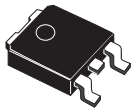
# LD1085C SERIES

## 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



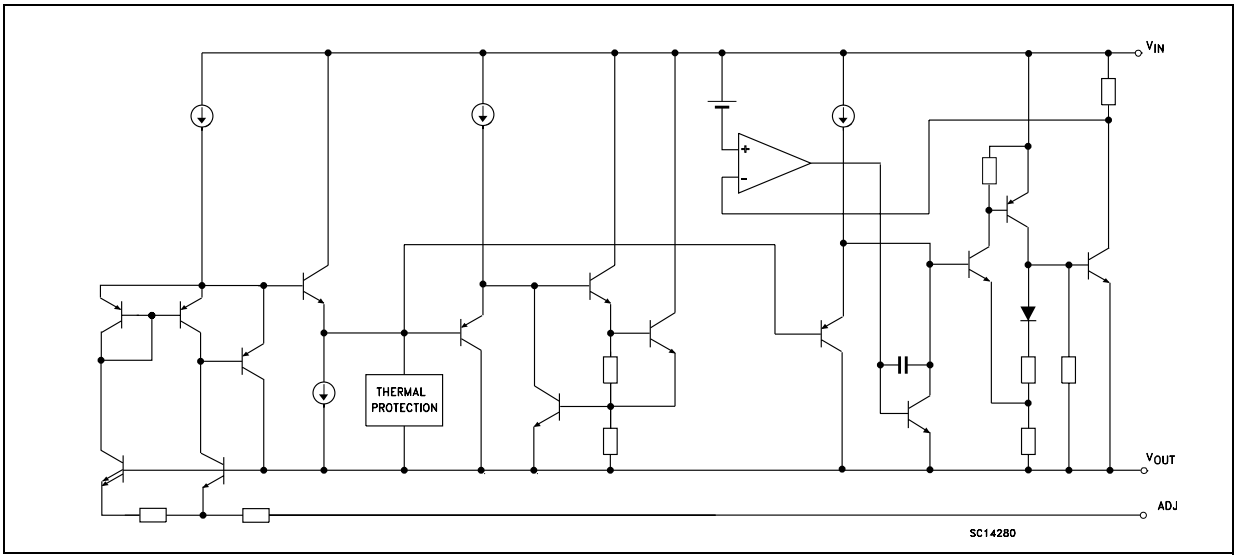
**DPAK**

### 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



## ABSOLUTE MAXIMUM RATINGS

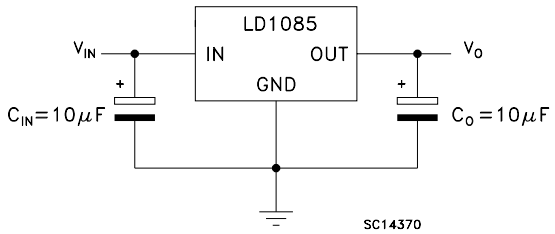
| Symbol | Parameter[2] | Value | Unit |
|---|---|---|---|
| $V_I$ | DC Input Voltage | 30 | V |
| $I_O$ | Output Current | Internally Limited | mA |
| $P_D$ | Power Dissipation | Internally Limited | mW |
| $T_{stg}$ | Storage Temperature Range | -55 to +150 | °C |
| $T_{op}$ | Operating Junction Temperature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

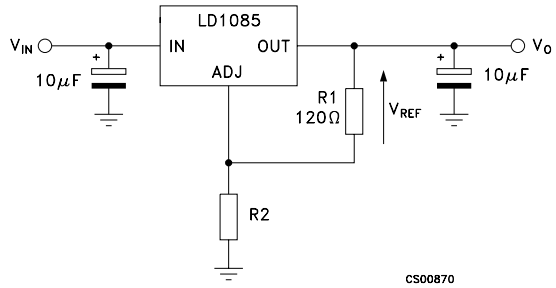
Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

## 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 |

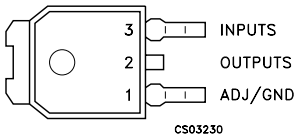
## APPLICATION CIRCUITS




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

**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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 $V_I = 8.3 \pm 3V$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 $V_I = 8.6 \pm 3V$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 |
| $\Delta V_O$ | 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 5A $V_I$ = 2.85 to 30V (note 1) | 1.213 | 1.25 | 1.288 | V |
| $\Delta V_O$ | 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 | % |
| $\Delta V_O$ | Load Regulation | $I_O$ = 10mA to 5A $T_J$ = 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 |
| $\Delta I_{ADJ}$ | 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

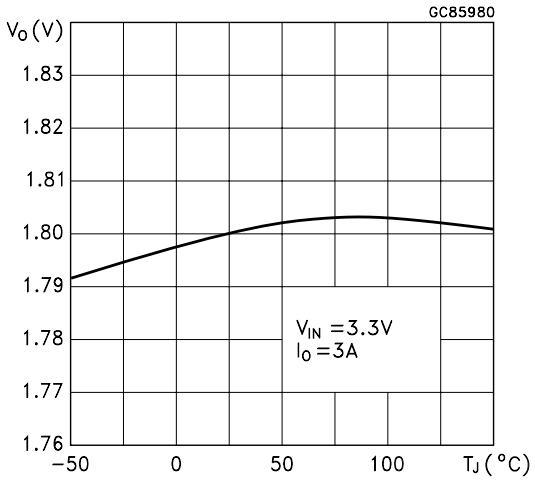



**Figure 2 :** Output Voltage vs Temperature

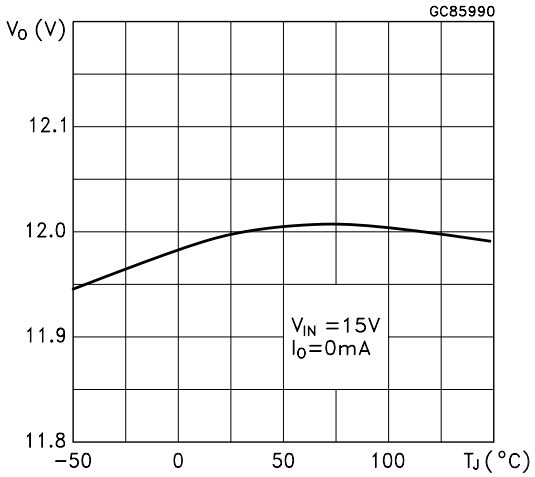



**Figure 3 :** Output Voltage vs Temperature

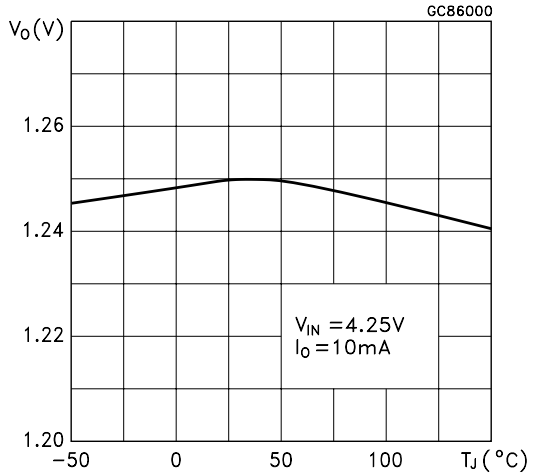



**Figure 4 :** Short Circuit Current vs Dropout Voltage

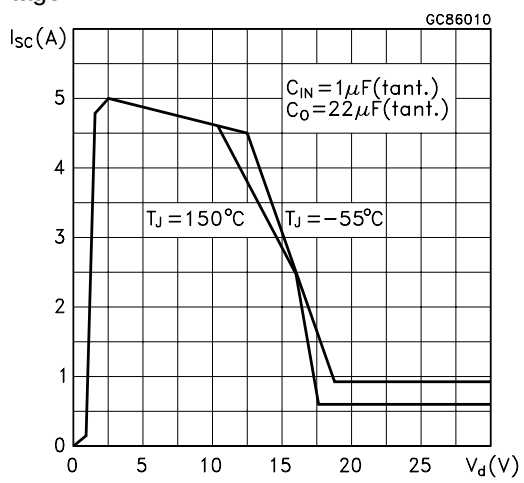



**Figure 5 :** Line Regulation vs Temperature

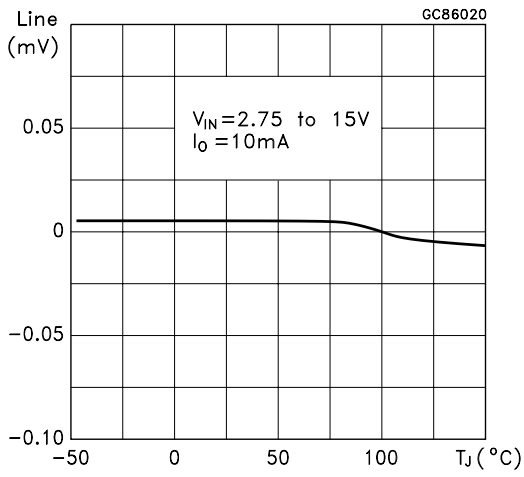



**Figure 6 :** Load Regulation vs Temperature

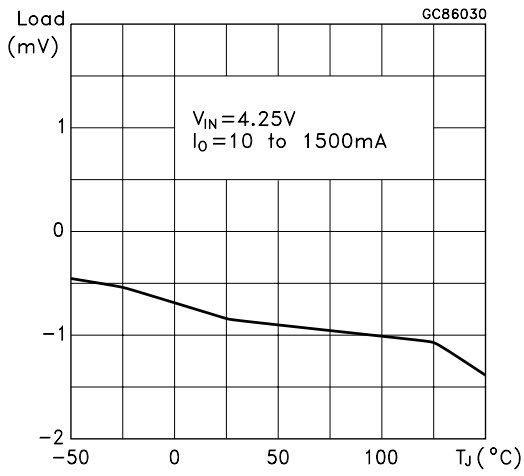


**Figure 7 :** Dropout Voltage vs Temperature

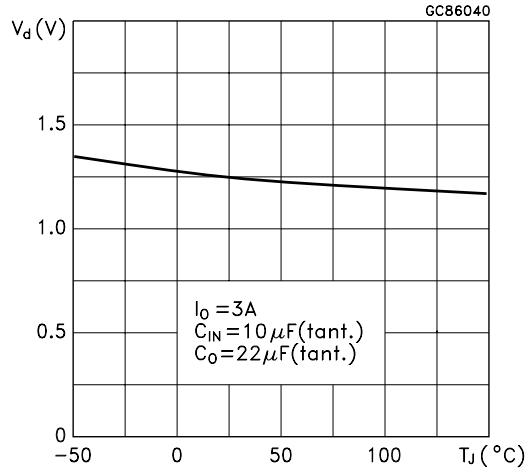



**Figure 8 :** Dropout Voltage vs Output Current

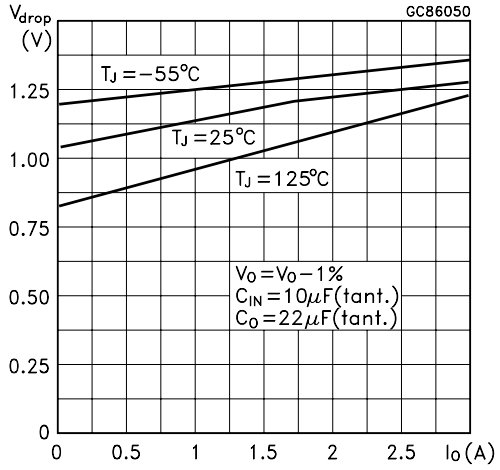



**Figure 9 :** Adjust Pin Current vs Temperature

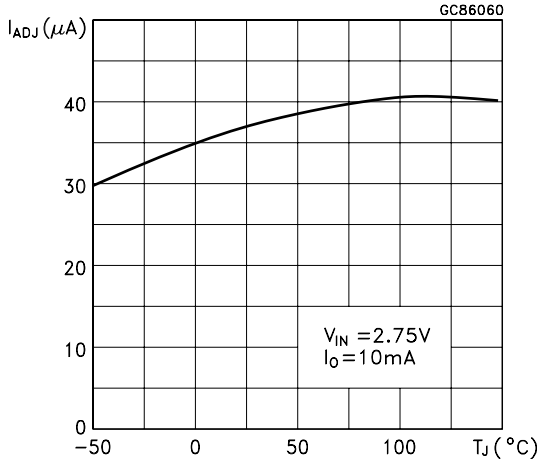



**Figure 10 :** Quiescent Current vs Temperature

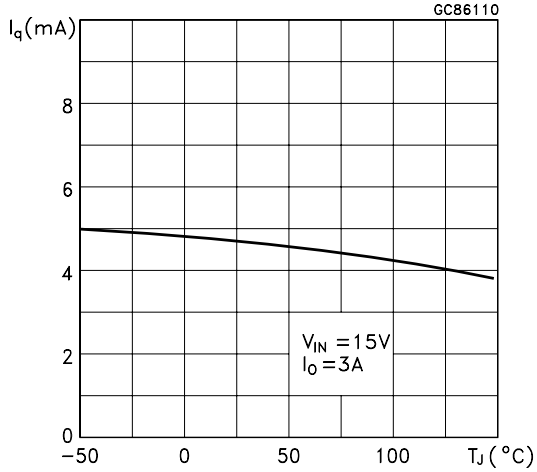



**Figure 11 :** Dropout Voltage vs Output Current

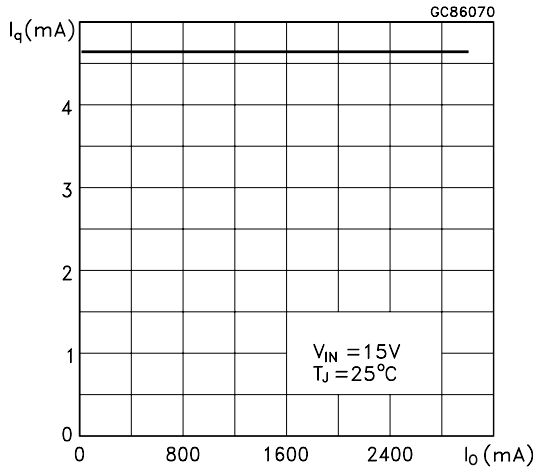



**Figure 12 :** Supply Voltage Rejection vs Output Current

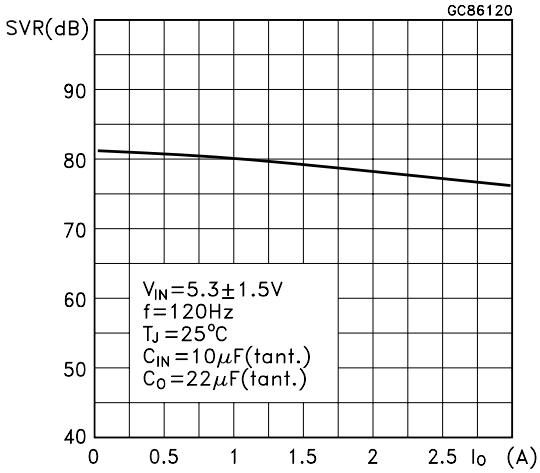


**Figure 13 :** Supply Voltage Rejection vs Frequency

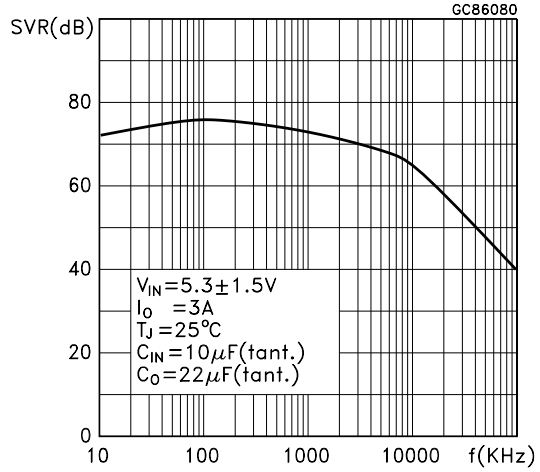



**Figure 14 :** Supply Voltage Rejection vs Temperature

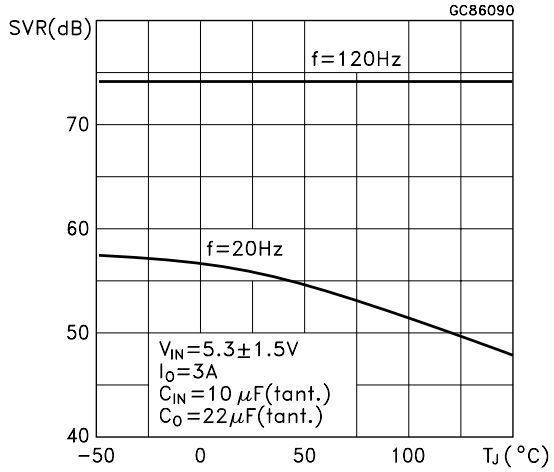



**Figure 15 :** Minimum Load Current vs Temperature

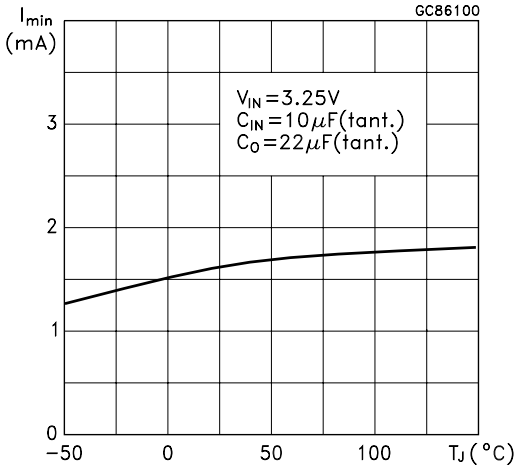



**Figure 16 :** Stability

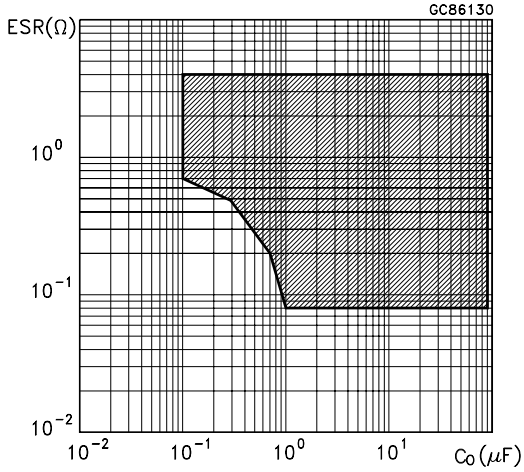



**Figure 17 :** Stability

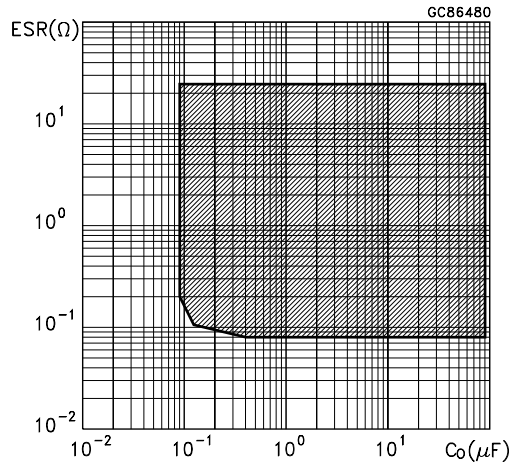
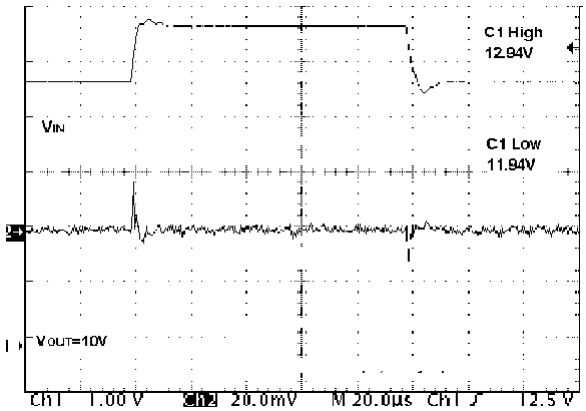
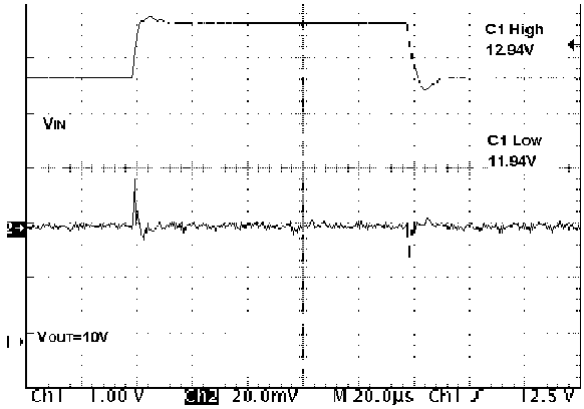



**Figure 18 :** Line Transient



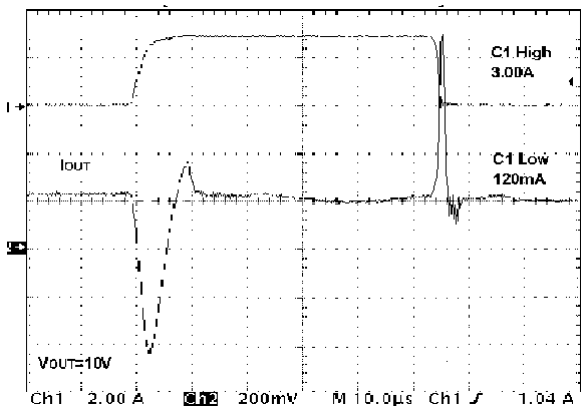

$V_I$=12 to 13V, $I_O$=200mA, $C_I$ = 1μF(tant), $C_O$=10μF(tant), $C_{ADJ}$ = 1μF

**Figure 19 :** Line Transient



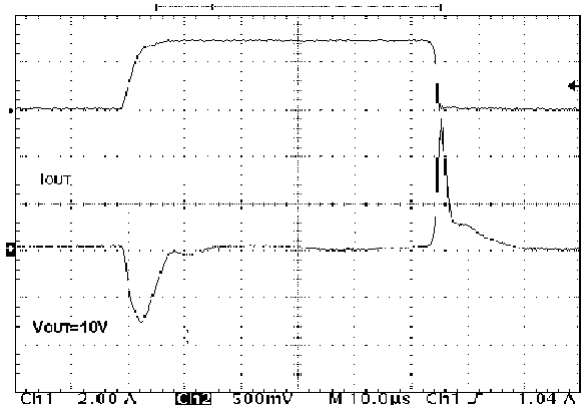

$V_I$=12 to 13V, $I_O$=200mA, $C_I$ = 1µF(tant), $C_O$=10µF(tant), $C_{ADJ}$ =1µF

**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 |