

### 3-TERMINAL 0.1A POSITIVE ADJUSTABLE REGULATOR

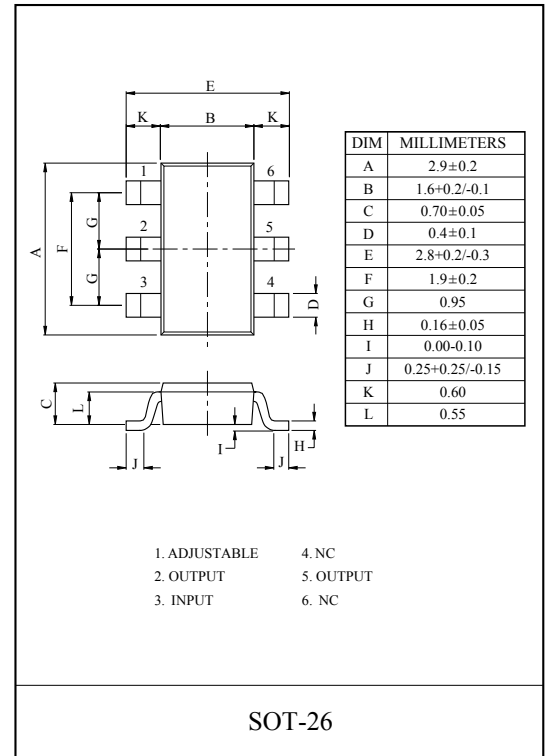
The FR317LSC is adjustable 3-terminal positive voltage regulator capable of supplying in excess of 100mA over a 1.2V to 18.5V output range.

This is exceptionally easy to use and require only two external resistors to set the output voltage.

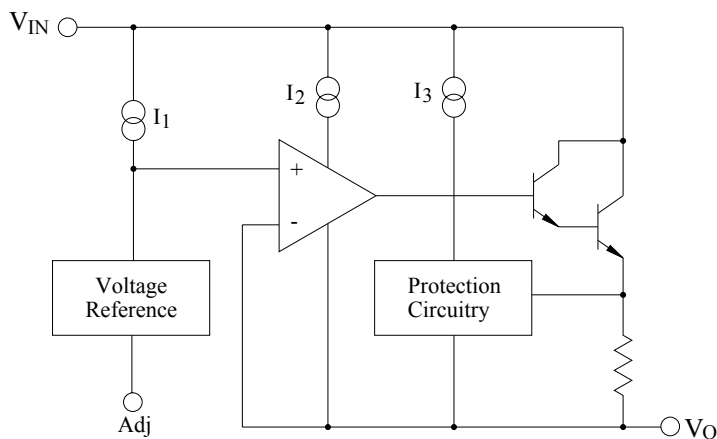
Further, it employ internal current limiting, thermal shutdown and safe area compensation.

#### FEATURES

- Adjustable output between 1.2V and 18.5V
- Guaranteed 100mA output current
- Line regulation typically 0.01%/V
- Load regulation typically 0.1%
- 80dB ripple rejection (with Cadj)
- Internal thermal overload protection
- Internal short-circuit current limiting
- Output transistor safe-area compensation



#### BLOCK DIAGRAM





# FR317LSC

## MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Input-Output Voltage Differential	$V_{IN} - V_{OUT}$	18.5	V
Power Dissipation (With infinite heat sink)	$P_D$	Internally limited	W
Operating Temperature	$T_{opr}$	-40 ~ 125	°C
Storage Temperature	$T_{stg}$	-65 ~ 150	°C

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

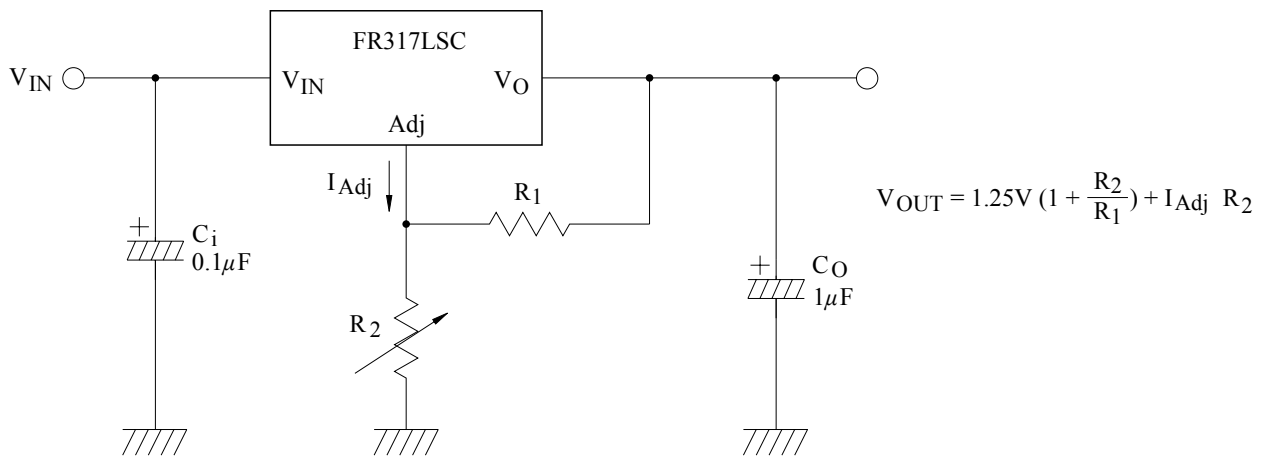
( $V_I - V_O = 3V$ ,  $I_O = 40mA$ ,  $-10°C \leq T_j \leq 125°C$ , unless otherwise specified.)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Line Regulation	$\Delta V_O(\text{Line})$	$3V \leq V_{IN} - V_{OUT} \leq 18.5V$	-	-	180	mV
Load Regulation	$\Delta V_O(\text{Load})$	$10mA \leq I_{OUT} \leq I_{MAX}$	-	-	10	mV
Adjustable Pin Current	$I_{Adj}$		10	-	100	$\mu A$
Adjustable Pin Current Change	$\Delta I_{Adj}$	$10mA \leq I_O \leq I_{MAX}$ , $3V \leq V_{IN} - V_{OUT} \leq 18.5V$	-	-	15	$\mu A$
Reference Voltage	$V_{ref}$	$10mA \leq I_O \leq I_{MAX}$ , $3V \leq V_{IN} - V_{OUT} \leq 18.5V$ , $P \leq P_{MAX}$	1.20	-	1.30	V
Minimum Load Current to Maintain Regulation	$I_{O(MIN)}$	$(V_{IN} - V_{OUT}) = 18.5V$	-	-	10	mA
Current Limit	$I_{O(MAX)}$	$(V_{IN} - V_{OUT}) = 3.0V$ , $P \leq P_{MAX}$	0.1	-	0.3	A
		$(V_{IN} - V_{OUT}) = 18.5V$ , $P \leq P_{MAX}$ , $T_a = 25°C$	0.025	-	0.15	A
Ripple Rejection Ratio	RR	$V_O = 10V$ , $f = 120Hz$	66	-	-	dB

Note : Load and line regulation are specified at constant junction temperature.

Change in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty is used. ( $P_{MAX} = 20W$ )

## TYPICAL APPLICATION (PROGRAMMABLE REGULATOR)



$C_i$  is required when regulator is located an appreciable distance from power supply filter.

$C_o$  is not needed for stability, however, in the range of  $1\mu F$  to  $100\mu F$  of aluminum or tantalum electrolytic are commonly used to provide improved output impedance and rejection of transients.

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