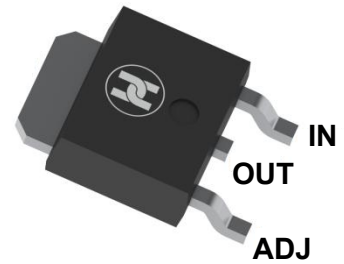


MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

FEATURES

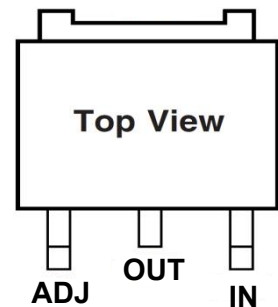
- Output voltage adjustable from 1.3V ~ 37V
- Output current in excess of 1.5 A
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation



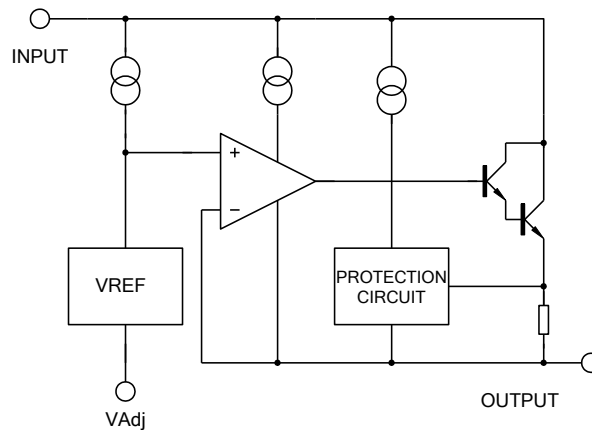
TO-252

MECHANICAL DATA

- Case: TO-252
- Case material: Molded Plastic. UL flammability 94V-0
- Weight: 0.33grams (approximate)
- Marking: LM317



BLOCK DIAGRAM



MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Input output voltage difference	$V_{IN}-V_{OUT}$	40	V
Power dissipation	P_D	2	W
Junction temperature	T_J	+150	$^\circ\text{C}$
Operating temperature	T_{OPR}	-40 ~ +125	
Storage temperature	T_{STG}	-65 ~ +150	
Thermal resistance from junction to ambient	$R_{\theta JA}$	165	$^\circ\text{C/W}$
Thermal resistance from junction to case	$R_{\theta JC}$	24	

Note:

Maximum ratings are those values beyond which the device could be permanently damaged.
Maximum ratings are stress ratings only and functional device operation is not implied.

MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

ELECTRICAL CHARACTERISTICS

($V_I - V_O = 5V$, $0^\circ C < T_J < 125^\circ C$, $I_O = 500mA$, $I_{MAX} = 1.5A$, $P_{MAX} = 20W$, unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Line Regulation	ΔV_O	$T_A = 25^\circ C, 3V \leq V_I - V_O \leq 40V$		0.01	0.04	% / V
		$T_A = 0 - 125^\circ C, 3V \leq V_I - V_O \leq 40V$		0.02	0.07	
Load Regulation	ΔV_O	$T_A = 25^\circ C$		18	25	mV
		$10mA \leq I_O \leq I_{MAX}$		0.4	0.5	% / V_O
		$10mA \leq I_O \leq I_{MAX}$		40	70	mV
		$T_A = 0 - 125^\circ C$		0.8	1.5	% / V_O
Adjustable Pin current	I_{ADJ}			46	100	μA
Adjustable Pin Current Change	ΔI_{ADJ}	$2.5V \leq V_I - V_O \leq 40V$, $10mA \leq I_O \leq I_{MAX}, P_D \leq P_{MAX}$		0.3	5	μA
Reference Voltage	V_{REF}	$3V \leq V_I - V_O \leq 40V$, $10mA \leq I_O \leq I_{MAX}, P_D \leq P_{MAX}$	1.20	1.25	1.30	V
Temperature Stability	STT			0.7		% / V_O
Minimum Load Current for regulation	$I_{L(MIN)}$	$V_I - V_O = 40V$		3.5	10	mA
Maximum output Current	$I_{O(MAX)}$	$V_I - V_O \leq 15V, P_D \leq P_{MAX}$	1.5	2.2		A
		$V_I - V_O = 40V, P_D \leq P_{MAX}, T_A = 25^\circ C$	0.15	0.4		
RMS Noise v.s. % of V_{out}	eN	$T_A = 25^\circ C, 10Hz \leq f \leq 10KHz$		0.003	0.01	% / V_O
Ripple Rejection	RR	$V_O = 10V, f = 120Hz, C_{ADJ} = 0$		60		dB
		$V_O = 10V, f = 120Hz, C_{ADJ} = 10\mu F$	66	75		
Long-term Stability, $T_J = T_{HIGH}$	ST	$T_A = 25^\circ C, 1000 \text{ hr}$		0.3	1	%

Note: Testing with low duty pulse should be used to avoid heating effect.

MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

TYPICAL CHARACTERISTICS

Fig.1. Load Regulation vs temperature

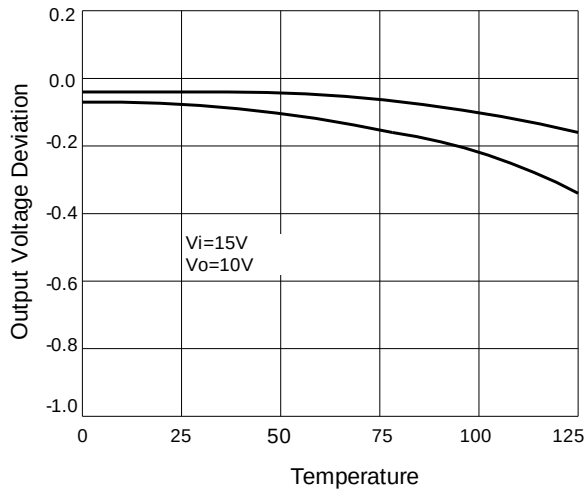


Fig.2 Adjustment Current vs Temperature

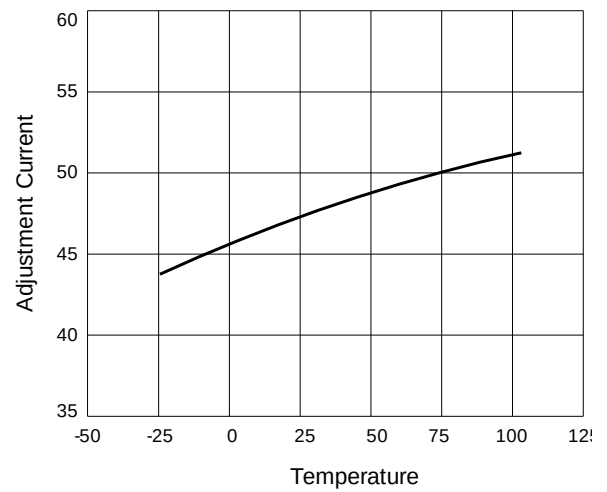


Fig.3. Dropout Voltage vs Input-Output Voltage Difference

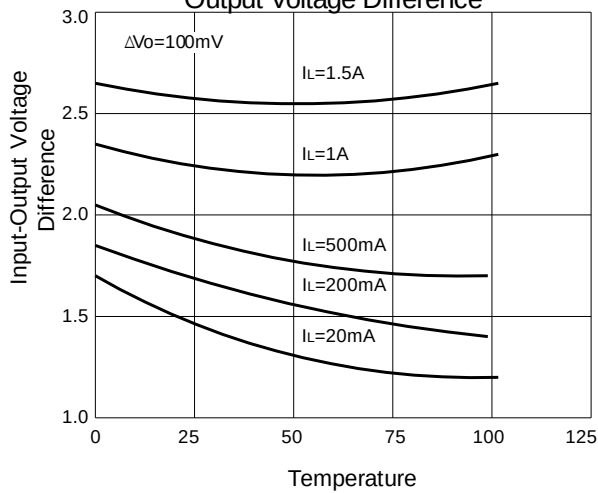
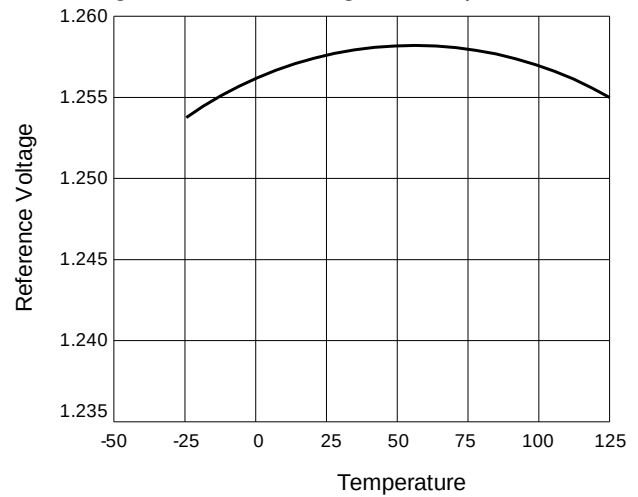
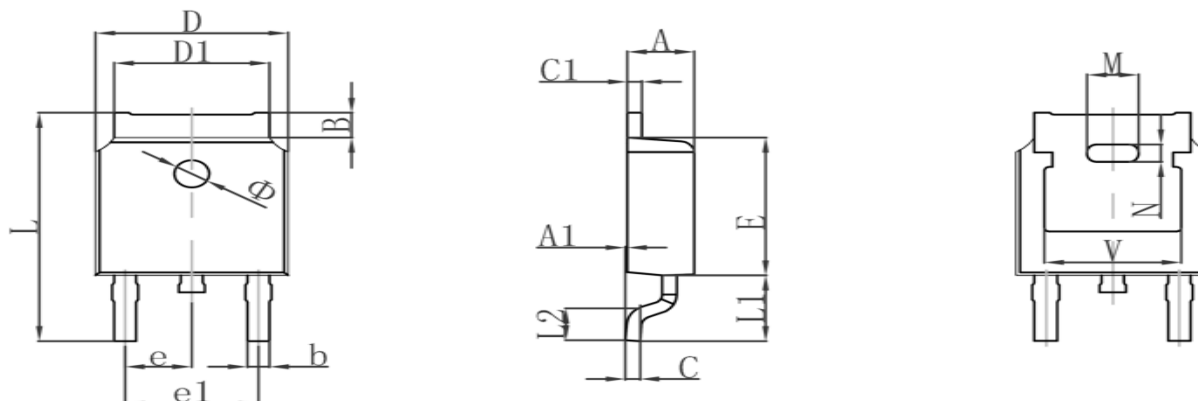


Fig.4 Reference Voltage vs Temperature



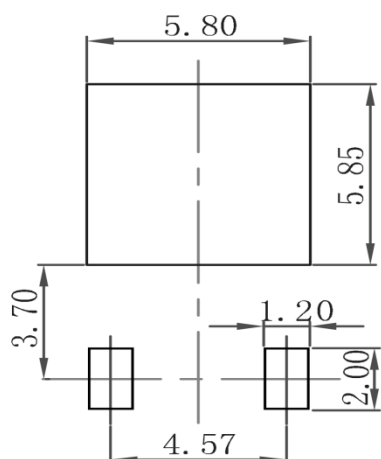
MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

TO-252 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
c	0.460	0.560	0.018	0.022
c1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286TYP		0.090TYP	
e1	4.327	4.727	0.170	0.186
M	1.778REF		0.070REF	
N	0.762REF		0.018REF	
L	9.800	10.400	0.386	0.409
L1	2.9REF		0.114REF	
L2	1.400	1.700	0.055	0.067
V	4.830REF		0.190REF	
Φ	1.100	1.300	0.043	0.051

TO-252 SUGGESTED PAD LAYOUT

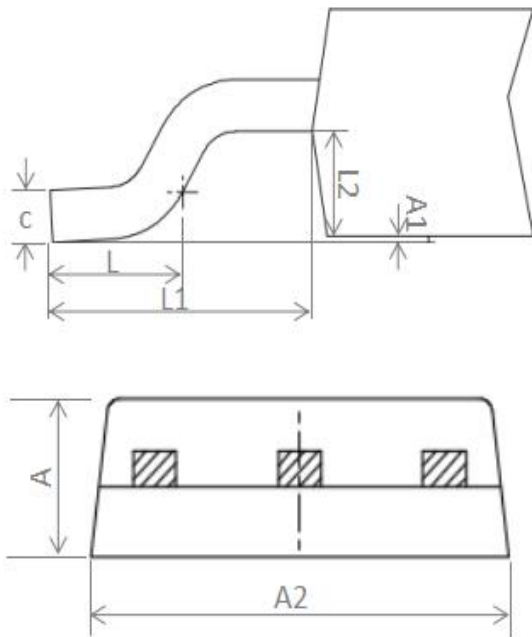
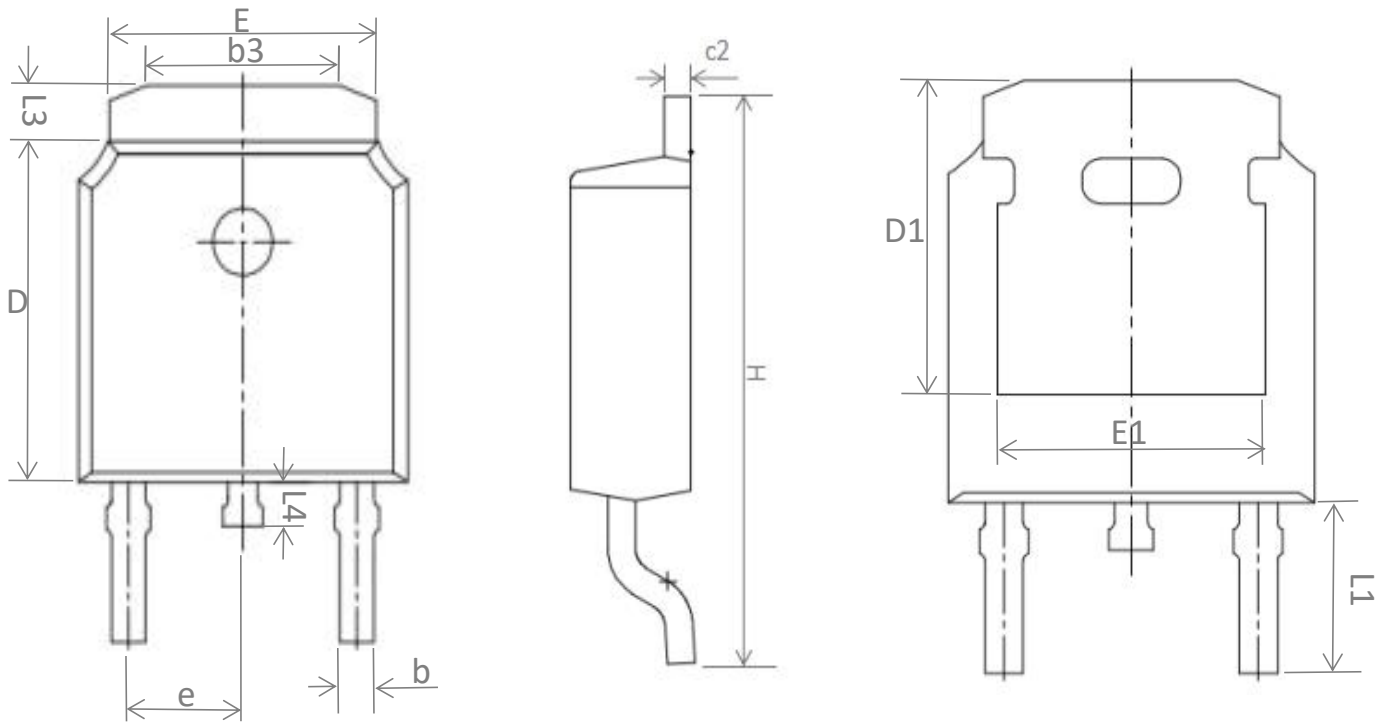


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

TO-252 PACKAGE OUTLINE DIMENSIONS

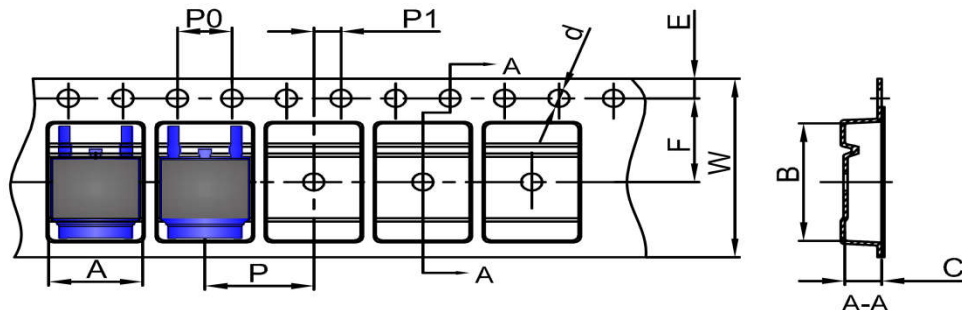


SYMBOL	Spec (mm)
A	2.3 ± 0.1
A1	0-0.15
A2	6.6 ± 0.1
b	0.67 ± 0.1
b3	3.85 ± 0.2
c	0.508 ± 0.1
c2	0.508 ± 0.1
D	6.1 ± 0.15
D1	5.249 ± 0.15
E	5.334 ± 0.15
E1	4.826 ± 0.15
e	2.286REF
H	10.0 ± 0.2
L	1.5 ± 0.15
L1	2.888 ± 0.2
L2	0.9-1.1
L3	1.0REF
L4	0.9 ± 0.2

MEDIUM CURRENT 1.3V TO 37V ADJUSTABLE VOLTAGE REGULATOR

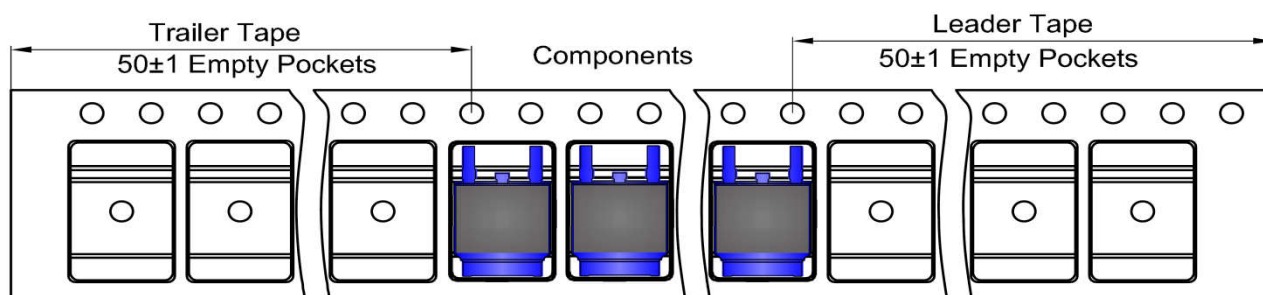
TO-252 TAPE AND REEL

TO-252 Embossed Carrier Tape

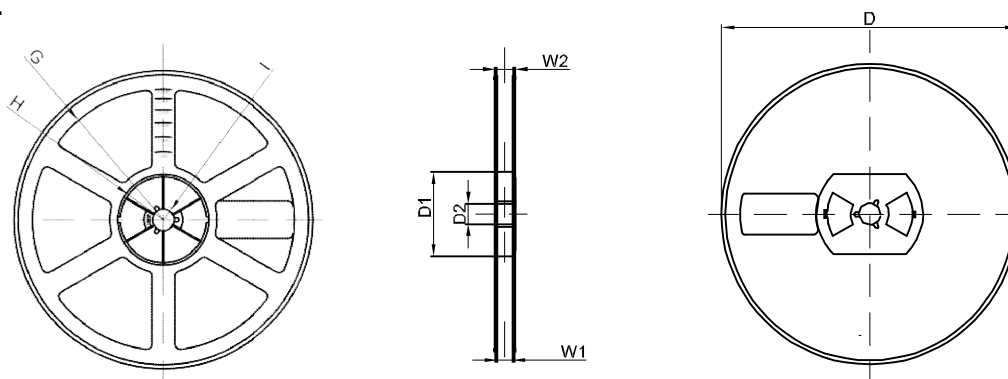


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

TO-252 Tape Leader and Trailer



TO-252 REEL



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
13" DIA	Ø330.00	100.00	Ø21.00	R151.00	R56.00	R6.50	16.40	21.00
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1