

FEATURES

- Second source to Linear Technology
- Low dropout performance
- Fixed models @ 3.3V, 5V, 12V
- Adjustable output down to 1.2V
- Line regulation typically 0.015%/V
- Load regulation typically 0.01%
- Standard 3-terminal, TO-3 packages or cost effective TO-220 packages
- MIL-temperature performance

DESCRIPTION

The LT1085 voltage regulators are monolithic integrated circuits designed for use in applications requiring a well regulated positive output voltage with low input-output differential voltage requirements. Outstanding features include full power usage up to 3.0A of load current, internal current limiting and thermal shutdown. Safe area protection on the die is also included, providing protection of the series pass Darlington under most operating conditions. Hermetically sealed TO-3 packages are utilized for high reliability and low thermal resistance. TO-220 packages are available for cost effective applications.

DEVICE SELECTION GUIDE

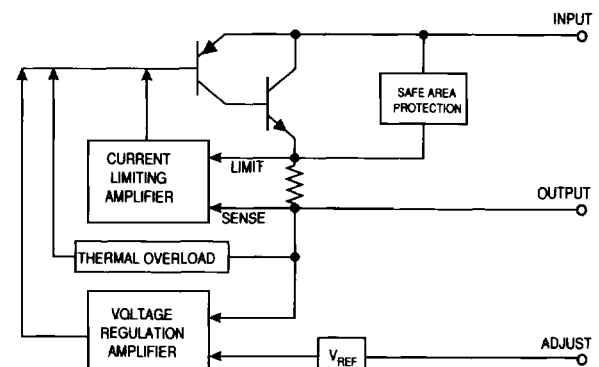
DEVICE	OPERATING JUNCTION TEMPERATURE RANGE	PACKAGE
LT1085MK-3.3 LT1085MK-5 LT1085MK-12 LT1085MK (ADJ)	MILITARY	TO-3
LT1085CK-3.3 LT1085CK-5 LT1085CK-12 LT1085CK (ADJ)	COMMERCIAL	
LT1085CT-3.3 LT1085CT-5 LT1085CT-12 LT1085CT (ADJ)		TO-220

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Units
Input-Output ⁽¹⁾ Voltage Differential Military Commercial	V_{IN}	35 30	V
Power Dissipation	P_D	Internally Limited ⁽²⁾	W
Thermal Resistance Junction to Case TO-3 Control / Power	θ_{JC}	0.93 / 3.0	°C/W
TO-220 Control / Power		0.7 / 3.0	
Operating Junction Temperature Range Military Control Military Power	T_J	-55 to 150 -55 to 200	°C
Commercial Control Commercial Power		0 to 125 0 to 150	
Storage Temperature Range		T_{STG}	
Lead Temperature (Soldering) 60 Sec. for TO-3 10 Sec. for TO-220	T_{LEAD}	300 260	

- (1) In case of short circuit, with input-output voltages approaching V_{INmax} , regulator may require the cycling of input voltage to recover.
- (2) Although power dissipation is internally limited, these specifications are applicable for power dissipations of 30 Watts and is only achievable over a limited range of $V_{IN}-V_{OUT}$

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Military $V_{IN} - V_{OUT} = 1.5V$ to $35V$, Commercial $V_{IN} - V_{OUT} = 1.5V$ to $30V$, or the maximum input, whichever is less; $I_O = 10mA$ to $3.0A$

PARAMETER	SYMBOL	Test Conditions ⁽¹⁾			Test Limits			UNITS	
		$V_{IN} - V_{OUT}$	I_O	$T_J^{(6)}$	MIN	TYP	MAX		
Output Voltage ⁽²⁾ Fixed Voltage	V_O	$V_O + 3V$	10 mA	25	.99 vo	V_O	1.01 vo	V	
				Over Temp.	.98 vo		1.02 vo		
Reference Voltage ⁽²⁾ Adj Voltage	V_{REF}	$V_O + 3V$	10 mA	25	1.238	1.250	1.262		
				Over Temp.	1.225		1.270		
Line Regulation ⁽²⁾	$REG_{(LINE)}$	1.5 to 15V	10 mA	25		0.015	0.2		%
				Over Temp.		0.035			
Load Regulation ⁽²⁾	$REG_{(LOAD)}$	15 to 35		25		0.05	0.5		
		3		Over Temp.		0.1	0.3		
Dropout Voltage $\Delta V_{OUT}, \Delta V_{REF} = 1\%$	V_D			25		0.2	0.4	V	
				Over Temp.		1.3	1.5		
Current Limit	I_{CL}	5V			3.2	4.0		A	
		25V			0.2		0.5		
Quiescent Current	I_Q	35V					10	mA	
Thermal Regulation ⁽³⁾	$REG_{(THERM)}$			25		0.002	0.01	%/W	
Adjust Pin Current	I_{PIN}					55		μA	
Adjust Pin Current Change	ΔI_{PIN}			Over Temp.			120		
Temperature Stability	T_S	5V	0.5A			0.2	5	%	
Minimum Load Current	I_O	25V					0.5		
RMS Output Noise ⁽⁴⁾	V_N			25		.003		% V_O	
Ripple Rejection Ratio ⁽⁵⁾	R_A	3V	3.0A	Over Temp.	60	75		dB	

NOTE: Nominal output voltages are specified under Device Selection Guide.

- (1) Although power dissipation is internally limited, these specifications are applicable for power dissipations of 30 Watts and is only achievable over a limited range of $V_{IN} - V_{OUT}$
- (2) Low duty cycle pulse testing with Kelvin connections required. Changes in output voltage due to heating effects are covered under the specification for thermal regulation.
- (3) 30ms pulse
- (4) Bandwidth of 10Hz to 10kHz.
- (5) 120Hz input ripple 15V = 54dB min; C_{OUT} & (C_{ADJ} for ADJ) = 25 μF
- (6) Over Temp. = over specified operating junction temperature range.