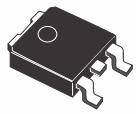
查询LD1085CXX90 供应商 捷多邦，专业PCB打样工厂，24小时加急出货

LD1085C 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 ±2% AT 25°C AND ±3% IN FULL TEMPERATURE RANGE
- INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE -40°C TO 125°C
- PACKAGE AVAILABLE : DPAK
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VREG



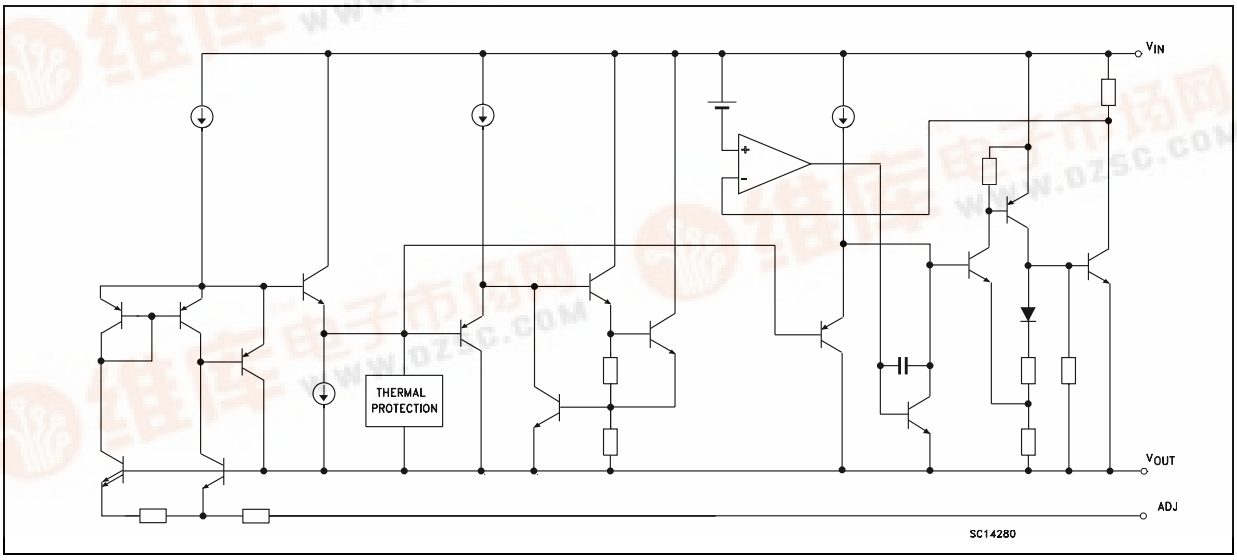
DPAK

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 1.5V 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 DPAK. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within ±2% at 25°C.

SCHEMATIC DIAGRAM



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ABSOLUTE MAXIMUM RATINGS

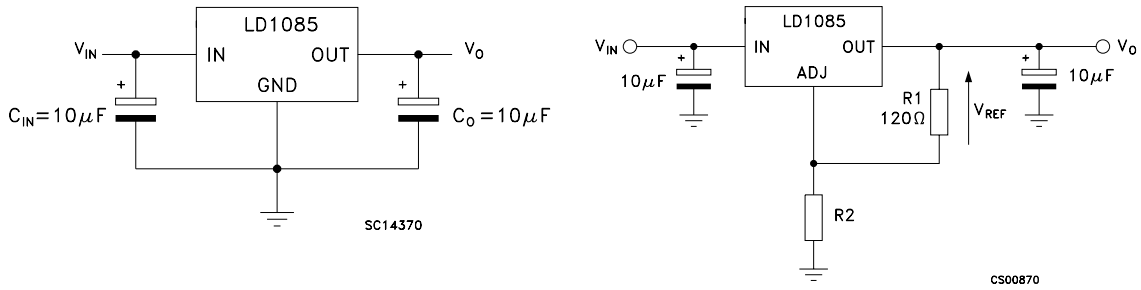
Symbol	Parameter[2]	Value	Unit
V_I	DC Input Voltage	30	V
I_O	Output Current	Internally Limited	mA
P_D	Power Dissipation	Internally Limited	mW
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_{op}	Operating Junction Temperature Range	-40 to +125	°C

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

THERMAL DATA

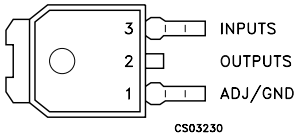
Symbol	Parameter	DPAK	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	3	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	62.5	°C/W

APPLICATION CIRCUITS



$$V_O = V_{REF}\left(1 + \frac{R_2}{R_1}\right)$$

CONNECTION DIAGRAM (top view)



DPAK

ORDERING CODES

DPAK (*)	OUTPUT VOLTAGE
LD1085CDT15	1.5 V
LD1085CDT18	1.8 V
LD1085CDT25	2.5 V
LD1085CDT28	2.85 V
LD1085CDT33	3.3 V
LD1085CDT36	3.6 V
LD1085CDT50	5.0 V
LD1085CDT80	8.0 V
LD1085CDT90	9.0 V
LD1085CDT120	12.0 V
LD1085CDT	ADJ

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

ELECTRICAL CHARACTERISTICS OF LD1085CDT15 (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	1.47	1.5	1.53	V
		I_O = 0 to 3A V_I = 3.1 to 30V (note 1)	1.455	1.5	1.545	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	V
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
	Termal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 3A V_I = 7.5 ± 3V	60	75		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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT18 (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	1.764	1.8	1.836	V
		I_O = 0 to 3A V_I = 3.4 to 30V (note 1)	1.746	1.8	1.854	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	V
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
	Termal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 3A V_I = 7.5 ± 3V	60	75		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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT25 (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	2.45	2.5	2.55	V
		I_O = 0 to 3A V_I = 4.1 to 30V (note 1)	2.425	2.5	2.575	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.1 to 18V T_J = 25°C		0.2	5	mV
		I_O = 0 mA V_I = 4.1 to 18V		0.4	5	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		2	10	mV
		I_O = 0 to 3A		4	20	V
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
	Termal 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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT285 (V_I=5.85V, 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	2.793	2.85	2.907	V
		I_O = 0 to 3A V_I = 4.5 to 30V (note 1)	2.765	2.85	2.935	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.5 to 18V T_J = 25°C		0.2	6	mV
		I_O = 0 mA V_I = 4.5 to 18V		0.5	6	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		3	15	mV
		I_O = 0 to 3A		7	20	V
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
	Termal 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 = 7.85 ± 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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT33 (V_I=6.3V, 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	3.234	3.35	3.366	V
		I_O = 0 to 3A V_I = 4.9 to 30V (note 1)	3.201	3.35	3.399	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.9 to 18V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.9 to 18V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		3	15	mV
		I_O = 0 to 3A		7	20	V
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
	Termal 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 = 5A V_I = 8.3 ± 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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT36 (V_I=6.6V, 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	3.528	3.6	3.672	V
		I_O = 0 to 3A V_I = 5.2 to 30V (note 1)	3.492	3.6	3.708	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 5.2 to 18V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 5.2 to 18V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		3	15	mV
		I_O = 0 to 3A		7	20	V
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
	Termal 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 = 8.6 ± 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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT50 (V_I=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	4.9	5	5.1	V
		I_O = 0 to 3A V_I = 6.6 to 30V (note 1)	4.85	5	5.15	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 6.6 to 20V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 6.6 to 20V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		5	20	mV
		I_O = 0 to 3A		10	35	V
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
	Termal 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 = 10 ± 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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT80 (V_I=11V, 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	7.84	8	8.16	V
		I_O = 0 to 3A V_I = 9.8 to 30V (note 1)	7.76	8	8.24	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 9.8 to 20V T_J = 25°C		1	18	mV
		I_O = 0 mA V_I = 9.8 to 20V		2	18	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		8	30	mV
		I_O = 0 to 3A		12	60	V
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
	Termal 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 = 13 ± 3V	54	71		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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT90 (V_I=12V, 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	8.82	9	9.18	V
		I_O = 0 to 3A V_I = 11 to 30V (note 1)	8.73	9	9.27	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 11 to 20V T_J = 25°C		1	20	mV
		I_O = 0 mA V_I = 11 to 20V		2	20	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		8	30	mV
		I_O = 0 to 3A		12	60	V
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	5.5	6.5		A
		V_I - V_O = 25V	0.5	0.7		A
	Termal 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 = 14 ± 3V	54	70		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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT120 (V_I=15V, 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	11.76	12	12.24	V
		I_O = 0 to 3A V_I = 13.8 to 30V (note 1)	11.64	12	12.36	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 13.8 to 25V T_J = 25°C		1	25	mV
		I_O = 0 mA V_I = 13.8 to 25V		2	25	mV
ΔV_O	Load Regulation	I_O = 0 to 3A T_J = 25°C		12	36	mV
		I_O = 0 to 3A		24	72	V
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
	Termal 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 = 17 ± 3V	54	66		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.

ELECTRICAL CHARACTERISTICS OF LD1085CDT (V_I=4.25V, 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 = 10mA T_J = 25°C	1.225	1.25	1.275	V
		I_O = 10mA to 5AV_I = 2.85 to 30V (note 1)	1.213	1.25	1.288	V
ΔV_O	Line Regulation	I_O = 10mA V_I = 2.85 to 16.5V T_J = 25°C		0.015	0.2	%
		I_O = 10mA V_I = 2.85 to 16.5V		0.035	0.2	%
ΔV_O	Load Regulation	I_O = 10mA to 5AT_J = 25°C		0.1	0.3	%
		I_O = 0 to 5A		0.2	0.4	%
V_d	Dropout Voltage	I_O = 5A		1.3	1.5	V
$I_{O(min)}$	Minimum Load Current	V_I = 30V		3	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
	Termal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, C_{ADJ} = 25 µF, I_O = 5A V_I = 6.25 ± 3V	60	75		dB
I_{ADJ}	Adjust Pin Current	V_I = 4.25V I_O = 10 mA		55	120	µA
ΔI_{ADJ}	Adjust Pin Current Change	I_O = 10mA to 5A V_I = 2.75 to 16.5V (note 1)		0.2	5	µA
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.

TYPICAL CHARACTERISTICS (unless otherwise specified T_j = 25°C, C_I=C_O=10µF)

Figure 1 : Output Voltage vs Temperature

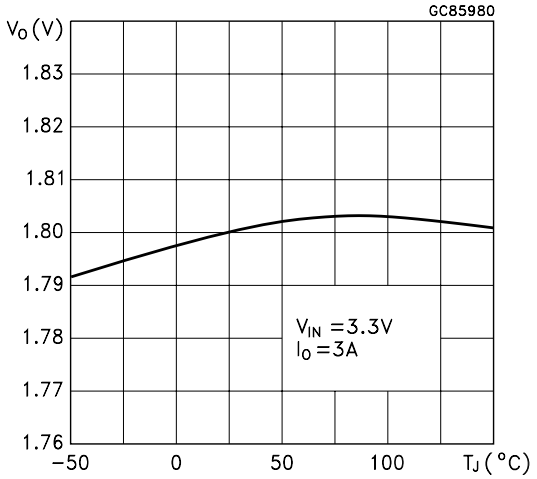


Figure 2 : Output Voltage vs Temperature

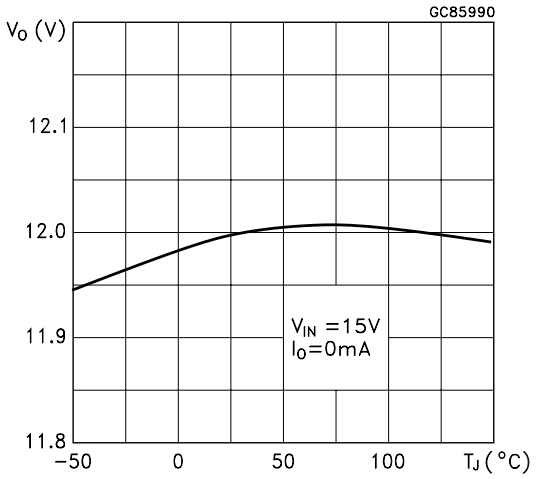


Figure 3 : Output Voltage vs Temperature

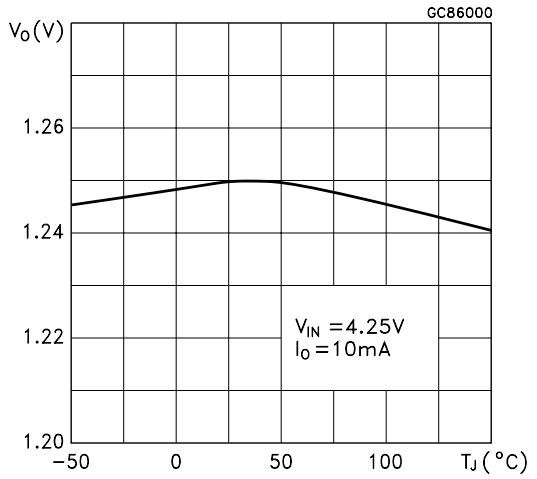


Figure 4 : Short Circuit Current vs Dropout Voltage

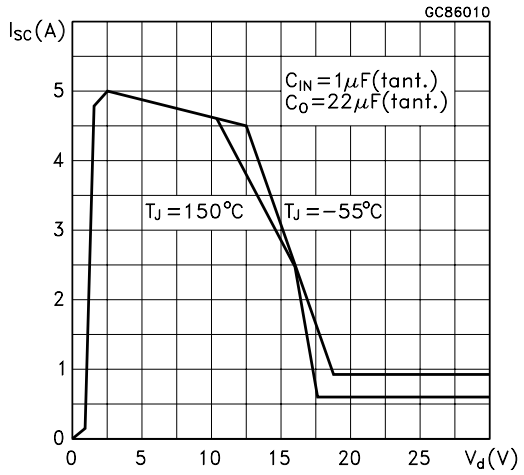


Figure 5 : Line Regulation vs Temperature

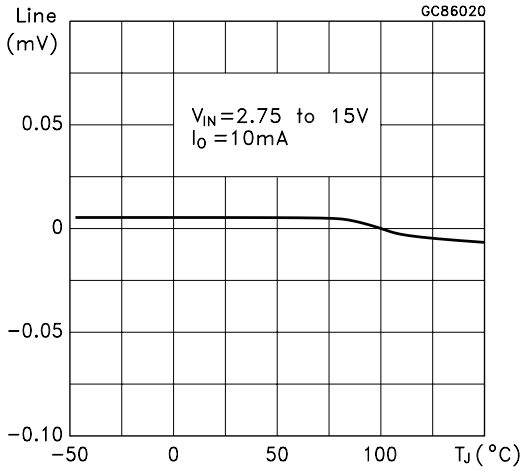


Figure 6 : Load Regulation vs Temperature

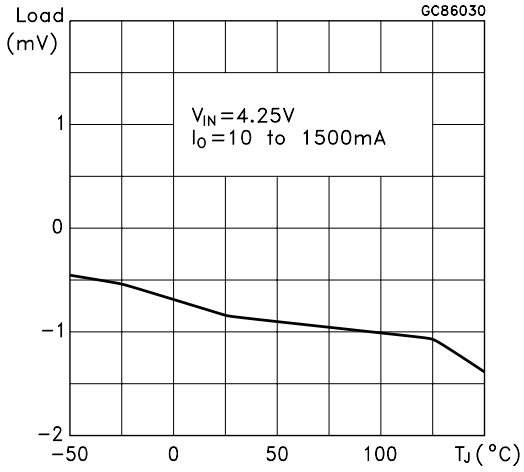


Figure 7 : Dropout Voltage vs Temperature

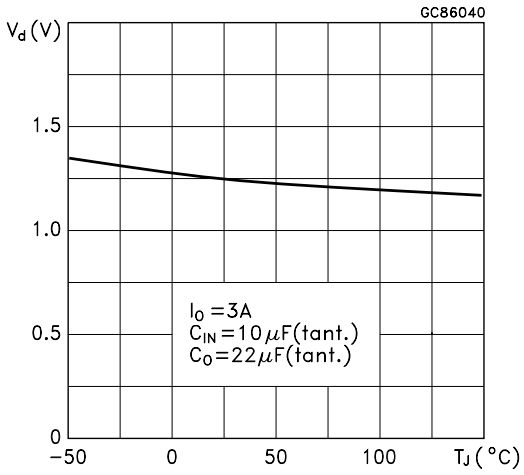


Figure 8 : Dropout Voltage vs Output Current

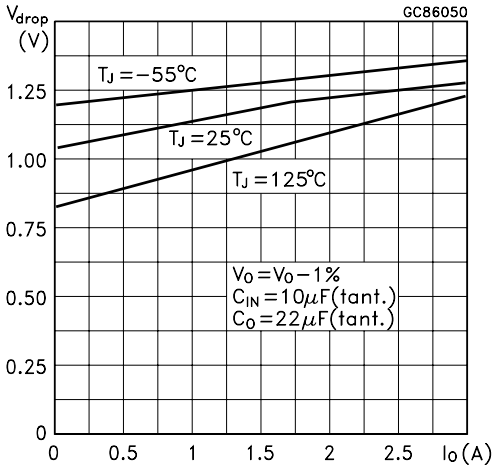


Figure 9 : Adjust Pin Current vs Temperature

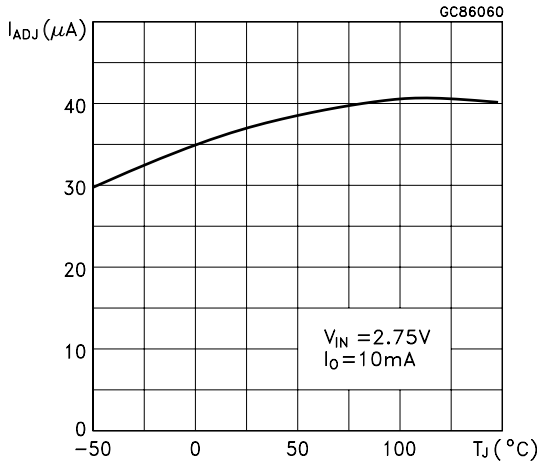


Figure 10 : Quiescent Current vs Temperature

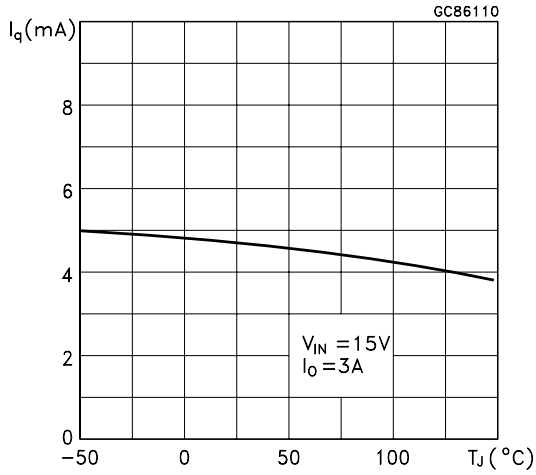


Figure 11 : Dropout Voltage vs Output Current

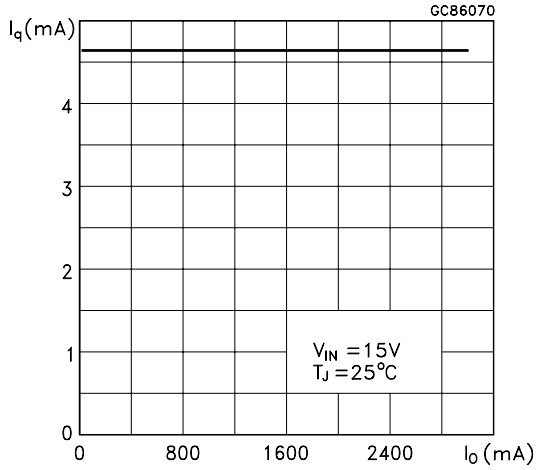


Figure 12 : Supply Voltage Rejection vs Output Current

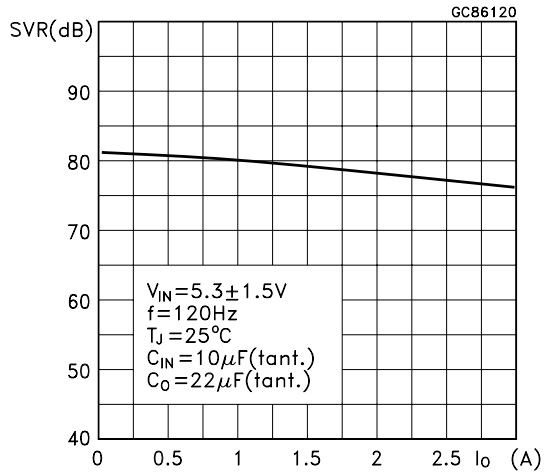


Figure 13 : Supply Voltage Rejection vs Frequency

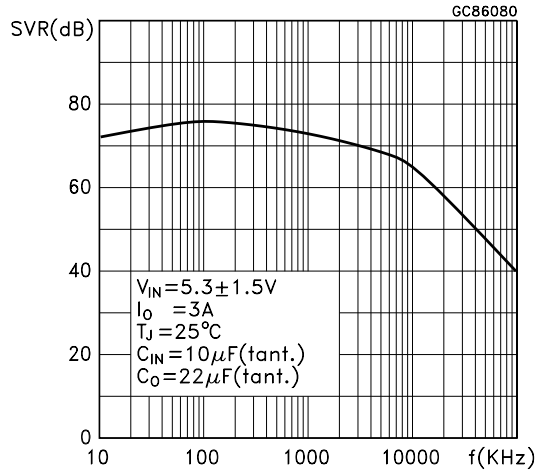


Figure 14 : Supply Voltage Rejection vs Temperature

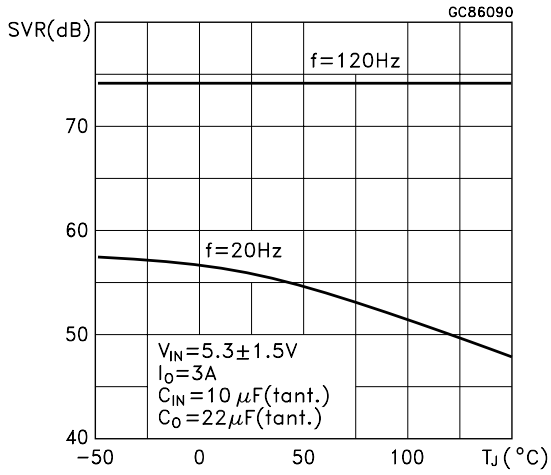


Figure 15 : Minimum Load Current vs Temperature

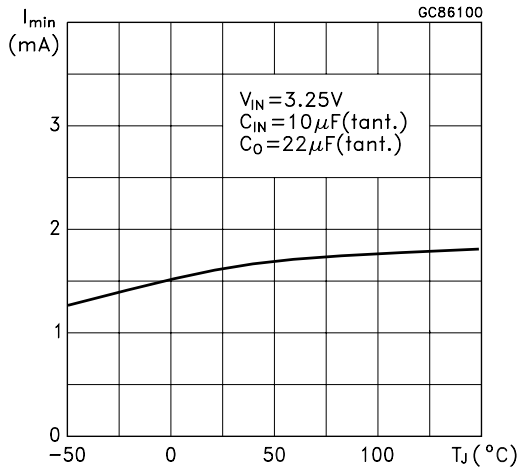


Figure 16 : Stability

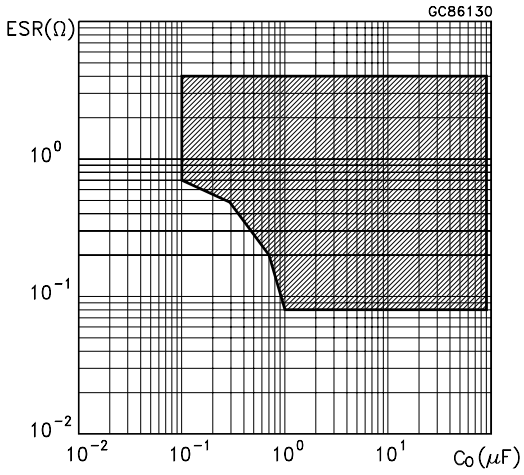


Figure 17 : Stability

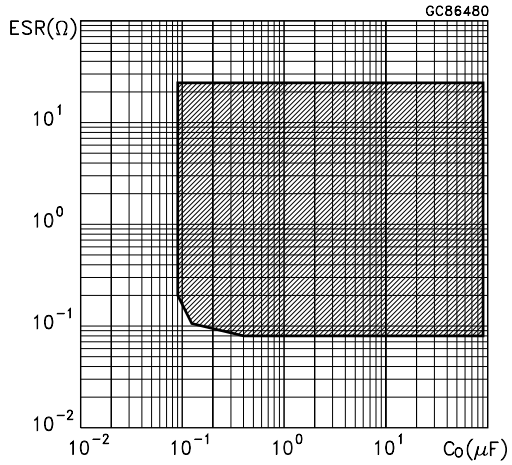
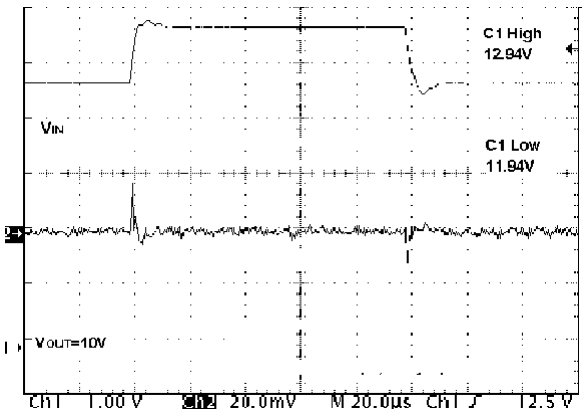
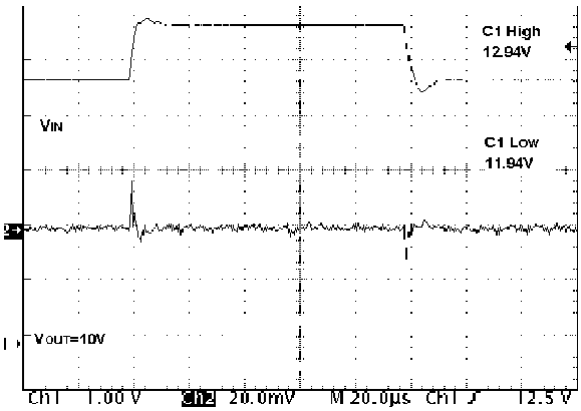


Figure 18 : Line Transient



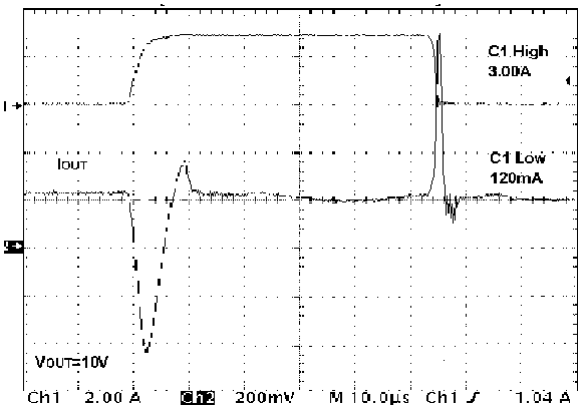
V_I=12 to 13V, I_O=200mA, C_I = 1μF(tant), C_O=10μF(tant), C_{ADJ} = 1μF

Figure 19 : Line Transient



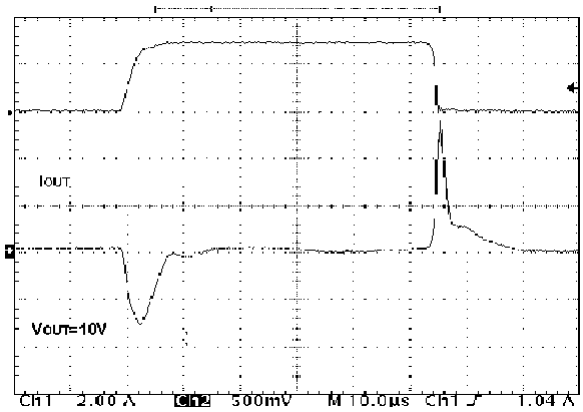
V_I=12 to 13V, I_O=200mA, C_I = 1µF(tant), C_O=10µF(tant), C_{ADJ} =1µF

Figure 20 : Load Transient



V_I=12 V, I_O=0.12 to 3 A, C_I = 1µF(tant), C_O=10µF(tant) C_{ADJ} =1µF

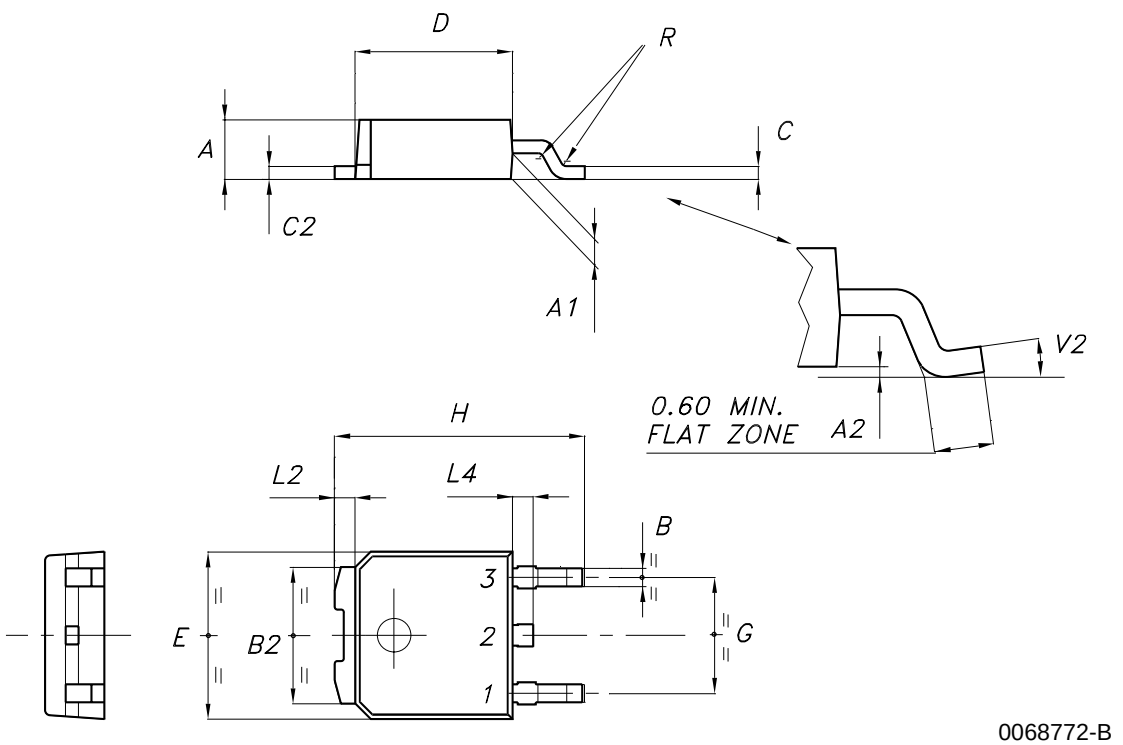
Figure 21 : Load Transient



V_I=12 V, I_O=0.12 to 3 A, C_I = 1µF(tant), C_O=10µF(tant) C_{ADJ} =1µF

DPAK MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L2		0.8			0.031	
L4	0.6		1	0.023		0.039



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