TS78M05A

3-Terminal 500mA Positive Voltage Regulator

TO-252 (DPAK)

Pin Definition:
1. Input
2. Ground (tab)
3. Output

General Description

The TS78M05A Series positive voltage regulators are identical to the popular TS7805 Series devices, except that they are specified for only half the output current. Like the TS7805 devices, the TS78M05A Series 3-Terminal regulators are intended for local, on-card voltage regulation.

Internal current limiting, thermal shutdown circuitry and safe-area compensation for the internal pass transistor combine to make these devices remarkably rugged under most operating conditions. Maximum output current with adequate heatsink is 500mA

Features

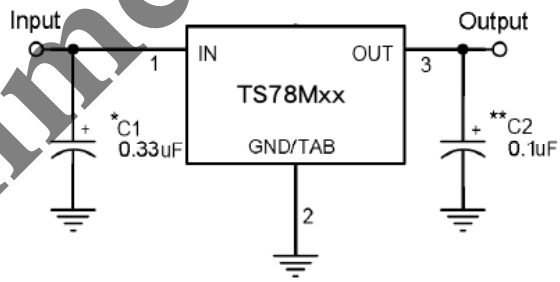
- Output Voltage 5V
- Output current up to 500mA
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation
- Output voltage offered in 2% tolerance

Ordering Information

Part No.	Package	Packing
TS78M05ACP ROG	TO-252	2.5Kpcs / 13” Reel

Note: “G” denotes for Halogen Free

Standard Application Circuit



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0V above the output voltage even during the low point on the Input ripple voltage.

XX = these two digits of the type number indicate voltage.

* = Cin is required if regulator is located an appreciable distance from power supply filter.

** = Co is not needed for stability; however, it does improve transient response.

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Input Voltage	V_{IN}*	35	V
Power Dissipation	P_D	Internal Limited	W
Operating Junction Temperature	T_J	0~+125	°C
Storage Temperature Range	T_{STG}	-65~+150	°C
Thermal Resistance - Junction to Case	$R\Theta_{JC}$	8	°C/W
Thermal Resistance - Junction to Ambient	$R\Theta_{JA}$	100	°C/W

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TS78M05A Electrical Characteristics

(Vin=10V, Iout=350mA, 0°C≤Tj≤125°C, Cin=0.33uF, Cout=0.1uF; unless otherwise specified.)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Output voltage	Vout	Tj=25°C		4.90	5	5.10	V
		7.5V≤Vin≤20V, 5mA≤Iout≤350mA		4.80	5	5.20	
Line Regulation	REGline	Tj=25°C	7.5V≤Vin≤25V	--	3	100	mV
			8V≤Vin≤12V	--	1	50	
Load Regulation	REGload	Tj=25°C	5mA≤Iout≤500mA	--	15	100	
			5mA≤Iout≤200mA	--	5	50	
Quiescent Current	Iq	Iout=0, Tj=25°C		--	3	6	mA
Quiescent Current Change	ΔIq	7.5V≤Vin≤25V		--	--	0.8	
		5mA≤Iout≤350mA		--	--	0.5	
Output Noise Voltage	Vn	10Hz≤f≤100KHz, Tj=25°C		--	40	--	μV
Ripple Rejection Ratio	RR	f=120Hz, 8V≤Vin≤18V		62	78	--	dB
Voltage Drop	Vdrop	Iout=500mA, Tj=25°C		--	2	--	V
Output Resistance	Rout	f=1KHz		--	17	--	mΩ
Output Short Circuit Current	Ios	Tj=25°C		--	50	--	mA
Peak Output Current	Io peak	Tj=25°C		--	0.7	--	A
Temperature Coefficient of Output Voltage	ΔVout/ ΔTj	Iout= 5mA, 0°C≤Tj≤125°C		--	-0.2	--	mV/°C

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Electrical Characteristics Curve

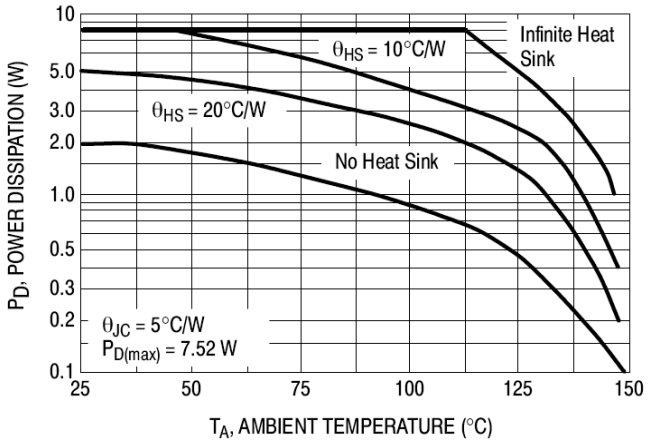

Figure 1. Worst Case Power Dissipation vs. Ambient Temperature (TO-220)

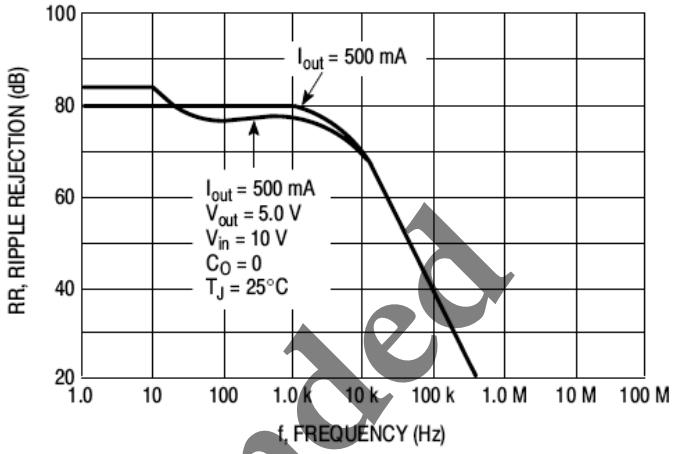

Figure 3. Ripple Rejection vs. Frequency

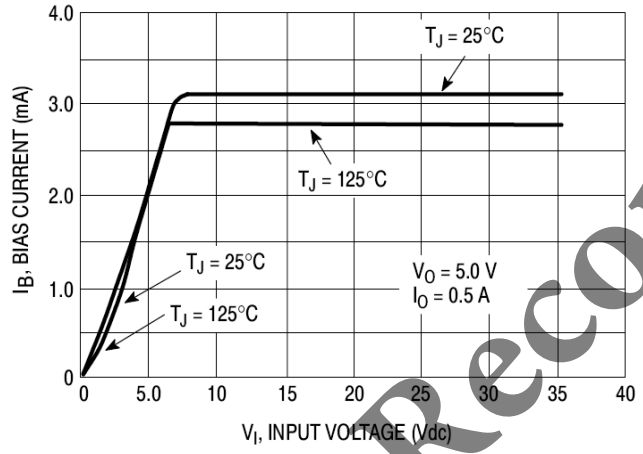

Figure 3. Bias Current vs. Input Voltage

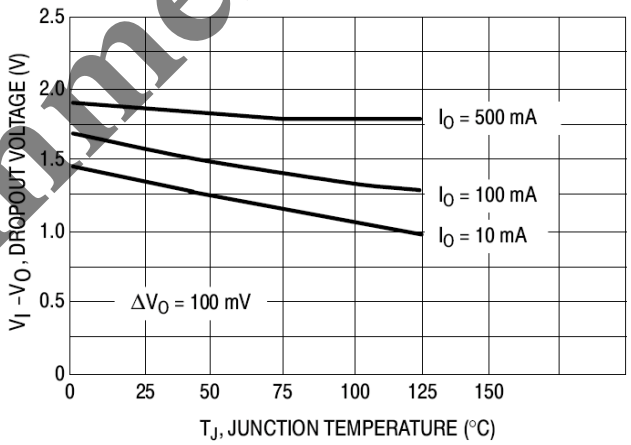

Figure 4. Dropout Voltage vs. Junction Temperature

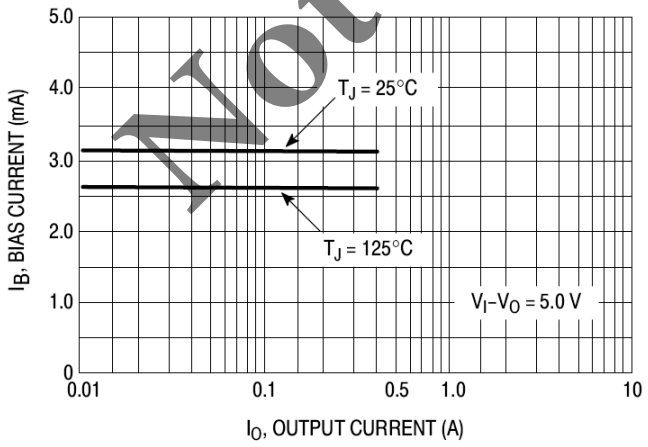

Figure 5. Bias Current vs. Output Current

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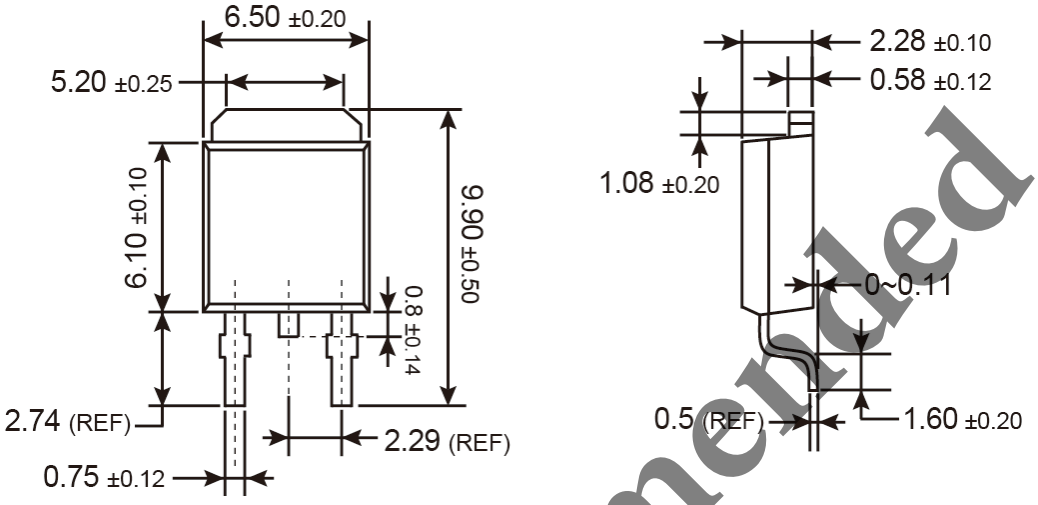
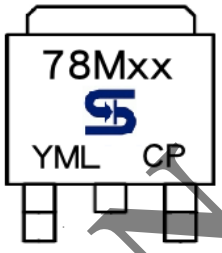
TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



XX = Output Voltage (05=5V)
Y = Year Code
M = Month Code for Halogen Free Product

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

L = Lot Code
CP = Package Code for TO-252

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