

# VOLTAGE REGULATOR

**MB3756**

May 1988  
Edition 2.0

## VOLTAGE REGULATOR

The Fujitsu MB3756 monolithic voltage regulator with three outputs is fabricated with a bipolar linear IC technology. Two alternately exchangeable outputs are provided for two stabilized output levels and controlled by an external control signal. Switching noise is prevented by internal circuitry that is suitable for switching between modes such as transmitting and receiving or AM and FM. The MB3756 is packaged in as 8-pin single-in-line package with a heat radiation fin to allow large power consumption.

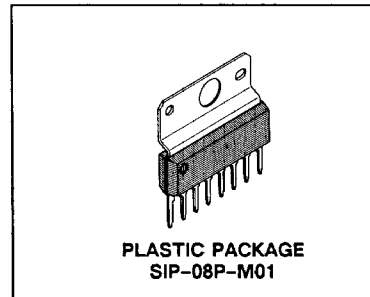
- No need for external components
- Good balance between three outputs
- On-chip noise protection circuitry
- On-chip overload current protection and thermal protection circuitry
- Good mountability
- High output current : 200 mA typical for V<sub>02</sub> output  
: 100 mA typical for V<sub>00</sub>, V<sub>01</sub> outputs

### ABSOLUTE MAXIMUM RATINGS (see NOTE) TA = 25°C

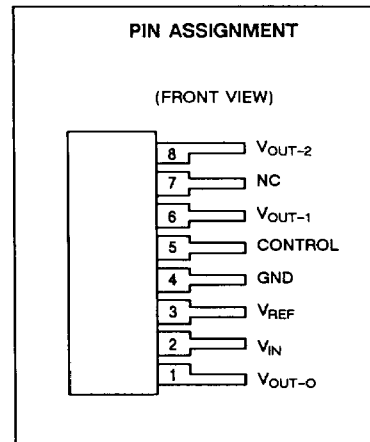
Rating	Symbol	Value	Unit
Input Voltage	V <sub>IN</sub>	18	V
Power Dissipation	P <sub>D</sub>	1 *1	W
		4 *2	W
Operating Temperature	T <sub>C</sub>	-20 to +75	°C
Storage Temperature	T <sub>STG</sub>	-55 to +125	°C

Notes: \*1 No Heat Sink (TA ≤ 70°C)  
\*2 Infinite Heat Sink (TA ≤ 70°C)

Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



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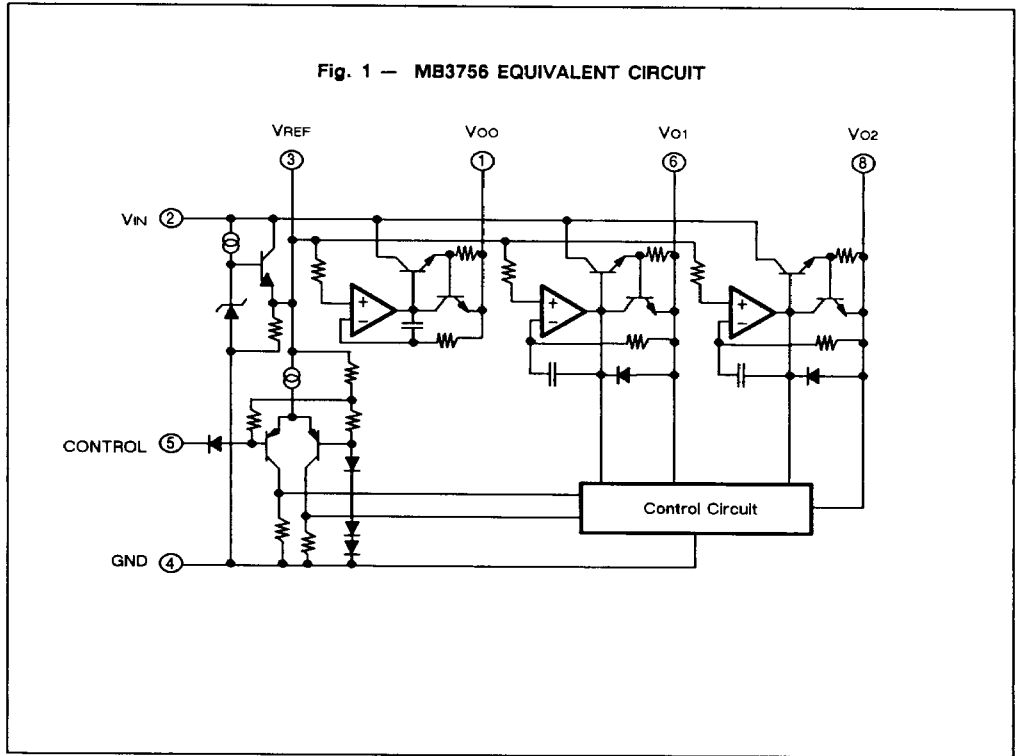


This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.



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### RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Input Voltage	$V_{IN}$	11	-	16	V
Load Current	$I_{L1} *1$	0	-	100	mA
	$I_{L2} *2$	0	-	200	mA
Operating Temperature	$T_C$	-20	-	+75	°C

Note : \*1  $V_{O0}$ ,  $V_{O1}$   
 \*2  $V_{O2}$

## ELECTRICAL CHARACTERISTICS

( $T_C = 25^\circ\text{C}$ ,  $V_{IN} = 14\text{ V}$ ,  $R_{L0} = R_{L1} = 200\ \Omega$ ,  $R_{L2} = 100\ \Omega$ )

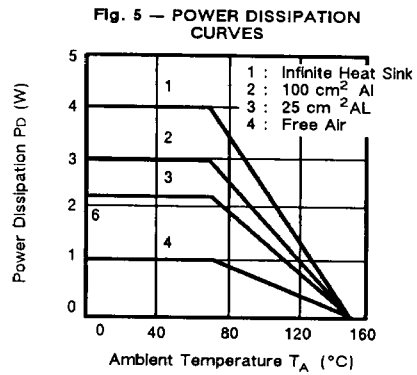
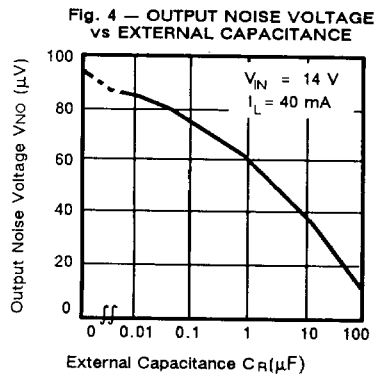
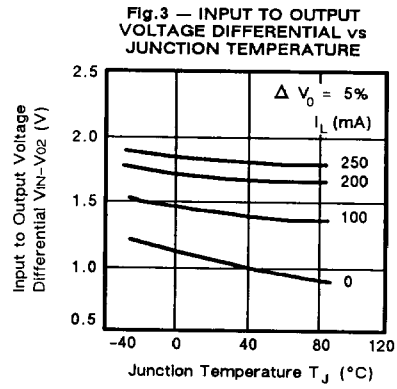
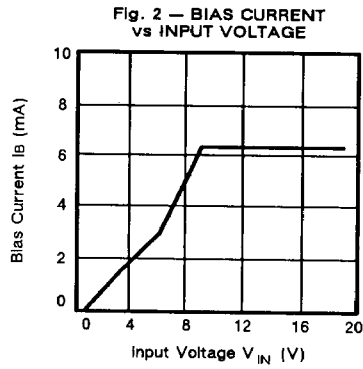
Parameter	Symbol	Condition	Values			Unit
			Min	Typ	Max	
Input Voltage	$V_{IN}$	—	10.6	—	18	V
Output Voltage	$V_O$	—	7.8	8.2	8.6	V
Input Regulation	—	$11\text{ V} \leq V_{IN} \leq 18\text{ V}$	—	20	100	mV
Load Regulation	—	$(V_{O0}, V_{O1})\ 1\text{ mA} \leq I_L \leq 100\text{ mA}$	—	15	80	mV
	—	$(V_{O2})\ 1\text{ mA} \leq I_L \leq 200\text{ mA}$	—	20	100	mV
	—	$(V_{O0}, V_{O1})\ 1\text{ mA} \leq I_L \leq 100\text{ mA}$ $V_{IN} = 11.5\text{ V}$	—	20	100	mV
	—	$(V_{O2})\ 1\text{ mA} \leq I_L \leq 200\text{ mA}$ $V_{IN} = 11.5\text{ V}$	—	30	150	mV
Bias Current	$I_B$	$V_{IN} = 18\text{ V}$	—	6	10	mA
Ripple Rejection Ratio	—	$f = 100\text{ Hz}$	—	60	—	dB
Output Noise Voltage	—	$10\text{ Hz} \leq f \leq 100\text{ kHz}$ , $C_R = 10\ \mu\text{F}$	—	40	—	$\mu\text{V}$
Input to Output Voltage Differential	$V_{IN} - V_O$	—	—	1.7	—	V
Temperature Coefficient of Output Voltage	$TCV_O$	—	—	-0.4	—	$\text{mV}/^\circ\text{C}$
Output Voltage Deviation	$\Delta V_O$	—	—	10	50	mV
Short Circuit Output Current	$I_{SC}$	$(V_{O0}, V_{O1})$	—	200	—	mA
		$(V_{O2})$	—	350	—	mA
Output Voltage	$V_{O1L}$	$V_{IC} = 0.8\text{ V}$	0	—	0.2	V
	$V_{O2L}$	$V_{IC} = 0.8\text{ V}$	7.8	8.2	8.6	V
	$V_{O1H}$	$V_{IC} = 2.0\text{ V}$	7.8	8.2	8.6	V
	$V_{O2H}$	$V_{IC} = 2.0\text{ V}$	0	—	0.2	V
Control Input Current	$I_{IL}$	$V_{ICL} = 0\text{ V}$	—	-0.2	-1.0	mA
	$I_{IH}$	$V_{ICH} = 18\text{ V}$ , $V_{IN} = 18\text{ V}$	—	—	10	$\mu\text{A}$



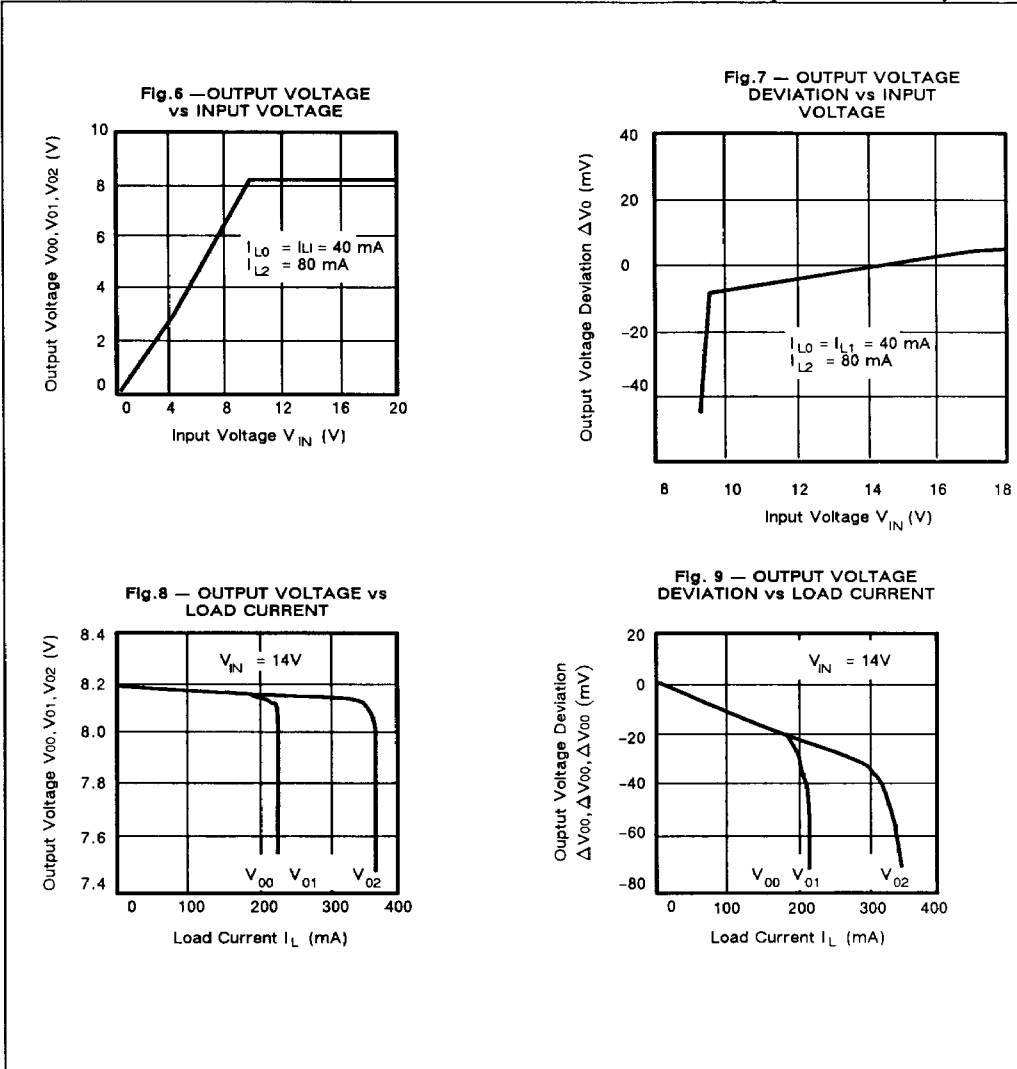
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## TYPICAL PERFORMANCE CHARACTERISTICS

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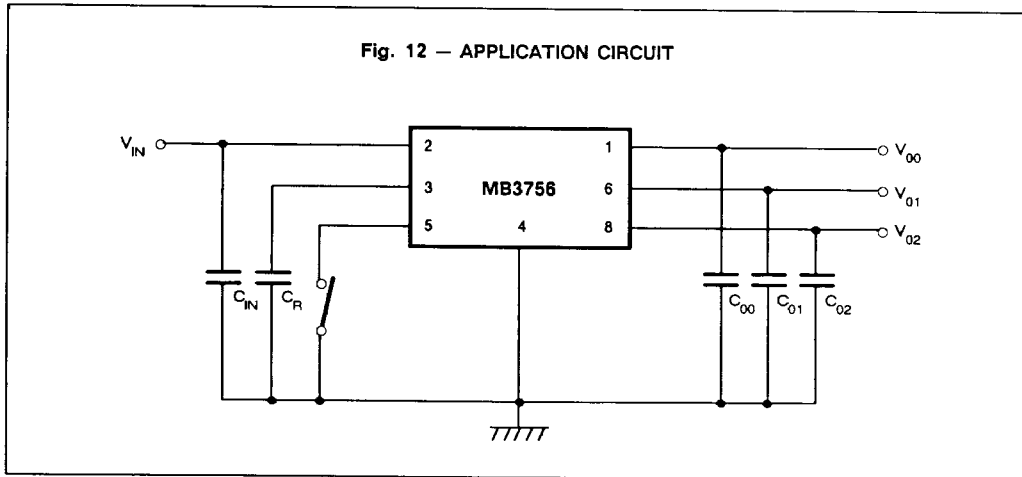
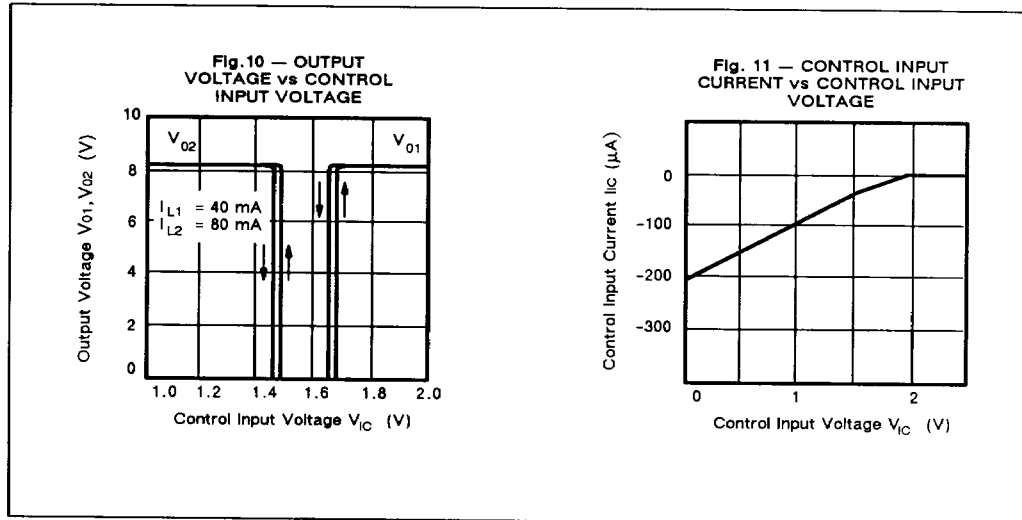
## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



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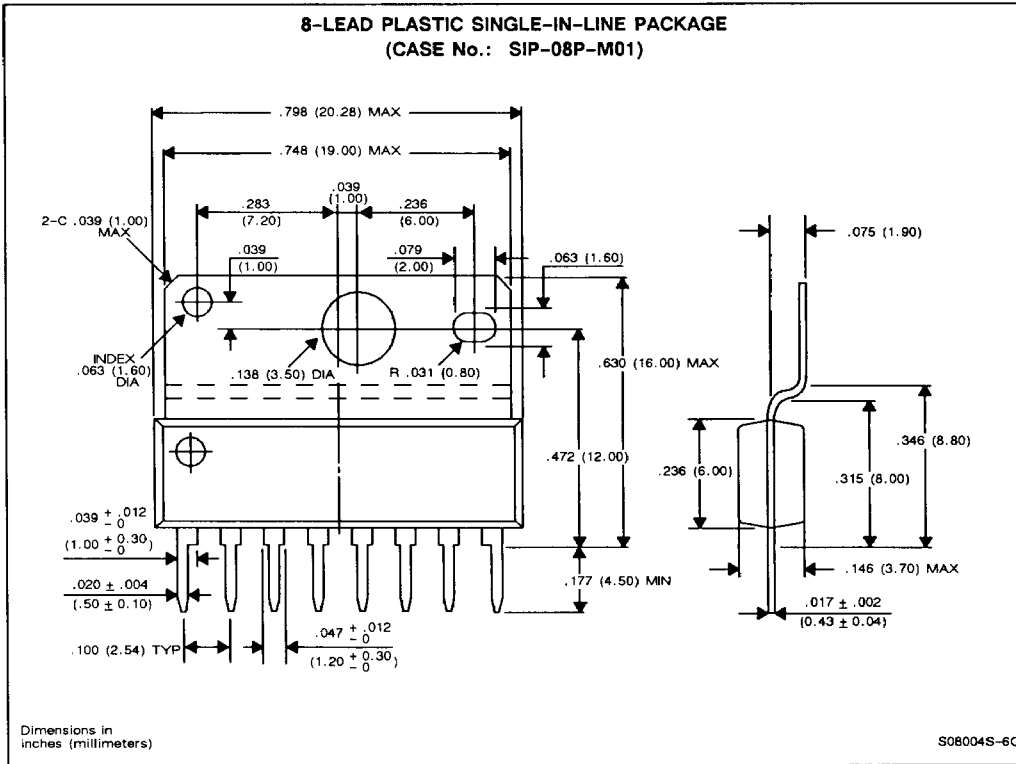
**TYPICAL PERFORMANCE CHARACTERISTICS (Continued)**

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**Note:**  $C_{IN}$  is required if the regulator is located at a distance from the power supply filter.  
 $C_L$  improves output noise and ripple rejection.  
 $C_{O0}$ ,  $C_{O1}$ ,  $C_{O2}$  improve transient response.

# PACKAGE DIMENSIONS



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