SEMELAB

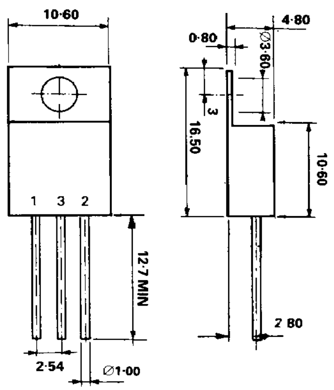
NEW PRODUCT

LM 7800–220M SERIES

POSITIVE VOLTAGE REGULATOR TO 220 METAL

MECHANICAL DATA

Dimensions in mm



PIN 1 – Input   PIN 2 – Output   PIN 3 – Ground

FEATURES

- **HERMETIC TO 220 METAL PACKAGE**
- **HIGH RELIABILTY**
- **ISOLATED OPTION**
- **MILITARY OPTION**
- **SCREENING OPTIONS**

- **OUTPUT CURRENT UP TO 1·5A**
- **OUTPUT VOLTAGES OF 5, 12, 15, 24V**
- **THERMAL OVERLOAD PROTECTION**
- **SHORT CIRCUIT PROTECTION**
- **OUTPUT TRANSISTOR SOA PROTECTION**

TO 220M. Metal case. Ground connected to case. Marking SML LM78XX
TO 220–ISO. Metal case. All leads isolated from case. Marking SML LM78XX–ISO

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25° unless otherwise stated)

V_i	DC input voltage (for V_o = 5 to 15V)	35V
	(for V_o = 24V)	40V
I_o	Output current	Internally limited
P_D	Power dissipation	Internally limited
T_j	Junction temperature	150°C
T_{stg}	Storage temperature	−65 to 150°C

ELECTRICAL CHARACTERISTICS (T_{CASE} = 25°C unless otherwise stated)

OUTPUT VOLTAGE			5			12			15			24			
INPUT VOLTAGE (unless otherwise specified)			10			19			23			33			Unit
Parameter		Test conditions	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V_o	Output voltage	$T_j = 25°C$	4·8	5	5·2	11·5	12	12·5	14·4	15	15·6	23	24	25	V
		I_o = 5mA to 1A, $P_o \leq 15W$	4·75	5	5·25 (V_i = 7 to 20V)	11·4	12	12·6 (V_i = 14·5 to 27V)	14·25	15	15·75 (V_i = 17·5 to 30V)	22·8	24	25·2 (V_i = 27 to 38V)	V
ΔV_o	Line regulation	$T_j = 25°C$		3	100 (V_i = 7 to 25V)			240 (V_i = 14·5 to 30V)			300 (V_i = 17·5 to 30V)			480 (V_i = 27 to 38V)	mV
				1	50 (V_i = 8 to 12V)			120 (V_i = 16 to 22V)			150 (V_i = 20 to 26V)			240 (V_i = 30 to 36V)	mV
ΔV_o	Load regulation	$T_j = 25°C$, I_o = 5mA to 1·5A			100			240			300			480	mV
		$T_j = 25°C$, I_o = 250 to 750mA			50			120			150			240	mV
I_d	Quiescent current	$T_j = 25°C$			8			8			8			8	mA
ΔI_d	Quiescent current change	I_o = 5mA to 1A			0·5			0·5			0·5			0·5	mA
					1·3 (V_i = 7 to 25V)			1 (V_i = 14.5 to 30V)			1 (V_i = 17·5 to 30V)			1 (V_i = 27 to 38V)	mA
$\frac{\Delta V_o}{\Delta T}$	Output voltage drift	I_o = 5mA		−1·1			−1			−1			−1·5		mV/°C
e_N	Output noise voltage	B = 10Hz to 100KHz, T = 25°C		40			75			90			170		µV
SVR	Supply voltage rejection	f = 100Hz	62	(V_i = 8 to 18V		55	(V_i = 15 to 25V)		54			50			dB
V_d	Dropout voltage	$T_j = 25°C$, I_o = 1A, ΔV_o = 100mV		2			2			2			2		V
I_{sc}	Short circuit current	V_i = 35V, $T_j = 25°C$		750			350			230			150		mA
I_{scp}	Short circuit peak current	$T_j = 25°C$		2·2			2·2			2·1			2·1		A

TYPICAL CHARACTERISTICS
(T_A =25°C unless otherwise stated)

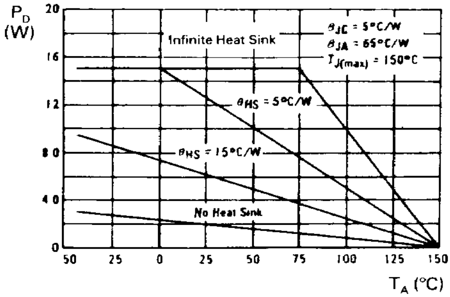


Fig. 1 Worst case Power Dissipation versus Ambient Temperature

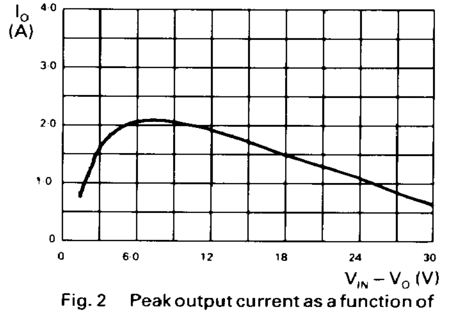


Fig. 2 Peak output current as a function of input-output differential voltage

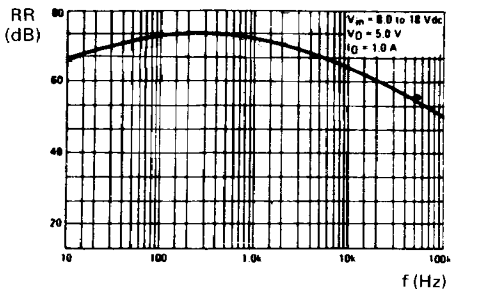


Fig. 3 Ripple rejection as a function of frequency

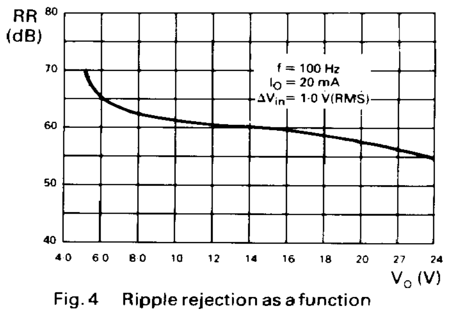


Fig. 4 Ripple rejection as a function of output voltages

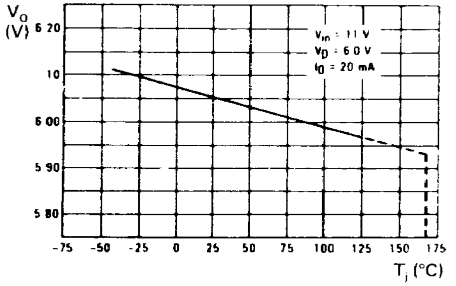


Fig. 5 Output voltage as a function of junction temperature

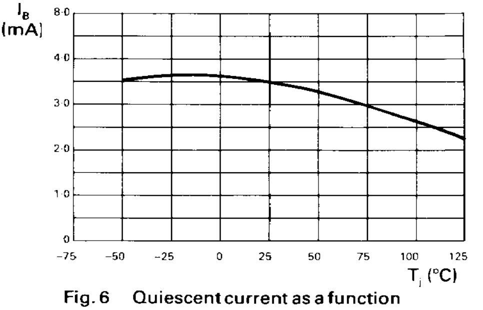
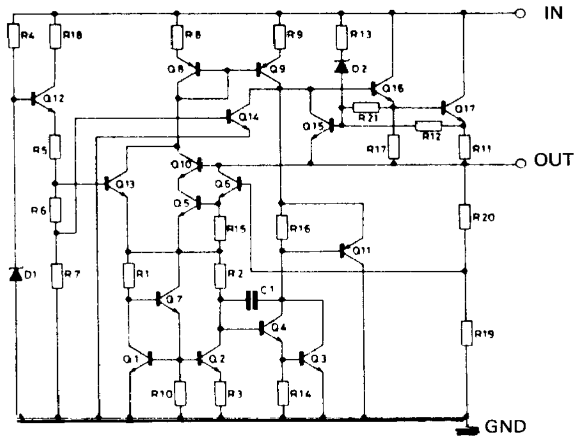
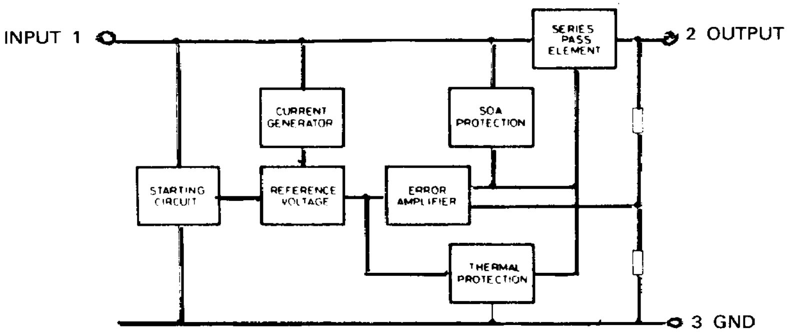


Fig. 6 Quiescent current as a function of temperature



SCHEMATIC DIAGRAM



BLOCK DIAGRAM

THERMAL DATA

$R_{THj-case}$	Thermal resistance junction–case	Max. 3°C/W
R_{THj-a}	Thermal resistance junction-ambient	Max. 50°C/W