

TS78M00 Series

3-Terminal 500mA Positive Voltage Regulator

TS78M05 Electrical Characteristics

($V_{IN}=10V$, $I_{OUT}=350mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$; unless otherwise specified.)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output voltage	V_{OUT}	$T_J=25^{\circ}C$	4.80	5	5.20	V
		$7.5V \leq V_{IN} \leq 20V$, $5mA \leq I_{OUT} \leq 350mA$	4.75	5	5.25	
Line Regulation	REG_{LINE}	$T_J=25^{\circ}C$	$7.5V \leq V_{IN} \leq 25V$	--	3	mV
			$8V \leq V_{IN} \leq 12V$	--	1	
Load Regulation	REG_{LOAD}	$T_J=25^{\circ}C$	$5mA \leq I_{OUT} \leq 500mA$	--	15	
			$5mA \leq I_{OUT} \leq 200mA$	--	5	
Quiescent Current	I_Q	$I_{OUT}=0$, $T_J=25^{\circ}C$	--	3	6	mA
Quiescent Current Change	ΔI_Q	$7.5V \leq V_{IN} \leq 25V$	--	--	0.8	
		$5mA \leq I_{OUT} \leq 350mA$	--	--	0.5	
Output Noise Voltage	V_n	$10Hz \leq f \leq 100KHz$, $T_J=25^{\circ}C$	--	40	--	μV
Ripple Rejection Ratio	RR	$f=120Hz$, $8V \leq V_{IN} \leq 18V$	62	78	--	dB
Voltage Drop	V_{DROP}	$I_{OUT}=500mA$, $T_J=25^{\circ}C$	--	2	--	V
Output Resistance	R_{out}	$f=1KHz$	--	17	--	$m\Omega$
Output Short Circuit Current	I_{OS}	$T_J=25^{\circ}C$	--	50	--	mA
Peak Output Current	$I_{O\ peak}$	$T_J=25^{\circ}C$	--	0.7	--	A
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T_J$	$I_{OUT}=5mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$	--	-0.2	--	$mV/^{\circ}C$

TS78M12 Electrical Characteristics

($V_{IN}=19V$, $I_{OUT}=350mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$, $C_{IN}=0.33\mu F$, $C_{OUT}=0.1\mu F$; unless otherwise specified.)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	11.53	12	12.48	V
		$14.5V \leq V_{IN} \leq 27V$, $5mA \leq I_{OUT} \leq 350mA$	11.42	12	12.60	
Line Regulation	REG_{LINE}	$T_J=25^{\circ}C$	$14.5V \leq V_{IN} \leq 30V$	--	10	mV
			$15V \leq V_{IN} \leq 19V$	--	3	
Load Regulation	REG_{LOAD}	$T_J=25^{\circ}C$	$5mA \leq I_{OUT} \leq 500mA$	--	12	
			$5mA \leq I_{OUT} \leq 200mA$	--	4	
Quiescent Current	I_Q	$T_J=25^{\circ}C$, $I_{OUT}=0$	--	3	6	mA
Quiescent Current Change	ΔI_Q	$14.5V \leq V_{IN} \leq 30V$	--	--	0.8	
		$5mA \leq I_{OUT} \leq 500mA$	--	--	0.5	
Output Noise Voltage	V_n	$10Hz \leq f \leq 100KHz$, $T_J=25^{\circ}C$	--	75	--	μV
Ripple Rejection Ratio	RR	$f=120Hz$, $15V \leq V_{IN} \leq 25V$	55	80	--	dB
Voltage Drop	V_{DROP}	$I_{OUT}=500mA$, $T_J=25^{\circ}C$	--	2	--	V
Output Resistance	R_{out}	$f=1KHz$	--	18	--	$m\Omega$
Output Short Circuit Current	I_{OS}	$T_J=25^{\circ}C$	--	50	--	mA
Peak Output Current	$I_{O\ peak}$	$T_J=25^{\circ}C$	--	0.7	--	A
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T_J$	$I_{OUT}=5mA$, $0^{\circ}C \leq T_J \leq 125^{\circ}C$	--	-0.3	--	$mV/^{\circ}C$

- Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible, and thermal effects must be taken into account separately.
- This specification applies only for DC power dissipation permitted by absolute maximum ratings.

Electrical Characteristics Curve

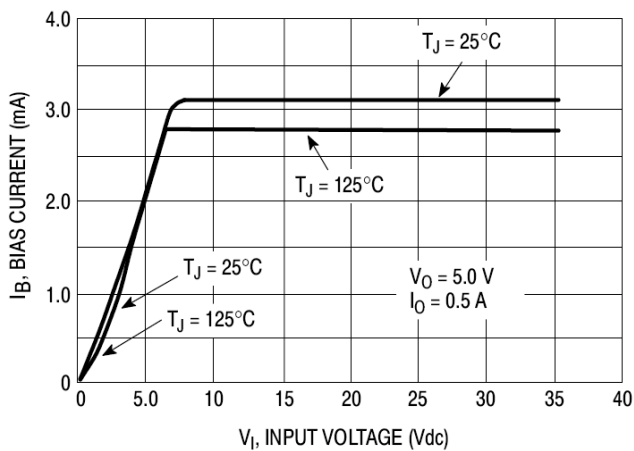


Figure 1. Bias Current vs. Input Voltage

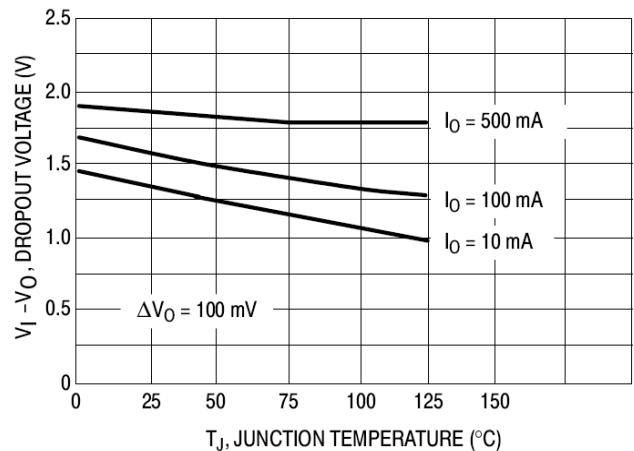


Figure 2. Dropout Voltage vs. Junction Temperature

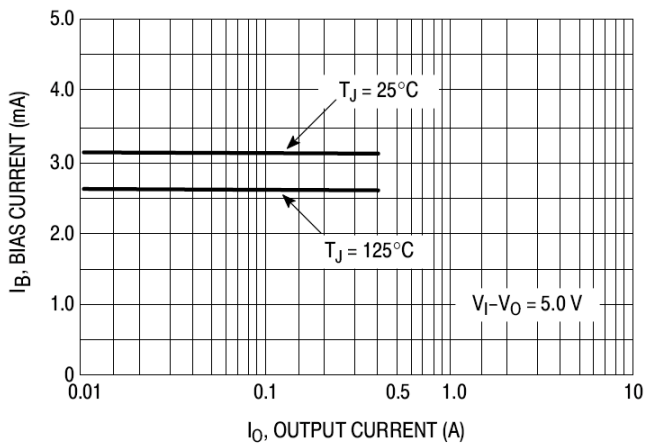


Figure 3. Bias Current vs. Output Current

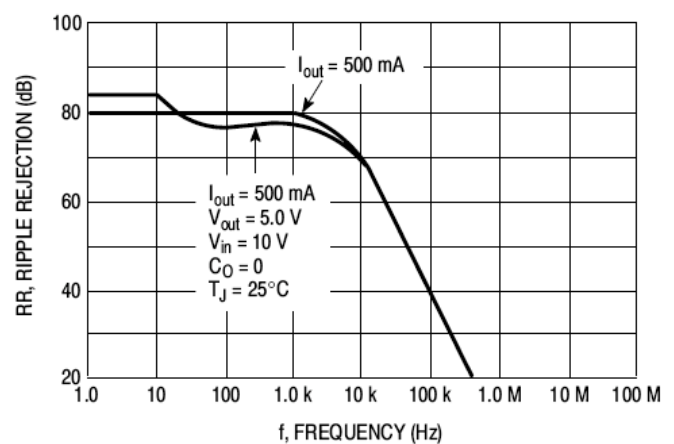


Figure 4. Ripple Rejection vs. Frequency

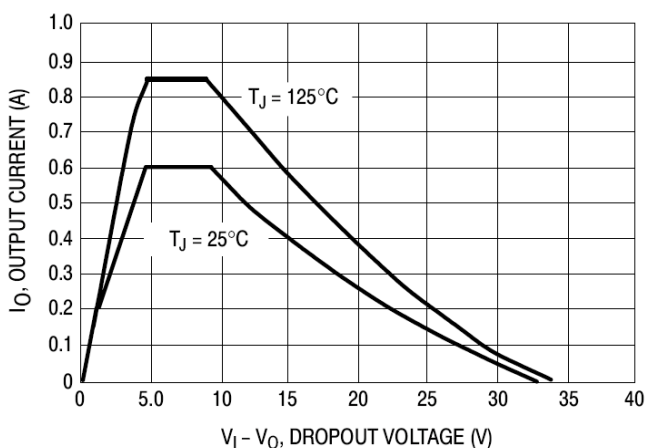


Figure 5. Peak Output Current vs. Dropout Voltage

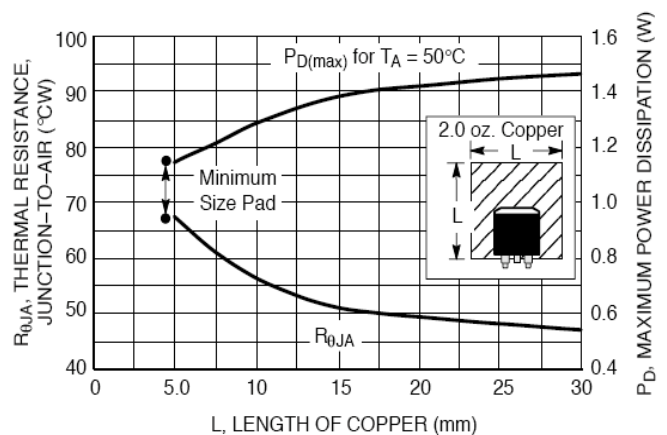
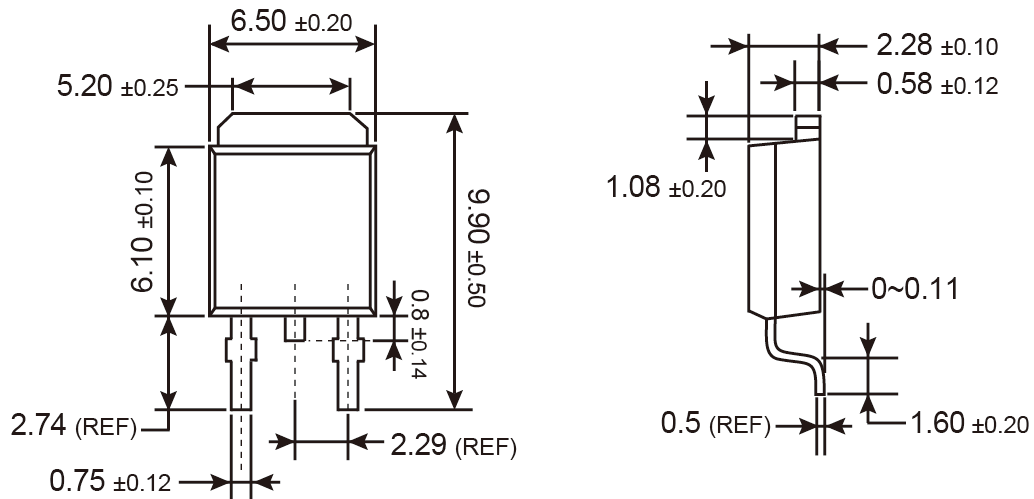


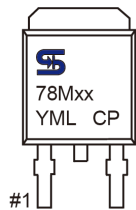
Figure 6. DPAK Thermal Resistance and Maximum Power Dissipation vs. P.C.B Copper Length

TO-252 Mechanical Drawing



Unit: Millimeters

Marking Diagram



- XX** = Output Voltage
(05=5V, 12=12V)
- Y** = Year Code
- M** = Month Code
(A=Jan, B=Feb, C=Mar, D=Apl, E=May, F=Jun, G=Jul, H=Aug, I=Sep, J=Oct, K=Nov, L=Dec)
- L** = Lot Code
- CP** = Package Code

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