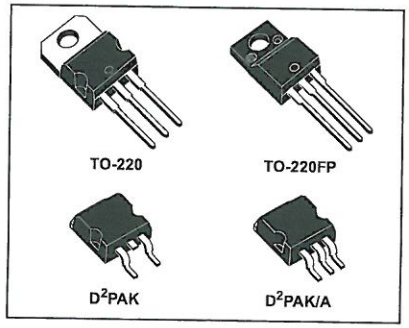
LD1085 SERIES

3A LOW DROP POSITIVE VOLTAGE REGULATOR ADJUSTABLE AND FIXED

- TYPICAL DROPOUT 1.3V (AT 3A)
- THREE TERMINAL ADJUSTABLE OR FIXED OUTPUT VOLTAGE 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 3.6V, 5V, 8V, 9V, 12V.
- GUARANTEED OUTPUT CURRENT UP TO 3A
- OUPUT TOLERANCE ±1% AT 25°C AND ±2% IN FULL TEMPERATURE RANGE
- INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE -40°C TO 125°C
- PACKAGE AVAILABLE: TO-220, TO-220FP D^2PAK, D^2PAK/A
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VREG



DESCRIPTION

The LD1085 is a LOW DROP Voltage Regulator able to provide up to 3A of Output Current. Dropout is guaranteed at a maximum of 1.2V at the maximum output current, decreasing at lower loads. The LD1085 is pin to pin compatible with the older 3-terminal adjustable regulators, but has better performances in term of drop and output tolerance.

A 2.85V output version is suitable for SCSI-2 active termination. Unlike PNP regulators, where a part of the output current is wasted as quiescent current, the LD1085 quiescent current flows into the load, so increase efficiency. Only a 10µF minimum capacitor is need for stability.
The device is supplied in TO-220, TO-220FP, D^2PAK and D^2PAK/A. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within ±1% at 25°C.

Figure 1: Schematic Diagram

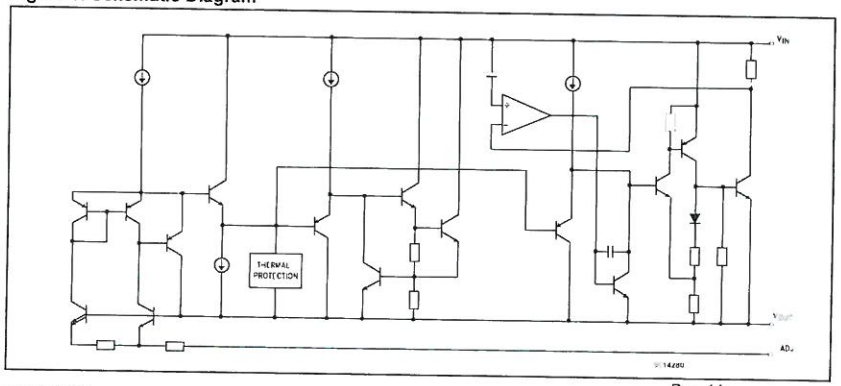


Figure 2: Pin Connection (top view)

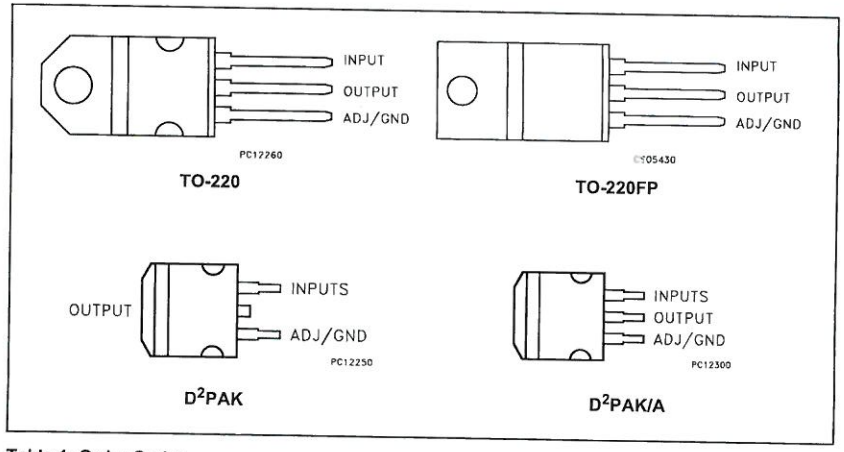


Table 1: Order Codes

TO-220	TO-220FP	D^2PAK (*)	D^2PAK/A (*)	OUTPUT VOLTAGE
LD1085V15	LD1085P15	LD1085D2T15	LD1085D2M15	1.5 V
LD1085V18	LD1085P18	LD1085D2T18	LD1085D2M18	1.8 V
LD1085V25	LD1085P25	LD1085D2T25	LD1085D2M25	2.5 V
LD1085V28	LD1085P28	LD1085D2T28	LD1085D2M28	2.85 V
LD1085V33	LD1085P33	LD1085D2T33	LD1085D2M33	3.3 V
LD1085V36	LD1085P36	LD1085D2T36	LD1085D2M36	3.6 V
LD1085V50	LD1085P50	LD1085D2T50	LD1085D2M50	5.0 V
LD1085V80	LD1085P80	LD1085D2T80	LD1085D2M80	8.0 V
LD1085V90	LD1085P90	LD1085D2T90	LD1085D2M90	9.0 V
LD1085V12	LD1085P12	LD1085D2T12	LD1085D2M12	12.0 V
LD1085V	LD1085P	LD1085D2T	LD1085D2M	ADJ

(*) Available in Tape & Reel with the suffix "R" for fixed version and "-R" for adjustable version.

Table 2: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_I	DC Input Voltage	30	V
I_O	Output Current	Internally Limited	mA
P_D	Power Dissipation	Internally Limited	mW
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_{op}	Operating Junction Temperature Range	-40 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.

Table 3: Thermal Data

Symbol	Parameter	TO-220	D^2PAK	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	3	3	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	50	62.5	°C/W

Figure 3: Application Circuits

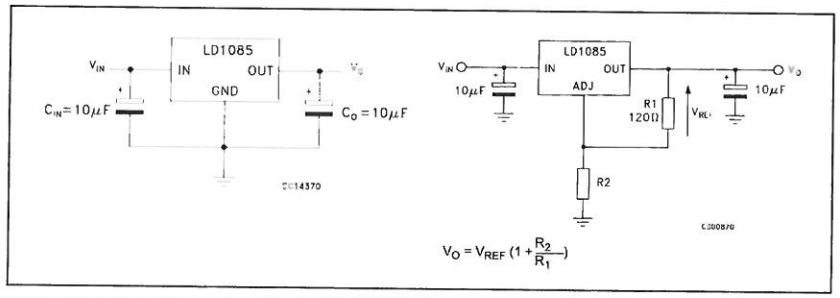


Table 4: Electrical Characteristics Of LD1085#15 (V_I=4.5V, $C_I = C_O$ =10µF, T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.485	1.5	1.515	V
		I_O = 0 to 5A V_I = 3.1 to 30V (note 1)	1.47	1.5	1.53	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.1 to 18V T_J = 25°C		0.2	4	mV
		I_O = 0 mA V_I = 3.1 to 15V		0.4	4	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		2	10	mV
		I_O = 0 to 3A		4	20	mV
V_d	Dropout Voltage	I_O =3 A		1.3	1.5	V
I_q	Quiescent Current	$V_I \leq$ 30V		5	10	mA
I_{sc}	Short Circuit Current	$V_I - V_O$ = 5V	3.2	4.5		A
		$V_I - V_O$ = 25V	0.2	0.5		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.008	0.04	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 3A V_I = 7.5 ± 3V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

NOTE 1: See short-circuit current curve for available output current at fixed dropout.

Table 5: Electrical Characteristics Of LD1085#18 (V_I=4.8V, $C_I = C_O$ =10µF, T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.782	1.8	1.818	V
		I_O = 0 to 5A V_I = 3.4 to 30V (note 1)	1.764	1.8	1.836	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.4 to 18V T_J = 25°C		0.2	4	mV
		I_O = 0 mA V_I = 3.4 to 15V		0.4	4	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		2	10	mV
		I_O = 0 to 3A		4	20	mV
V_d	Dropout Voltage	I_O =3 A		1.3	1.5	V
I_q	Quiescent Current	$V_I \leq$ 30V		5	10	mA
I_{sc}	Short Circuit Current	$V_I - V_O$ = 5V	3.2	4.5		A
		$V_I - V_O$ = 25V	0.2	0.5		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.008	0.04	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 3A V_I = 7.5 ± 3V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

NOTE 1: See short-circuit current curve for available output current at fixed dropout.

Table 6: Electrical Characteristics Of LD1085#25 (V_I=5.5V, $C_I = C_O$ =10µF, T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	2.475	2.5	2.525	V
		I_O = 0 to 3A V_I = 4.1 to 30V (note 1)	2.45	2.5	2.55	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.1 to 18V T_J = 25°C		0.2	4	mV
		I_O = 0 mA V_I = 4.1 to 18V		0.4	4	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		2	10	mV
		I_O = 0 to 3A		4	20	mV
V_d	Dropout Voltage	I_O =3 A		1.3	1.5	V
I_q	Quiescent Current	$V_I \leq$ 30V		5	10	mA
I_{sc}	Short Circuit Current	$V_I - V_O$ = 5V	3.2	4.5		A
		$V_I - V_O$ = 25V	0.2	0.5		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.008	0.04	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 3A V_I = 7.5 ± 3V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

NOTE 1: See short-circuit current curve for available output current at fixed dropout.