

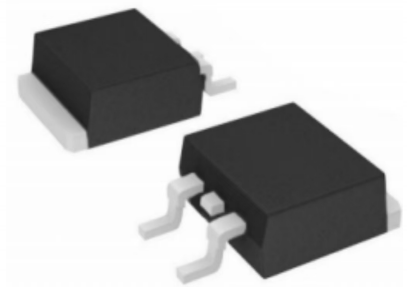
Descriptions

The LM317D2T-TR-CN is an adjustable 3-terminal positive voltage regulator capable of supplying in excess of 1.5 A over an output voltage range of 1.2 V to 37 V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow-out proof.

The LM317 serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM317 can be used as a precision current regulator.

Feature

Typical 1% Output Voltage Tolerance
Output voltage adjustable from 1.25V ~37V
Output current in excess of 1.5A
Internal short circuit protection
Internal over temperature protection
Output transistor safe area compensation
Internal short circuit protection



TO-263-2L

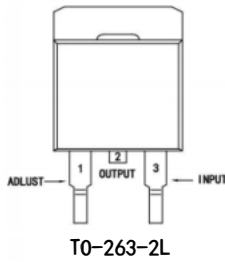
Applications

PC Motherboard
LCD Monitor
Graphic Card
DVD Player
Network Interface Card/Switch
Telecom Equipment
Printer and other Peripheral Equipmen

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
LM317D2T-TR-CN	TO-263-2L	LM317C	Tape	800Pcs/Reel

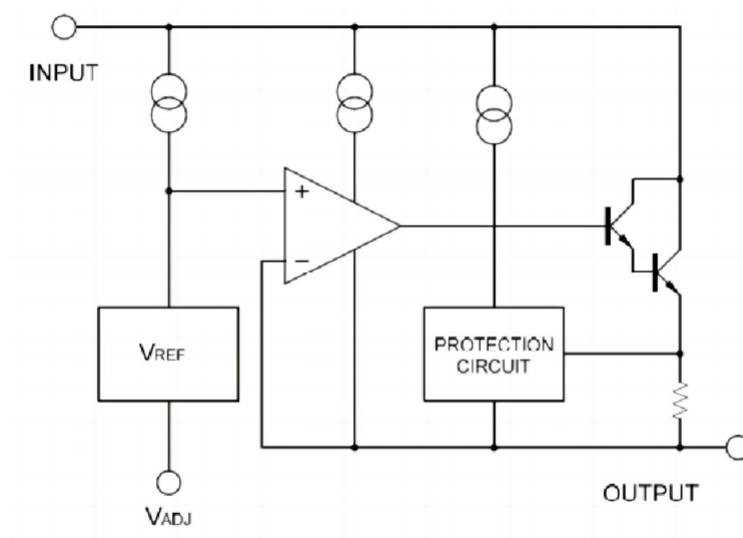
Pin Configuration (Top View)



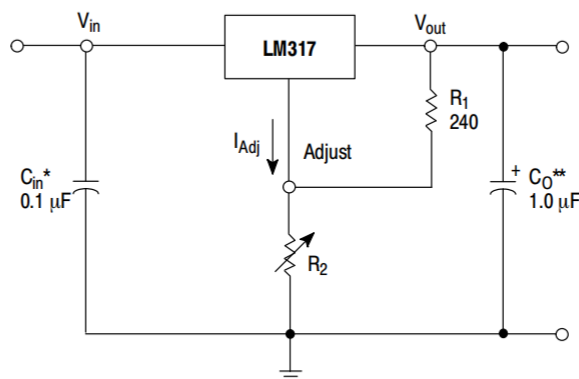
Pin Functions

PIN		I/O	DESCRIPTION
NAME	NO.		
ADJUST	1	I	Output voltage adjustment pin. Connect to a resistor divider to set V_o
INPUT	3	I	Supply input pin
OUTPUT	2	O	Voltage output pin

BLOCK DIAGRAM



APPLICATION CIRCUIT



* C_{in} is required if regulator is located an appreciable distance from power supply filter.
 ** C_o is not needed for stability, however, it does improve transient response.

$$V_{out} = 1.25 V \left(1 + \frac{R_2}{R_1} \right) + I_{Adj} R_2$$

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

ABSOLUTE MAXIMUM RATINGS (Ta=25°C) *

Characteristic	Symbol	Min.	Max.	Unit
Input - Output Voltage Difference	Vin-Vout		37	V
Power Dissipation	Pd	Internal limited		
Maximum junction temperature	T _J		150	°C
Storage temperature	T _S	-40	150	°C
Lead temperature (soldering, 10sec)	T _{LEAD}		260	°C
ESD (human body model)	ESD		4000	V

*: Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

		MIN	MAX	UNIT
Operating Temperature Range	LM317D2T-TR-CN	-20	125	°C

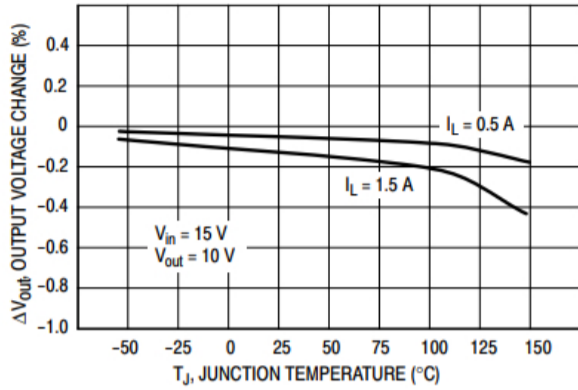
ELECTRICAL CHARACTERISTICS

(VIN-VOUT=5V, IOUT=10mA, Ta=25° C, unless otherwise specified.) *

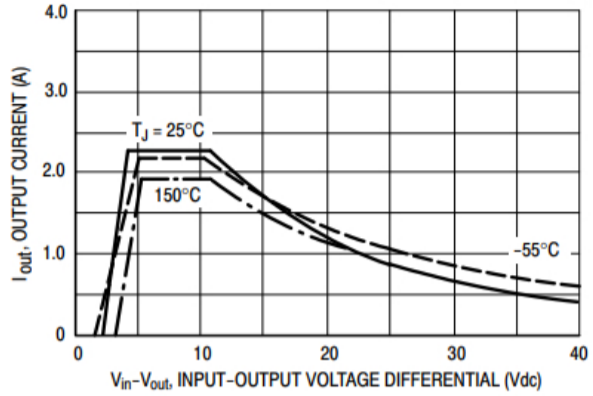
Characteristics	Test conditions	Symbol	Min.	Typ.	Max.	Unit
Reference voltage	10 mA ≤ I _{OUT} ≤ 1.5 A, 3 V ≤ (V _{IN} - V _{OUT}) ≤ 37 V , P _D ≤ 2.0 W	V _{REF}	1.2	1.25	1.3	V
Line regulation	3 V ≤ V _{IN} - V _{OUT} ≤ 37 V	S _V		0.01	0.04	%/V
Load regulation	0 mA ≤ I _{OUT} ≤ 1.5 A	S _I		0.2	0.4	%
Adjust pin current		I _{Adj}		50	100	μA
Adjust pin current change	3 V ≤ V _{IN} - V _{OUT} ≤ 37 V , 10 mA ≤ I _{OUT} ≤ 1.5 A , P _D ≤ 2.0 W	I _{Adj}		0.2	5.0	μA
Minimum load current	V _{IN} -V _{OUT} =37 V	I _{Lmin}		3.5	10	mA
Ripple rejection	f= 120Hz, C _{OUT} = 1μF tantalum, (V _{IN} -V _{OUT})=3V, I _{OUT} = 1.5A	RR	60	75		dB
Temperature stability	T _{MIN} ≤ T _J ≤ T _{MAX}			0.7		%
RMS output noise (% of V _{OUT})	Ta=25°C , 10Hz ≤ f ≤ 10kHz	en		0.003		%
Thermal resistance, Junction to case	TO263	θ _{JC}		5		°C/W
Thermal resistance, Junction to Ambient	TO263	θ _{JA}		64		°C/W
Thermal shutdown hysteresis		Thys		25		°C/W

*: Maximum Power Dissipation is Package Type and Case Temperature dependent.

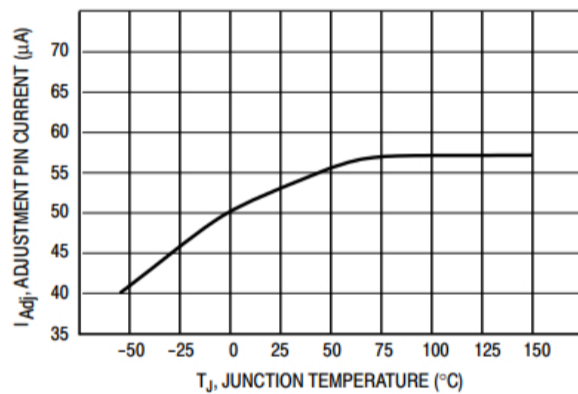
CHARACTERISTICS CURVES



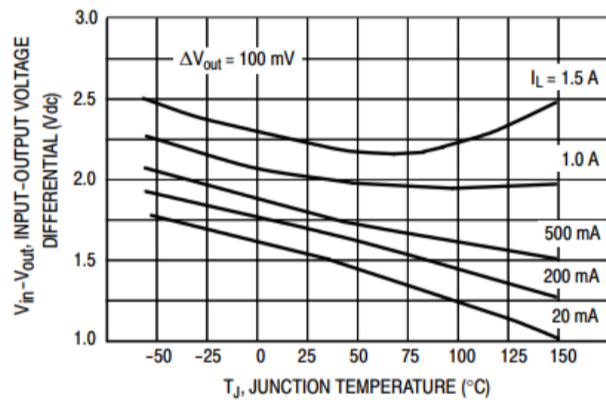
Load Regulation



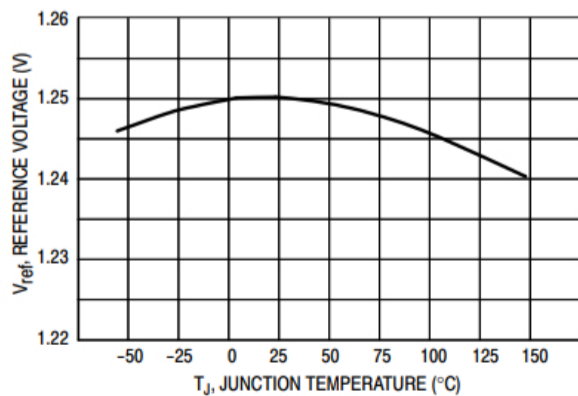
Current Limit



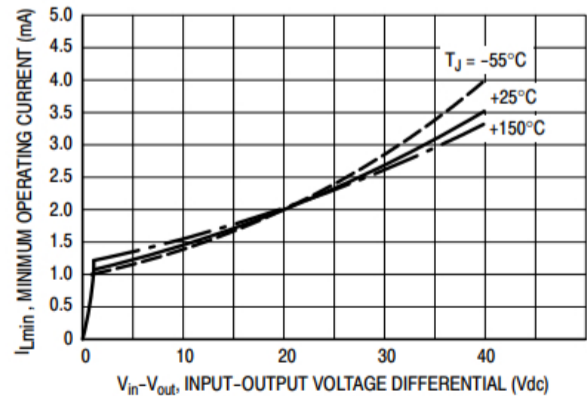
Adjustment Pin Current



Dropout Voltage

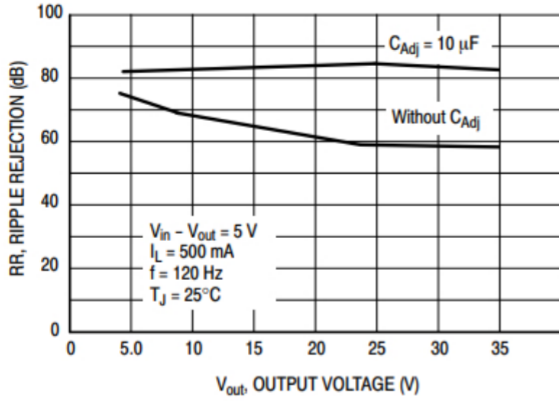


Temperature Stability

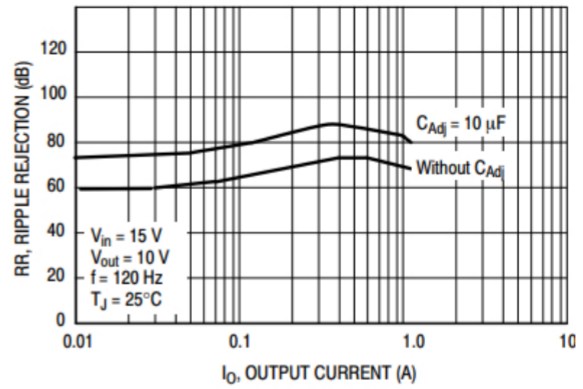


Minimum Operating Current

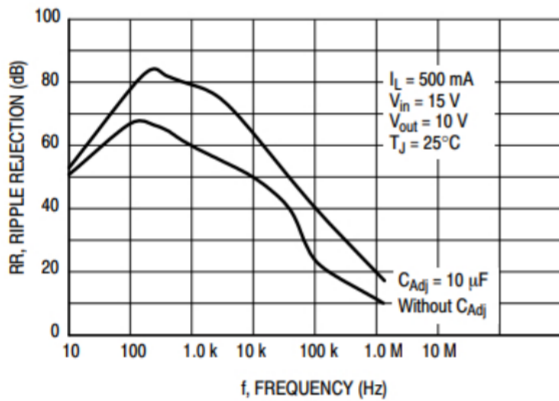
CHARACTERISTICS CURVES



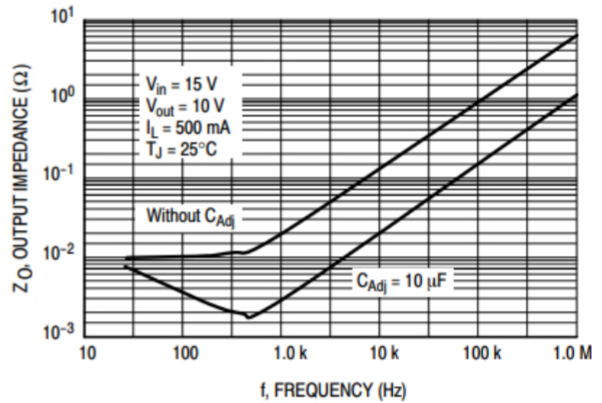
Ripple Rejection versus Output Voltage



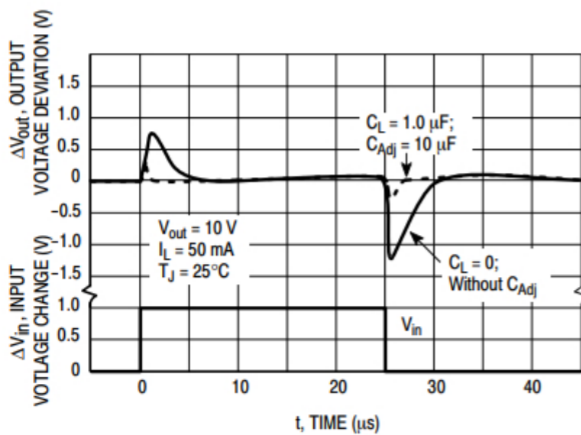
Ripple Rejection versus Output Current



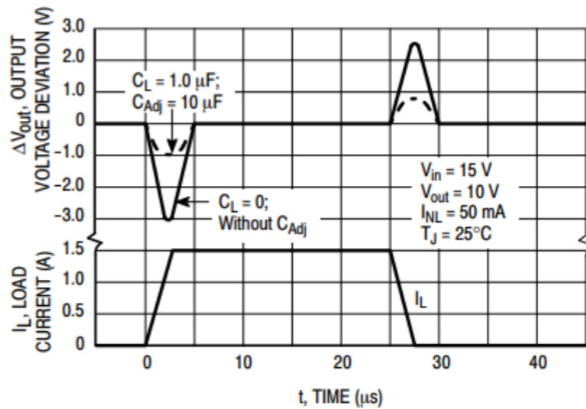
Ripple Rejection versus Frequency



Output Impedance



Line Transient Response

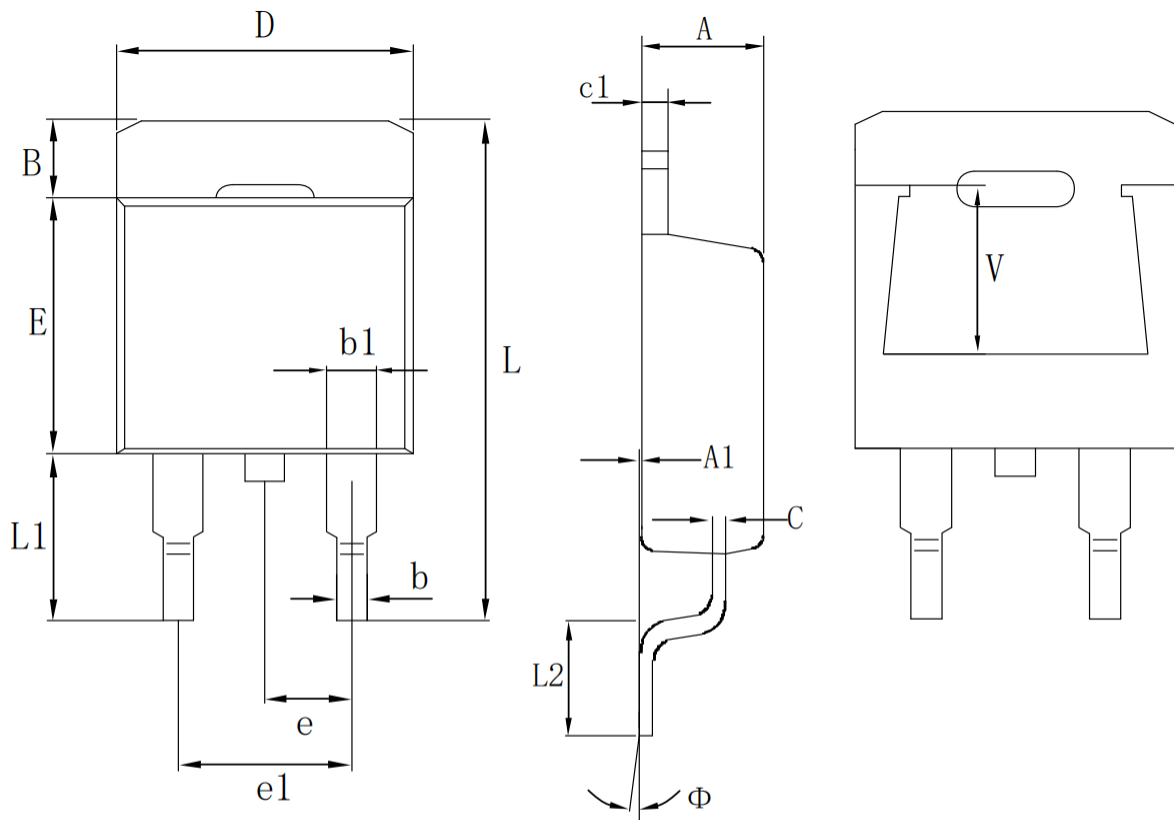


Load Transient Response

Package Information

· T0-263-2L

Symbol	Size	Dimensions In Millimeters		Symbol	Size	Dimensions In Inches	
		Min (mm)	Max (mm)			Min (in)	Max (in)
A		4.470	4.670	A		0.176	0.184
A1		0.000	0.150	A1		0.000	0.006
B		1.120	1.420	B		0.044	0.056
b		0.710	0.910	b		0.028	0.036
b1		1.170	1.370	b1		0.046	0.054
c		0.310	0.530	c		0.012	0.021
c1		1.170	1.370	c1		0.046	0.054
D		10.01	10.31	D		0.394	0.406
E		8.700	9.400	E		0.343	0.370
e		2.540 (TYP)		e		0.100 (TYP)	
e1		4.980	5.180	e1		0.196	0.204
L		14.94	15.50	L		0.588	0.610
L1		4.950	5.450	L1		0.195	0.215
L2		2.340	2.740	L2		0.092	0.860
V		5.600 (REF)		V		0.220 (REF)	
Φ		0°	8°	Φ		0°	8°



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