

1.Description

This monolithic integrated circuit is an adjustable 3-terminal positive voltage regulator designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V. It employs internal current limiting, thermal shut-down and safe area compensation.

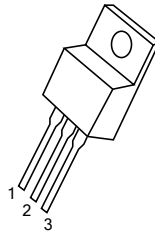
2.Features

- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe operating area compensation

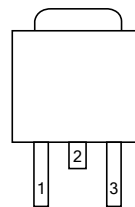
3.Pinning information

Pin	Symbol	Description
1	A	Adj
2	O	Output
3	I	Input

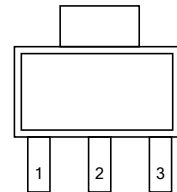
TO-220-3L



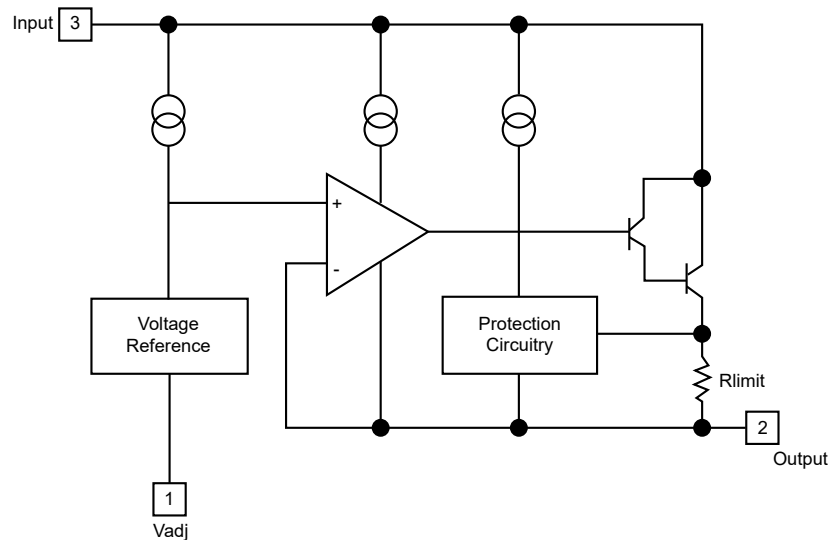
TO-252



SOT-223



4.Internal Block Diagram





5. Absolute Maximum Rating

Parameter		Symbol	Value	Units
Input-Output Voltage Differential		$V_I - V_O$	40	V
Lead Temperature		T_{LEAD}	230	°C
Power Dissipation	TO-220	P_D	Internally limited	W
	TO-252		2	W
	SOT-223		1	W
Junction Temperature Range		T_J	-40 to 105	°C
Storage Temperature Range		T_{STG}	-55 to 125	°C
Temperature Coefficient of Output Voltage		$\Delta V_O / \Delta T$	±0.02	%/°C



6. Electrical Characteristics

($V_I - V_O = 5V$, $I_O = 0.1A$, $0^\circ C \leq T_J \leq +125^\circ C$, unless otherwise specified)

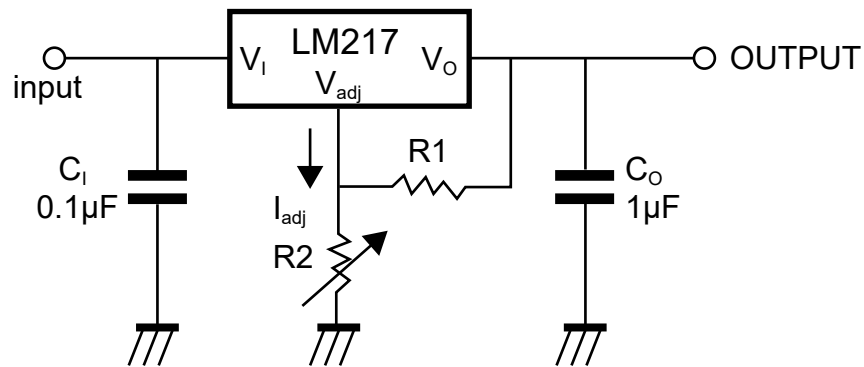
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Line Regulation (note1)	R_{line}	$T_A = 25^\circ C$, $3V \leq V_I - V_O \leq 40V$		0.01	0.04	%/ V
		$3V \leq V_I - V_O \leq 40V$		0.02	0.07	
Load Regulation (note1)	R_{load}	$V_O \leq 5V$, $I_O = 10$ to $500mA$	$T_J = 25^\circ C$	5	25	mV
				20	70	
		$V_O \geq 5V$, $I_O = 10$ to $500mA$	$T_J = 25^\circ C$	0.1	0.5	%/ V_O
				0.3	1.5	
Adjustable Pin Current	I_{ADJ}			46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}$, $P_D \leq P_{MAX}$		2	5	
Reference Voltage	V_{REF}	$3V \leq V_{IN} - V_O \leq 40V$ $10mA \leq I_O \leq I_{MAX}$, $P_D \leq P_{MAX}$	1.2	1.25	1.3	V
Temperature Stability	ST_T			0.7		%/ V_O
Minimum Load Current to Maintain Regulation	$I_{L(MIN)}$	$V_I - V_O = 40V$		3.5	12	mA
Maximum Output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V$, $P_D \leq P_{MAX}$	$T_A = 25^\circ C$	1		A
		$V_I - V_O \leq 40V$, $P_D \leq P_{MAX}$		0.3		
RMS Noise, % of V_{OUT}	e_N	$T_A = 25^\circ C$, $10Hz \leq f \leq 10KHz$		0.003	0.01	%/ V_O
Ripple Rejection	RR	$V_O = 10V$, $f = 120Hz$ without C_{ADJ}	66	60		dB
		$C_{ADJ} = 10\mu F$ (note2)		75		
Long-Term Stability, $T_J = T_{HIGH}$	ST	$T_A = 25^\circ C$ for end point measurements, 1000HR		0.3	1	%
Thermal Resistance Junction to case	$R_{\theta JC}$			25.2		$^\circ C/W$

Notes: 1. Load and line regulation are specified at constant junction temperature. Change in V_D due to heating effects must be taken into account separately. Pulse testing with low duty is used. ($P_{MAX} = 20W$)

2. C_{ADJ} . when used, is connected between the adjustment pin and ground.



7. Typical Application



$$V_O = 1.25V(1 + R_2/R_1) + I_{adj} R_2$$

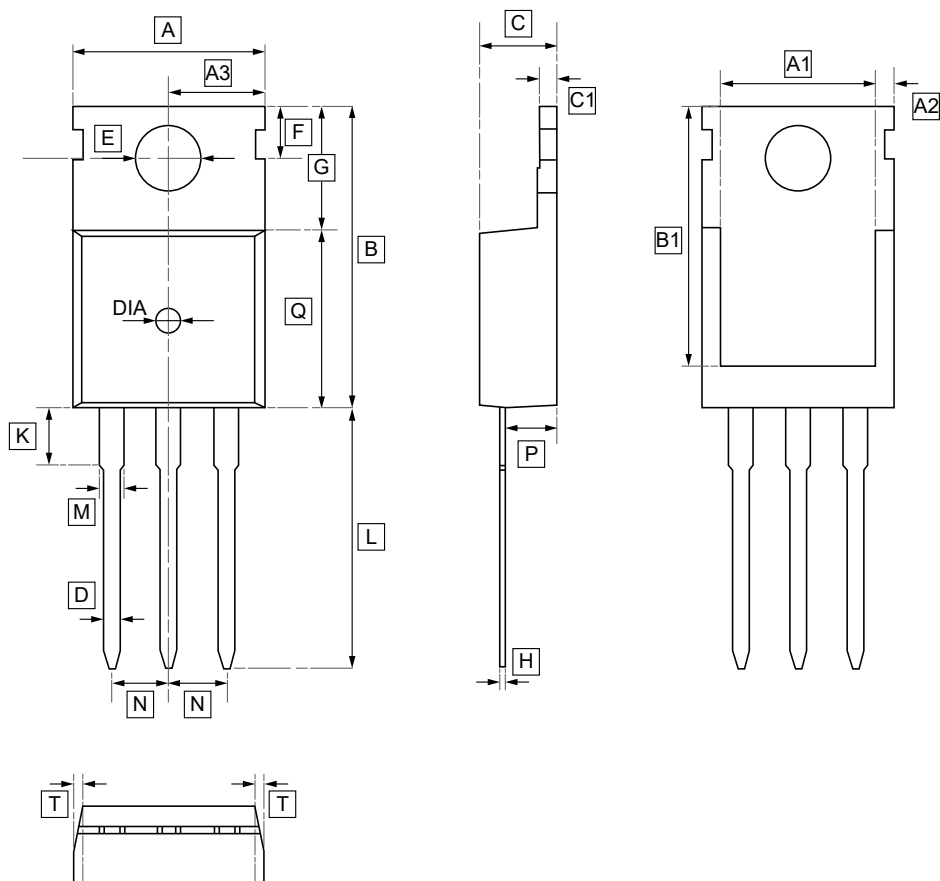
C_i is required when regulator is located an appreciable distance from power supply filter.

C_o is not needed for stability , however, it does improve transient response.

Since I_{ADJ} is controlled to less than 100μA, the error associated with this term is negligible in most applications



8.1TO-220 Package Outline Dimensions



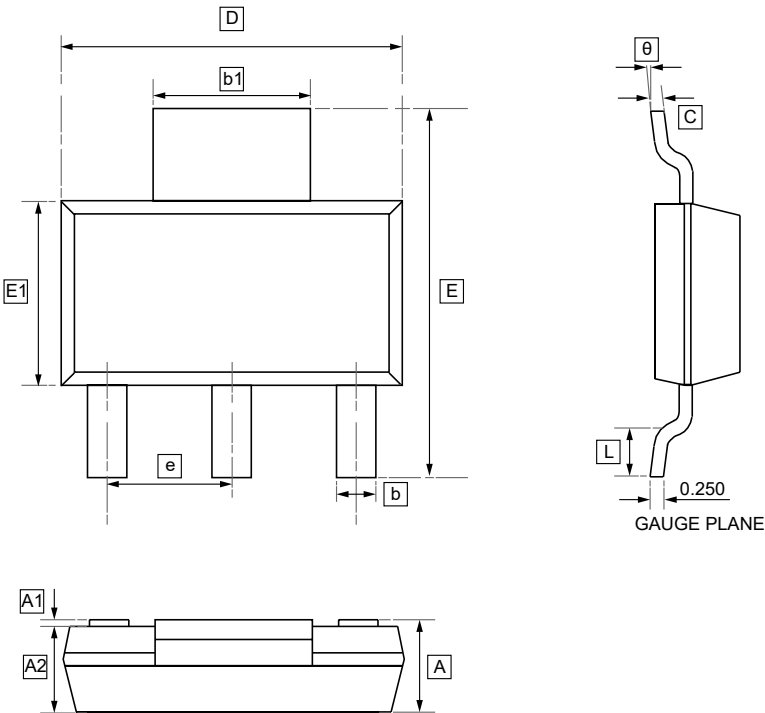
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	C	C1	D	E	F	G
Min	9.7	8.44	1.05	4.8	15.4	12.9	4.28	1.1	0.6	3.4	2.65	5.2
Max	10.3	8.84	1.25	5.2	16.2	13.5	4.68	1.5	1.0	3.8	3.25	5.8

Symbol	H	K	L	L1	M	N	P	Q	T	DIA
Min	0.4	2.9	12.8	2.7	1.15	2.49	2.1	8.7	W:0.35	⌀1.5
Max	0.6	3.3	13.6	3.3	1.35	2.59	2.7	9.3		(deep 0.2)



8.2SOT-223 Package Outlie Dimensions

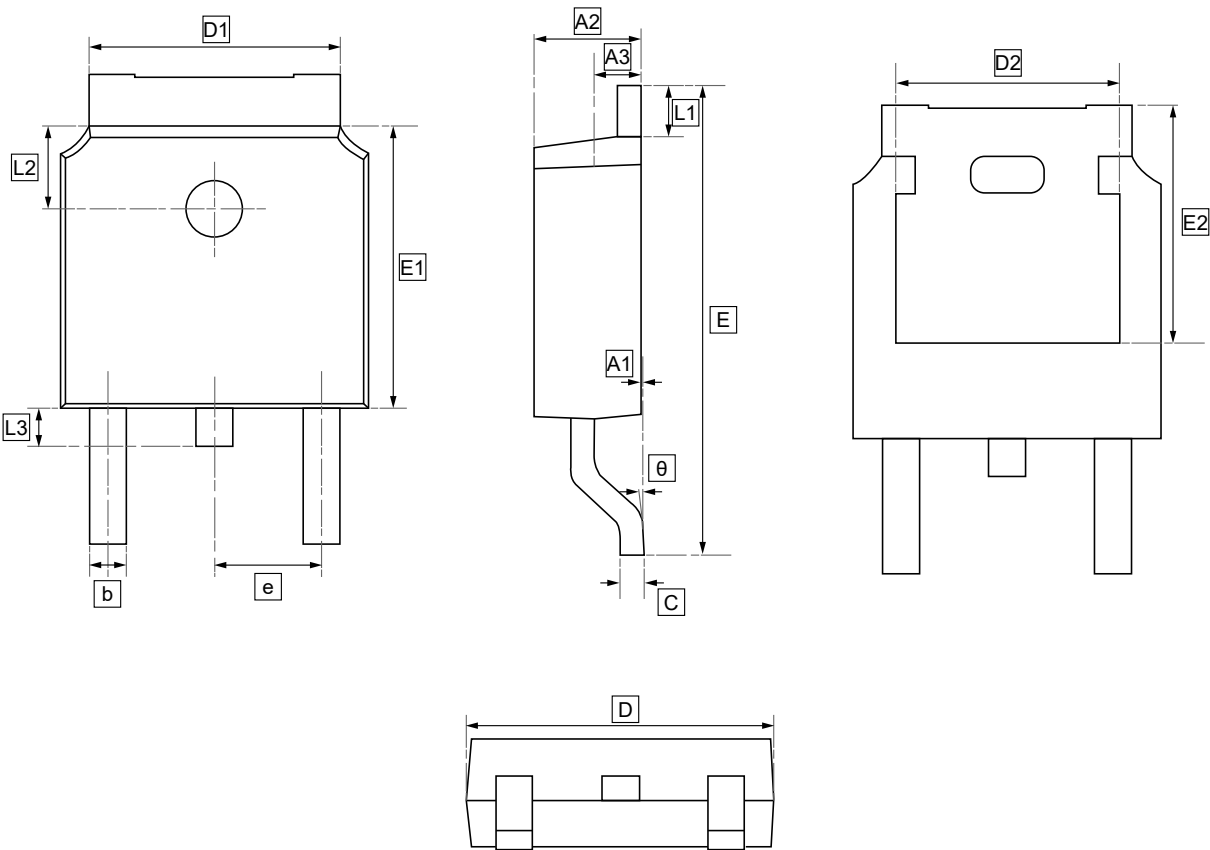


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	b1	c	D	E	E1	e	L	θ
Min	-	0.020	1.500	0.660	2.900	0.230	6.300	6.700	3.300	2.300	0.750	0°
Max	1.800	0.100	1.700	0.840	3.100	0.350	6.700	7.300	3.700	BSC	-	10°



8.3TO-252 Package Outline Dimensions

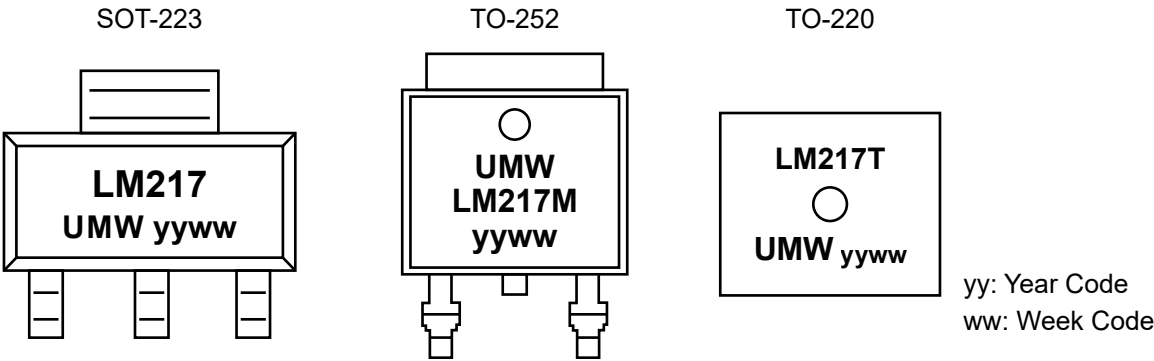


DIMENSIONS (mm are the original dimensions)

Symbol	A1	A2	A3	b	c	D	D1	D2	E	E1	E2	e	L1	L2	L3	θ
Min	0.00	2.18	0.90	0.65	0.46	6.35	4.95	4.32	9.40	5.97	5.21	2.286 BSC	0.89	1.70	0.60	0.00
Max	0.13	2.39	1.10	0.85	0.61	6.73	5.46	4.90	10.41	6.22	5.38		1.27	1.90	1.00	8.00



9.Ordering information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW LM217DCYR	LM217	SOT-223	2500	Tape and reel
UMW LM217MDT	LM217M	TO-252	2500	Tape and reel
UMW LM217T	LM217T	TO-220	1000	Tube and box



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