

3A LOW DROPOUT POSITIVE REGULATOR

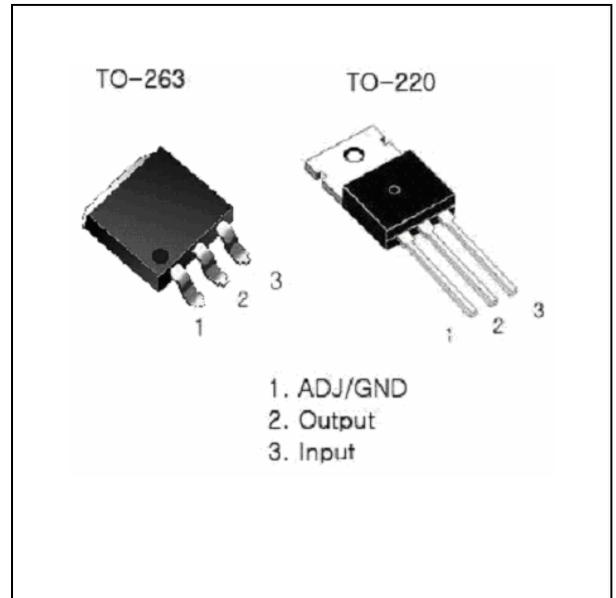
IL1085-XX

Features

- Output Current : 3A
- Maximum Input Voltage : 7V
- Adjustable Output Voltage or Fixed
1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 3.6V, 5.0V
- Current Limiting and Thermal Protection
- Standard 3-Pin Power Packages

Applications

- Post Regulator for Switching DC/DC Converter
- High Efficiency Liner Regulators
- Battery Charger



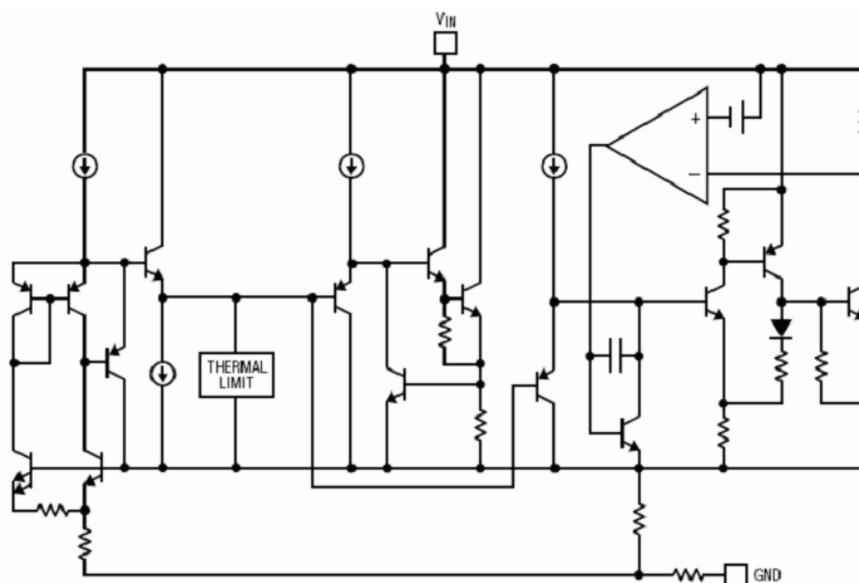
Absolute Maximum Ratings (Note 1)

Symbol	Parameter	Value	Unit
Tstg	Storage Temperature Range	-65 to +150	°C
Top	Operating Junction Temperature Range (Note 3)	-10 to +125	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

Power Dissipation (Note 2) Internally Limited

Block Diagram



Electrical Characteristics

Typicals and limits appearing in normal type apply for Tj= +25°C.

Limits appearing in **Boldface** type apply over the entire junction temperature range for operation.

Symbol	Parameter	Conditions	Min (Note 5)	Typ (Note 4)	Max (Note 5)	Units
V _{OUT}	Output Voltage (Note 6) IL1085BT3-Adj	I _{OUT} =10mA, V _{IN} =4.25V	1.237	1.250	1.263	V
		0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 2.75V ≤ V _{IN} ≤ 7.0V	1.232	1.250	1.268	
			1.225	1.250	1.275	
	IL1085BT3-1.5	I _{OUT} =10mA, V _{IN} =4.5V	1.485	1.500	1.515	
		0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 3.0V ≤ V _{IN} ≤ 7.0V	1.478	1.500	1.522	
			1.470	1.500	1.530	
	IL1085BT3-1.8	I _{OUT} =10mA, V _{IN} =4.8V	1.782	1.800	1.818	
		0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 3.3V ≤ V _{IN} ≤ 7.0V	1.773	1.800	1.827	
			1.764	1.800	1.836	
IL1085BT3-2.5	I _{OUT} =10mA, V _{IN} =5.5V	2.475	2.500	2.525		
	0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 4.0V ≤ V _{IN} ≤ 7.0V	2.463	2.500	2.537		
		2.450	2.500	2.550		
IL1085BT3-2.85	I _{OUT} =10mA, V _{IN} =5.85V	2.820	2.850	2.880		
	0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 4.35V ≤ V _{IN} ≤ 7.0V	2.805	2.850	2.895		
		2.790	2.850	2.910		
IL1085BT3-3.3	I _{OUT} =10mA, V _{IN} =6.3V	3.270	3.300	3.330		
	0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 4.8V ≤ V _{IN} ≤ 7.0V	3.250	3.300	3.350		
		3.235	3.300	3.365		
IL1085BT3-3.6	I _{OUT} =10mA, V _{IN} =6.6V	3.564	3.600	3.636		
	0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 5.1V ≤ V _{IN} ≤ 7.0V	3.546	3.600	3.654		
		3.528	3.600	3.672		
IL1085BT3-5.0		I _{OUT} =10mA, V _{IN} =7.0V	4.950	5.000	5.050	
		0 ≤ I _{OUT} ≤ I _{FULL LOAD} , 6.5V ≤ V _{IN} ≤ 7.0V	4.925	5.000	5.075	
			4.900	5.000	5.100	

Electrical Characteristics

Typicals and limits appearing in normal type apply for Tj= +25°C.

Limits appearing in **Boldface** type apply over the entire junction temperature range for operation.

ΔV_{OUT}	Line Regulation (Note 7)		-	-	0.3	%
	IL1085BT3-Adj	$I_{OUT}=10mA, 2.75V \leq V_{IN} \leq 7.0V$	-	-	0.4	
	IL1085BT3-1.5	$I_{OUT}=10mA, 3.0V \leq V_{IN} \leq 7.0V$	-	-	6	mV
	IL1085BT3-1.8	$I_{OUT}=10mA, 3.3V \leq V_{IN} \leq 7.0V$	-	-	10	
	IL1085BT3-2.5	$I_{OUT}=10mA, 4.0V \leq V_{IN} \leq 7.0V$	-	-	6	
	IL1085BT3-2.85	$I_{OUT}=10mA, 4.35V \leq V_{IN} \leq 7.0V$	-	-	10	
	IL1085BT3-3.3	$I_{OUT}=10mA, 4.8V \leq V_{IN} \leq 7.0V$	-	-	6	
	IL1085BT3-3.6	$I_{OUT}=10mA, 5.1V \leq V_{IN} \leq 7.0V$	-	-	10	
	IL1085BT3-5.0	$I_{OUT}=10mA, 6.5V \leq V_{IN} \leq 7.0V$	-	-	6	
				10		
ΔV_{OUT}	Load Regulation (Note 7)		-	-	0.3	%
	IL1085BT3-Adj	$V_{IN}=4.25V, 0 \leq I_{OUT} \leq I_{FULL\ LOAD}$	-	-	0.4	
	IL1085BT3-1.5	$V_{IN}=5.0V, 0 \leq I_{OUT} \leq I_{FULL\ LOAD}$	-	-	12	mV
	IL1085BT3-1.8		-	-	20	
	IL1085BT3-2.5		-	-	15	
	IL1085BT3-2.85		-	-	20	
	IL1085BT3-3.3	$V_{IN}=5.0V, 0 \leq I_{OUT} \leq I_{FULL\ LOAD}$	-	-	15	
IL1085BT3-3.6	$V_{IN}=5.3V, 0 \leq I_{OUT} \leq I_{FULL\ LOAD}$	-	-	25		
IL1085BT3-5.0	$V_{IN}=7.0V, 0 \leq I_{OUT} \leq I_{FULL\ LOAD}$	-	-	20		
				35		
ΔV	Dropout Voltage (Note 8)	$\Delta V_{REF}=1\%, I_{OUT}=3A$	-	-	1.5	V
$I_{O(MIN)}$	Minimum Load Current	$V_{IN}=7.0V$	-	-	10	mA
I_{LIMIT}	Current Limit	$V_{IN}=V_{out}+2V$	3.5	-	-	A
I_{ADJ}	Adjust Pin Current	$V_{IN}=2.75+7.0V, I_{OUT}=10mA$	-	-	120	μA
ΔI_{ADJ}	Adjust Pin Current Change	$I_{OUT}=10mA \pm 3A, V_{IN}=2.75+7.0V$	-	-	5	μA
RR	Ripple Rejection	$f_{RIPPLE} = 120Hz, C_{OUT}=25\mu F$ Tantalum, $I_{out}=3A; V_{IN}=V_{out}+2V$	60	-	-	dB
S	Temperature Stability		-	0.5	-	%

NOTES 1: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Rating indicate conditions for which the device is intended to be functional, but specific performance is not guaranteed. For guaranteed specifications and the test conditions, see the Electrical Characteristics.

NOTES 2: Power Dissipation is kept in a safe range by current limiting circuitry. Refer to Overload Recovery in Application Notes.

NOTES 3: The maximum power dissipation is a function of $T_{j(MAX)}$, Θ_{JA} and T_A . The maximum allowable power dissipation at any ambient temperature is $P_D=(T_{j(MAX)} - T_A)\Theta_{JA}$.

NOTES 4: Typical Values represent the most likely parametric norm

NOTES 5: All limits are guaranteed by testing or statistical analysis

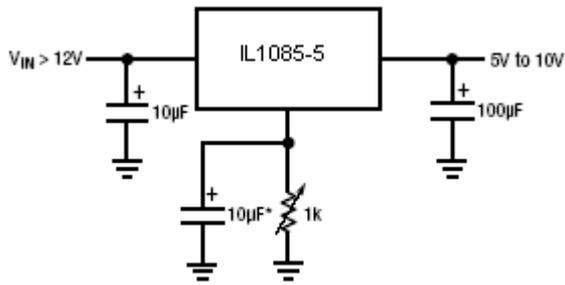
NOTES 6: $I_{FULL\ LOAD}$ is defined in the current limit curves. The $I_{FULL\ LOAD}$ curve defines the current limit as a function of input-to-output voltage.

NOTES 7: Load and Line regulation are measured at constant junction temperature, and are guaranteed up to the maximum power dissipation of 30W. Power dissipation is determined by the input/output differential and the output current. Guaranteed maximum power dissipation will not be available over the full input/output range.

NOTES 8: Dropout voltage is specified over the full output current range of the device.

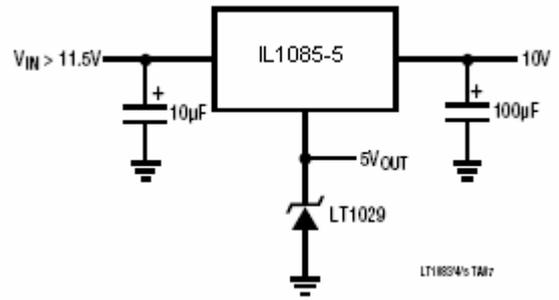
Typical Applications

Adjusting Output Voltage

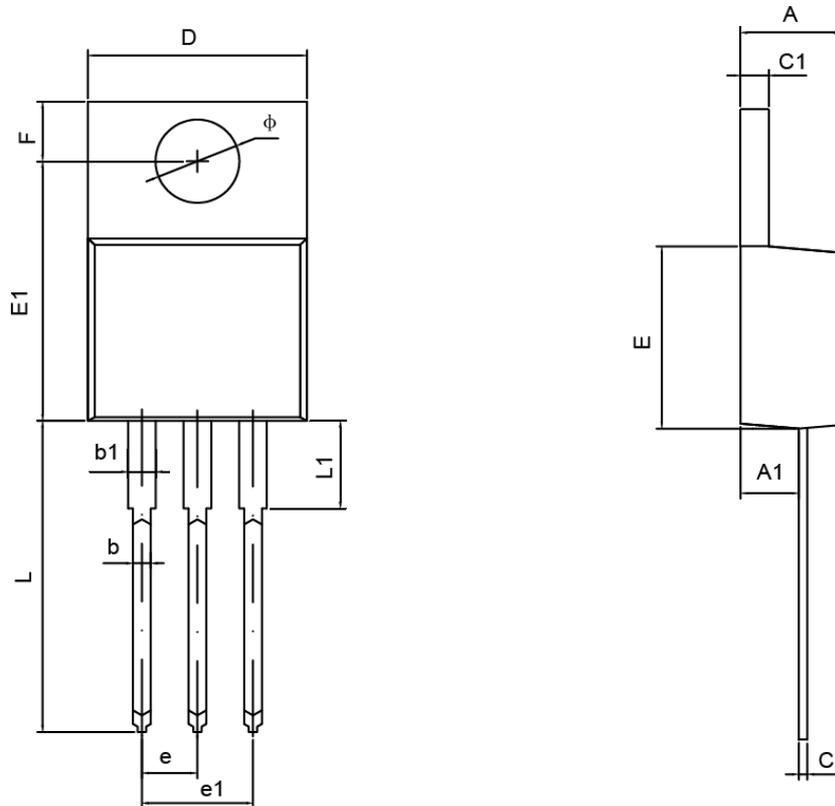


*OPTIONAL IMPROVES RIPPLE REJECTION

Regulator with Reference

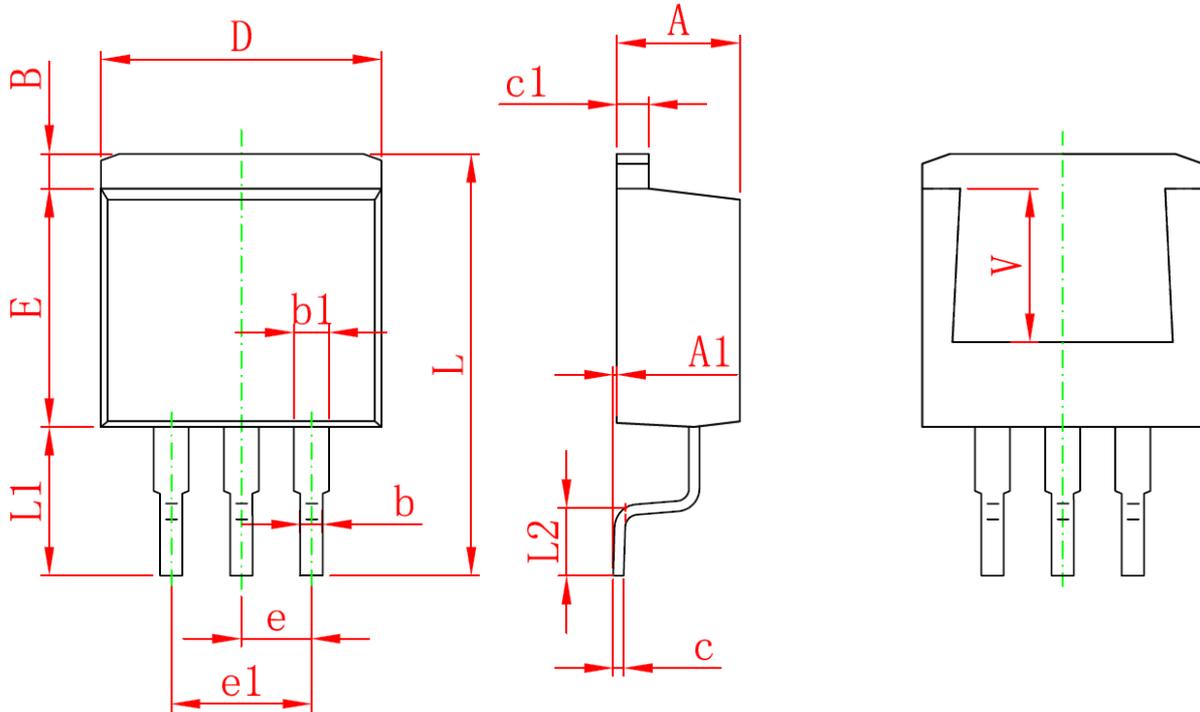


TO-220-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	1.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.710	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540TYP		0.100TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
ϕ	3.790	3.890	0.149	0.153

TO-263-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
V	5.600 REF		0.220 REF	