

XL217 SOP8 / XT217 TO92

Datasheet - production data

Features

- Output voltage range: 1.2 to 37 V
- Output current in excess of 100 mA
- Output current up to 100 mA
- Line regulation typ. 0.01%
- Load regulation typ. 0.1%
- Thermal overload protection
- Short-circuit protection
- Output transition safe area compensation
- Floating operation for high voltage applications

Description

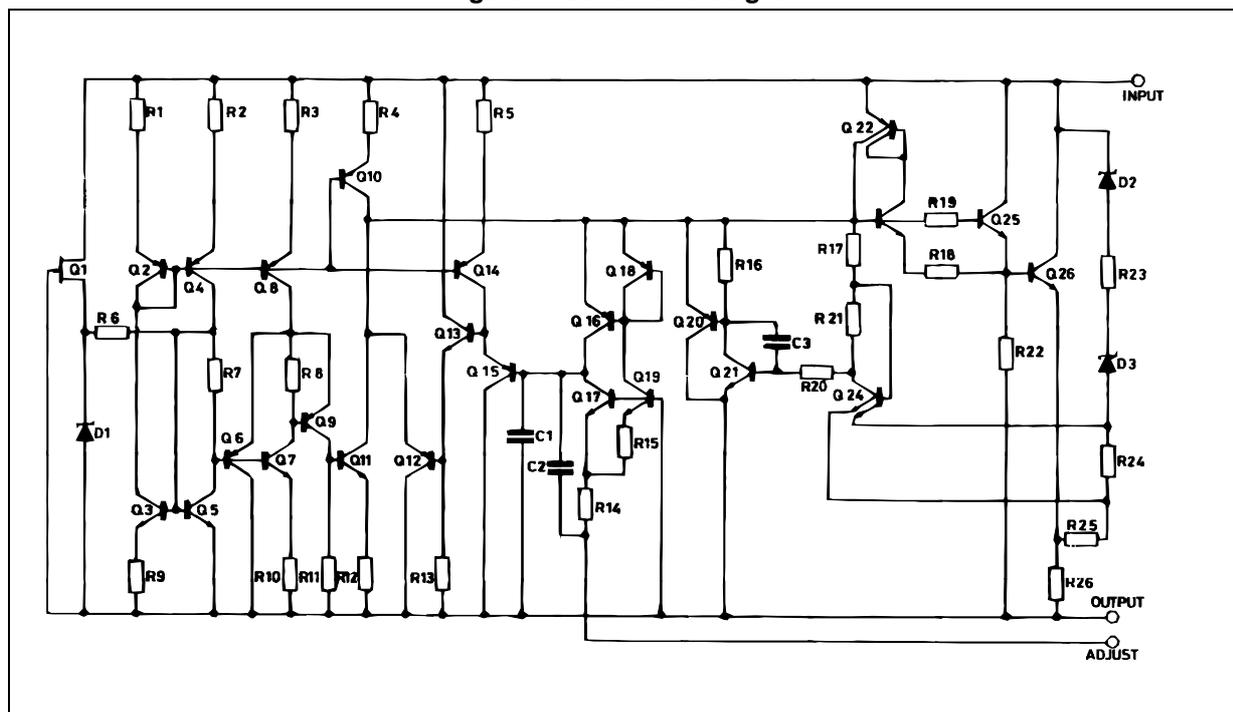
The XL217 are monolithic integrated circuits in SO-8 and TO-92 packages intended for use as positive adjustable voltage regulators. They are designed to supply up to 100 mA of load current with an output voltage adjustable over a 1.2 to 37 V range. The nominal output voltage is selected by means of only a resistive divider, making the device exceptionally easy to use and eliminating the stocking of many fixed regulators.

Table 1. Device summary

Order codes	
SO-8 (tape and reel)	TO-92 (Bag)
XL217	
XL217	XT217

1 Diagram

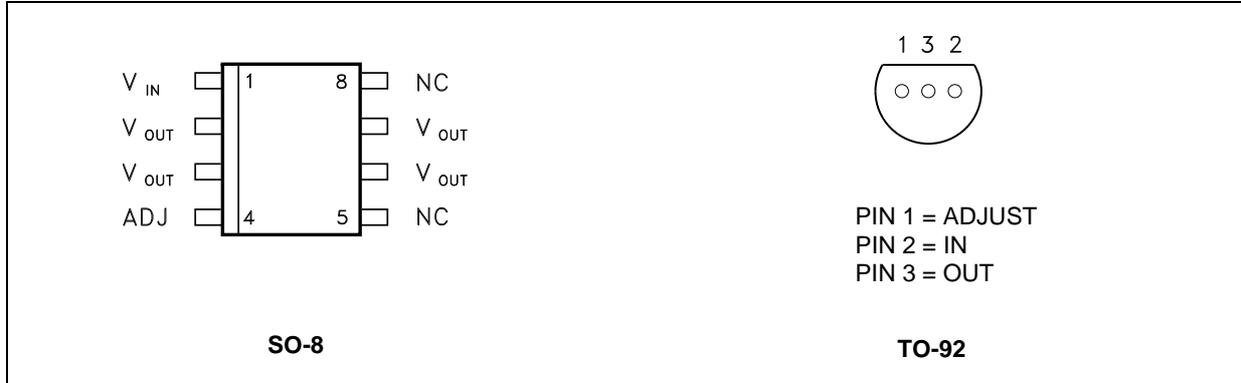
Figure 1. Schematic diagram



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2 Pin configuration

Figure 2. Pin connections (top view for SO-8, bottom view for TO-92)

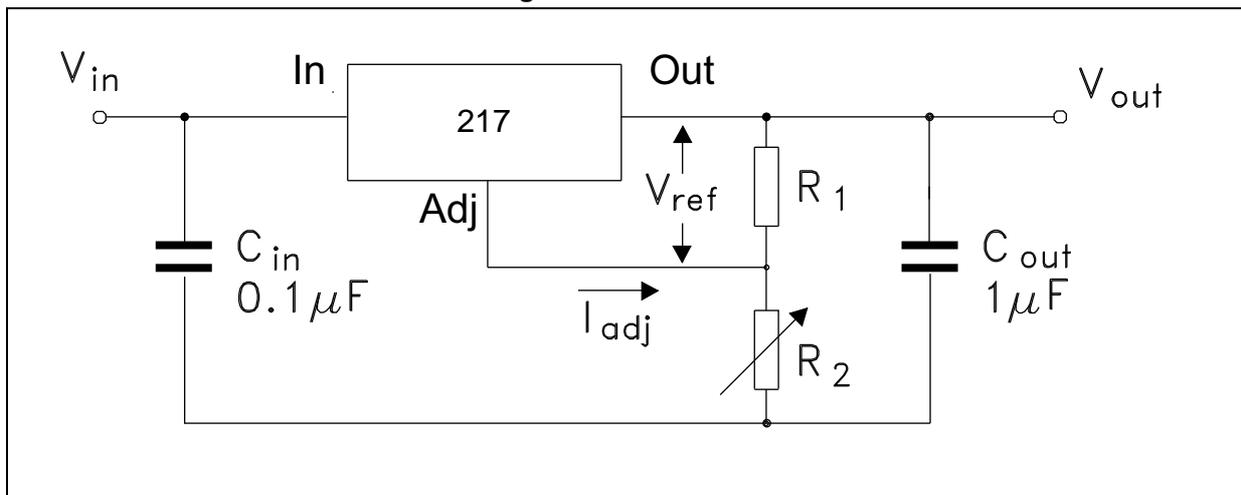


3 Maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_I-V_O	Input-output differential voltage	40	V
P_D	Power dissipation	Internally limited	mW
T_{OP}	Operating junction temperature range	for XL217	-40 to 125
		for XT217	0 to 125
T_{STG}	Storage temperature range	-55 to 150	°C

Figure 3. Test circuit



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4 Electrical characteristics

(Refer to the test circuits, $T_J = -40$ to 125°C , $V_I - V_O = 5$ V, $I_O = 40$ mA, unless otherwise specified)

Table 3. Electrical characteristics of XL217

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
DV_O	Line regulation	$V_I - V_O = 3$ to 40 V, $I_L = 20$ mA	$T_J = 25^\circ\text{C}$		0.01	0.02	%V
					0.02	0.05	
DV_O	Load regulation	$V_O \leq 5$ V, $I_O = 5$ to 100 mA	$T_J = 25^\circ\text{C}$		5	15	mV
					20	50	
		$V_O \geq 5$ V, $I_O = 5$ to 100 mA	$T_J = 25^\circ\text{C}$		0.1	0.3	%
					0.3	1	
I_{ADJ}	Adjustment pin current			50	100	μA	
DI_{ADJ}	Adjustment pin current	$V_I - V_O = 3$ to 40 V, $I_O = 5$ to 100 mA $P_d < 625$ mW		0.2	5	μA	
V_{REF}	Reference voltage	$V_I - V_O = 3$ to 40 V, $I_O = 10$ to 500 mA $P_d < 625$ mW	1.2	1.25	1.3	V	
DV_O/V_O	Output voltage temperature stability			0.7		%	
$I_{O(\min)}$	Minimum load current	$V_I - V_O = 40$ V		3.5	5	mA	
$I_{O(\max)}$	Maximum output current	$V_I - V_O = 3$ to 13 V	100	200		mA	
		$V_I - V_O = 40$ V		50			
eN	Output noise voltage	B = 10 Hz to 10 KHz, $T_J = 25^\circ\text{C}$		0.003		%	
SVR	Supply voltage rejection ⁽¹⁾	$T_J = 25^\circ\text{C}$ $f = 120$ Hz	$C_{ADJ} = 0$		65	dB	
			$C_{ADJ} = 10$ μF	66	80		

1. C_{ADJ} is connected between adjust pin and ground.

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(Refer to the test circuits, $T_J = 0$ to 125°C , $V_I - V_O = 5$ V, $I_O = 40$ mA, unless otherwise specified)

Table 4. Electrical characteristics of XL217

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	
DV_O	Line regulation	$V_I - V_O = 3$ to 40 V, $I_L < 20$ mA		$T_J = 25^\circ\text{C}$	0.01	0.04	%V
					0.02	0.07	
DV_O	Load regulation	$V_O \leq 5$ V, $I_O = 5$ to 100 mA		$T_J = 25^\circ\text{C}$	5	25	mV
					20	70	
		$V_O \geq 5$ V, $I_O = 5$ to 100 mA		$T_J = 25^\circ\text{C}$	0.1	0.5	%
					0.3	1.5	
I_{ADJ}	Adjustment pin current			50	100	μA	
DI_{ADJ}	Adjustment pin current	$V_I - V_O = 3$ to 40 V, $I_O = 5$ to 100 mA $P_d < 625$ mW		0.2	5	μA	
V_{REF}	Reference voltage	$V_I - V_O = 3$ to 40 V, $I_O = 5$ to 100 mA $P_d < 625$ mW	1.2	1.25	1.3	V	
DV_O/V_O	Output voltage temperature stability			0.7		%	
$I_{O(\min)}$	Minimum load current	$V_I - V_O = 40$ V		3.5	5	mA	
$I_{O(\max)}$	Maximum output current	$V_I - V_O = 3$ to 13 V	100	200		mA	
		$V_I - V_O = 40$ V		50			
eN	Output noise voltage	$B = 10$ Hz to 10 KHz, $T_J = 25^\circ\text{C}$		0.003		%	
SVR	Supply voltage rejection ⁽¹⁾	$T_J = 25^\circ\text{C}$ $f = 120$ Hz	$C_{ADJ} = 0$		65	dB	
			$C_{ADJ} = 10$ μF	66	80		

1. C_{ADJ} is connected between adjust pin and ground.

5 Typical performance

Figure 4. Current limit

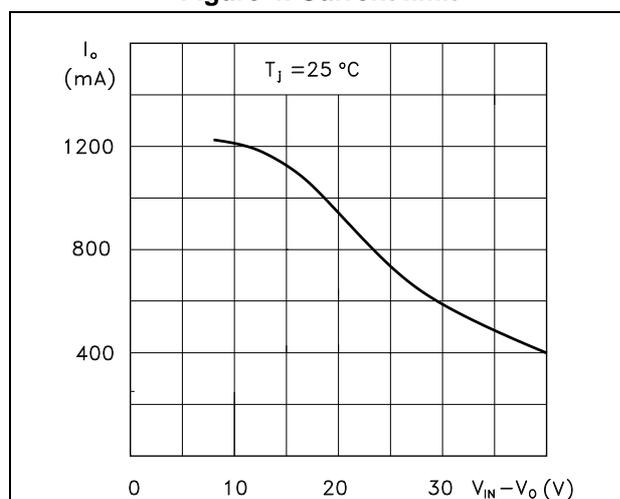
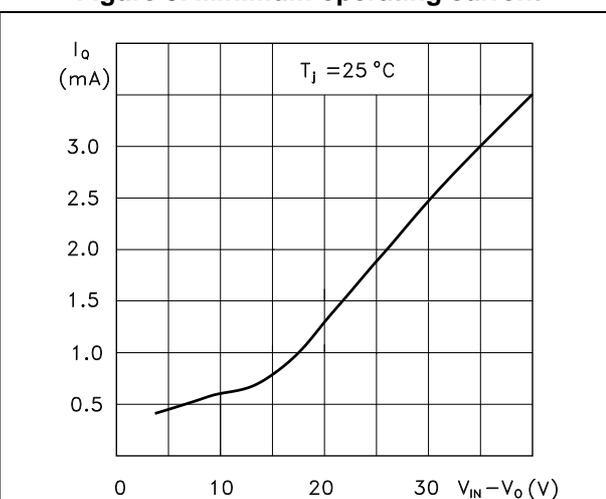


Figure 5. Minimum operating current



6 Application information

The XL217 provides an internal reference voltage of 1.25 V between the output and adjustments terminals. This is used to set a constant current flow across an external resistor divider (see *Figure 6.*), giving an output voltage V_O of:

$$V_O = V_{REF} (1 + R_2/R_1) + I_{ADJ} R_2$$

The device was designed to minimize the term I_{ADJ} (100 μ A max) and to maintain it very constant with line and load changes. Usually, the error term $I_{ADJ} \times R_2$ can be neglected. To obtain the previous requirement, all the regulator quiescent current is returned to the output terminal, imposing a minimum load current condition. If the load is insufficient, the output voltage will rise.

Since the XL217 is a floating regulator and "sees" only the input-to-output differential voltage, supplies of very high voltage with respect to ground can be regulated as regulator as the maximum input-to-output differential is not exceeded. Furthermore, programmable regulators are easily obtainable and, by connecting a fixed resistor between the adjustment and output, the device can be used as a precision current regulator. In order to optimize the load regulation, the current set resistor R_1 (see *Figure 6.*) should be tied as close as possible to the regulator, while the ground terminal of R_2 should be near the ground of the load to provide remote ground sensing.

7 Application circuits

Figure 6. Basic adjustable regulator

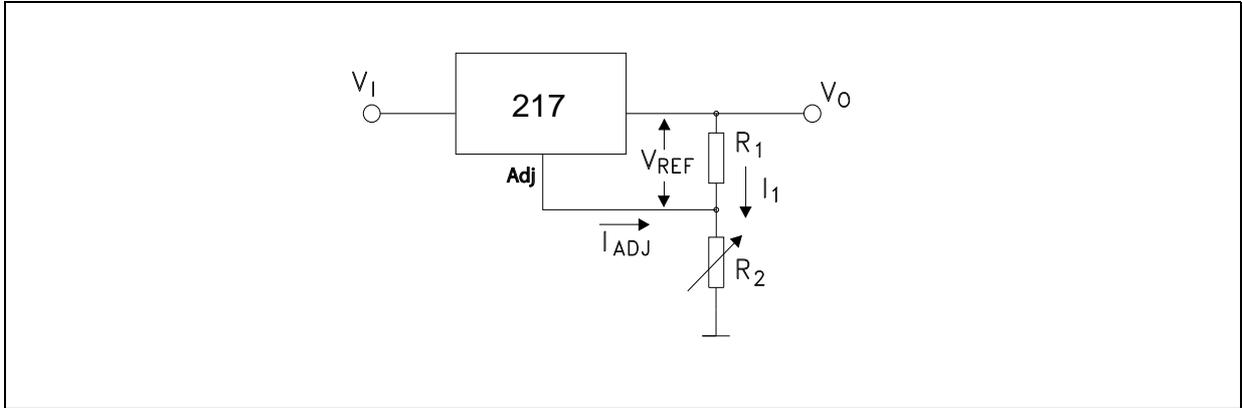


Figure 7. Voltage regulator with protection diodes

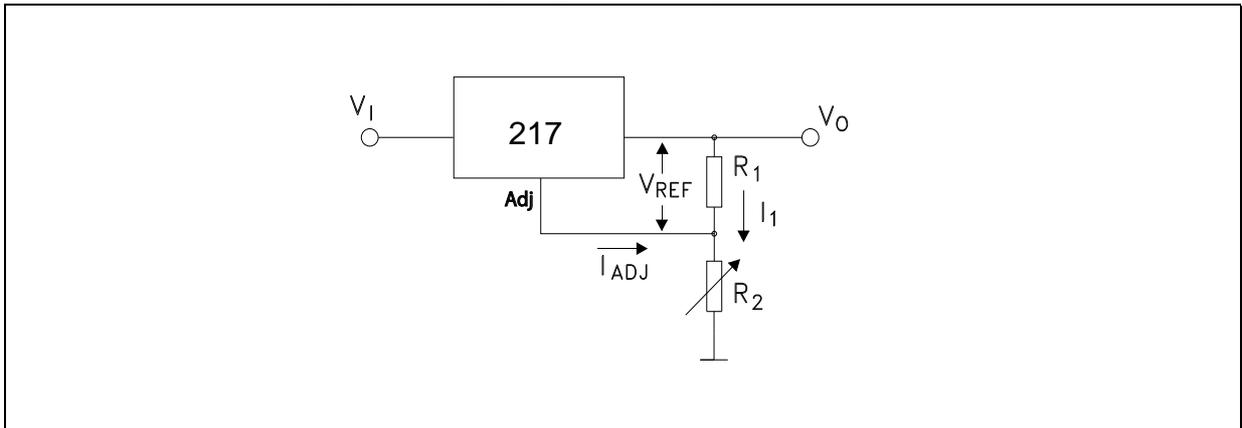
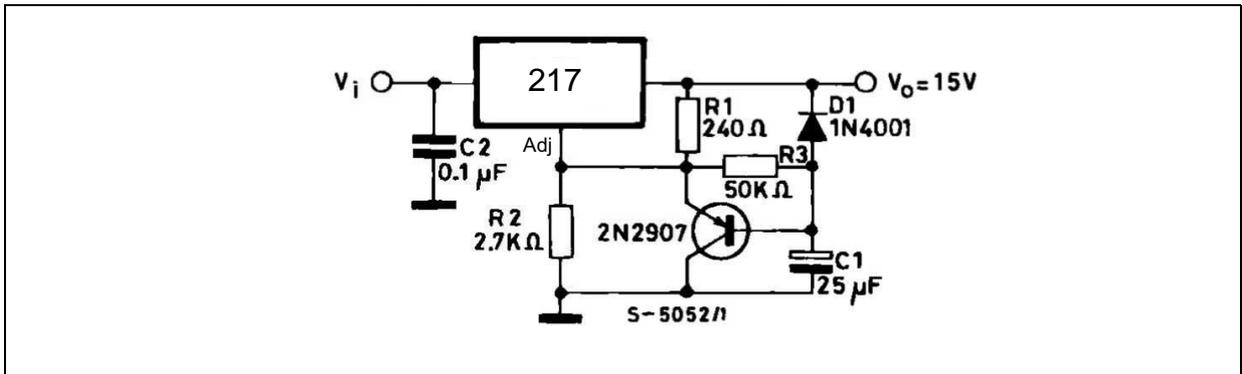
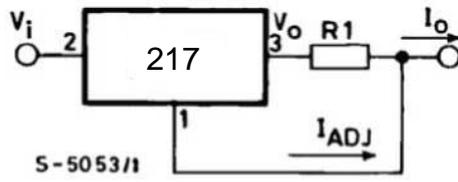


Figure 8. Slow turn-on 15 V regulator



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Figure 9. Current regulator



$$I_O = V_{REF}/R_1 + I_{ADJ} = 1.25V/R_1$$

Figure 10. 5 V Electronic shut-down regulator

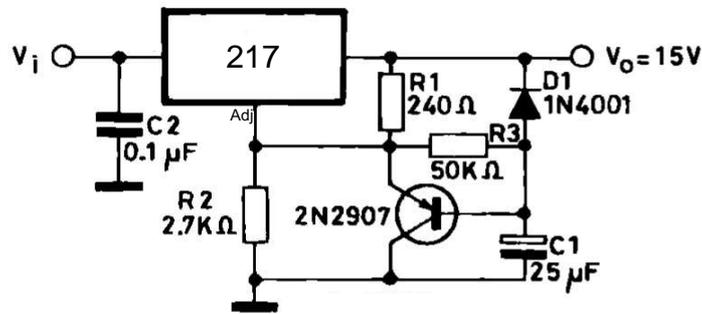
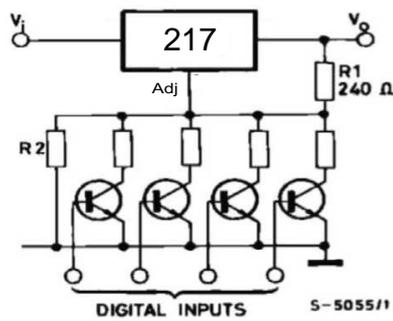
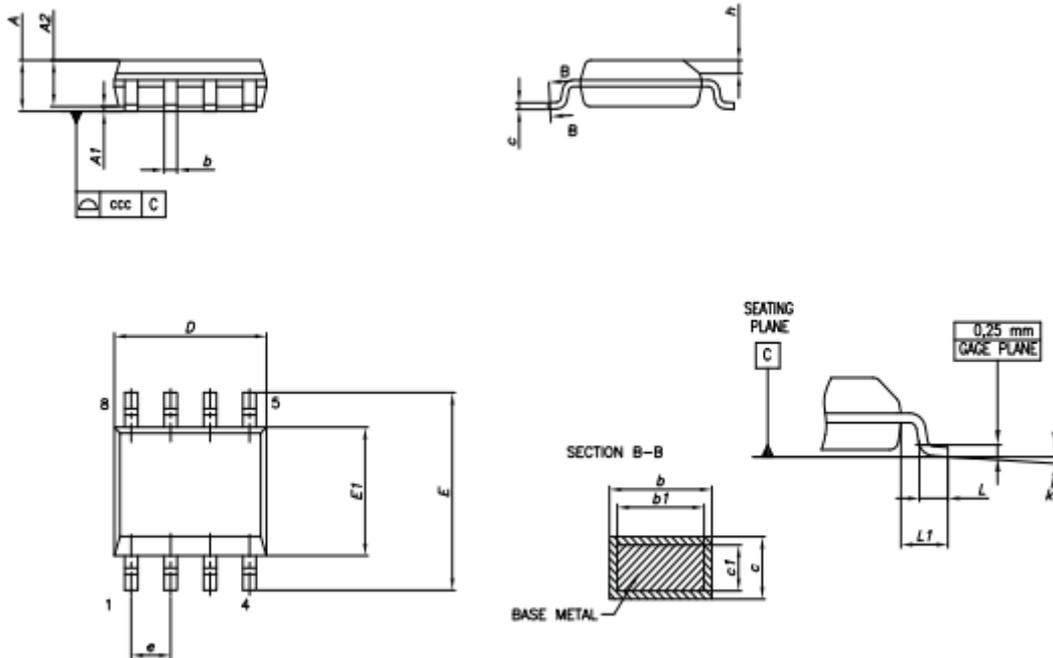


Figure 11. Digitally selected outputs



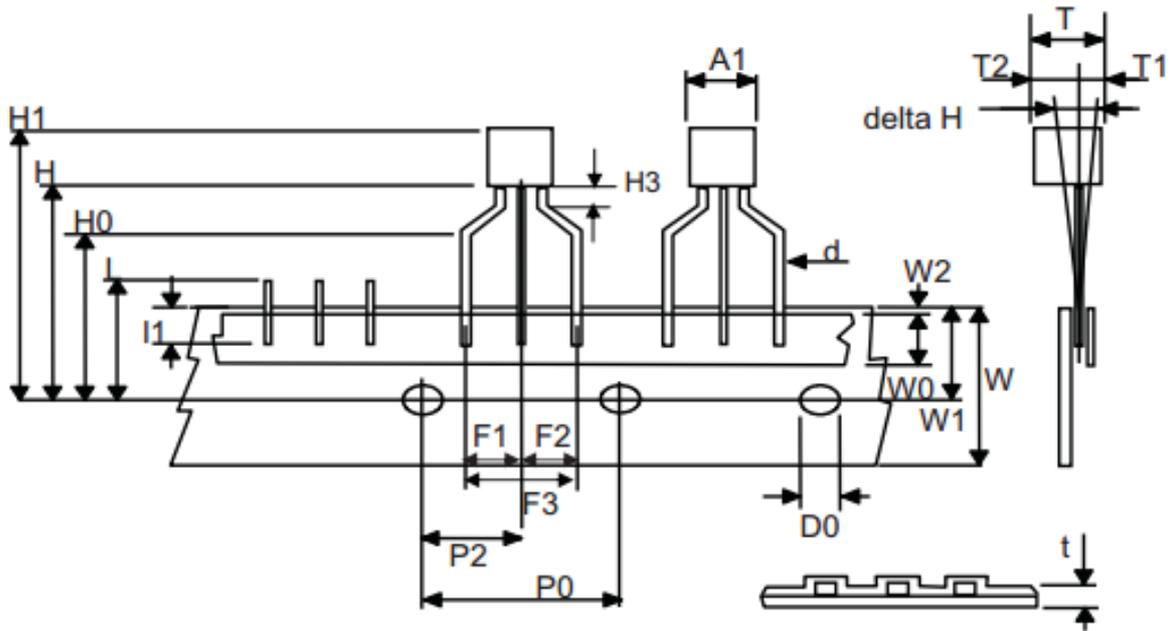
(R_2 = sets maximum V_o)

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Dim.	mm		
	Min.	Typ.	Max.
A			1.75
A1	0.10		0.25
A2	1.25		
b	0.31		0.51
b1	0.28		0.48
c	0.10		0.25
c1	0.10		0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e		1.27	
h	0.25		0.50
L	0.40		1.27
L1		1.04	
L2		0.25	
k	0°		8°
ccc			0.10

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以上信息仅供参考. 如需帮助联系客服人员。谢谢 XINLUDA