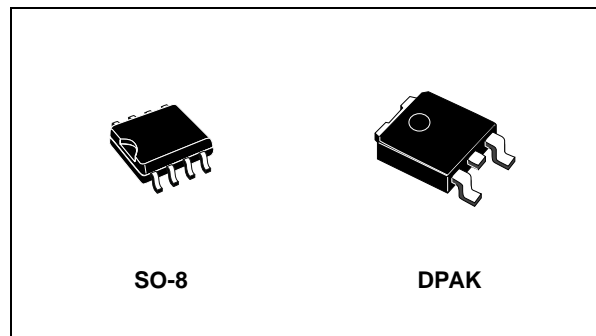




KF00 SERIES

VERY LOW DROP VOLTAGE REGULATORS WITH INHIBIT

- VERY LOW DROPOUT VOLTAGE (0.4V)
- VERY LOW QUIESCENT CURRENT (TYP. 50 μ A IN OFF MODE, 500 μ A IN ON MODE)
- OUTPUT CURRENT UP TO 500 mA
- LOGIC-CONTROLLED ELECTRONIC SHUTDOWN
- OUTPUT VOLTAGES OF 1.25; 1.5; 2.5; 2.7; 3; 3.3; 3.5; 4; 4.5; 4.7; 5; 5.2; 5.5; 6; 8; 8.5; 12V
- INTERNAL CURRENT AND THERMAL LIMIT
- ONLY 2.2 μ F FOR STABILITY
- AVAILABLE IN \pm 2% ACCURACY AT 25 $^{\circ}$ C
- SUPPLY VOLTAGE REJECTION: 70 db (TYP.)
- TEMPERATURE RANGE: -40 TO 125 $^{\circ}$ C



DESCRIPTION

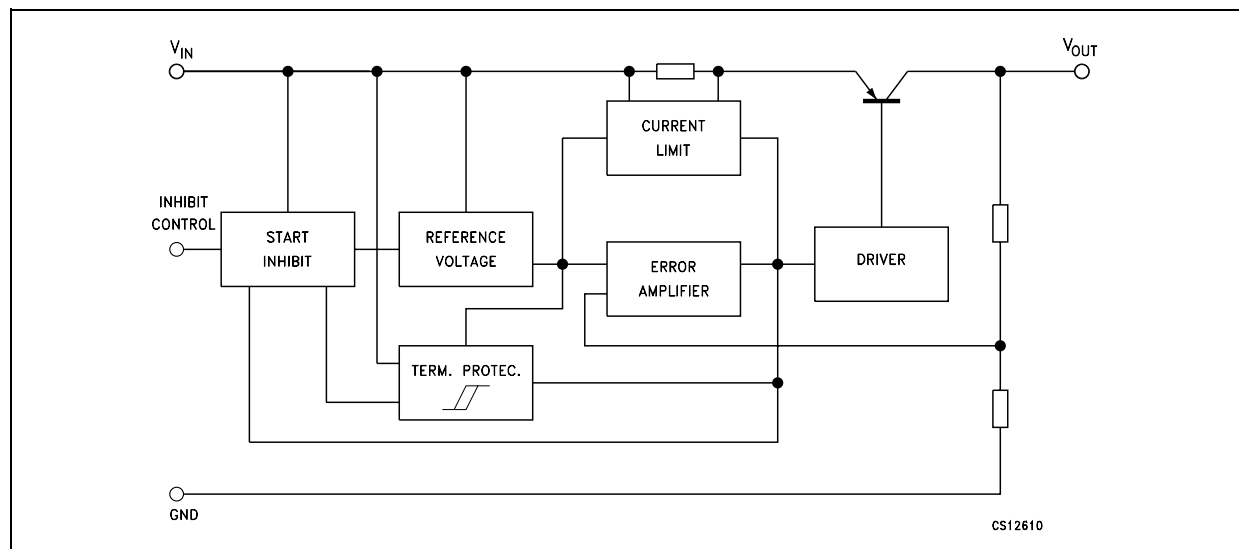
The KF00 series are very Low Drop regulators available in SO-8 package and in a wide range of output voltages.

The very Low Drop voltage (0.4V) and the very low quiescent current make them particularly

suitable for Low Noise, Low Power applications and specially in battery powered systems.

A Shutdown Logic Control function is available (pin 5, TTL compatible). This means that when the device is used as a local regulator, it is possible to put a part of the board in standby, decreasing the total power consumption. It requires only a 2.2 μ F capacitor for stability allowing space and cost saving.

SCHEMATIC DIAGRAM



KF00

ABSOLUTE MAXIMUM RATINGS

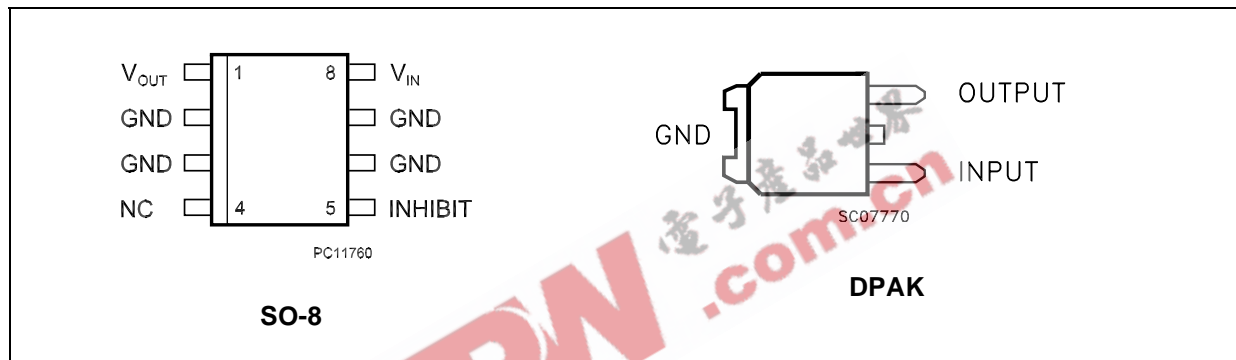
| Symbol | Parameter | Value | Unit |
|-----------|--------------------------------------|--------------------|------|
| V_I | DC Input Voltage | -0.5 to 20 | V |
| I_O | Output Current | Internally Limited | |
| P_{tot} | Power Dissipation | Internally Limited | |
| T_{stg} | Storage Temperature Range | -40 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 | DAK | SO-8 | Unit |
|----------------|----------------------------------|-----|------|------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | 8 | 20 | °C/W |

CONNECTION DIAGRAM (top view)



ORDERING CODES

| TYPE | SO-8(#) | DAK(#) | OUTPUT VOLTAGE |
|---------|---------|----------|----------------|
| KF12(*) | KF12BD | KF12BDT | 1.25 V |
| KF15 | KF15BD | KF15BDT | 1.5 V |
| KF25 | KF25BD | KF25BDT | 2.5 V |
| KF27 | KF27BD | KF27BDT | 2.7 V |
| KF30 | KF30BD | KF30BDT | 3 V |
| KF33 | KF33BD | KF33BDT | 3.3 V |
| KF35 | KF35BD | KF35BDT | 3.5 V |
| KF40 | KF40BD | KF40BDT | 4 V |
| KF45(*) | KF45BD | KF45BDT | 4.5 V |
| KF47 | KF47BD | KF47BDT | 4.75 V |
| KF50 | KF50BD | KF50BDT | 5 V |
| KF52 | KF52BD | KF52BDT | 5.2 V |
| KF55(*) | KF55BD | KF55BDT | 5.5 V |
| KF60 | KF60BD | KF60BDT | 6 V |
| KF80 | KF80BD | KF80BDT | 8 V |
| KF85 | KF85BD | KF85BDT | 8.5 V |
| KF120 | KF120BD | KF120BDT | 12 V |

(*) Available on request.

(#) Available in Tape & Reel with the suffix "-TR".

TEST CIRCUITS



ELECTRICAL CHARACTERISTICS FOR KF12 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_I = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit | |
|--------------|---------------------------|--|----------------------|------|-------|---------------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 3.3 \text{ V}$ | 1.225 | 1.25 | 1.275 | V | |
| | | $I_O = 50 \text{ mA}$, $V_I = 3.3 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 1.2 | | 1.3 | | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | 2.5 | | 20 | V | |
| I_O | Output Current Limit | | | 1 | | A | |
| ΔV_O | Line Regulation | $V_I = 2.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV | |
| ΔV_O | Load Regulation | $V_I = 2.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV | |
| I_d | Quiescent Current | $V_I = 2.5 \text{ to } 20 \text{ V}$, $I_O = 0 \text{ mA}$ | (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 2.6 \text{ to } 20 \text{ V}$, $I_O = 500 \text{ mA}$ | | | | 12 | |
| | | $V_I = 6 \text{ V}$ | (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 3.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 82 | | dB | |
| | | | $f = 1 \text{ KHz}$ | 77 | | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV | |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 1.25 | | V | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V | |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V | |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA | |
| C_O | Output Bypass Capacitance | ESR = 0.1 to 10 Ω $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF | |

ELECTRICAL CHARACTERISTICS FOR KF15 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 3.5 \text{ V}$ | 1.47 | 1.5 | 1.53 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 3.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 1.44 | | 1.56 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | 2.5 | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 2.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 2.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 2.5 \text{ to } 20 \text{ V}$, $I_O = 0 \text{ mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 2.8 \text{ to } 20 \text{ V}$, $I_O = 500 \text{ mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 3.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 82 | | dB |
| | | | $f = 1 \text{ KHz}$ | 77 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 1 | | V |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF25 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 4.5 \text{ V}$ | 2.45 | 2.5 | 2.55 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 4.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 2.4 | | 2.6 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 3.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 3.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 3.5 \text{ to } 20 \text{ V}$, $I_O = 0 \text{ mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 3.8 \text{ to } 20 \text{ V}$, $I_O = 500 \text{ mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 4.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 82 | | dB |
| | | | $f = 1 \text{ KHz}$ | 77 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF27 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|-------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 4.7 \text{ V}$ | 2.646 | 2.7 | 2.754 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 4.7 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 2.592 | | 2.808 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 3.7 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 4 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 3.7 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 4 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 4.7 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 82 | | dB |
| | | | $f = 1 \text{ KHz}$ | 77 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF30 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 5 \text{ V}$ | 2.94 | 3 | 3.06 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 2.88 | | 3.12 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 4 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 4.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 4 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 4.3 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 81 | | dB |
| | | | $f = 1 \text{ KHz}$ | 76 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF33 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|-------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 5.3 \text{ V}$ | 3.234 | 3.3 | 3.366 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 5.3 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 3.168 | | 3.432 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 4.3 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 4.6 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 4.3 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 4.6 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 5.3 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 80 | | dB |
| | | | $f = 1 \text{ KHz}$ | 75 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF35 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 5.5 \text{ V}$ | 3.43 | 3.5 | 3.57 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 5.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 3.36 | | 3.64 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 4.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 2 | 12 | mV |
| ΔV_O | Load Regulation | $V_I = 4.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 4.5 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 4.8 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 5.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 79 | | dB |
| | | | $f = 1 \text{ KHz}$ | 74 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF40 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 6 \text{ V}$ | 3.92 | 4 | 4.08 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 6 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 3.84 | | 4.16 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 5.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 5 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 5.3 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 6 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 78 | | dB |
| | | | $f = 1 \text{ KHz}$ | 73 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF45 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 6.5 \text{ V}$ | 4.41 | 4.5 | 4.59 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 6.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 4.32 | | 4.68 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 5.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 5.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 5.5 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 5.8 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 6.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 77 | | dB |
| | | | $f = 1 \text{ KHz}$ | 72 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF47 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|-------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 6.7 \text{ V}$ | 4.606 | 4.7 | 4.794 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 6.7 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 4.512 | | 4.888 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 5.7 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 6 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 5.7 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 6 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 6.7 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 77 | | dB |
| | | | $f = 1 \text{ KHz}$ | 72 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF50 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 7 \text{ V}$ | 4.9 | 5 | 5.1 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 7 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 4.8 | | 5.2 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 6 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 6.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 6 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 6.3 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 7 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 76 | | dB |
| | | | $f = 1 \text{ KHz}$ | 71 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF52 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|-------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 7.2 \text{ V}$ | 5.096 | 5.2 | 5.304 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 7.2 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 4.992 | | 5.408 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 6.2 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 6.5 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 6.2 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 6.5 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 7.2 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 76 | | dB |
| | | | $f = 1 \text{ KHz}$ | 71 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF55 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 7.5 \text{ V}$ | 5.39 | 5.5 | 5.61 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 7.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 5.28 | | 5.72 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 6.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 3 | 18 | mV |
| ΔV_O | Load Regulation | $V_I = 6.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 6.5 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.5 | 1 | mA |
| | | $V_I = 6.8 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 6 \text{ V}$ (OFF MODE) | | 50 | 100 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 7.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 76 | | dB |
| | | | $f = 1 \text{ KHz}$ | 71 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 6 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF60 (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_0 = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|--|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 8 \text{ V}$ | 5.88 | 6 | 6.12 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 8 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 5.76 | | 6.24 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 7 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 4 | 24 | mV |
| ΔV_O | Load Regulation | $V_I = 7.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 7 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.7 | 1.5 | mA |
| | | $V_I = 7.3 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 9 \text{ V}$ (OFF MODE) | | 70 | 140 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 8 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 75 | | dB |
| | | | $f = 1 \text{ KHz}$ | 70 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 9 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF80B (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_0 = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|---|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 10 \text{ V}$ | 7.84 | 8 | 8.16 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 10 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 7.68 | | 8.32 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 9 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 4 | 24 | mV |
| ΔV_O | Load Regulation | $V_I = 9.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 9 \text{ to } 20\text{V}$, $I_O = 0\text{mA}$ (ON MODE) | | 0.7 | 1.5 | mA |
| | | $V_I = 9.3 \text{ to } 20\text{V}$, $I_O = 500\text{mA}$ | | | 12 | |
| | | $V_I = 9 \text{ V}$ (OFF MODE) | | 70 | 140 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 10 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 72 | | dB |
| | | | $f = 1 \text{ KHz}$ | 67 | | |
| | | | $f = 10 \text{ KHz}$ | 60 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 9 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF85B (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|---|----------------------|------|------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 10.5 \text{ V}$ | 8.33 | 8.5 | 8.67 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 10.5 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 8.16 | | 8.84 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 9.5 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 4 | 24 | mV |
| ΔV_O | Load Regulation | $V_I = 9.8 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 9.5 \text{ to } 20 \text{ V}$, $I_O = 0 \text{ mA}$ (ON MODE) | | 0.7 | 1.5 | mA |
| | | $V_I = 9.8 \text{ to } 20 \text{ V}$, $I_O = 500 \text{ mA}$ | | | 12 | |
| | | $V_I = 10 \text{ V}$ (OFF MODE) | | 70 | 140 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 10.5 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 67 | | dB |
| | | | $f = 1 \text{ KHz}$ | 63 | | |
| | | | $f = 10 \text{ KHz}$ | 53 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 10 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

ELECTRICAL CHARACTERISTICS FOR KF120B (refer to the test circuits, $T_j = 25^\circ\text{C}$, $C_1 = 0.1 \mu\text{F}$, $C_O = 2.2 \mu\text{F}$ unless otherwise specified.)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|---------------------------|---|----------------------|------|-------|---------------|
| V_O | Output Voltage | $I_O = 50 \text{ mA}$, $V_I = 14 \text{ V}$ | 11.76 | 12 | 12.24 | V |
| | | $I_O = 50 \text{ mA}$, $V_I = 14 \text{ V}$, $T_a = -25 \text{ to } 85^\circ\text{C}$ | 11.52 | | 12.48 | |
| V_I | Operating Input Voltage | $I_O = 500 \text{ mA}$ | | | 20 | V |
| I_O | Output Current Limit | | | 1 | | A |
| ΔV_O | Line Regulation | $V_I = 13 \text{ to } 20 \text{ V}$, $I_O = 5 \text{ mA}$ | | 8 | 48 | mV |
| ΔV_O | Load Regulation | $V_I = 13.3 \text{ V}$, $I_O = 5 \text{ to } 500 \text{ mA}$ | | 2 | 50 | mV |
| I_d | Quiescent Current | $V_I = 13 \text{ to } 20 \text{ V}$, $I_O = 0 \text{ mA}$ (ON MODE) | | 0.7 | 1.5 | mA |
| | | $V_I = 13.3 \text{ to } 20 \text{ V}$, $I_O = 500 \text{ mA}$ | | | 12 | |
| | | $V_I = 13 \text{ V}$ (OFF MODE) | | 70 | 140 | μA |
| SVR | Supply Voltage Rejection | $I_O = 5 \text{ mA}$ $V_I = 14 \pm 1 \text{ V}$ | $f = 120 \text{ Hz}$ | 69 | | dB |
| | | | $f = 1 \text{ KHz}$ | 64 | | |
| | | | $f = 10 \text{ KHz}$ | 54 | | |
| eN | Output Noise Voltage | $B = 10 \text{ Hz to } 100 \text{ KHz}$ | | 50 | | μV |
| V_d | Dropout Voltage | $I_O = 200 \text{ mA}$ | | 0.2 | 0.35 | V |
| | | $I_O = 500 \text{ mA}$ | | 0.4 | 0.7 | |
| V_{IL} | Control Input Logic Low | $T_a = -40 \text{ to } 125^\circ\text{C}$ | | | 0.8 | V |
| V_{IH} | Control Input Logic High | $T_a = -40 \text{ to } 125^\circ\text{C}$ | 2 | | | V |
| I_I | Control Input Current | $V_I = 13 \text{ V}$, $V_C = 6 \text{ V}$ | | 10 | | μA |
| C_O | Output Bypass Capacitance | $\text{ESR} = 0.1 \text{ to } 10 \Omega$, $I_O = 0 \text{ to } 500 \text{ mA}$ | 2 | 10 | | μF |

TYPICAL PERFORMANCE CHARACTERISTICS (unless otherwise specified $V_{O(NOM)} = 3.3\text{ V}$)

Figure 1 : Dropout Voltage vs Output Current



Figure 2 : Dropout Voltage vs Temperature

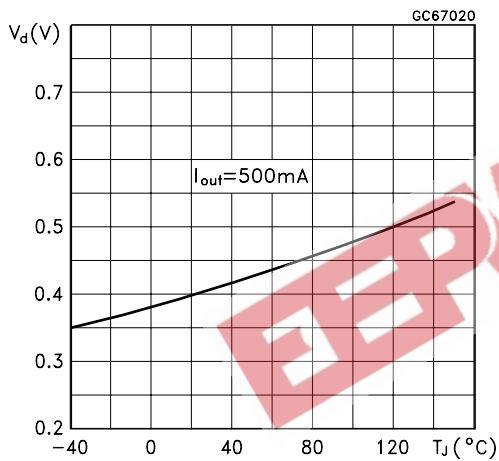


Figure 3 : Supply Current vs Input Voltage

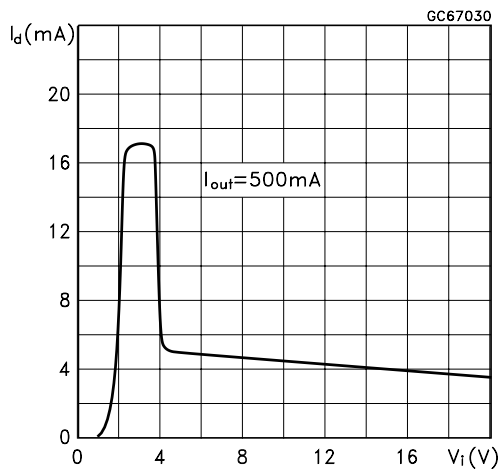


Figure 4 : Supply Current vs Input Voltage

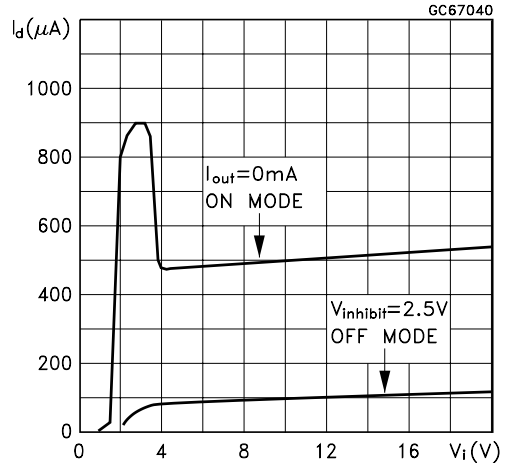


Figure 5 : Short Circuit Current vs Input Voltage

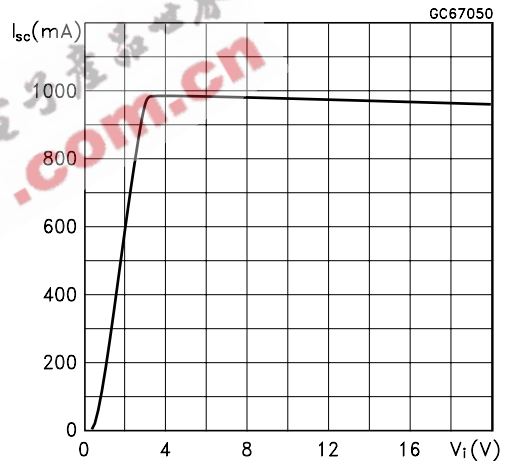
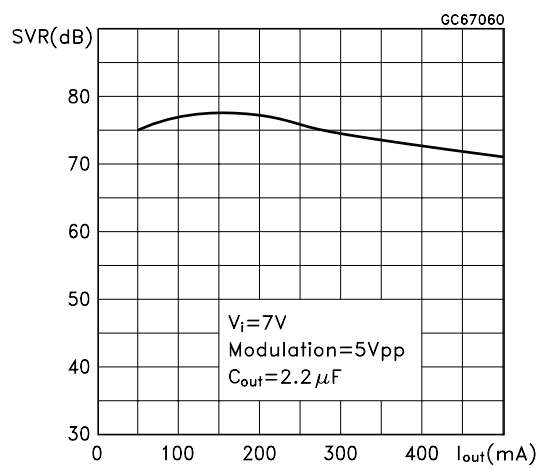
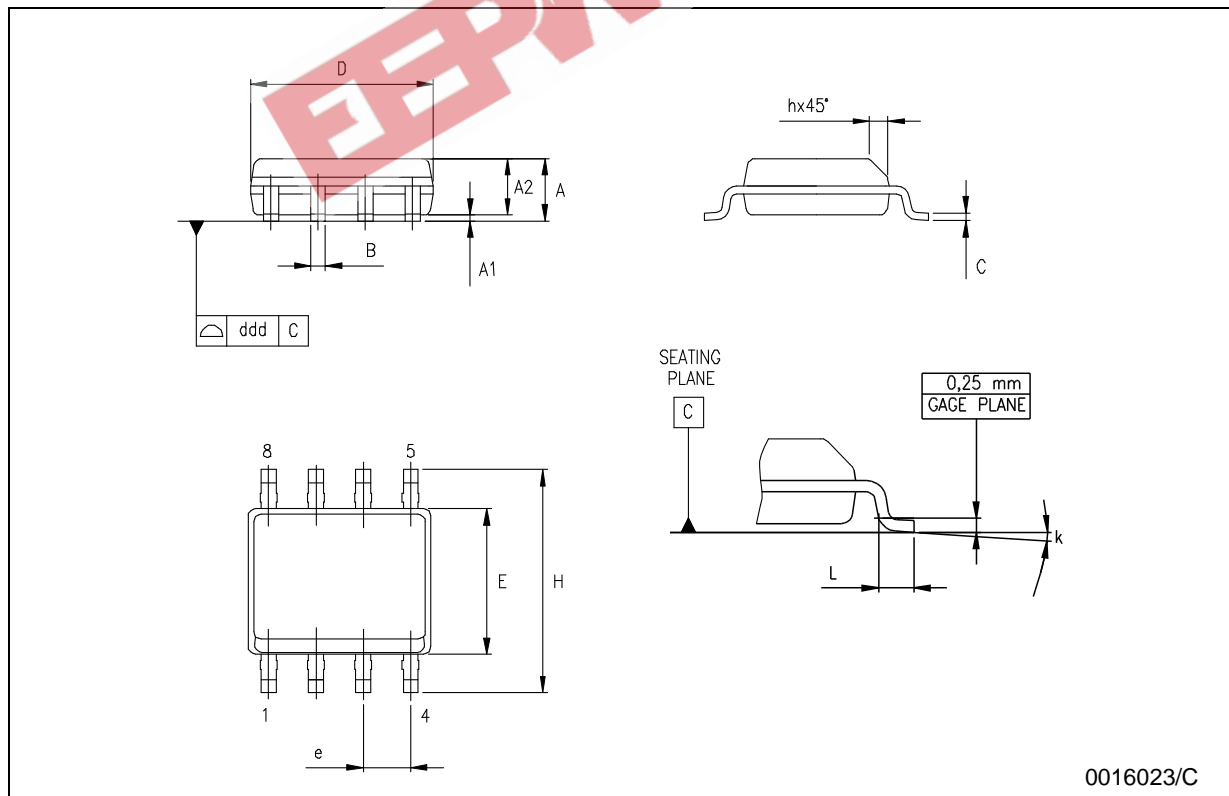


Figure 6 : Supply Voltage Rejection vs Input Voltage



SO-8 MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|-----------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 1.35 | | 1.75 | 0.053 | | 0.069 |
| A1 | 0.10 | | 0.25 | 0.04 | | 0.010 |
| A2 | 1.10 | | 1.65 | 0.043 | | 0.065 |
| B | 0.33 | | 0.51 | 0.013 | | 0.020 |
| C | 0.19 | | 0.25 | 0.007 | | 0.010 |
| D | 4.80 | | 5.00 | 0.189 | | 0.197 |
| E | 3.80 | | 4.00 | 0.150 | | 0.157 |
| e | | 1.27 | | | 0.050 | |
| H | 5.80 | | 6.20 | 0.228 | | 0.244 |
| h | 0.25 | | 0.50 | 0.010 | | 0.020 |
| L | 0.40 | | 1.27 | 0.016 | | 0.050 |
| k | 8° (max.) | | | | | |
| ddd | | | 0.1 | | | 0.04 |



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 |
| D1 | | 5.1 | | | 0.200 | |
| E | 6.4 | | 6.6 | 0.252 | | 0.260 |
| E1 | | 4.7 | | | 0.185 | |
| e | | 2.28 | | | 0.090 | |
| e1 | 4.4 | | 4.6 | 0.173 | | 0.181 |
| H | 9.35 | | 10.1 | 0.368 | | 0.397 |
| L | | 1 | | | 0.039 | |
| (L1) | | 2.8 | | | 0.110 | |
| L2 | | 0.8 | | | 0.031 | |
| L4 | 0.6 | | 1 | 0.023 | | 0.039 |



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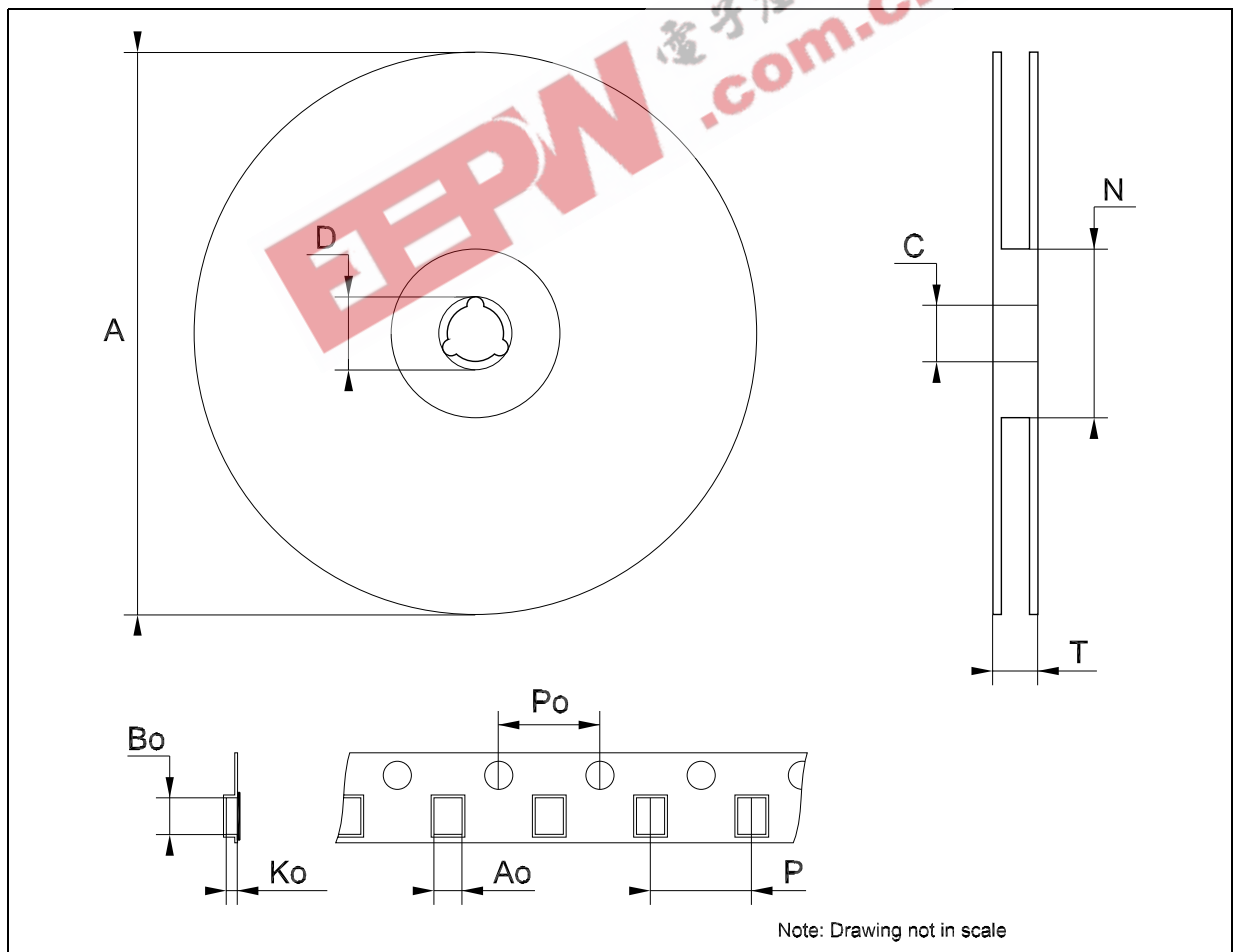
Tape & Reel SO-8 MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|------|-----|------|-------|------|--------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | | | 330 | | | 12.992 |
| C | 12.8 | | 13.2 | 0.504 | | 0.519 |
| D | 20.2 | | | 0.795 | | |
| N | 60 | | | 2.362 | | |
| T | | | 22.4 | | | 0.882 |
| Ao | 8.1 | | 8.5 | 0.319 | | 0.335 |
| Bo | 5.5 | | 5.9 | 0.216 | | 0.232 |
| Ko | 2.1 | | 2.3 | 0.082 | | 0.090 |
| Po | 3.9 | | 4.1 | 0.153 | | 0.161 |
| P | 7.9 | | 8.1 | 0.311 | | 0.319 |



Tape & Reel DPAK-PPAK MECHANICAL DATA

| DIM. | mm. | | | inch | | |
|------|-------|-------|-------|-------|-------|--------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | | | 330 | | | 12.992 |
| C | 12.8 | 13.0 | 13.2 | 0.504 | 0.512 | 0.519 |
| D | 20.2 | | | 0.795 | | |
| N | 60 | | | 2.362 | | |
| T | | | 22.4 | | | 0.882 |
| Ao | 6.80 | 6.90 | 7.00 | 0.268 | 0.272 | 0.276 |
| Bo | 10.40 | 10.50 | 10.60 | 0.409 | 0.413 | 0.417 |
| Ko | 2.55 | 2.65 | 2.75 | 0.100 | 0.104 | 0.105 |
| Po | 3.9 | 4.0 | 4.1 | 0.153 | 0.157 | 0.161 |
| P | 7.9 | 8.0 | 8.1 | 0.311 | 0.315 | 0.319 |



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