

# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## LM317D2T(MS))

Product specification

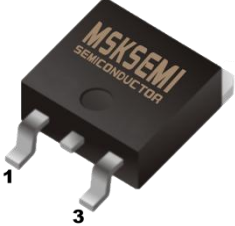

**3-TERMINAL 1A POSITIVE ADJUSTABLE VOLTAGE REGULATOR**

**DESCRIPTION**

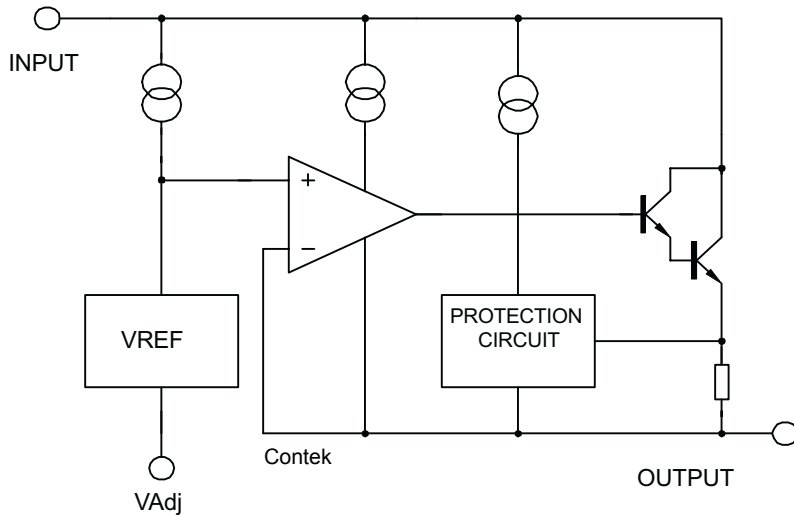
The Contek LM317 is an adjustable 3-terminal positive voltage regulator, designed to supply more than 1.5A of output current with voltage adjustable from 1.3 to 37v

**FEATURES**

- Output current up to 1.5A.
- Output voltage adjustable from 1.3V to 37V.
- Internal short circuit protection.
- Internal over temperature protection.
- Safe-Area compensation for output transistor.

PACKAGE OUTLINE	Marking
 <p>1 3</p> <p>1.IN 2.GND 3.OUT</p>	 <p><b>MSKSEMI</b> <b>LM317D2T</b> <b>CHN MS**</b></p>

**BLOCKDIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**( $T_a=25^{\circ}\text{C}$ , UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	VALUE	UNIT
Input - Output Voltage Difference	VI-VO	40	V
Lead Temperature	TLEAD	230	$^{\circ}\text{C}$
Power Dissipation	PD	Internal limited	
Operating Temperature Range	TOPR	0~125	$^{\circ}\text{C}$
Storage Temperature Range	TSTG	-65~150	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS**

 (VI-VO=5V,  $0^{\circ}\text{C} < T_j < 125^{\circ}\text{C}$ , IO=500mA, IMAX=1.5A, PMAX=20W, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Line Regulation	$\Delta\text{VO}$	$T_a=25^{\circ}\text{C}$ , $3\text{V} \leq \text{VI}-\text{VO} \leq 40\text{V}$		0.01	0.04	%/V
		$T_a=0 - 125^{\circ}\text{C}$ , $3\text{V} \leq \text{VI}-\text{VO} \leq 40\text{V}$		0.02	0.07	%/V
		$T_a=25^{\circ}\text{C}$ , $\text{VO} \leq 6\text{V}$		18	25	mV
Load Regulation	$\Delta\text{VO}$	$10\text{mA} \leq \text{IO} \leq \text{IMAX}$ , $\text{VO} \geq 5\text{V}$		0.4	0.5	%/VO
		$10\text{mA} \leq \text{IO} \leq \text{IMAX}$ , $\text{VO} \leq 5\text{V}$		40	70	mV
		$\text{VO} \geq 6\text{V}$		0.8	1.5	%/VO
Adjustable Pin Current	IADJ			46	100	$\mu\text{A}$
Adjustable Pin Current Change	$\Delta\text{IADJ}$	$2.5\text{V} \leq \text{VI}-\text{VO} \leq 40\text{V}$ , $10\text{mA} \leq \text{IO} \leq \text{IMAX}$ , $\text{PD} \leq \text{PMAX}$		2.0	5	$\mu\text{A}$
Reference Voltage	VREF	$3\text{V} \leq \text{VI}-\text{VO} \leq 40\text{V}$ , $10\text{mA} \leq \text{IO} \leq \text{IMAX}$ , $\text{PD} \leq \text{PMAX}$	1.20	1.25	1.30	V
Temperature Stability	STT			0.7		%/VO
Minimum Load Current for Regulation	IL(MIN)	$\text{VI}-\text{VO}=40\text{V}$		3.5	10	mA
Maximum Output Current	IO(MAX)	$\text{VI}-\text{VO} \leq 15\text{V}$ , $\text{PD} \leq \text{PMAX}$	1.5	2.2		A
		$\text{VI}-\text{VO} \leq 15\text{V}$ , $\text{PD} \leq \text{PMAX}$ , $T_a=25^{\circ}\text{C}$	0.15	0.4		
RMS Noise v.s. % of Vout	eN	$T_a=25^{\circ}\text{C}$ , $10\text{HZ} \leq f \leq 10\text{KHZ}$		0.003	0.01	%/VO
Ripple Rejection	RR	$\text{VO}=10\text{V}$ , $f=120\text{HZ}$ ,		60		dB
		$\text{VO}=10\text{V}$ , $f=120\text{HZ}$ , $\text{CADJ}=10\mu\text{F}$		75		
Long-term Stability, $T_j=\text{THIGH}$	ST	$T_a=25^{\circ}\text{C}$ , 1000 hr	66	0.3	1	%
Junction to Case Thermal Resistance	$R_{\theta\text{JC}}$			5		C/W

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

**TYPICAL PERFORMANCE CHARACTERISTICS**

Fig.1. Load Regulation vs temperature

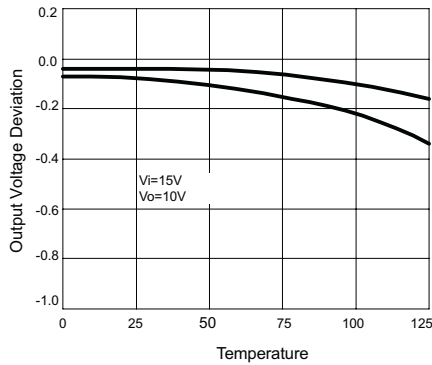


Fig.2 Adjustment Current vs Temperature

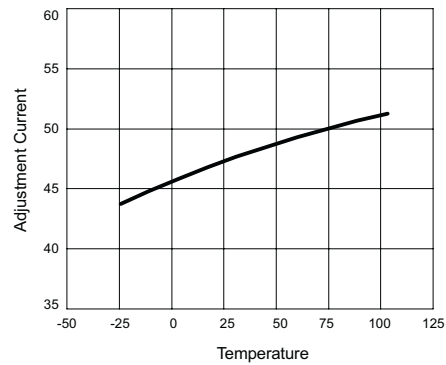


Fig.3 Dropout Voltage vs Input-Output Voltage Difference

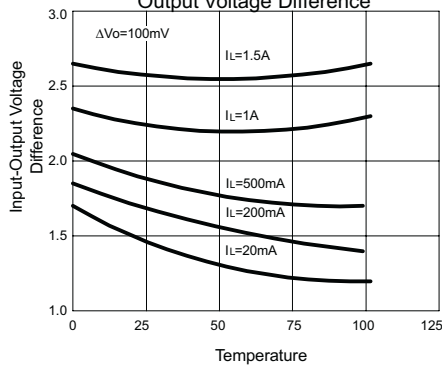
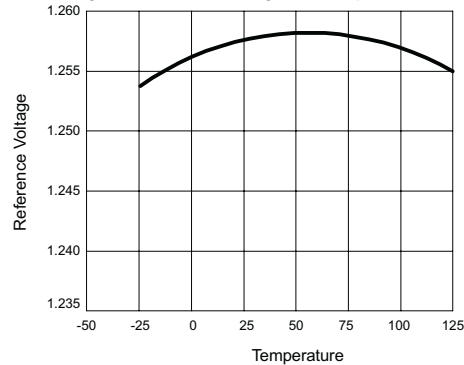


Fig.4 Reference Voltage vs Temperature



**APPLICATION CIRCUIT**

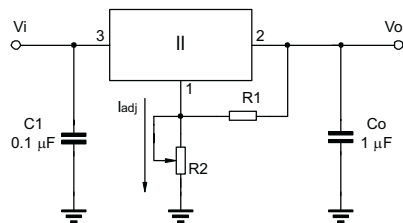


Fig.5 Programmable voltage regulator  
 $V_o = 1.25V \cdot (1 + R_2/R_1) + I_{adj} \cdot R_2$   
 C1 is required when regulator is located an appreciated distance from power supply. Co is needed to improve transient response.

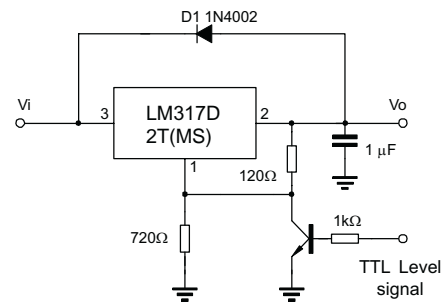


Fig.6 Regulator with On-off control

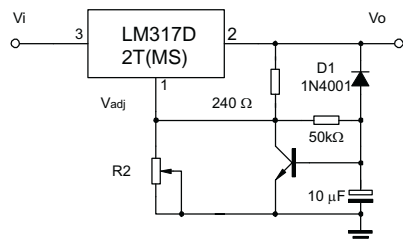


Fig.7 Soft start application

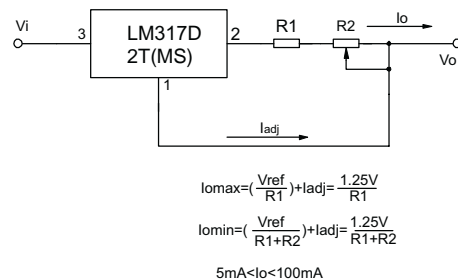
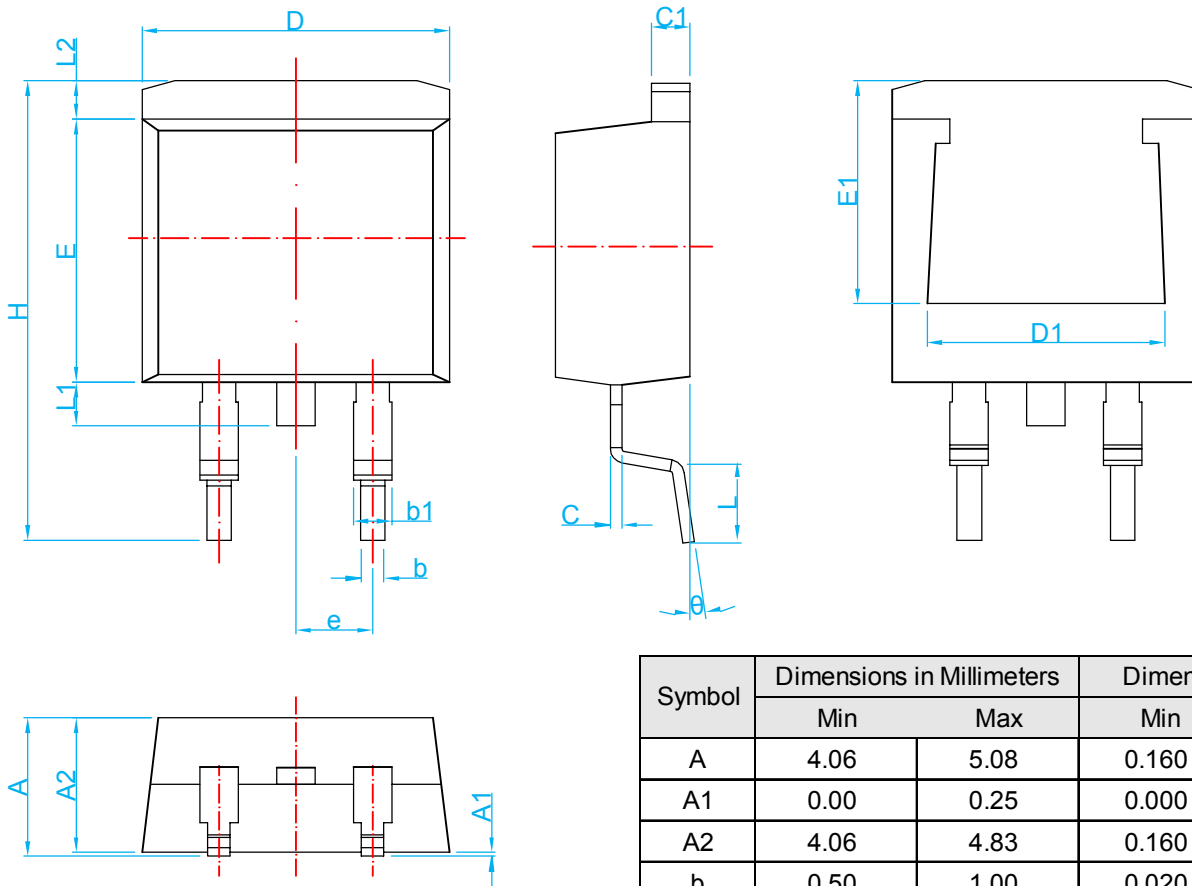


Fig.8 Constant current application

**Package Outline Dimensions**



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	4.06	5.08	0.160	0.200
A1	0.00	0.25	0.000	0.010
A2	4.06	4.83	0.160	0.190
b	0.50	1.00	0.020	0.039
b1	1.14	1.78	0.045	0.070
C	0.33	0.74	0.013	0.029
C1	1.14	1.67	0.045	0.066
D	9.65	10.67	0.380	0.420
D1	6.23	---	0.245	---
E	8.38	9.66	0.330	0.380
E1	6.86	---	0.270	---
H	14.60	15.88	0.575	0.625
e	2.54 TYP		0.100 TYP	
L	1.78	2.84	0.070	0.112
L1	1.20	1.78	0.047	0.070
L2	1.17	1.68	0.046	0.066
θ	0°	8°	0°	8°

**REEL SPECIFICATION**

P/N	PKG	QTY
LM317D2T(MS)	TO-263	1000

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