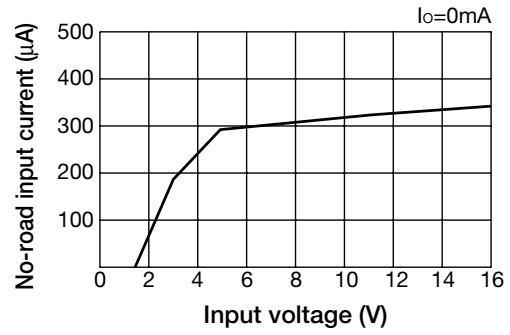


Characteristics (MM1180G)

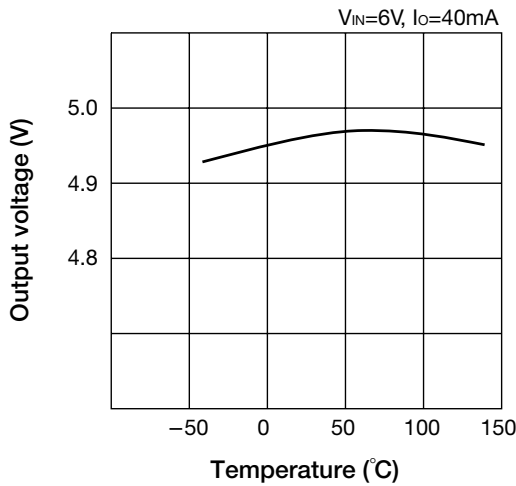
■ Input / output voltage difference



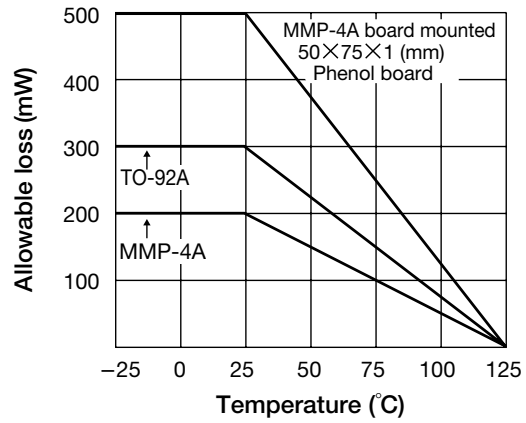
■ No-load input current



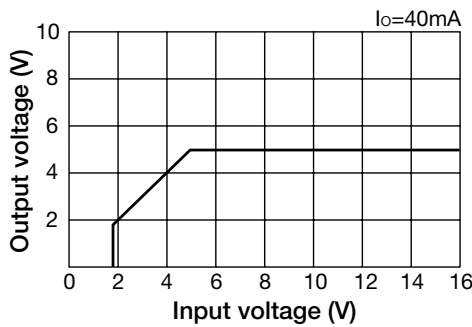
■ Output voltage temperature characteristic



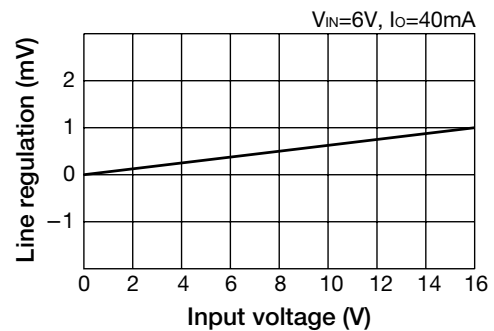
■ Allowable loss



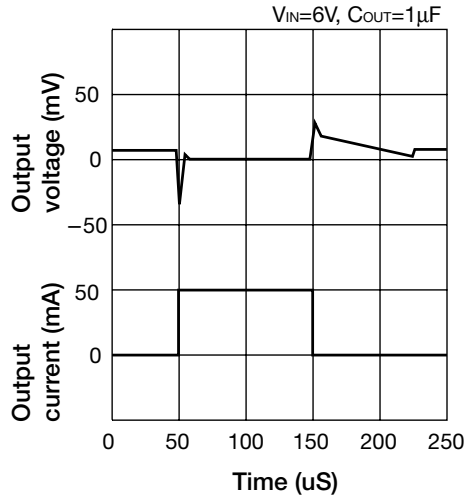
■ Output voltage characteristic



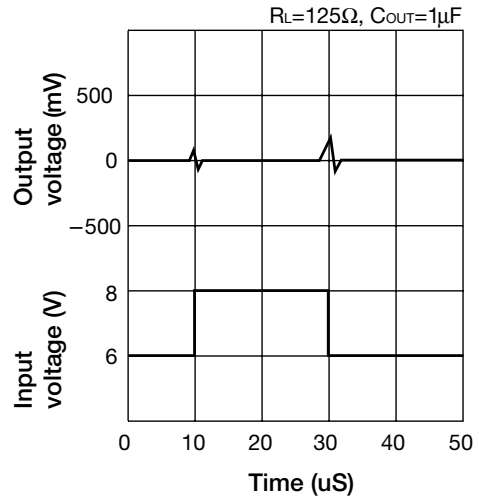
■ Line regulation



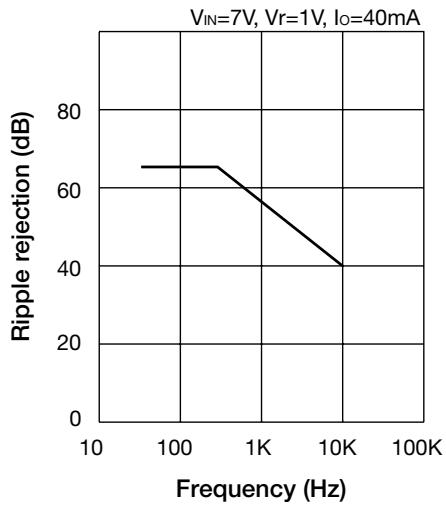
■ Load transient response



■ Line transient response



■ Ripple rejection



■ Output current characteristic

