

## DESCRIPTIONS:

The LM3373CD-TD are adjustable 3-terminal negative voltage regulators capable of supplying in excess of  $-1.5A$  over an output voltage

range of  $-1.2V$  to  $-37V$ . These regulators are exceptionally easy to apply, requiring only 2 external resistors to set the output voltage and 1 output capacitor for frequency compensation. The circuit design has been optimized for excellent regulation and low thermal transients.

The LM3373CD-TD serve a wide variety of applications including local

on-card regulation, programmable-output voltage regulation or precision current regulation. The LM3373CD-TD is ideal complements to

the LM3373CD-TD adjustable positive regulators.



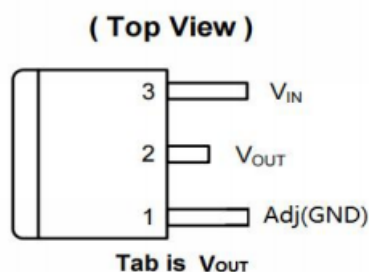
TO-263

## FEATURES

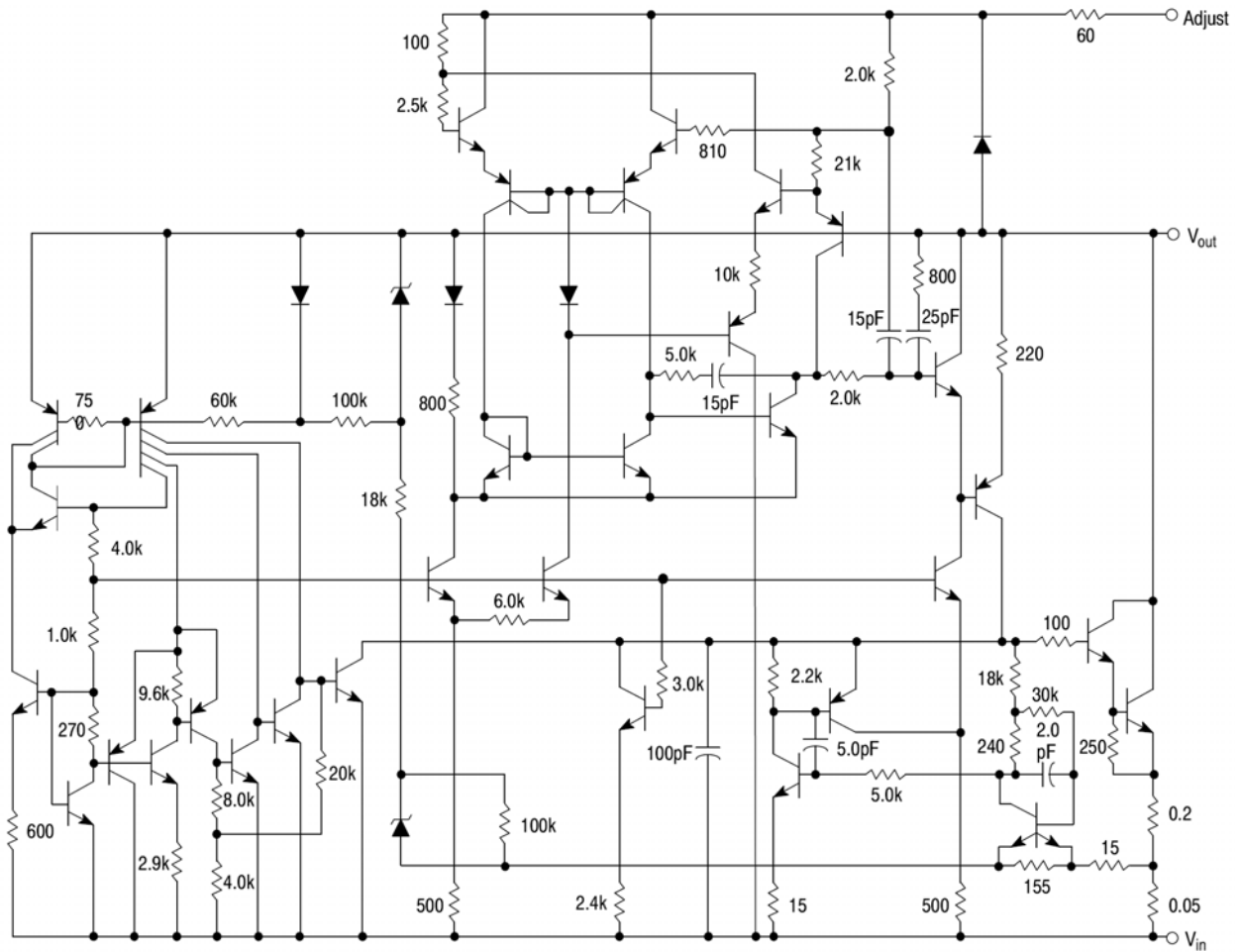
- Output voltage adjustable from  $-1.2V$  to  $-37V$
- 1.5A output current guaranteed,  $-55^{\circ}C$  to  $+150^{\circ}C$
- Line regulation typically 0.01%/V
- Excellent thermal regulation, 0.002%/W
- Excellent rejection of thermal transients
- Temperature-independent current limit
- Internal thermal overload protection
- 77 dB ripple rejection
- 50 ppm/ $^{\circ}C$  temperature coefficient
- Load regulation typically 0.3%
- P+ Product Enhancement tested
- Output is short circuit protected

## PI N CONFIGURATION

TO263-3L



## BLOCK DIAGRAM



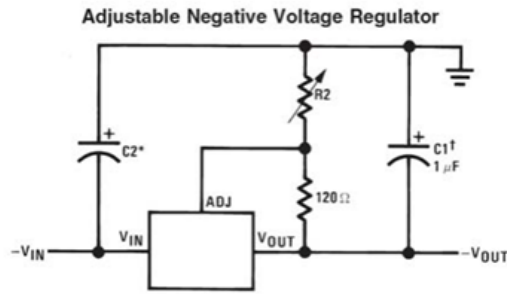
## ABSOLUTE MAXIMUM RATINGS \*1

Characteristic	Value	Unit
Power dissipation	Internally limited	
Input-output voltage differential	40	V
Operating junction temperature range	0 ~ +125	°C
Storage temperature	-65 ~ +150	°C
Lead temperature (soldering, 10 sec.)	300	°C
Plastic package (soldering, 4 sec.)	260	°C
ESD rating	2k	Volts

## ELECTRICAL CHARACTERISTICS \*1

Characteristics	Test conditions	Min	Typ	Max	Unit
Line regulation	$T_j=25^{\circ}\text{C}, 3\text{V} \leq  V_{\text{IN}}-V_{\text{OUT}}  \leq 40\text{V}$ *2 $I_L=10\text{mA}$		0.01	0.04	%/V
Load regulation	$T_j=25^{\circ}\text{C}, 10\text{mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$		0.3	1.0	%
Thermal regulation	$T_j=25^{\circ}\text{C}, 10\text{ms pulse}$		0.003	0.04	%/W
Adjustment pin current			65	100	$\mu\text{A}$
Adjustment pin current charge	$10\text{mA} \leq I_L \leq I_{\text{MAX}}, T_A=25^{\circ}\text{C}$ $3\text{V} \leq  V_{\text{IN}}-V_{\text{OUT}}  \leq 40\text{V}$		2	5	$\mu\text{A}$
Reference voltage	$T_j=25^{\circ}\text{C}$ *3 $3\text{V} \leq  V_{\text{IN}}-V_{\text{OUT}}  \leq 40\text{V}$ *3 $10\text{mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}, P \leq P_{\text{MAX}}$	-1.213 -1.200	-1.250 -1.250	-1.287 -1.300	V
Line regulation	$3\text{V} \leq  V_{\text{IN}}-V_{\text{OUT}}  \leq 40\text{V}$ *2		0.02	0.07	%/V
Load regulation	$10\text{mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$ *2		0.3	1.5	%
Temperature stability	$T_{\text{MIN}} \leq T_j \leq T_{\text{MAX}}$		0.6		%
Minimum load current	$ V_{\text{IN}}-V_{\text{OUT}}  \leq 40\text{V}$ $ V_{\text{IN}}-V_{\text{OUT}}  \leq 10\text{V}$		2.5 1.5	10 6	mA
Current limit	$ V_{\text{IN}}-V_{\text{OUT}}  \leq 15\text{V}$ $ V_{\text{IN}}-V_{\text{OUT}}  = 40\text{V}, T_j=25^{\circ}\text{C}$	1.5 0.15	2.2 0.4	3.7	A
RMS output noise,% of $V_{\text{OUT}}$	$T_j=25^{\circ}\text{C}, 10\text{Hz} \leq f \leq 10\text{kHz}$		0.003		%
Ripple rejection ratio	$V_{\text{OUT}}=-10\text{V}, f=120\text{Hz}$ $C_{\text{ADJ}}=10\mu\text{F}$	66	60 77		dB
Long-term stability	$T_j=125^{\circ}\text{C}, 1000\text{ Hours}$		0.3	1	%

## TYPICAL APPLICATION



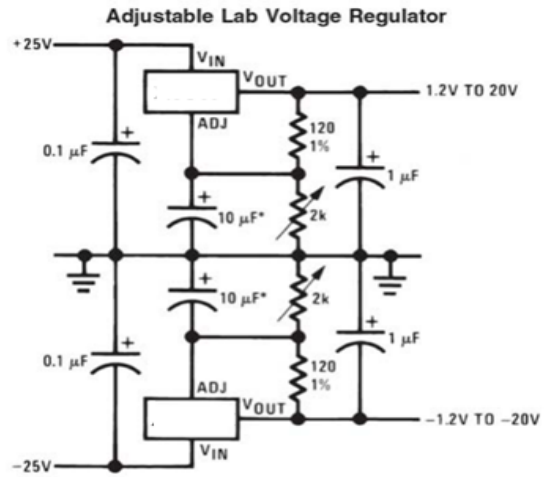
Full output current not available at high input-output voltages

$$-V_{OUT} = -1.25V \left( 1 + \frac{R_2}{120} \right) + (-I_{ADJ} \times R_2)$$

†C1 = 1 μF solid tantalum or 10 μF aluminum electrolytic required for stability

\*C2 = 1 μF solid tantalum is required only if regulator is more than 4" from power-supply filter capacitor

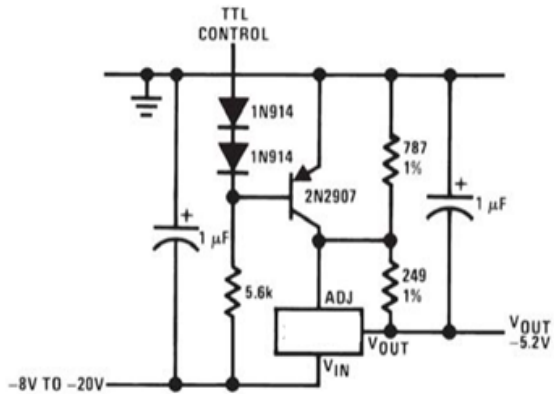
Output capacitors in the range of 1 μF to 1000 μF of aluminum or tantalum electrolytic are commonly used to provide improved output impedance and rejection of transients



Full output current not available at high input-output voltages

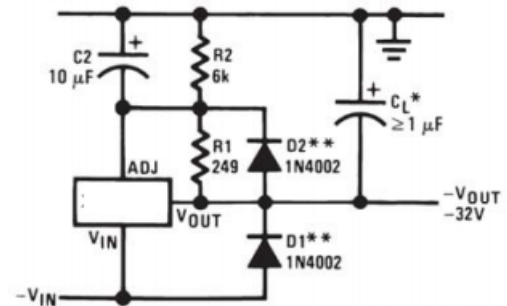
\*The 10 μF capacitors are optional to improve ripple rejection

### -5.2V Regulator with Electronic Shutdown\*



\*Minimum output = -1.3V when control input is low

### Negative Regulator with Protection Diodes

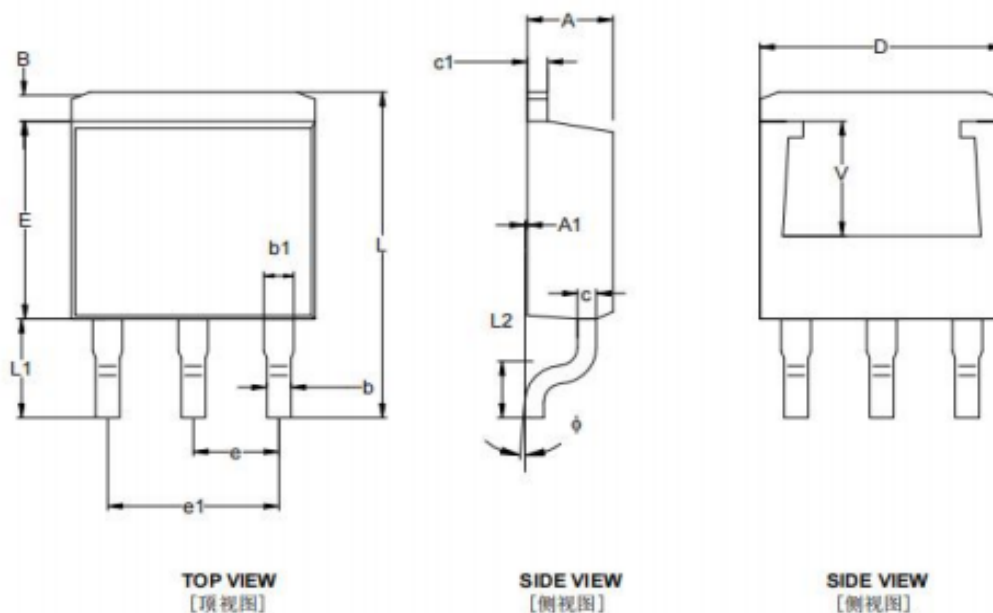


\*When  $C_L$  is larger than 20 μF, D1 protects the 7833K in case the input supply is shorted

\*\*When  $C_2$  is larger than 10 μF and  $-V_{OUT}$  is larger than -25V, D2 protects the 7833K in case the output is shorted

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Unit:mm



编号	尺寸 (mm)		
	Min	TYP	Max
A	4.470	4.570	4.670
A1	0.000	0.075	0.150
B	1.120	1.270	1.420
b	0.710	0.810	0.910
b1	1.170	1.270	1.370
c	0.310	0.420	0.530
c1	1.170	1.270	1.370
D	10.010	10.160	10.310
E	8.700	9.050	9.400
e	2.540TYP		
e1	4.980	5.080	5.180
L	14.940	15.220	15.500
L1	4.950	5.200	5.450
L2	2.340	2.540	2.740
V	5.600REF		
$\phi$	0°	4°	8°