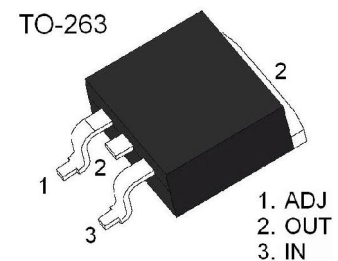


The LM317D2T-TR-CN are monolithic integrated circuit in TO-263 package sintended for use as positive adjustable voltage regulators. They are designed to supply more than 1.5A of load current with an output voltage adjustable over a 1.2 to 37V range.

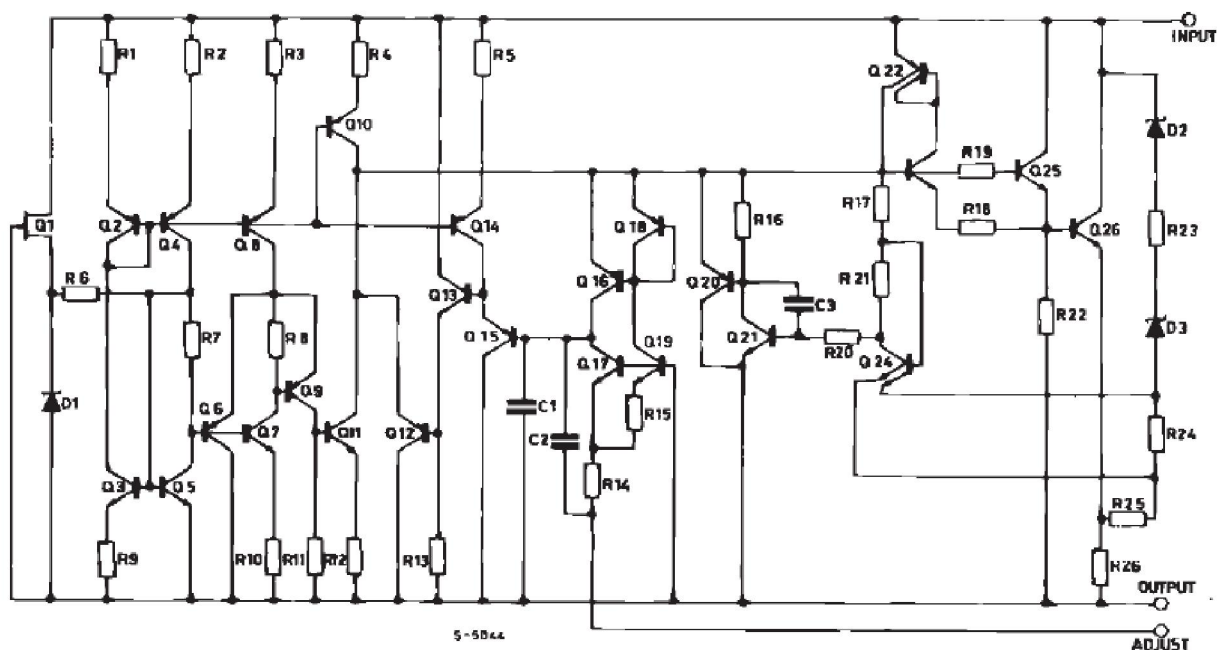
The nominal output voltage is selected by means of only a resistive divider, making the device exceptionally easy to use and eliminating the stocking of many fixed regulators.

## Features

- Output Voltage Range : 1.2 to 37V
- Output Current in excess of 1.5A
- 0.1% Line and Load Regulation Voltages
- Floating Operation For High Voltages
- Complete Series of Protections: Current Limiting, Thermal Shutdown and SOA Control



## Schematic Diagram



**Absolute Maximum Ratings**

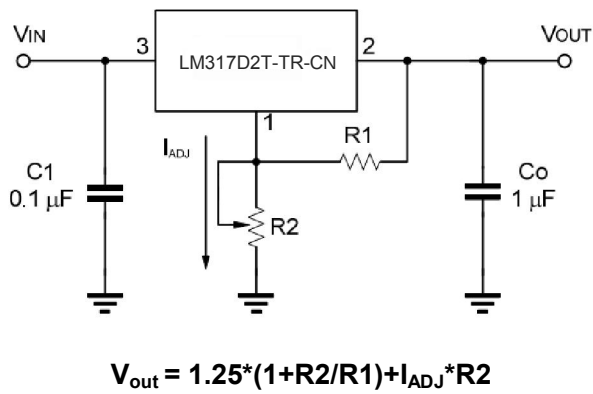
| Symbol    | Parameter                         | Value              | Unit |
|-----------|-----------------------------------|--------------------|------|
| $V_{I-O}$ | Input-output Differential Voltage | 40                 | V    |
| $I_O$     | Output Current                    | Intenrally Limited |      |
| $V_O$     | Out put Voltage                   | 5                  | V    |
| $T_{OP}$  | Operating Junction Temperature    | 0~+125             | °C   |
| $T_{STG}$ | Storage Temperature               | -60~+150           | °C   |

**Electrical Characteristics**

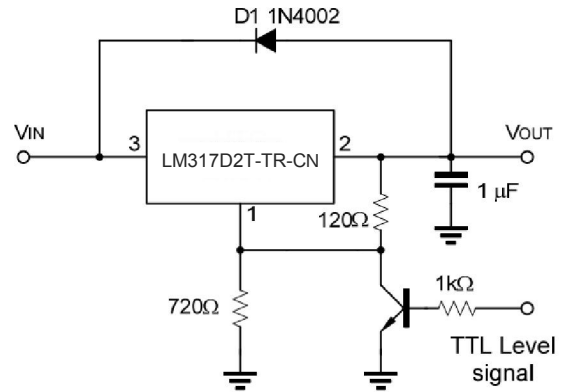
( $V_i - V_o = 5\text{ V}$ ,  $I_o = 500\text{ mA}$ ,  $I_{MAX} = 1.5\text{ A}$  and  $P_{MAX} = 20\text{ W}$ , unless otherwise specified)

| Parameter                                    | Symbol                    | Conditions                                                                                                      |                          | Value |      |      | Unit                       |
|----------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|-------|------|------|----------------------------|
|                                              |                           |                                                                                                                 |                          | Min   | Typ  | Max  |                            |
| Line Regulation                              | $\Delta V_O$              | $V_i - V_o = 3\text{ to }40\text{ V}$                                                                           | $T_j = 25^\circ\text{C}$ |       |      | 0.04 | %V                         |
|                                              |                           |                                                                                                                 |                          |       |      | 0.07 |                            |
| Load Regulation                              | $\Delta V_O$              | $V_o \leq 5\text{ V}$<br>$I_o = 10\text{ mA} \sim I_{MAX} 1.5\text{ A}$                                         | $T_j = 25^\circ\text{C}$ |       |      | 25   | mV                         |
|                                              |                           |                                                                                                                 |                          |       |      | 70   |                            |
|                                              |                           | $V_o \geq 5\text{ V}$<br>$I_o = 10\text{ mA} \sim I_{MAX} 1.5\text{ A}$                                         | $T_j = 25^\circ\text{C}$ |       |      | 0.5  | %V                         |
|                                              |                           |                                                                                                                 |                          |       |      | 1.5  |                            |
| Adjustment Pin Current                       | $I_{ADJ}$                 | $T_j = 25^\circ\text{C}$                                                                                        |                          |       |      | 100  | $\mu\text{A}$              |
| Adjustment Pin Current                       | $\Delta I_{ADJ}$          | $V_i - V_o = 2.5\text{ to }40\text{ V}$<br>$I_o = 10\text{ mA} \sim I_{MAX} 1.5\text{ A}$                       |                          |       |      | 5    | $\mu\text{A}$              |
| Output Voltage Drift                         | $\Delta V / \Delta T$     | $I_o = 5\text{ mA}$                                                                                             |                          |       | -0.8 |      | $\text{mV}/^\circ\text{C}$ |
| Reference Voltage<br>(between pin3 and pin1) | $V_{REF}$                 | $V_i - V_o = 2.5\text{ to }40\text{ V}$<br>$I_o = 10\text{ mA} \sim I_{MAX} 1.5\text{ A}$<br>$P_D \leq P_{MAX}$ |                          | 1.2   | 1.25 | 1.3  | V                          |
| Output Voltage<br>Temperature Stability      | $\Delta V_O / \Delta V_O$ |                                                                                                                 |                          |       | 1    |      | %                          |
| Minimum Load Current                         | $I_{O(min)}$              | $V_i - V_o = 40\text{ V}$                                                                                       |                          |       |      | 10   | mA                         |
| Maximum Load Current                         | $I_{O(max)}$              | $V_i - V_o \leq 15\text{ V}$ , $P_D < P_{MAX}$                                                                  |                          | 1.5   |      |      | A                          |
|                                              |                           | $V_i - V_o = 40\text{ V}$ , $P_D < P_{MAX}$ , $T_j = 25^\circ\text{C}$                                          |                          |       | 0.4  |      |                            |

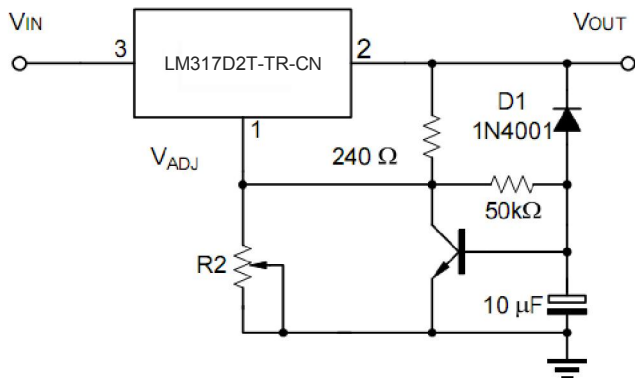
## Application Circuits



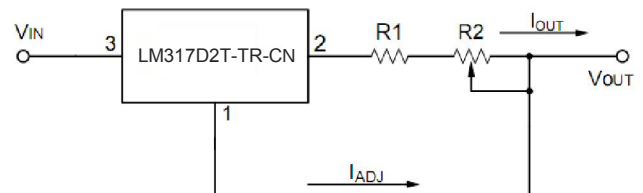
**Fig.1 Programmable Voltage Regulator**



**Fig.2 Regulator with ON-off control**

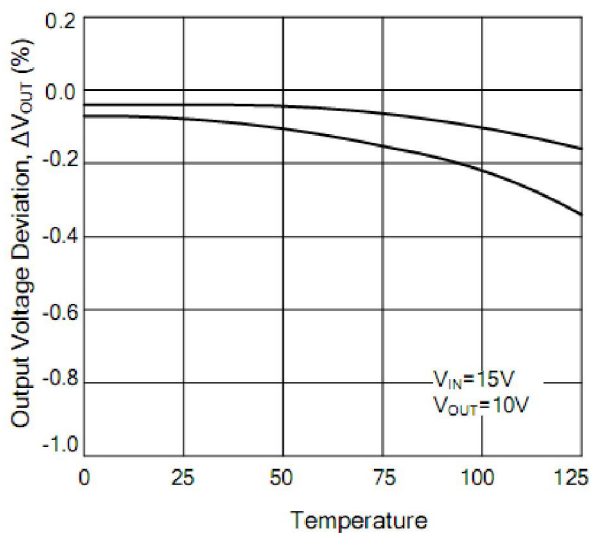


**Fig.3 Soft Start Application**

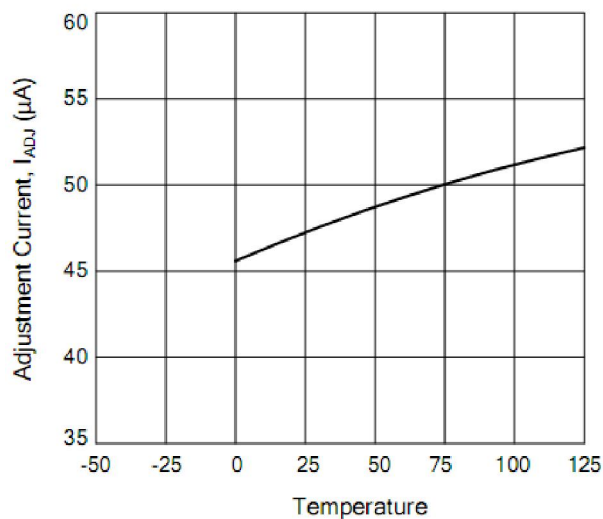


**Fig.4. Constant Current Application**

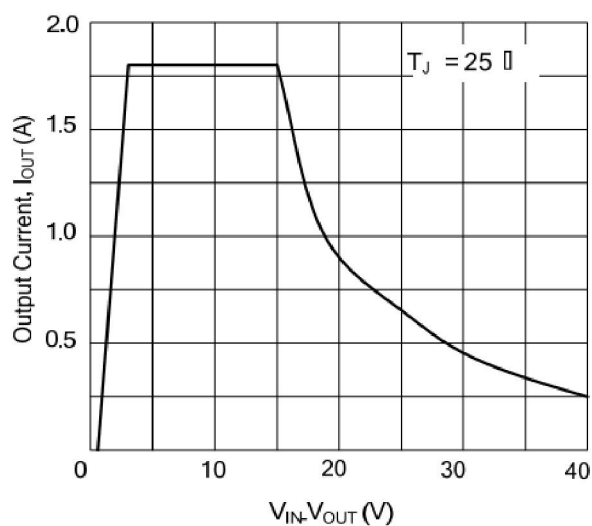
## Typical Characteristics



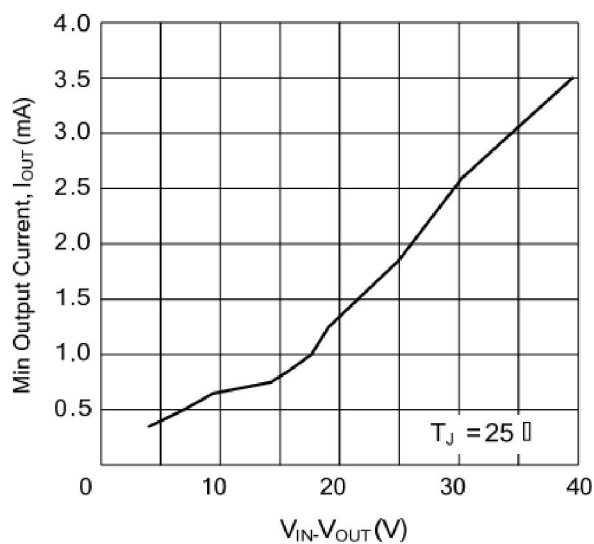
**Fig.1. Load Regulation vs. temperature**



**Fig.2. Adjustment Current vs. Temperature**

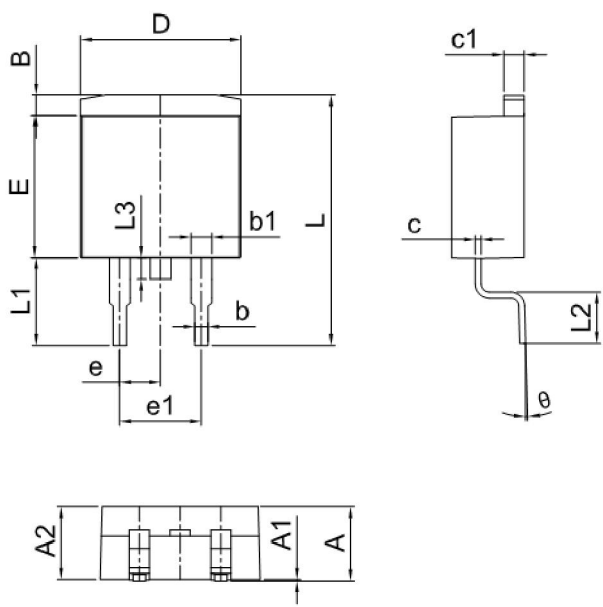


**Fig.3. Currents Limit**



**Fig.4. Minimum Operating Current**

**Package Dimensions**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Symbol | Millimeter |       | Inches |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|-------|--------|-------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        | Min.       | Max.  | Min.   | Max.  |
|  <p>The diagram shows three views of the LM317D2T-TR-CN package: a top view, a side view, and a bottom view. The top view shows dimensions A, A1, A2, B, D, E, L, L1, L2, L3, b, b1, c, c1, e, and e1. The side view shows dimensions L, L1, L2, and L3. The bottom view shows dimensions A, A1, and A2. The package is a TO-18 style package with a central pin and two side pins.</p> | A      | 4.30       | 4.70  | 0.169  | 0.185 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A1     | 0.00       | 0.15  | 0.000  | 0.006 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A2     | 4.30       | 4.55  | 0.169  | 0.179 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | B      | 1.10       | 1.50  | 0.043  | 0.059 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | b      | 0.70       | 0.90  | 0.028  | 0.035 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | b1     | 1.20       | 1.50  | 0.047  | 0.059 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | c      | 0.30       | 0.60  | 0.012  | 0.024 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | c1     | 1.17       | 1.37  | 0.046  | 0.054 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | D      | 9.90       | 10.20 | 0.390  | 0.402 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | E      | 8.50       | 8.90  | 0.335  | 0.350 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | e      | 2.44       | 2.64  | 0.096  | 0.104 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | e1     | 4.88       | 5.28  | 0.192  | 0.208 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | L      | 15.00      | 15.30 | 0.591  | 0.602 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | L1     | 5.20       | 5.40  | 0.205  | 0.213 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | L2     | 2.40       | 2.60  | 0.094  | 0.102 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | L3     | 1.60       | 1.80  | 0.063  | 0.071 |

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