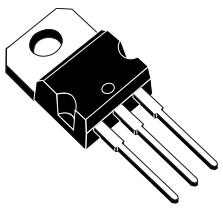
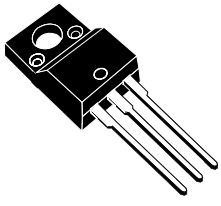
LM117/217
LM317

1.2V TO 37V VOLTAGE REGULATOR

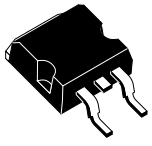
- OUTPUT VOLTAGE RANGE: 1.2 TO 37V
- OUTPUT CURRENT IN EXCESS OF 1.5A
- 0.1% LINE AND LOAD REGULATION
- FLOATING OPERATION FOR HIGH VOLTAGES
- COMPLETE SERIES OF PROTECTIONS: CURRENT LIMITING, THERMAL SHUTDOWN AND SOA CONTROL



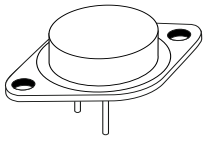
TO-220



TO-220FP



D^2PAK



TO-3

DESCRIPTION

The LM117/LM217/LM317 are monolithic integrated circuit in TO-220, TO-220FP, TO-3 and D^2PAK packages intended for use as positive adjustable voltage regulators.

They are designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V range.

The nominal output voltage is selected by means of only a resistive divider, making the device exceptionally easy to use and eliminating the stocking of many fixed regulators.

Figure 1: Schematic Diagram

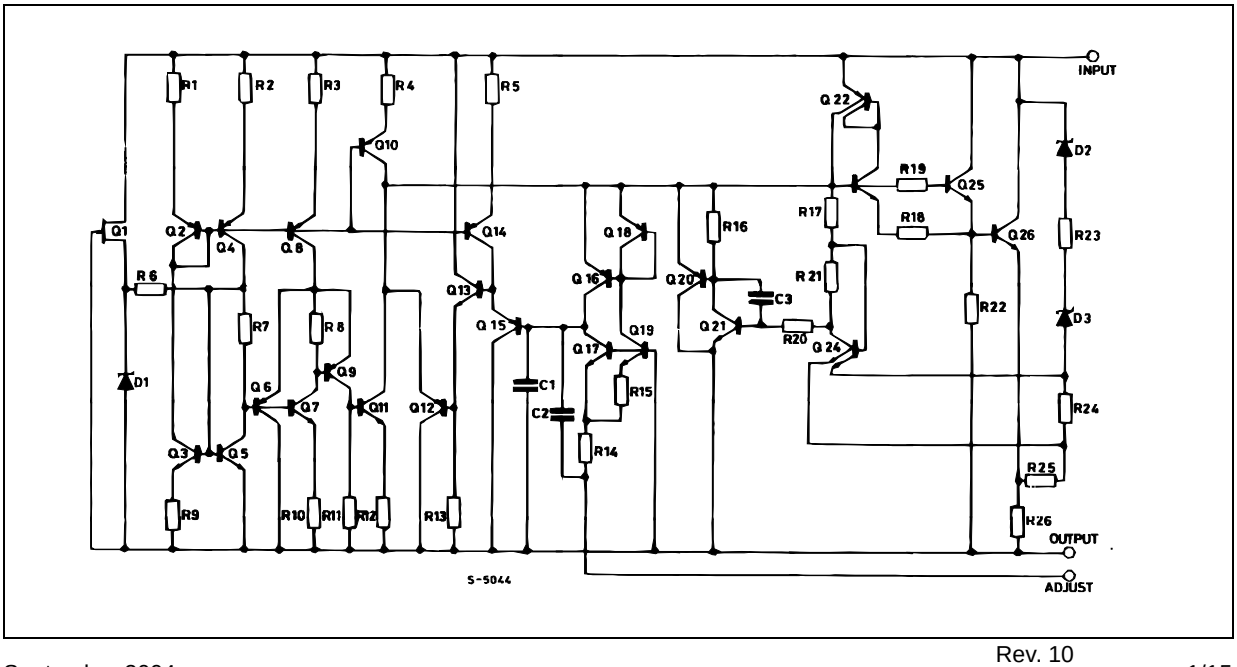


Table 1: Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_I - V_O	Input-Reference Differential Voltage		40	V
I_O	Output Current		Internally Limited	
T_{op}	Operating Junction Temperature for:	LM117	-55 to 150	°C
		LM217	-25 to 150	
		LM317	0 to 125	
P_{tot}	Power Dissipation		Internally Limited	
T_{stg}	Storage Temperature		-65 to 150	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

Table 2: Thermal Data

Symbol	Parameter		D^2PAK	TO-220	TO-220FP	TO-3	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	3	3	5	4	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	62.5	50	60	35	°C/W

Figure 2: Connection Diagram (top view)

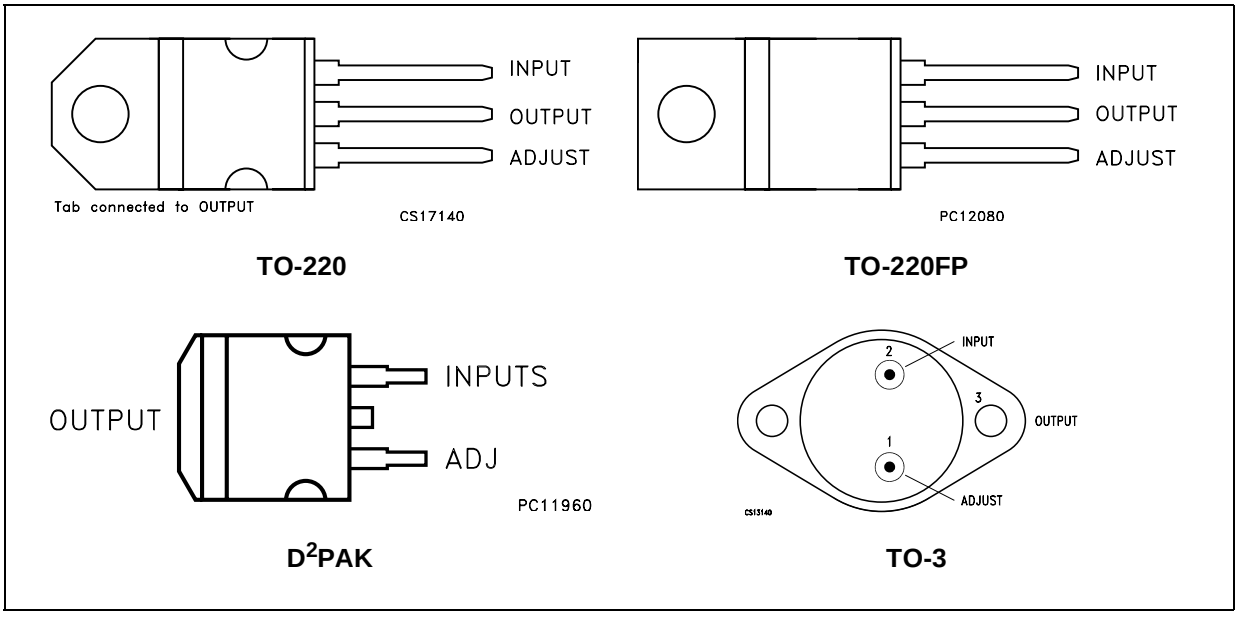


Table 3: Order Codes

TYPE	TO-220	D^2PAK	TO-220FP	TO-3
LM117				LM117K
LM217	LM217T	LM217D2T		LM217K
LM317	LM317T	LM317D2T	LM317P	LM317K

Figure 3: Basic Adjustable Regulator

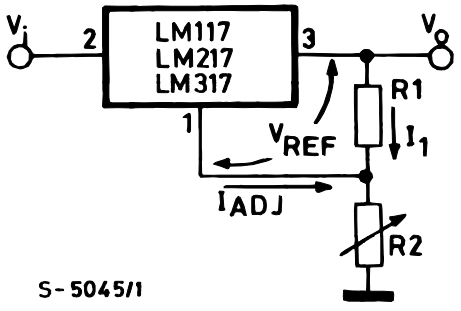


Table 4: Electrical Characteristics For LM117/LM217 (V_I - V_O = 5 V, I_O = 500 mA, I_{MAX} = 1.5 A and P_{MAX} = 20 W, T_J = -55 to 150°C for LM117, T_J = -25 to 150°C for LM217, unless otherwise specified).

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
ΔV_O	Line Regulation	V_I - V_O = 3 to 40 V	T_J = 25°C		0.01	0.02	%/V
					0.02	0.05	
ΔV_O	Load Regulation	$V_O \leq$ 5 V I_O = 10 mA to I_{MAX}	T_J = 25°C		5	15	mV
					20	50	
		$V_O \geq$ 5 V I_O = 10 mA to I_{MAX}	T_J = 25°C		0.1	0.3	%
					0.3	1	
I_{ADJ}	Adjustment Pin Current				50	100	µA
ΔI_{ADJ}	Adjustment Pin Current	V_I - V_O = 2.5 to 40V I_O = 10 mA to I_{MAX}			0.2	5	µA
V_{REF}	Reference Voltage (between pin 3 and pin 1)	V_I - V_O = 2.5 to 40V I_O= 10 mA to I_{MAX} $P_D \leq P_{MAX}$		1.2	1.25	1.3	V
$\Delta V_O/V_O$	Output Voltage Temperature Stability				1		%
$I_{O(min)}$	Minimum Load Current	V_I - V_O = 40 V			3.5	5	mA
$I_{O(max)}$	Maximum Load Current	V_I - $V_O \leq$ 15 V	$P_D < P_{MAX}$	1.5	2.2		A
		V_I - V_O = 40 V T_J = 25°C	$P_D < P_{MAX}$		0.4		
eN	Output Noise Voltage (percentage of V_O)	B = 10Hz to 100KHz	T_J = 25°C		0.003		%
SVR	Supply Voltage Rejection (*)	T_J = 25°C f = 120Hz	C_{ADJ}=0		65		dB
			C_{ADJ}=10µF	66	80		

(*) C_{ADJ} is connected between pin 1 and ground.