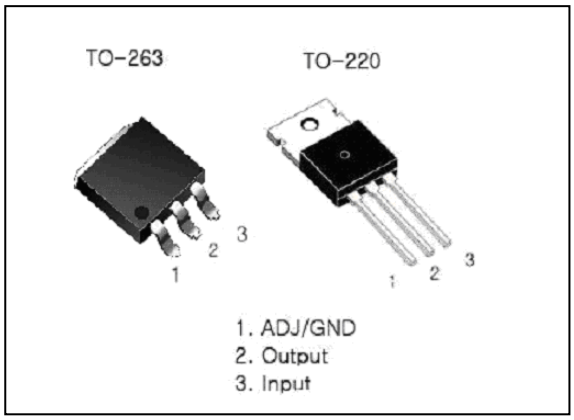
3A LOW DROPOUT POSITIVE REGULATOR

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

ORDERING INFORMATION

Device	Operating Temperature Range	Package	Packing
IL1085xxD2T	T_A = -10° to 125° C for all packages	To-263	Tape&Reel
IL1085xxKB		To-220	Tube

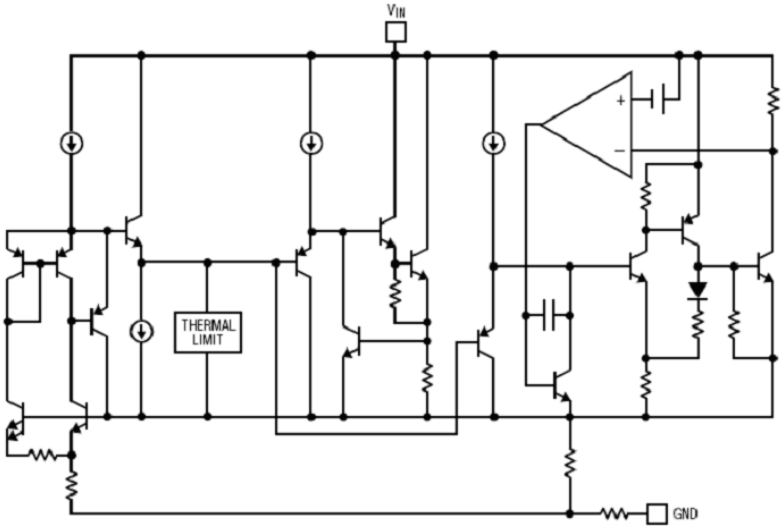
Absolute Maximum Ratings (Note 1)

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

* Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied.
Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

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

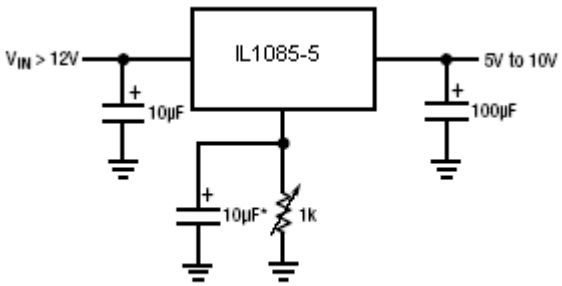
Typicals and limits appearing in normal type apply for Tj= +25°C.
Limits appearing in **Boldface** type apply over the entire junction temperature range for operation.

ΔV_{OUT}	Line Regulation (Note 7) IL1085BT3-Adj	I_{OUT}=10mA, 2.75V≤V_{IN}≤7.0V	- -	- -	0.3 **0.4**	%
	IL1085BT3-1.5	I_{OUT}=10mA, 3.0V≤V_{IN}≤7.0V	- -	- -	6 **10**	mV
	IL1085BT3-1.8	I_{OUT}=10mA, 3.3V≤V_{IN}≤7.0V	- -	- -	6 **10**	
	IL1085BT3-2.5	I_{OUT}=10mA, 4.0V≤V_{IN}≤7.0V	- -	- -	6 **10**	
	IL1085BT3-2.85	I_{OUT}=10mA, 4.35V≤V_{IN}≤7.0V	- -	- -	6 **10**	
	IL1085BT3-3.3	I_{OUT}=10mA, 4.8V≤V_{IN}≤7.0V	- -	- -	6 **10**	
	IL1085BT3-3.6	I_{OUT}=10mA, 5.1V≤V_{IN}≤7.0V	- -	- -	6 **10**	
	IL1085BT3-5.0	I_{OUT}=10mA, 6.5V≤V_{IN}≤7.0V	- -	- -	6 **10**	
ΔV_{OUT}	Load Regulation (Note 7) IL1085BT3-Adj	V_{IN}=4.25V, 0≤ I_{OUT}≤$I_{FULL\ LOAD}$	- -	- -	0.3 **0.4**	%
	IL1085BT3-1.5 IL1085BT3-1.8 IL1085BT3-2.5 IL1085BT3-2.85	V_{IN}=5.0V, 0≤ I_{OUT}≤$I_{FULL\ LOAD}$	- -	- -	12 **20**	mV
	IL1085BT3-3.3	V_{IN}=5.0V, 0≤ I_{OUT}≤$I_{FULL\ LOAD}$	- -	- -	15 **20**	
	IL1085BT3-3.6	V_{IN}=5.3V, 0≤ I_{OUT}≤$I_{FULL\ LOAD}$	- -	- -	15 **25**	
	IL1085BT3-5.0	V_{IN}=7.0V, 0≤ I_{OUT}≤$I_{FULL\ LOAD}$	- -	- -	20 **35**	
ΔV	Dropout Voltage (Note 8)	ΔV_{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}=Vout+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÷3A, V_{IN}=2.75÷7.0V	-	-	5	μA
RR	Ripple Rejection	f_{RIPPLE} = 120Hz, C_{OUT}=25μF Tantalum, Iout=3A;V_{IN}=Vout+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 $Tj_{(MAX)}$, Θj_A and T_A . The maximum allowable power dissipation at any ambient temperature is $P_D=(Tj_{(MAX)} - T_A)\Theta j_A$.
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 defind in the current limit curves . The $I_{FULL\ LOAD}$ curve defines the current limit as a function of inputto-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.

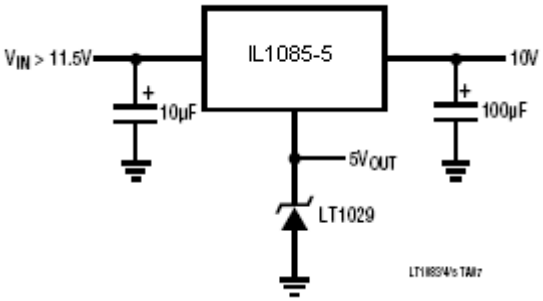
Typical Applications

Adjusting Output Voltage

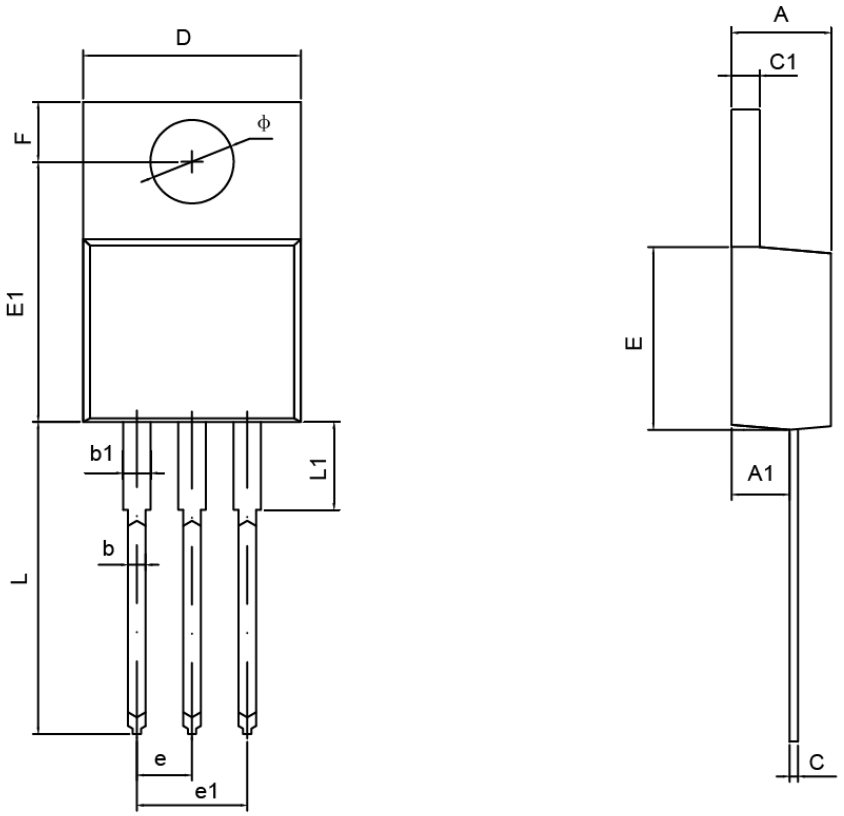


*OPTIONAL IMPROVES RIPPLE REJECTION

Regulator with Reference

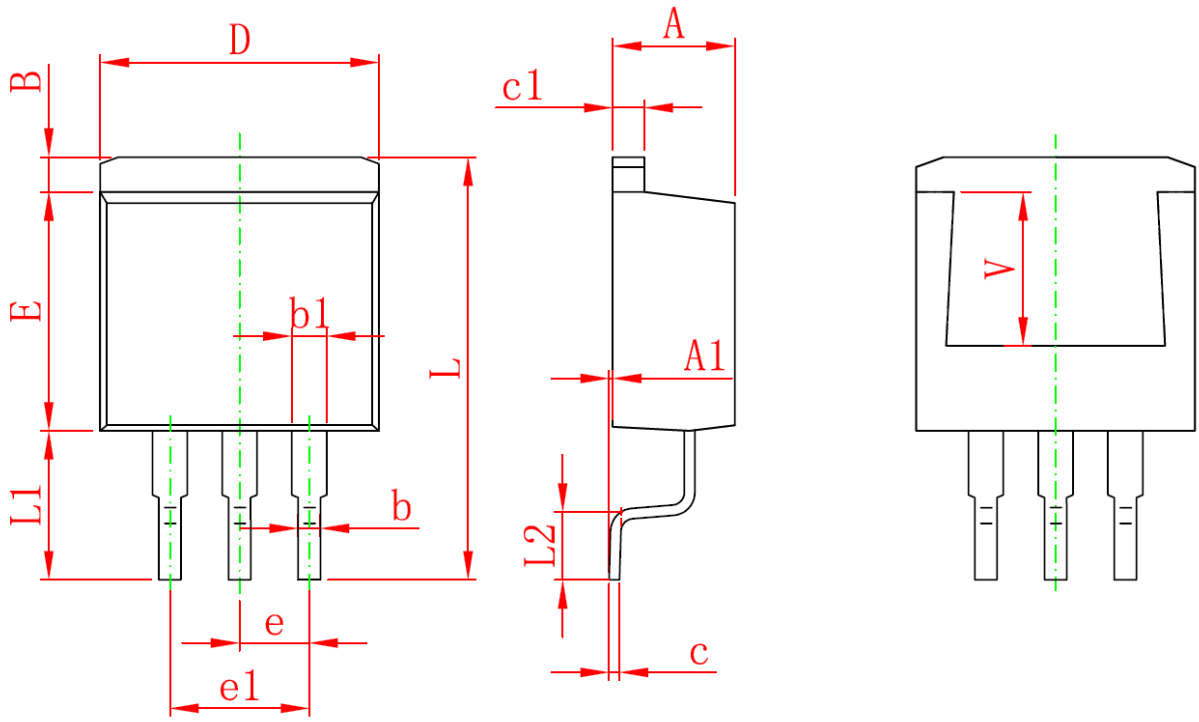


TO-220-3L PACKAGE OUTLINE DIMENSIONS



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	