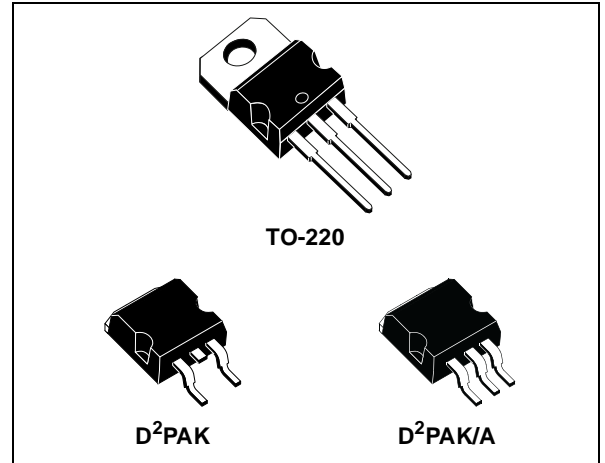


5A LOW DROPOUT FAST RESPONSE POSITIVE VOLTAGE REGULATOR ADJUSTABLE AND FIXED

- TYPICAL DROPOUT 1.2V
- FAST TRANSIENT RESPONSE
- THREE TERMINAL ADJUSTABLE OR FIXED OUTPUT VOLTAGE 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5V, 8V, 9V, 12V.
- GUARANTEED OUTPUT CURRENT UP TO 5A
- OUTPUT TOLERANCE $\pm 1\%$ AT 25°C AND $\pm 2\%$ IN FULL TEMPERATURE RANGE
- INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE 0°C TO 125°C
- PACKAGE AVAILABLE: TO-220, D²PAK, D²PAK/A
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VREG



DESCRIPTION

The LD1585C is a LOW DROP Voltage Regulator able to provide up to 5A of Output Current. Dropout is guaranteed at a maximum of 1.4V at the maximum output current, decreasing at lower loads. The device has been improved to be utilized in low voltage applications where transient response and minimum input voltage are critical. The most important feature of the device consist in lower dropout voltage and very fast transient

response. 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 LD1585C quiescent current flows into the load, so increase efficiency. Only a 10 μ F minimum capacitor is need for stability. The device is supplied in TO-220, D²PAK and D²PAK/A. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within $\pm 1\%$ at 25°C.

Figure 1: Schematic Diagram

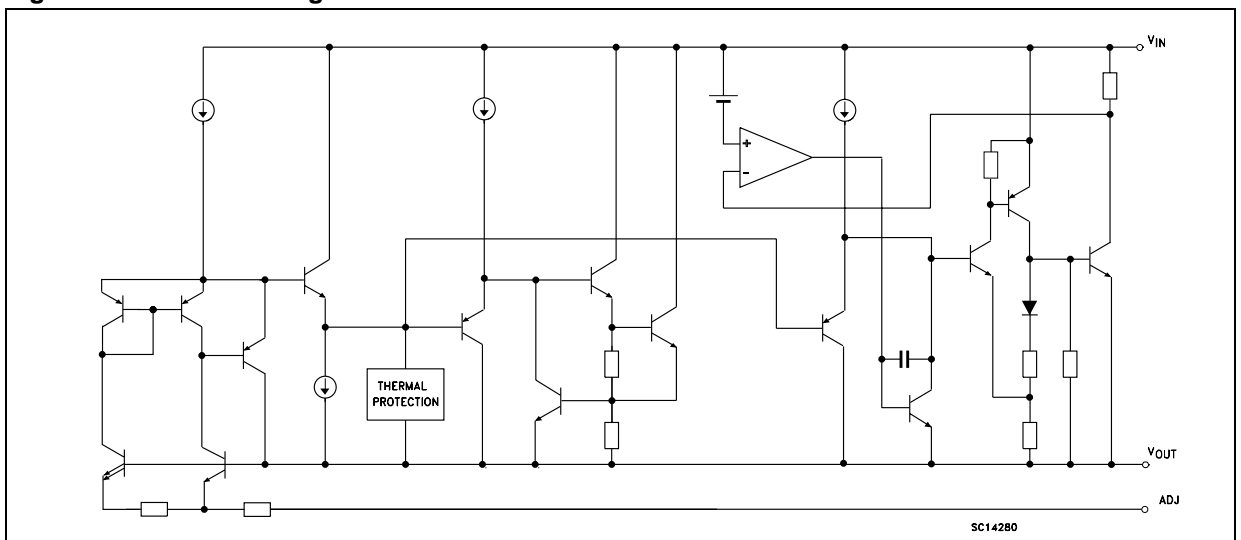


Figure 2: Pin Connection (top view)

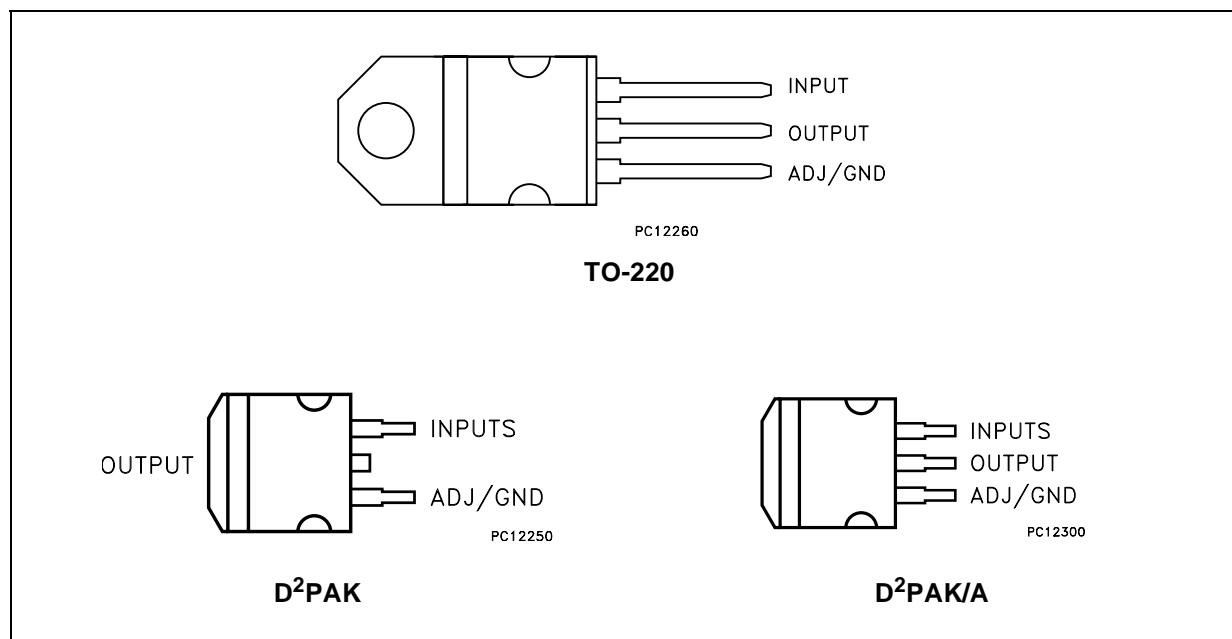


Table 1: Order Codes

| TO-220 | D ² PAK (*) | D ² PAK/A (*) | OUTPUT VOLTAGE |
|------------|------------------------|--------------------------|----------------|
| LD1585CV15 | LD1585CD2T15 | LD1585CD2M15 | 1.5 V |
| LD1585CV18 | LD1585CD2T18 | LD1585CD2M18 | 1.8 V |
| LD1585CV25 | LD1585CD2T25 | LD1585CD2M25 | 2.5 V |
| LD1585CV28 | LD1585CD2T28 | LD1585CD2M28 | 2.85 V |
| LD1585CV33 | LD1585CD2T33 | LD1585CD2M33 | 3.3 V |
| LD1585CV50 | LD1585CD2T50 | LD1585CD2M50 | 5.0 V |
| LD1585CV80 | LD1585CD2T80 | LD1585CD2M80 | 8.0 V |
| LD1585CV90 | LD1585CD2T90 | LD1585CD2M90 | 9.0 V |
| LD1585CV12 | LD1585CD2T12 | LD1585CD2M12 | 12.0 V |
| LD1585CV | LD1585CD2T | LD1585CD2M | ADJ |

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

Table 2: Absolute Maximum Ratings

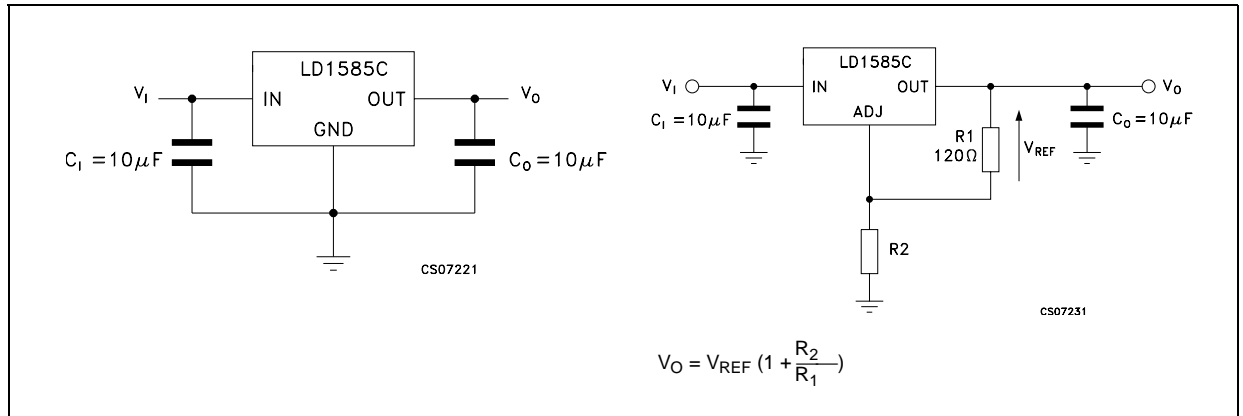
| Symbol | Parameter | Value | Unit |
|------------------|--------------------------------------|--------------------|------|
| V _I | DC Input Voltage | 30 | V |
| I _O | Output Current | Internally Limited | mA |
| P _D | Power Dissipation | Internally Limited | mW |
| T _{stg} | Storage Temperature Range | -55 to +150 | °C |
| T _{op} | Operating Junction Temperature Range | 0 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 ² PAK | Unit |
|-----------------------|-------------------------------------|--------|--------------------|------|
| R _{thj-case} | Thermal Resistance Junction-case | 3 | 3 | °C/W |
| R _{thj-amb} | Thermal Resistance Junction-ambient | 50 | 62.5 | °C/W |

Figure 3: Application Circuits



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

Table 4: Electrical Characteristics Of LD1585C#15 ($V_I=4.5V$, $C_I = C_O=10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|---|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0$ mA $T_J = 25^\circ C$ | 1.485 | 1.5 | 1.515 | V |
| | | $I_O = 0$ to $5A$ $V_I = 3$ to $25V$ (note 1) | 1.47 | 1.5 | 1.53 | V |
| ΔV_O | Line Regulation | $I_O = 0$ mA $V_I = 3$ to $15V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | % |
| | | $I_O = 0$ mA $V_I = 3$ to $15V$ | | 0.005 | 0.2 | % |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | % |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | % |
| V_d | Dropout Voltage | $I_O = 5$ A | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120$ Hz, $C_O = 25$ μF , $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10$ Hz to 10 KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 5: Electrical Characteristics Of LD1585C#18 ($V_I=4.8V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 1.782 | 1.8 | 1.818 | V |
| | | $I_O = 0$ to $5A$ $V_I = 3.3$ to $25V$ (note 1) | 1.764 | 1.8 | 1.836 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 3.3$ to $15V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 3.3$ to $15V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 6: Electrical Characteristics Of LD1585C#25 ($V_I=5.5V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 2.475 | 2.5 | 2.525 | V |
| | | $I_O = 0$ to $5A$ $V_I = 4$ to $25V$ (note 1) | 2.45 | 2.5 | 2.55 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 4$ to $16V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 4$ to $16V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 7: Electrical Characteristics Of LD1585C#285 ($V_I=5.85V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|---|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0$ mA $T_J = 25^\circ C$ | 2.821 | 2.85 | 2.879 | V |
| | | $I_O = 0$ to $5A$ $V_I = 4.5$ to $30V$ (note 1) | 2.793 | 2.85 | 2.907 | V |
| ΔV_O | Line Regulation | $I_O = 0$ mA $V_I = 4.5$ to $18V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0$ mA $V_I = 4.5$ to $18V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5$ A | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120$ Hz, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10$ Hz to 10 KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 8: Electrical Characteristics Of LD1585C#33 ($V_I=6.3V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|---|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0$ mA $T_J = 25^\circ C$ | 3.267 | 3.3 | 3.333 | V |
| | | $I_O = 0$ to $5A$ $V_I = 4.8$ to $25V$ (note 1) | 3.234 | 3.35 | 3.366 | V |
| ΔV_O | Line Regulation | $I_O = 0$ mA $V_I = 4.8$ to $18V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0$ mA $V_I = 4.9$ to $18V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5$ A | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120$ Hz, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10$ Hz to 10 KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 9: Electrical Characteristics Of LD1585C#50 ($V_I=8V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|------|-------|------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 4.95 | 5 | 5.05 | V |
| | | $I_O = 0$ to $5A$ $V_I = 6.5$ to $30V$ (note 1) | 4.9 | 5 | 5.1 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 6.5$ to $20V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 6.5$ to $20V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 10: Electrical Characteristics Of LD1585C#80 ($V_I=11V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|------|-------|------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 7.92 | 8 | 8.08 | V |
| | | $I_O = 0$ to $5A$ $V_I = 9.5$ to $30V$ (note 1) | 7.84 | 8 | 8.16 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 9.5$ to $20V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 9.5$ to $20V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 11: Electrical Characteristics Of LD1585C#90 ($V_I=12V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|------|-------|------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 8.91 | 9 | 9.09 | V |
| | | $I_O = 0$ to $5A$ $V_I = 10.5$ to $30V$ (note 1) | 8.82 | 9 | 9.18 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 10.5$ to $20V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 10.5$ to $20V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 12: Electrical Characteristics Of LD1585C#12 ($V_I=15V$, $C_I = C_O = 10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|-------|-------|-------|------|
| V_O | Output Voltage | $I_O = 0 \text{ mA}$ $T_J = 25^\circ C$ | 11.88 | 12 | 12.12 | V |
| | | $I_O = 0$ to $5A$ $V_I = 13.5$ to $30V$ (note 1) | 11.76 | 12 | 12.24 | V |
| ΔV_O | Line Regulation | $I_O = 0 \text{ mA}$ $V_I = 13.5$ to $25V$ $T_J = 25^\circ C$ | | 0.005 | 0.2 | mV |
| | | $I_O = 0 \text{ mA}$ $V_I = 13.5$ to $25V$ | | 0.005 | 0.2 | |
| ΔV_O | Load Regulation | $I_O = 0$ to $5A$ $T_J = 25^\circ C$ | | 0.05 | 0.3 | mV |
| | | $I_O = 0$ to $5A$ | | 0.05 | 0.5 | |
| V_d | Dropout Voltage | $I_O = 5 \text{ A}$ | | 1.2 | 1.4 | V |
| I_q | Quiescent Current | $V_I \leq 25V$ | | 5 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120 \text{ Hz}$, $C_O = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.03 | 1 | % |

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

Table 13: Electrical Characteristics Of LD1585C# ($V_I=4.25V$, $C_I = C_O=10\mu F$, $T_J = 0$ to $125^\circ C$, unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|--|---|-------|-------|-------|---------|
| V_O | Output Voltage | $I_O = 10mA$ $V_I - V_O = 3V$ $T_J = 25^\circ C$ | 1.237 | 1.25 | 1.263 | V |
| | | $I_O = 10mA$ to $5A$ $V_I - V_O = 1.5$ to $25V$ (note 1) | 1.225 | 1.25 | 1.275 | V |
| ΔV_O | Line Regulation | $I_O = 10mA$ $V_I = 2.75$ to $15V$ $T_J = 25^\circ C$ | | 0.015 | 0.2 | % |
| | | $I_O = 10mA$ $V_I = 2.75$ to $15V$ | | 0.1 | 0.2 | % |
| ΔV_O | Load Regulation | $I_O = 10mA$ to $5A$ $T_J = 25^\circ C$ | | 0.1 | 0.3 | % |
| | | $I_O = 0$ to $5A$ | | 0.25 | 0.5 | % |
| V_d | Dropout Voltage | $I_O = 5A$ | | 1.2 | 1.4 | V |
| $I_{O(min)}$ | Minimum Load Current | $V_I = 25V$ | | 3 | 10 | mA |
| I_{sc} | Short Circuit Current | $V_I - V_O = 5.5V$ | 5.5 | 7 | | A |
| | Thermal Regulation | $T_J = 25^\circ C$, 30ms pulse | | 0.004 | 0.02 | %/W |
| SVR | Supply Voltage Rejection | $f = 120$ Hz, $C_O = 25 \mu F$, $C_{ADJ} = 25 \mu F$, $I_O = 5A$ $V_I - V_O = 3 \pm 1V$ | 60 | 75 | | dB |
| I_{ADJ} | Adjust Pin Current | $I_O = 10$ mA | | 50 | 100 | μA |
| ΔI_{ADJ} | Adjust Pin Current Change | $I_O = 10mA$ to $5A$ $V_I = 3$ to $25V$ (note 1) | | 0.2 | 5 | μA |
| eN | RMS Output Noise Voltage (% of V_O) | $T_J = 25^\circ C$ $f = 10Hz$ to $10KHz$ | | 0.003 | | % |
| S | Temperature Stability | | | 0.5 | | % |
| S | Long Term Stability | $T_J = 125^\circ C$ 1000Hrs | | 0.5 | | % |

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

TYPICAL CHARACTERISTICS (unless otherwise specified $T_j = 25^\circ C$, $C_I=C_O=10\mu F$ tant)

Figure 4: Output Voltage vs Temperature

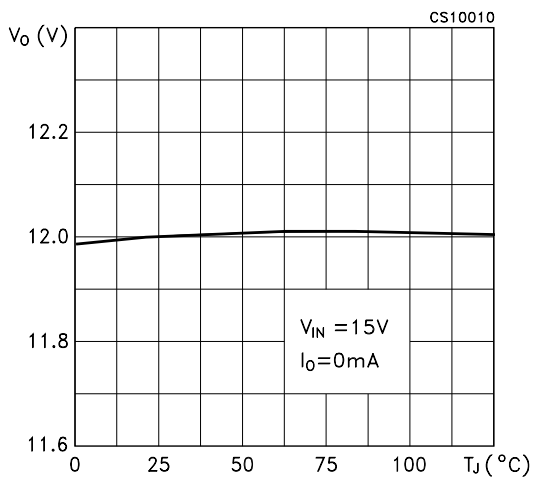


Figure 5: Short Circuit Current vs Dropout Voltage

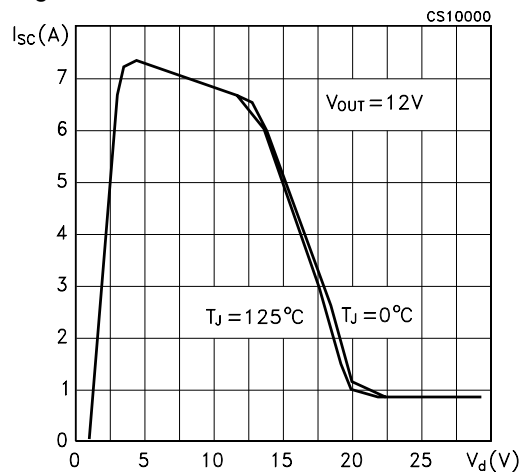


Figure 6: Line Regulation vs Temperature

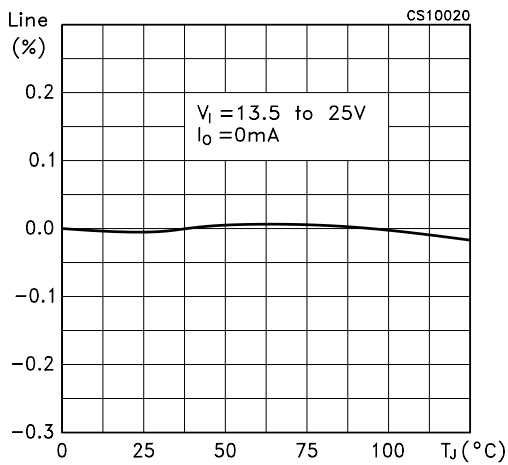


Figure 9: Load Regulation vs Temperature

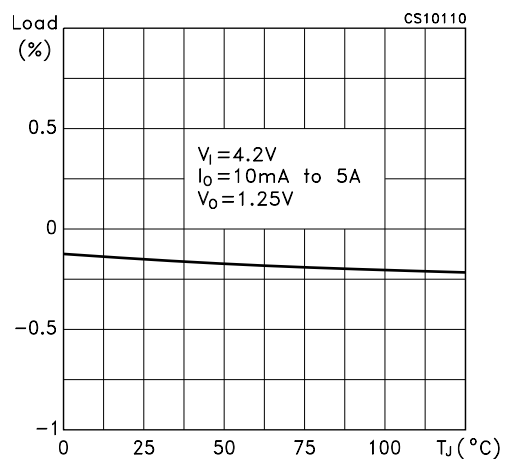


Figure 7: Line Regulation vs Temperature

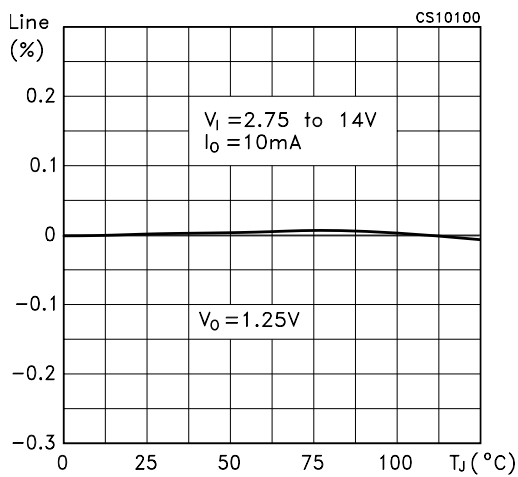


Figure 10: Dropout Voltage vs Temperature

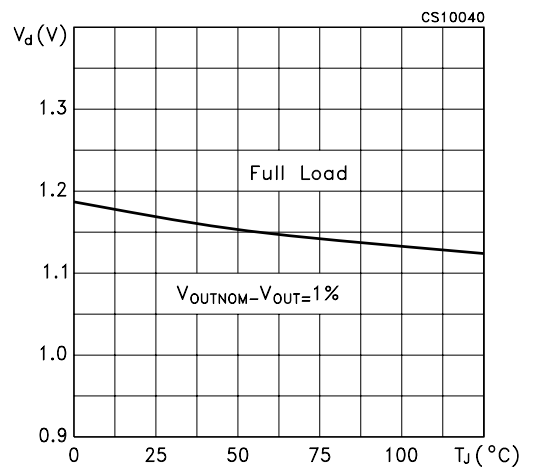


Figure 8: Load Regulation vs Temperature

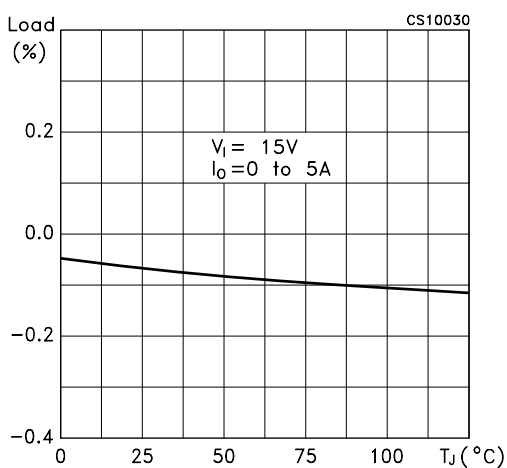


Figure 11: Dropout Voltage vs Output Current

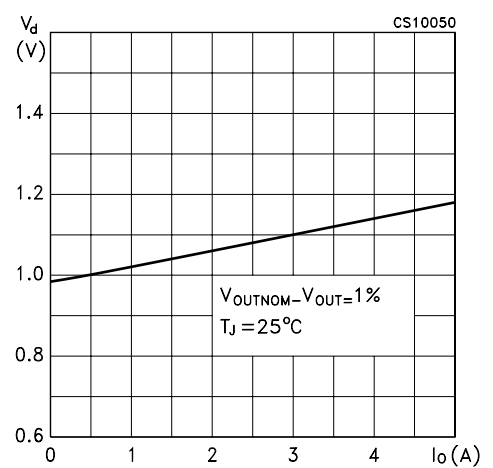


Figure 12: Adjust Pin Current vs Input Voltage

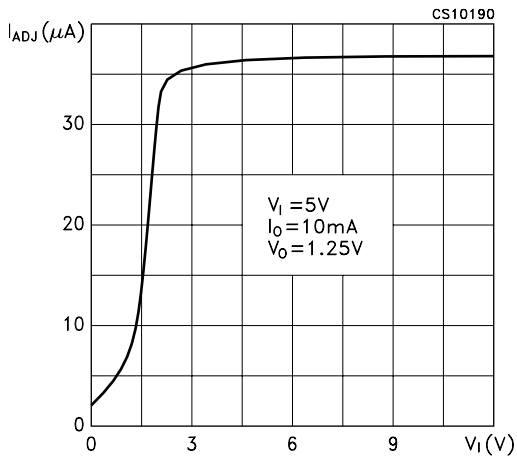


Figure 15: Quiescent Current vs Temperature

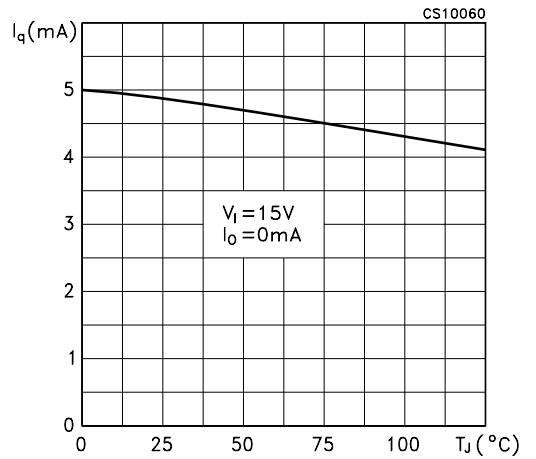


Figure 13: Adjust Pin Current vs Temperature

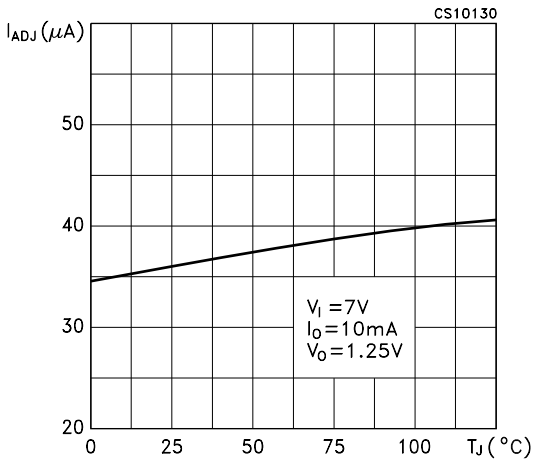


Figure 16: Reference Voltage vs Temperature

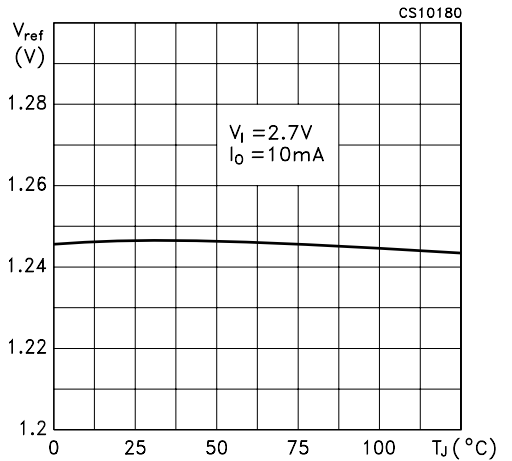


Figure 14: Adjust Pin Current Change vs Temperature

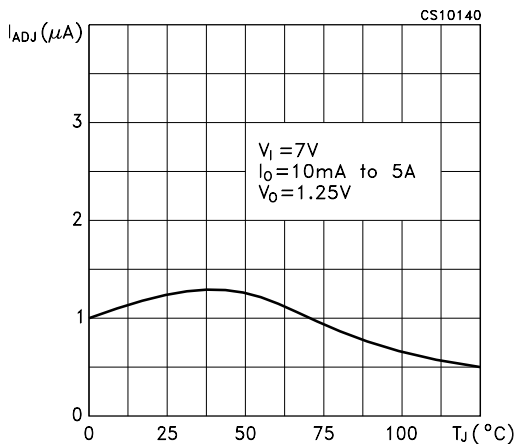


Figure 17: Minimum Load Current vs Temperature

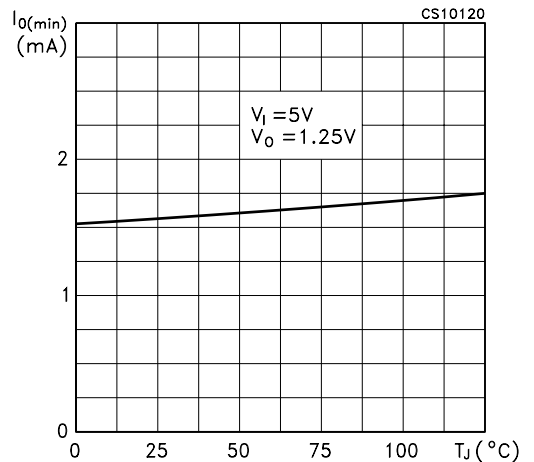


Figure 18: Supply Voltage Rejection vs Output Current

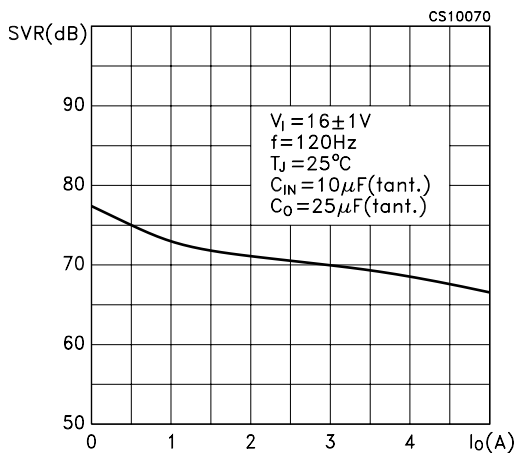


Figure 21: Supply Voltage Rejection vs Frequency

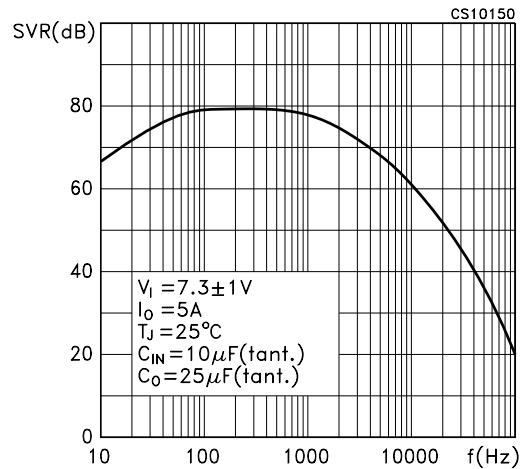


Figure 19: Supply Voltage Rejection vs Output Current

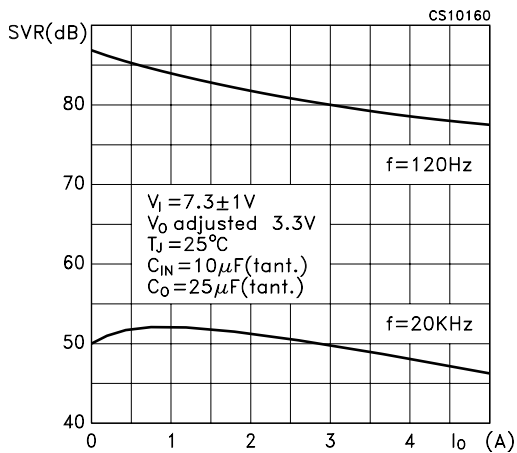


Figure 22: Supply Voltage Rejection vs Temperature

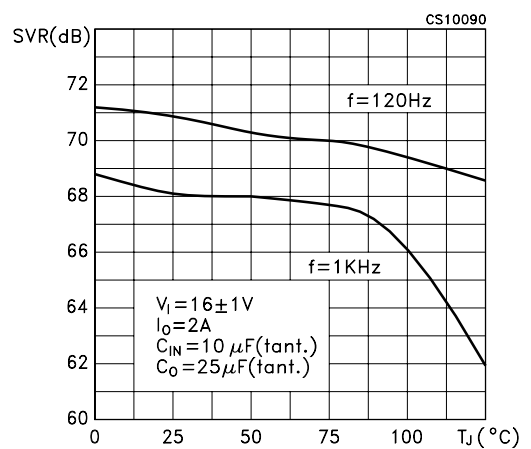


Figure 20: Supply Voltage Rejection vs Frequency

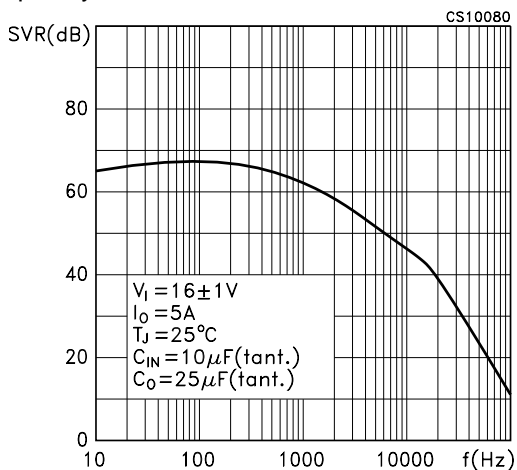


Figure 23: Supply Voltage Rejection vs Temperature

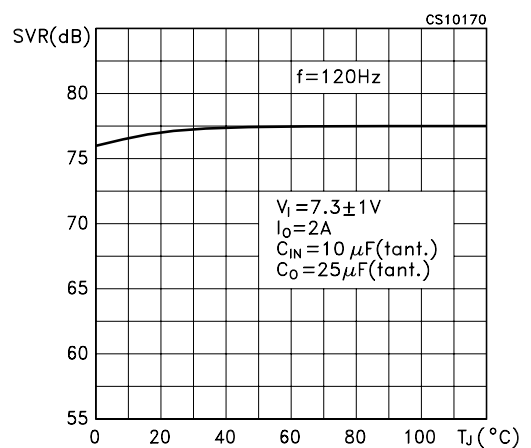
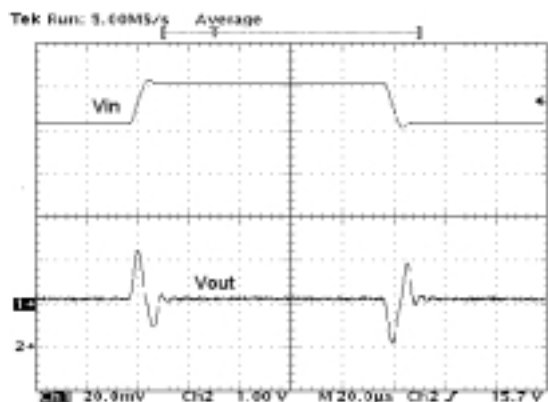
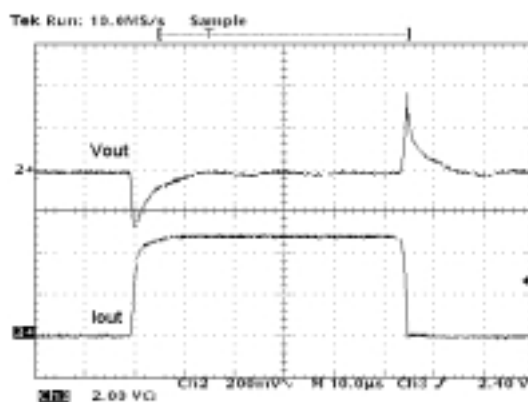


Figure 24: Line Transient



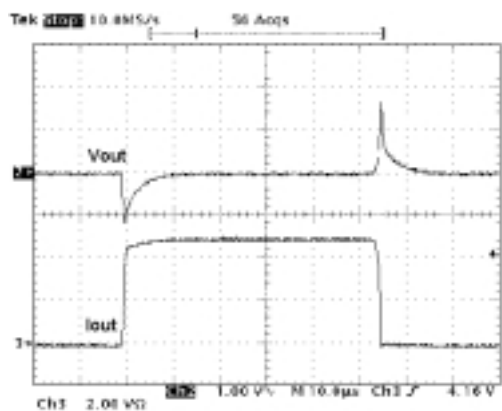
$V_I=15$ to 16 V, $I_O=200$ mA, $C_I = 1\mu\text{F}$ (tant), $C_O=10\mu\text{F}$ (tant),

Figure 26: Load Transient



$V_I=7$ V, $I_O=0.1$ to 5 A, $C_I = 10\mu\text{F}$ (tant), $C_O=10\mu\text{F}$ (tant)

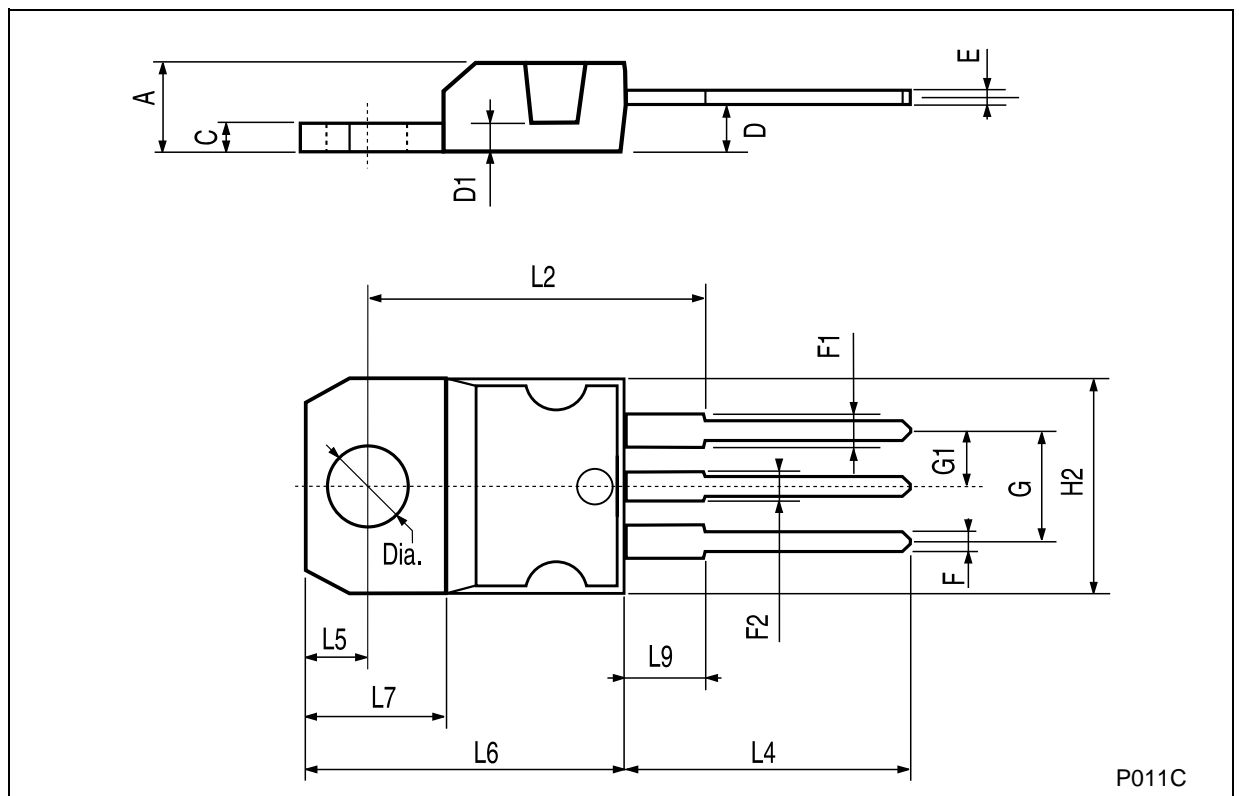
Figure 25: Load Transient



$V_I=15$ V, $I_O=0.1$ to 5 A, $C_I = 10\mu\text{F}$ (tant), $C_O=10\mu\text{F}$ (tant)

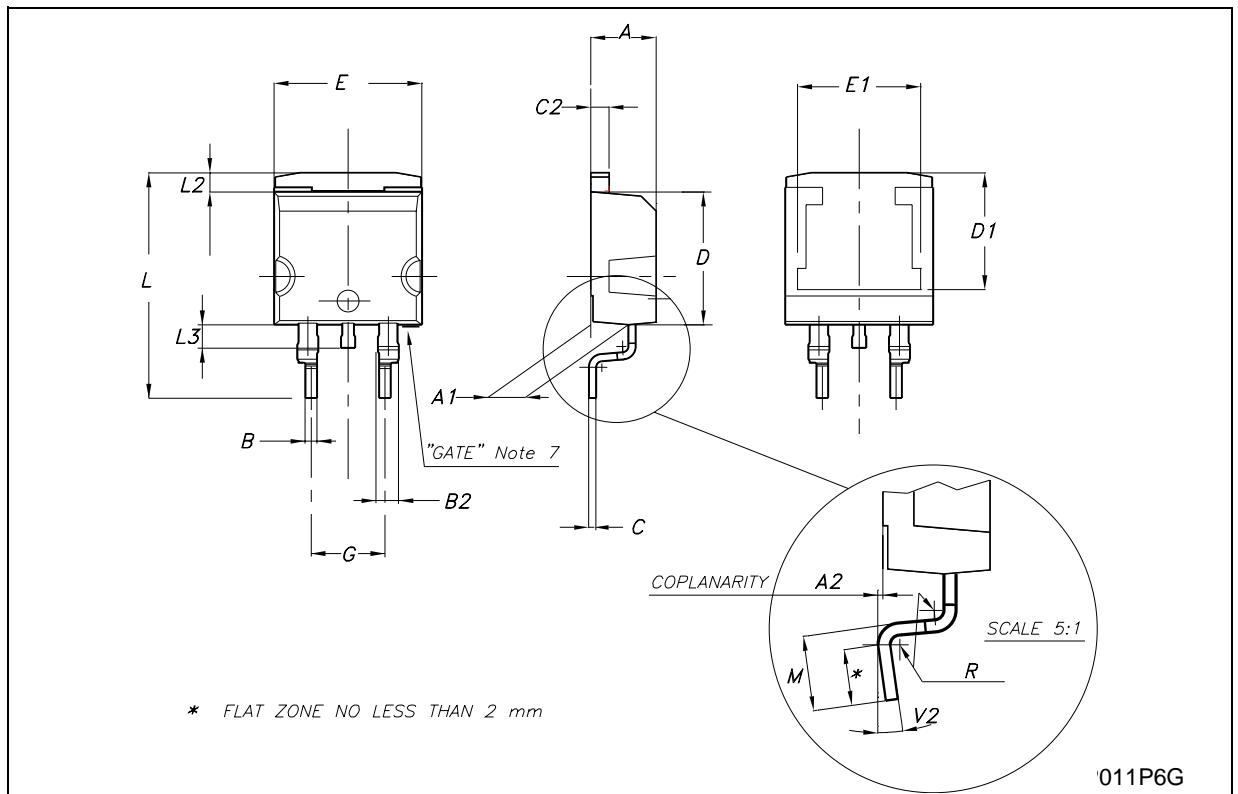
TO-220 MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| C | 1.23 | | 1.32 | 0.048 | | 0.051 |
| D | 2.40 | | 2.72 | 0.094 | | 0.107 |
| D1 | | 1.27 | | | 0.050 | |
| E | 0.49 | | 0.70 | 0.019 | | 0.027 |
| F | 0.61 | | 0.88 | 0.024 | | 0.034 |
| F1 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| F2 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| G | 4.95 | | 5.15 | 0.194 | | 0.203 |
| G1 | 2.4 | | 2.7 | 0.094 | | 0.106 |
| H2 | 10.0 | | 10.40 | 0.393 | | 0.409 |
| L2 | | 16.4 | | | 0.645 | |
| L4 | 13.0 | | 14.0 | 0.511 | | 0.551 |
| L5 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| L6 | 15.25 | | 15.75 | 0.600 | | 0.620 |
| L7 | 6.2 | | 6.6 | 0.244 | | 0.260 |
| L9 | 3.5 | | 3.93 | 0.137 | | 0.154 |
| DIA. | 3.75 | | 3.85 | 0.147 | | 0.151 |



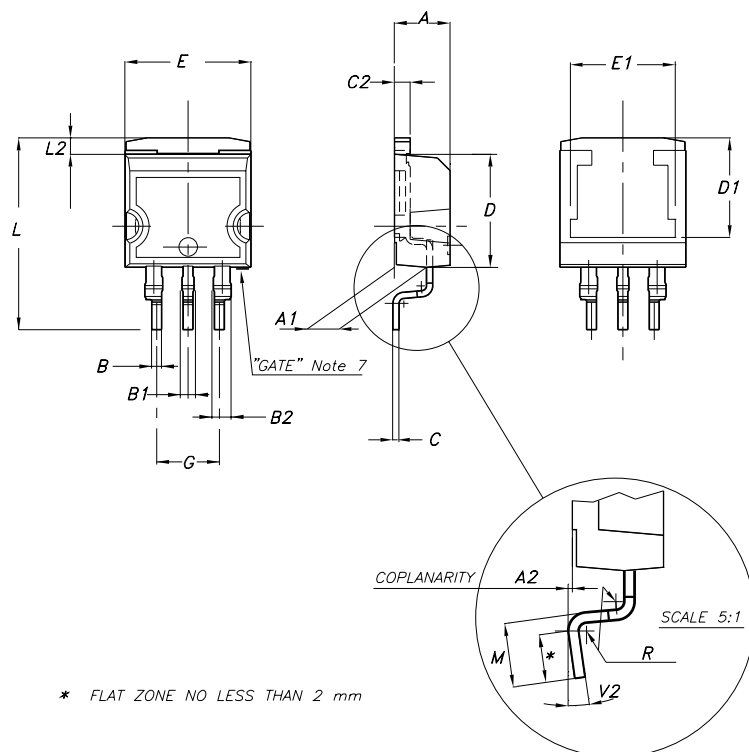
D²PAK MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|------|-----|-------|-------|-------|-------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | 4.4 | | 4.6 | 0.173 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.7 | | 0.93 | 0.027 | | 0.036 |
| B2 | 1.14 | | 1.7 | 0.044 | | 0.067 |
| C | 0.45 | | 0.6 | 0.017 | | 0.023 |
| C2 | 1.23 | | 1.36 | 0.048 | | 0.053 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| D1 | | 8 | | | 0.315 | |
| E | 10 | | 10.4 | 0.393 | | 0.409 |
| E1 | | 8.5 | | | 0.335 | |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15 | | 15.85 | 0.590 | | 0.624 |
| L2 | 1.27 | | 1.4 | 0.050 | | 0.055 |
| L3 | 1.4 | | 1.75 | 0.055 | | 0.068 |
| M | 2.4 | | 3.2 | 0.094 | | 0.126 |
| R | | 0.4 | | | 0.016 | |
| V2 | 0° | | 8° | 0° | | 8° |



D²PAK/A MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|------|-----|-------|-------|-------|-------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.7 | | 0.93 | 0.028 | | 0.037 |
| B1 | 0.8 | | 1.3 | 0.031 | | 0.051 |
| B2 | 1.14 | | 1.7 | 0.045 | | 0.067 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 1.23 | | 1.36 | 0.048 | | 0.054 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| D1 | | 8 | | | 0.315 | |
| E | 10 | | 10.4 | 0.394 | | 0.409 |
| E1 | | 8.5 | | | 0.335 | |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15 | | 15.85 | 0.591 | | 0.624 |
| L2 | 1.27 | | 1.4 | 0.050 | | 0.055 |
| M | 2.4 | | 3.2 | 0.094 | | 0.126 |
| R | | 0.4 | | | 0.016 | |
| V2 | 0° | | 8° | 0° | | 8° |



7106164/D

Tape & Reel D²PAK-P²PAK-D²PAK/A-P²PAK/A MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|-------|-------|-------|-------|-------|-------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | | | 180 | | | 7.086 |
| C | 12.8 | 13.0 | 13.2 | 0.504 | 0.512 | 0.519 |
| D | 20.2 | | | 0.795 | | |
| N | 60 | | | 2.362 | | |
| T | | | 14.4 | | | 0.567 |
| Ao | 10.50 | 10.6 | 10.70 | 0.413 | 0.417 | 0.421 |
| Bo | 15.70 | 15.80 | 15.90 | 0.618 | 0.622 | 0.626 |
| Ko | 4.80 | 4.90 | 5.00 | 0.189 | 0.193 | 0.197 |
| Po | 3.9 | 4.0 | 4.1 | 0.153 | 0.157 | 0.161 |
| P | 11.9 | 12.0 | 12.1 | 0.468 | 0.472 | 0.476 |

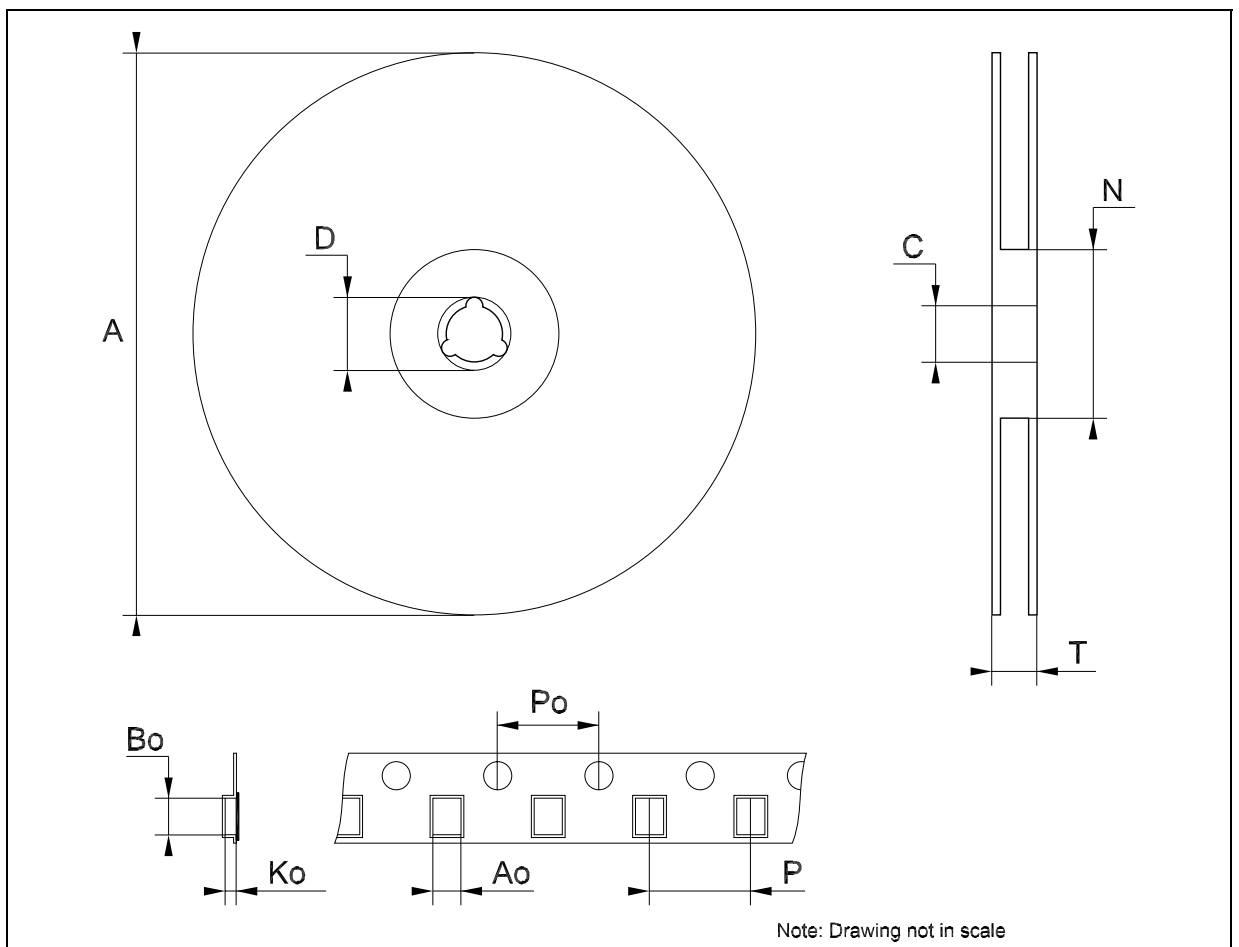


Table 14: Revision History

| Date | Revision | Description of Changes |
|-------------|----------|--------------------------------|
| 07-Oct-2004 | 3 | Mistake Order Codes - Table 1. |

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