

MC78XX/LM78XX/MC78XXA

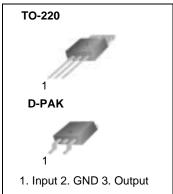
3-Terminal 1A Positive Voltage Regulator

Features

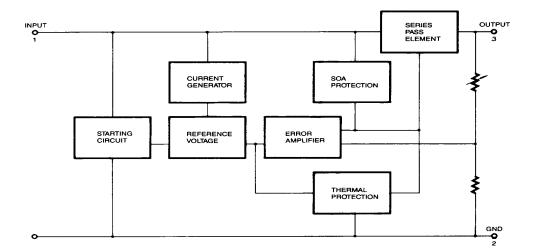
- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

Description

The MC78XX/LM78XX/MC78XXA series of three terminal positive regulators are available in the TO-220/D-PAK package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.



Internal Block Digram



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|----------------------------------|------------|--------|
| Input Voltage (for V _O = 5V to 18V) (for V _O = 24V) | V _I V _I | 35 40 | V V |
| Thermal Resistance Junction-Cases (TO-220) | R ₀ JC | 5 | °C/W |
| Thermal Resistance Junction-Air (TO-220) | RθJA | 65 | °C/W |
| Operating Temperature Range | TOPR | 0 ~ +125 | °C |
| Storage Temperature Range | TSTG | -65 ~ +150 | °C |

Electrical Characteristics (MC7805/LM7805)

(Refer to test circuit ,0°C < TJ < 125°C, IO = 500mA, VI = 10V, CI= 0.33 μ F, CO= 0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Ca | onditions | MC7 | 805/LM | 7805 | Unit |
|--------------------------|-------------------|--|---|------|--------|------|-------|
| Parameter | Symbol | | onditions | Min. | Тур. | Max. | Unit |
| | | TJ =+25 °C | | 4.8 | 5.0 | 5.2 | |
| Output Voltage | Vo | $5.0 \text{mA} \le \text{Io} \le 1.0 \text{A}, \text{PO} \le 15 \text{W}$ $\text{VI} = 7 \text{V to } 20 \text{V}$ | | 4.75 | 5.0 | 5.25 | V |
| Line Regulation (Note1) | Regline | T _{J=+25} °C | Vo = 7V to 25V | - | 4.0 | 100 | mV |
| Line Regulation (Note I) | Regilile | 11=+23 C | VI = 8V to 12V | - | 1.6 | 50 | IIIV |
| | | | IO = 5.0mA to1.5A | - | 9 | 100 | |
| Load Regulation (Note1) | Regload | T _J =+25 °C | I _O =250mA to 750mA | - | 4 | 50 | mV |
| Quiescent Current | IQ | TJ =+25 °C | | - | 5.0 | 8.0 | mA |
| Quiescent Current Change | Alo | IO = 5mA to 1. | 0A | - | 0.03 | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 7V to 25V | | - | 0.3 | 1.3 | IIIA |
| Output Voltage Drift | ΔV0/ΔΤ | Io= 5mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100 | OKHz, TA=+25 °C | - | 42 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz Vo = 8V to 18V | f = 120Hz V _O = 8V to 18V | | 73 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 15 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A = | +25 °C | - | 230 | - | mA |
| Peak Current | IPK | TJ =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_0 due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7806)

(Refer to test circuit $,0^{\circ}C < T_{J} < 125^{\circ}C, \ I_{O} = 500 \text{mA}, \ V_{I} = 11 \text{V}, \ C_{I} = 0.33 \mu\text{F}, \ C_{O} = 0.1 \mu\text{F}, \ unless otherwise specified})$

| Parameter | Cymbal | Co | nditions | l | MC7806 | ; | Unit |
|--------------------------|-------------------|---|----------------------------|------|--------|------|-------|
| Parameter | Symbol | | maitions | Min. | Тур. | Max. | Onit |
| | | T _J =+25 °C | | 5.75 | 6.0 | 6.25 | |
| Output Voltage | Vo | $\begin{array}{l} \textrm{5.0mA} \leq \textrm{I}_{\textrm{O}} \leq \textrm{1.0A, P}_{\textrm{O}} \leq \textrm{15W} \\ \textrm{V}_{\textrm{I}} = \textrm{8.0V to 21V} \end{array}$ | | 5.7 | 6.0 | 6.3 | V |
| Line Regulation (Note1) | Poglino | T _J =+25 °C | V _I = 8V to 25V | - | 5 | 120 | mV |
| Line Regulation (Note I) | Regline | 1J =+25 C | V _I = 9V to 13V | - | 1.5 | 60 | IIIV |
| Load Regulation (Note1) | Pagland | TJ =+25 °C | IO =5mA to 1.5A | - | 9 | 120 | mV |
| Load Regulation (Note I) | Regload | 1J=+25 C | IO =250mA to750A | - | 3 | 60 | IIIV |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 8.0 | mA |
| Quiescent Current Change | Ma | I _O = 5mA to 1A | | - | - | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 8V to 25V | | - | - | 1.3 | IIIA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100K | Hz, TA =+25 °C | - | 45 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 9V to 19V | | 59 | 75 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 19 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A =+2 | 25 °C | - | 250 | - | mA |
| Peak Current | IPK | TJ =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7808)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =14V, C_I= 0.33 μ F, C_O= 0.1 μ F, unless otherwise specified)

| Devemeter | Cymphol | C | an dition o | N | /IC780 | 8 | Unit |
|--------------------------|---------|---|--------------------------------|------|--------|------|-------|
| Parameter | Symbol | | onditions | Min. | Тур. | Max. | Unit |
| | | TJ =+25 °C | | 7.7 | 8.0 | 8.3 | |
| Output Voltage | Vo | $5.0 \text{mA} \le I_0 \le 1$ V _I = 10.5V to 23 | | 7.6 | 8.0 | 8.4 | V |
| Line Demulation (Nated) | Danka | T05.00 | V _I = 10.5V to 25V | - | 5.0 | 160 | \/ |
| Line Regulation (Note1) | Regline | TJ =+25 °C | V _I = 11.5V to 17V | - | 2.0 | 80 | mV |
| Load Regulation (Note1) | Doglood | T25 °C | I _O = 5.0mA to 1.5A | - | 10 | 160 | m\/ |
| Load Regulation (Note1) | Regload | TJ =+25 °C | Io= 250mA to 750mA | - | 5.0 | 80 | mV |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 8.0 | mA |
| Quiagont Current Change | 41- | I _O = 5mA to 1.0A | J | - | 0.05 | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 10.5A to 25 | V | - | 0.5 | 1.0 | mA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | Hz, TA =+25 °C | - | 52 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, V _I = 1 | 1.5V to 21.5V | 56 | 73 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ=+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA =+2 | 5 °C | - | 230 | - | mA |
| Peak Current | IPK | T _J =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7809)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =15V, C_I= 0.33 μ F, C_O= 0.1 μ F, unless otherwise specified)

| Parameter | Cymbal | Co | onditions | ı | MC7809 |) | Unit |
|--------------------------|-------------------|--|-------------------------------|------|--------|------|-------|
| Parameter | Symbol | | onditions | Min. | Тур. | Max. | Unit |
| | | TJ =+25°C | | 8.65 | 9 | 9.35 | |
| Output Voltage | Vo | 5.0mA≤ I _O ≤1.0A V _I = 11.5V to 24V | • | 8.6 | 9 | 9.4 | V |
| Line Degulation (Note1) | Dogling | T25°C | V _I = 11.5V to 25V | - | 6 | 180 | m\/ |
| Line Regulation (Note1) | Regline | TJ=+25°C | VI = 12V to 17V | - | 2 | 90 | mV |
| Load Regulation (Note1) | Dogland | T25°C | I _O = 5mA to 1.5A | - | 12 | 180 | m\/ |
| Load Regulation (Note1) | Regload | TJ=+25°C | IO = 250mA to 750mA | - | 4 | 90 | mV |
| Quiescent Current | IQ | T _J =+25°C | | - | 5.0 | 8.0 | mA |
| Quiescent Current Change | Mo | $I_0 = 5 \text{mA to } 1.0 \text{A}$ | 1 | - | - | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 11.5V to 26 | V | - | - | 1.3 | IIIA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -1 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | lz, T _A =+25 °C | - | 58 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 13V to 23V | | | 71 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25°C | | - | 2 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A =+2 | 5°C | - | 250 | - | mA |
| Peak Current | IPK | TJ= +25°C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7810)

(Refer to test circuit ,0°C< TJ < 125°C, IO = 500mA, VI =16V, CI= $0.33\mu F$, CO= $0.1\mu F$, unless otherwise specified)

| Parameter | Symbol Conditions | | | MC7810 |) | Unit | |
|--------------------------|-------------------|--|-------------------------------|--------|------|------|-------|
| Parameter | Symbol | | onations | Min. | Тур. | Max. | Unit |
| | | TJ =+25 °C | | 9.6 | 10 | 10.4 | |
| Output Voltage | Vo | 5.0mA ≤ I _O ≤1.0A V _I = 12.5V to 25 | | 9.5 | 10 | 10.5 | V |
| Line Degulation (Noted) | Doglino | T 25°C | V _I = 12.5V to 25V | 1 | 10 | 200 | \/ |
| Line Regulation (Note1) | Regline | TJ =+25°C | VI = 13V to 25V | • | 3 | 100 | - mV |
| Load Regulation (Note1) | Dogland | T25°C | I _O = 5mA to 1.5A | - | 12 | 200 | m\/ |
| Load Regulation (Note1) | Regload | TJ =+25°C | IO = 250mA to 750mA | 1 | 4 | 400 | - mV |
| Quiescent Current | IQ | T _J =+25°C | | 1 | 5.1 | 8.0 | mA |
| Quinagent Current Change | Mo | $I_0 = 5 \text{mA to } 1.0 \text{A}$ | 4 | 1 | - | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 12.5V to 29 | V | - | - | 1.0 | IIIA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -1 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | łz, TA =+25 °C | - | 58 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 13V to 23V | | | 71 | - | dB |
| Dropout Voltage | V _{Drop} | Io = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A =+2 | 5 °C | - | 250 | - | mA |
| Peak Current | IPK | TJ =+25 °C | | - | 2.2 | - | Α |

Note

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7812)

(Refer to test circuit ,0°C < TJ < 125°C, IO = 500mA, VI =19V, CI= 0.33 μ F, CO=0.1 μ F, unless otherwise specified)

| Donomotor | Cymphol | Conditions | | N | /IC781 | 2 | Unit |
|--------------------------|-------------------|---|-------------------------------|------|--------|------|--------|
| Parameter | Symbol | | onations | Min. | Тур. | Max. | Unit |
| | | TJ =+25 °C | | 11.5 | 12 | 12.5 | |
| Output Voltage | Vo | 5.0mA ≤ I _O ≤1.0A V _I = 14.5V to 27\ | | 11.4 | 12 | 12.6 | V |
| Line Degulation (Noted) | Dogling | T25 90 | V _I = 14.5V to 30V | - | 10 | 240 | mV |
| Line Regulation (Note1) | Regline | TJ =+25 °C | VI = 16V to 22V | - | 3.0 | 120 | IIIV |
| Load Regulation (Note1) | Regload | TJ =+25 °C | I _O = 5mA to 1.5A | - | 11 | 240 | mV |
| Load Regulation (Note1) | Regioad | 1J=+25 C | IO = 250mA to 750mA | - | 5.0 | 120 | IIIV |
| Quiescent Current | IQ | TJ =+25 °C | | - | 5.1 | 8.0 | mA |
| Quiescent Current Change | Alo | IO = 5mA to 1.0A | 1 | - | 0.1 | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 14.5V to 30\ | / | - | 0.5 | 1.0 | ША |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -1 | - | mV/ °C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | z, TA =+25 °C | - | 76 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 15V to 25V | | 55 | 71 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 18 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A =+2 | 5°C | - | 230 | - | mA |
| Peak Current | IPK | TJ = +25 °C | | - | 2.2 | - | Α |

Note

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7815)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =23V, C_I= 0.33 μ F, C_O=0.1 μ F, unless otherwise specified)

| Parameter | Cumbal | Co | onditions | | MC7815 |) | Unit |
|--------------------------|---------------------|---|--|-------|--------|-------|-------|
| Parameter | Symbol | | onanions | Min. | Тур. | Max. | Onit |
| | | TJ =+25 °C | | 14.4 | 15 | 15.6 | |
| Output Voltage | Vo | $5.0\text{mA} \le I_O \le 1.0\text{A}, P_O \le 15\text{W}$ VI = 17.5V to 30V | | 14.25 | 15 | 15.75 | V |
| Line Regulation (Nete1) | Doglino | TJ =+25 °C | V _I = 17.5V to 30V | - | 11 | 300 | mV |
| Line Regulation (Note1) | Regline | 1J=+25 C | V _I = 20V to 26V | - | 3 | 150 | IIIV |
| | | | I _O = 5mA to 1.5A | - | 12 | 300 | |
| Load Regulation (Note1) | Regload | | IO = 250mA to 750mA | - | 4 | 150 | mV |
| Quiescent Current | IQ | TJ =+25 °C | | - | 5.2 | 8.0 | mA |
| Quiagant Current Change | A.I.O. | I _O = 5mA to 1 | .0A | - | - | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 17.5V to 3 | 30V | - | - | 1.0 | |
| Output Voltage Drift | ΔV _O /ΔT | I _O = 5mA | | - | -1 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100 | KHz, T _A =+25 °C | - | 90 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 18.5V to 2 | f = 120Hz V _I = 18.5V to 28.5V | | 70 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 19 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A = | +25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _J =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7818)

(Refer to test circuit ,0°C < TJ < 125°C, IO = 500mA, VI =27V, CI= 0.33 μ F, CO=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | C | onditions | N | /IC7818 | В | Unit |
|--------------------------|-------------------|---|------------------------------|------|---------|------|-------|
| Parameter | Symbol | | onations | Min. | Тур. | Max. | Onit |
| | | TJ =+25 °C | | 17.3 | 18 | 18.7 | |
| Output Voltage | Vo | 5.0mA ≤ I _O ≤1.0A V _I = 21V to 33V | A, P _O ≤15W | 17.1 | 18 | 18.9 | V |
| Line Degulation (Note1) | Dogling | TJ =+25 °C | V _I = 21V to 33V | - | 15 | 360 | mV |
| Line Regulation (Note1) | Regline | 1J=+25 C | VI = 24V to 30V | - | 5 | 180 | IIIV |
| Load Regulation (Note1) | Regload | TJ =+25 °C | I _O = 5mA to 1.5A | - | 15 | 360 | mV |
| Load Regulation (Note1) | Regioad | 1J=+25 C | IO = 250mA to 750mA | - | 5.0 | 180 | IIIV |
| Quiescent Current | IQ | TJ =+25 °C | | - | 5.2 | 8.0 | mA |
| Quiagant Current Change | ΔIO | IO = 5mA to 1.0A | | - | - | 0.5 | mΛ |
| Quiescent Current Change | ΔlQ | V _I = 21V to 33V | | - | - | 1 | mA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -1 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | z, TA =+25 °C | - | 110 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 22V to 32V | | | 69 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 22 | - | mΩ |
| Short Circuit Current | Isc | VI = 35V, T _A =+25 | 5°C | - | 250 | - | mA |
| Peak Current | IPK | TJ =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7824)

(Refer to test circuit ,0°C < TJ < 125°C, IO = 500mA, VI =33V, CI= 0.33 μ F, CO=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | DI Conditions | | N | MC7824 | | |
|--------------------------|-------------------|--|------------------------------|------|--------|-------|-------|
| Parameter | Symbol | | Diamons | Min. | Тур. | Max. | Unit |
| | | TJ =+25 °C | | 23 | 24 | 25 | |
| Output Voltage | Vo | $5.0 \text{mA} \le I_0 \le 1.0$ VI = 27V to 38V | A, P _O ≤ 15W | 22.8 | 24 | 25.25 | V |
| Line Regulation (Note1) | Poglino | TJ =+25 °C | V _I = 27V to 38V | - | 17 | 480 | mV |
| Line Regulation (Note1) | Regline | 1J =+25 C | VI = 30V to 36V | - | 6 | 240 | IIIV |
| Load Population (Note1) | Regload | TJ =+25 °C | I _O = 5mA to 1.5A | - | 15 | 480 | mV |
| Load Regulation (Note1) | Regioad | 1J =+25 C | IO = 250mA to 750mA | - | 5.0 | 240 | IIIV |
| Quiescent Current | IQ | TJ =+25 °C | | - | 5.2 | 8.0 | mA |
| Quiescent Current Change | Alo | I _O = 5mA to 1.0A | | - | 0.1 | 0.5 | mΛ |
| Quiescent Current Change | ΔlQ | V _I = 27V to 38V | | - | 0.5 | 1 | - mA |
| Output Voltage Drift | ΔV0/ΔΤ | IO = 5mA | | - | -1.5 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 100KH | z, TA =+25 °C | - | 60 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz V _I = 28V to 38V | | 50 | 67 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 28 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A =+25 | 5 °C | - | 230 | - | mA |
| Peak Current | IPK | TJ =+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7805A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 10V, C I=0.33 μ F, C O=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|---------|--|---|------|------|------|-------|
| | | T _J =+25 °C | | 4.9 | 5 | 5.1 | |
| Output Voltage | Vo | IO = 5mA to 1 V _I = 7.5V to 2 | | 4.8 | 5 | 5.2 | V |
| | | V _I = 7.5V to 2 I _O = 500mA | 5V | - | 5 | 50 | |
| Line Regulation (Note1) | Regline | VI = 8V to 12 | V | - | 3 | 50 | mV |
| | | T _J =+25 °C | V _I = 7.3V to 20V | - | 5 | 50 | - |
| | | 1J=+25°C | V _I = 8V to 12V | - | 1.5 | 25 | 1 |
| Load Regulation (Note1) | | T _J =+25 °C I _O = 5mA to 1 | T _J =+25 °C I _O = 5mA to 1.5A | | 9 | 100 | ., |
| , , | Regload | IO = 5mA to 1A | | - | 9 | 100 | mV |
| | | IO = 250mA to | o 750mA | - | 4 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 6 | mA |
| 0: 10 1 | | IO = 5mA to 1A | | - | - | 0.5 | mA |
| Quiescent Current Change | ΔlQ | V _I = 8 V to 25V, I _O = 500mA | | - | - | 0.8 | |
| Onlango | | V _I = 7.5V to 20V, T _J =+25 °C | | - | - | 0.8 | |
| Output Voltage Drift | ΔV/ΔΤ | lo = 5mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | | f = 120Hz, I _O = 500mA V _I = 8V to 18V | | | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ = | +25 °C | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _J = +25 °C | | - | 2.2 | - | А |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7806A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I =11V, C I=0.33 μ F, C O=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|---------------------------|---------|--|------------------------------|------|------|------|-------|
| | | T _J =+25 °C | | 5.58 | 6 | 6.12 | |
| Output Voltage | Vo | IO = 5mA to 1 VI = 8.6V to 2 | • - | 5.76 | 6 | 6.24 | V |
| | | V _I = 8.6V to 25V I _O = 500mA | | - | 5 | 60 | |
| Line Regulation (Note1) | Regline | V _I = 9V to 13V | 1 | - | 3 | 60 | mV |
| | | T _J =+25 °C | V _I = 8.3V to 21V | - | 5 | 60 | |
| | | 1J=+25 °C | V _I = 9V to 13V | - | 1.5 | 30 | |
| Load Regulation (Note1) | | T _J =+25 °C I _O = 5mA to 1 | .5A | - | 9 | 100 | |
| Load (togalation (troto)) | Regload | I _O = 5mA to 1 | A | - | 4 | 100 | mV |
| | | IO = 250mA to | o 750mA | - | 5.0 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 4.3 | 6 | mA |
| | | IO = 5mA to 1A | | - | - | 0.5 | |
| Quiescent Current Change | ΔlQ | V _I = 9V to 25V, I _O = 500mA | | - | - | 8.0 | mA |
| | | VI= 8.5V to 21V, TJ =+25 °C | | - | - | 8.0 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -0.8 | • | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, IO = 500mA VI = 9V to 19V | | - | 65 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | -+25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _{J=+25} °C | | - | 2.2 | ı | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7808A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_{0} =1A, V I = 14V, C I=0.33 μ F, C I=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|-------------------|---|--------------------------------|------|------|------|-------|
| | | T _J =+25 °C | | 7.84 | 8 | 8.16 | |
| Output Voltage | Vo | IO = 5mA to 1A, PO ≤15W VI = 10.6V to 23V | | 7.7 | 8 | 8.3 | V |
| | | V _I = 10.6V to 2 I _O = 500mA | VI= 10.6V to 25V IO = 500mA | | 6 | 80 | |
| Line Regulation (Note1) | Regline | V _I = 11V to 17 | 7 V | - | 3 | 80 | mV |
| | | T 05.00 | V _I = 10.4V to 23V | - | 6 | 80 | |
| | | TJ =+25 °C | V _I = 11V to 17V | - | 2 | 40 | |
| Load Regulation (Note1) | | Regload $T_J = +25$ °C $I_O = 5mA$ to 1.5A $I_O = 5mA$ to 1A $I_O = 250mA$ to 750mA | | - | 12 | 100 | |
| 5 () | Regload | | | - | 12 | 100 | |
| | | | | - | 5 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 6 | mA |
| | | IO = 5mA to 1A | | - | - | 0.5 | |
| Quiescent Current Change | ΔlQ | V _I = 11V to 25V, I _O = 500mA | | - | - | 0.8 | mA |
| | | V _I = 10.6V to 23V, T _J =+25 °C | | - | - | 0.8 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -0.8 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vο |
| Ripple Rejection | RR | f = 120Hz, I _O = 500mA V _I = 11.5V to 21.5V | | - | 62 | - | dB |
| Dropout Voltage | V _{Drop} | I _O = 1A, T _J =+25 °C | | - | 2 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 18 | - | mΩ |
| Short Circuit Current | Isc | V _I = 35V, T _A = | =+25 °C | - | 250 | - | mA |
| Peak Current | lрк | TJ=+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7809A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 15V, C I=0.33 μ F, C I=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|-----------------------|---|---|------|------|------|--------|
| | T _J =+25°C | | | 8.82 | 9.0 | 9.18 | |
| Output Voltage | Vo | IO = 5mA to 1 V _I = 11.2V to | | 8.65 | 9.0 | 9.35 | V |
| | | V _I = 11.7V to 2 I _O = 500mA | V _I = 11.7V to 25V I _O = 500mA | | 6 | 90 | |
| Line Regulation (Note1) | Regline | V _I = 12.5V to | 19V | - | 4 | 45 | mV |
| | | T,j =+25°C | V _I = 11.5V to 24V | - | 6 | 90 | |
| | | 15 = +25 C | V _I = 12.5V to 19V | - | 2 | 45 | |
| Load Regulation (Note1) | | T _J =+25°C I _O = 5mA to 1 | .0A | - | 12 | 100 | ., |
| , , | Regload | I _O = 5mA to 1.0A I _O = 250mA to 750mA | | - | 12 | 100 | mV |
| | | | | - | 5 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 6.0 | mA |
| | | V _I = 11.7V to 25V, T _J =+25 °C | | - | - | 0.8 | |
| Quiescent Current Change | ΔlQ | V _I = 12V to 25V, I _O = 500mA | | - | - | 0.8 | mA |
| | | IO = 5mA to 1.0A | | - | - | 0.5 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -1.0 | - | mV/ °C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vο |
| Ripple Rejection | RR | f = 120Hz, IO = 500mA V _I = 12V to 22V | | - | 62 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25 °C | | - | 2.0 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _{J=+25} °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant, junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7810A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 16V, C I=0.33 μ F, C I=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|------------------------------------|--|---|------|------|------|--------|
| | | T _J =+25°C | | 9.8 | 10 | 10.2 | |
| Output Voltage | Vo | IO = 5mA to 7 V _I =12.8V to | 1A, Po ≤ 15W 25V | 9.6 | 10 | 10.4 | V |
| | | V _I = 12.8V to I _O = 500mA | V _I = 12.8V to 26V I _O = 500mA | | 8 | 100 | |
| Line Regulation (Note1) | Regline | V _I = 13V to 20 |)V | - | 4 | 50 | mV |
| | | T _J =+25 °C | V _I = 12.5V to 25V | - | 8 | 100 | |
| | | 1J =+25 C | V _I = 13V to 20V | - | 3 | 50 | |
| Load Regulation (Note1) | | T _J =+25 °C I _O = 5mA to 1.5A | | - | 12 | 100 | ., |
| | Regload I _O = 5mA to 1. | | 1.0A | - | 12 | 100 | mV |
| | | IO = 250mA to 750mA | | - | 5 | 50 | 1 |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.0 | 6.0 | mA |
| | | VI = 13V to 2 | 6V, TJ=+25 °C | - | - | 0.5 | |
| Quiescent Current Change | Δ lQ | V _I = 12.8V to 25V, I _O = 500mA | | - | - | 0.8 | mA |
| | | IO = 5mA to 1.0A | | - | - | 0.5 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -1.0 | - | mV/ °C |
| Output Noise Voltage | VN | f = 10Hz to 1 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, IO = 500mA V _I = 14V to 24V | | - | 62 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25°C | | - | 2.0 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 17 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA : | =+25 °C | - | 250 | - | mA |
| Peak Current | lpk | TJ=+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7812A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 19V, C I=0.33 μ F, C I=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|---------|---|---|-------|------|-------|-------|
| | | T _J =+25 °C | | 11.75 | 12 | 12.25 | |
| Output Voltage | Vo | IO = 5mA to 7 V _I = 14.8V to | 1A, Po ≤15W 27V | 11.5 | 12 | 12.5 | V |
| | | V _I = 14.8V to I _O = 500mA | V _I = 14.8V to 30V I _O = 500mA | | 10 | 120 | |
| Line Regulation (Note1) | Regline | V _I = 16V to 22 | 2V | - | 4 | 120 | mV |
| | | T _J =+25 °C | V _I = 14.5V to 27V | - | 10 | 120 | |
| | | 1J=+25 C | V _I = 16V to 22V | - | 3 | 60 | - |
| Load Regulation (Note1) | | $T_J = +25 \degree C$ IO = 5mA to ? | 1.5A | - | 12 | 100 | ., |
| 3 (, | Regload | I _O = 5mA to 1.0A | | - | 12 | 100 | mV |
| | | IO = 250mA to 750mA | | - | 5 | 50 | |
| Quiescent Current | IQ | T _J =+25°C | | - | 5.1 | 6.0 | mA |
| | | V _I = 15V to 3 | 0V, TJ=+25 °C | - | | 0.8 | |
| Quiescent Current Change | ΔlQ | V _I = 14V to 27V, I _O = 500mA | | - | | 0.8 | mA |
| | | IO = 5mA to 1.0A | | - | | 0.5 | |
| Output Voltage Drift | ΔV/ΔΤ | I _O = 5mA | | - | -1.0 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25°C | 00KHz | - | 10 | - | μV/Vο |
| Ripple Rejection | RR | f = 120Hz, IO = 500mA VI = 14V to 24V | | - | 60 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25°C | | - | 2.0 | - | V |
| Output Resistance | rO | f = 1KHz | | - | 18 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 °C | - | 250 | - | mA |
| Peak Current | IPK | TJ=+25 °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7815A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I =23V, C I=0.33 μ F, C O=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|--------------------------------------|--|---|------|------|------|-------|
| | | T _J =+25 °C | | 14.7 | 15 | 15.3 | |
| Output Voltage | Vo | IO = 5mA to 1 V _I = 17.7V to | • - | 14.4 | 15 | 15.6 | V |
| | | V _I = 17.9V to 1 I _O = 500mA | V _I = 17.9V to 30V I _O = 500mA | | 10 | 150 | |
| Line Regulation (Note1) | Regline | V _I = 20V to 26 | SV | - | 5 | 150 | mV |
| | | T _J =+25°C | V _I = 17.5V to 30V | - | 11 | 150 | |
| | | 1J=+25 C | V _I = 20V to 26V | - | 3 | 75 | |
| Load Regulation (Note1) | | $T_J = +25 \degree C$ IO = 5mA to 1 | 1.5A | - | 12 | 100 | ., |
| | Regload I _O = 5mA to 1.0A | | - | 12 | 100 | mV | |
| | | IO = 250mA to 750mA | | - | 5 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.2 | 6.0 | mA |
| | | V _I = 17.5V to | 30V, TJ =+25 °C | - | - | 0.8 | |
| Quiescent Current Change | Δ lQ | V _I = 17.5V to | 30V, I _O = 500mA | - | - | 0.8 | mA |
| | | IO = 5mA to 1 | 1.0A | - | - | 0.5 | - |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -1.0 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25 °C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, I _O = 500mA V _I = 18.5V to 28.5V | | - | 58 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25 °C | | - | 2.0 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 19 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _{J=+25} °C | | - | 2.2 | ı | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7818A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 27V, C I=0.33 μ F, C I=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|---------|--|---|-------|------|-------|-------|
| | | T _J =+25 °C | | 17.64 | 18 | 18.36 | |
| Output Voltage | Vo | IO = 5mA to 3 | | 17.3 | 18 | 18.7 | V |
| | | V _I = 21V to 33V I _O = 500mA | | - | 15 | 180 | |
| Line Regulation (Note1) | Regline | V _I = 21V to 33 | BV | - | 5 | 180 | mV |
| | | T _J =+25 °C | V _I = 20.6V to 33V | - | 15 | 180 | |
| | | 1J =+25 C | VI= 24V to 30V | - | 5 | 90 | |
| Load Regulation (Note1) | | $T_J = +25^{\circ}C$ IO = 5mA to 2 | T _J =+25°C I _O = 5mA to 1.5A | | 15 | 100 | ., |
| | Regload | $I_O = 5mA \text{ to } 1$ | 1.0A | - | 15 | 100 | mV |
| | | IO = 250mA to 750mA | | - | 7 | 50 | - |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.2 | 6.0 | mA |
| | | V _I = 21V to 3 | 3V, TJ=+25 [°] C | - | - | 0.8 | |
| Quiescent Current Change | ΔlQ | $V_I = 21V \text{ to } 33V, I_O = 500\text{mA}$ | | - | - | 0.8 | mA |
| | | IO = 5mA to 1.0A | | - | - | 0.5 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -1.0 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A =+25°C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, I _O = 500mA V _I = 22V to 32V | | - | 57 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25°C | | - | 2.0 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 19 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 [°] C | - | 250 | - | mA |
| Peak Current | IPK | T _{J=+25} °C | | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in Vo due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Electrical Characteristics (MC7824A)

(Refer to the test circuits. 0° C < T_J < 125° C, I_0 =1A, V I = 33V, C I=0.33 μ F, C O=0.1 μ F, unless otherwise specified)

| Parameter | Symbol | Co | onditions | Min. | Тур. | Max. | Unit |
|--------------------------|---------|--|---|------|------|------|-------|
| | | T _J =+25 °C | | 23.5 | 24 | 24.5 | |
| Output Voltage | /oltage | | 23 | 24 | 25 | V | |
| | | V _I = 27V to 38 I _O = 500mA | V _I = 27V to 38V I _O = 500mA | | 18 | 240 | |
| Line Regulation (Note1) | Regline | V _I = 21V to 33 | BV | - | 6 | 240 | mV |
| | | T _J =+25 °C | V _I = 26.7V to 38V | - | 18 | 240 | |
| | | 1J =+25 C | VI= 30V to 36V | - | 6 | 120 | - |
| Load Regulation (Note1) | | T _J =+25 °C I _O = 5mA to 1.5A | | - | 15 | 100 | ., |
| - 3 () | Regload | $I_O = 5mA \text{ to } 1$ | $I_O = 5mA$ to 1.0A | | 15 | 100 | mV |
| | | IO = 250mA to 750mA | | - | 7 | 50 | |
| Quiescent Current | IQ | T _J =+25 °C | | - | 5.2 | 6.0 | mA |
| | | V _I = 27.3V to | 38V, TJ =+25 °C | - | - | 0.8 | |
| Quiescent Current Change | ΔlQ | V _I = 27.3V to | $V_I = 27.3V$ to 38V, $I_O = 500$ mA | | - | 0.8 | mA |
| | | IO = 5mA to 1.0A | | - | - | 0.5 | |
| Output Voltage Drift | ΔV/ΔΤ | IO = 5mA | | - | -1.5 | - | mV/°C |
| Output Noise Voltage | VN | f = 10Hz to 10 T _A = 25 °C | 00KHz | - | 10 | - | μV/Vo |
| Ripple Rejection | RR | f = 120Hz, IO = 500mA VI = 28V to 38V | | - | 54 | - | dB |
| Dropout Voltage | VDrop | IO = 1A, TJ =+25 °C | | - | 2.0 | - | V |
| Output Resistance | ro | f = 1KHz | | - | 20 | - | mΩ |
| Short Circuit Current | Isc | VI= 35V, TA = | =+25 °C | - | 250 | - | mA |
| Peak Current | IPK | T _{J=+25} °C | - | - | 2.2 | - | Α |

^{1.} Load and line regulation are specified at constant junction temperature. Change in VO due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Typical Perfomance Characteristics

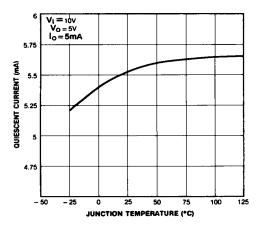


Figure 1. Quiescent Current

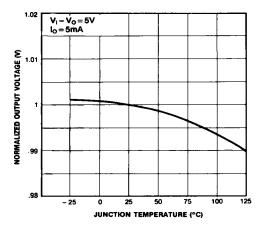


Figure 3. Output Voltage

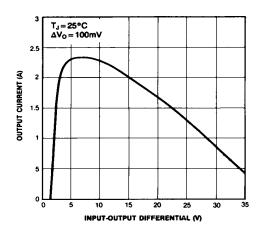


Figure 2. Peak Output Current

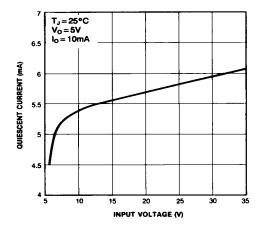


Figure 4. Quiescent Current

Typical Applications

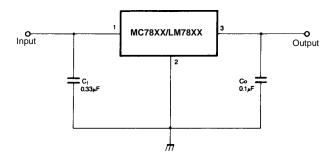


Figure 5. DC Parameters

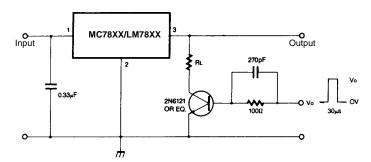


Figure 6. Load Regulation

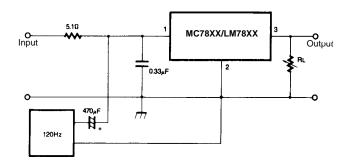


Figure 7. Ripple Rejection

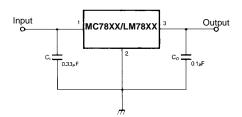


Figure 8. Fixed Output Regulator

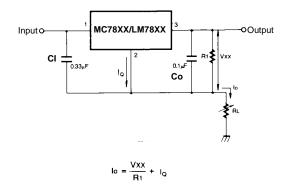
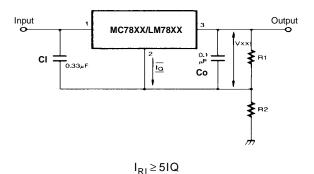


Figure 9. Constant Current Regulator

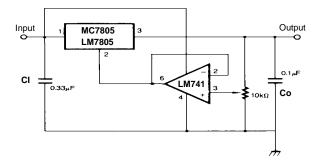
Notes:

- (1) To specify an output voltage. substitute voltage value for "XX." A common ground is required between the input and the Output voltage. The input voltage must remain typically 2.0V above the output voltage even during the low point on the input ripple voltage.
- (2) C_I is required if regulator is located an appreciable distance from power Supply filter.
- (3) Co improves stability and transient response.



 $VO = VXX(1+R_2/R_1)+IQR_2$

Figure 10. Circuit for Increasing Output Voltage



 $I_{RI} \ge 5 I_{Q}$ $V_{O} = V_{XX}(1+R_{2}/R_{1})+I_{Q}R_{2}$

Figure 11. Adjustable Output Regulator (7 to 30V)

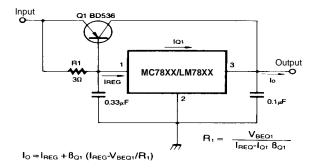


Figure 12. High Current Voltage Regulator

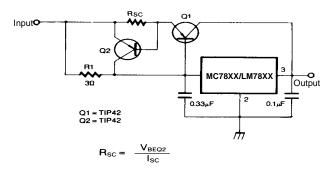


Figure 13. High Output Current with Short Circuit Protection

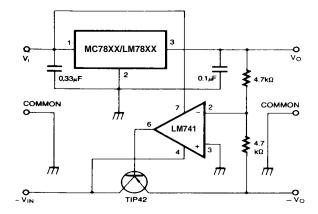


Figure 14. Tracking Voltage Regulator

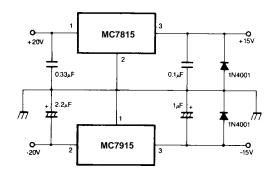


Figure 15. Split Power Supply (±15V-1A)

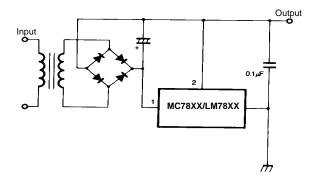


Figure 16. Negative Output Voltage Circuit

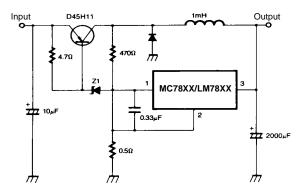
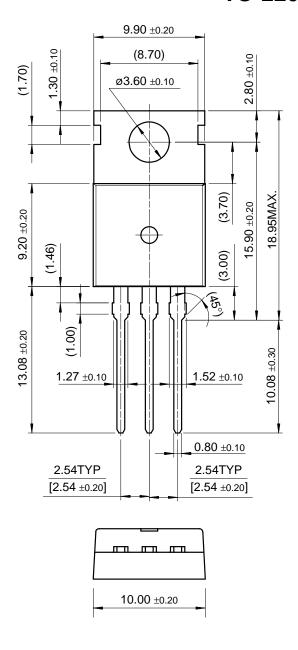


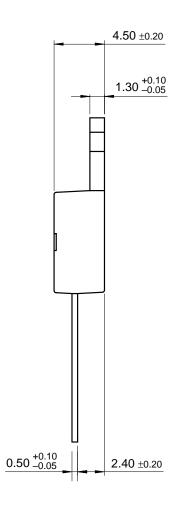
Figure 17. Switching Regulator

Mechanical Dimensions

Package

TO-220

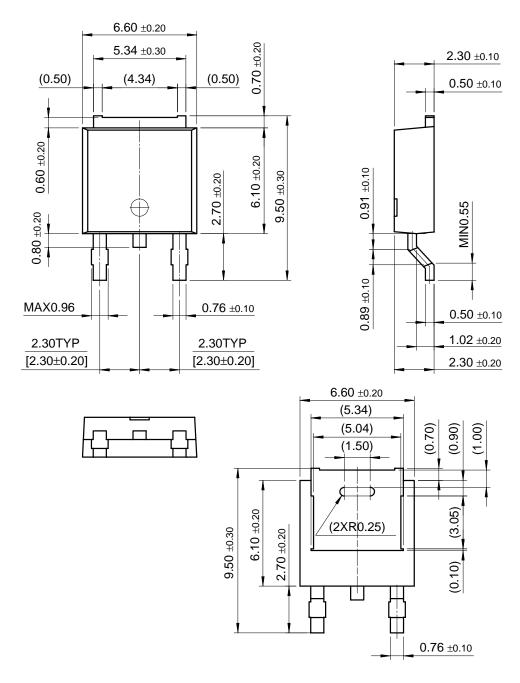




Mechancal Dimensions (Continued)

Package

D-PAK



Ordering Information

| Product Number | Output Voltage Tolerance | Package | Operating Temperature |
|----------------|--------------------------|---------|-----------------------|
| LM7805CT | ±4% | TO-220 | 0 ~ + 125°C |

| Product Number | Output Voltage Tolerance | Package | Operating Temperature | | | |
|----------------|--------------------------|---------|-----------------------|--|--|--|
| MC7805CT | | | | | | |
| MC7806CT | | | | | | |
| MC7808CT | | | | | | |
| MC7809CT | | | | | | |
| MC7810CT | | TO-220 | | | | |
| MC7812CT | | | | | | |
| MC7815CT | | | | | | |
| MC7818CT | ±4% | | | | | |
| MC7824CT | | | | | | |
| MC7805CDT | | | | | | |
| MC7806CDT | | D-PAK | | | | |
| MC7808CDT | | | 0 ~ + 125°C | | | |
| MC7809CDT | | D-I AIX | 0~+1250 | | | |
| MC7810CDT | | | | | | |
| MC7812CDT | | | | | | |
| MC7805ACT | | | | | | |
| MC7806ACT | | | | | | |
| MC7808ACT | | | | | | |
| MC7809ACT | | | | | | |
| MC7810ACT | ±2% | TO-220 | | | | |
| MC7812ACT | | | | | | |
| MC7815ACT | | | | | | |
| MC7818ACT | | | | | | |
| MC7824ACT | | | | | | |

DISCLAIMER

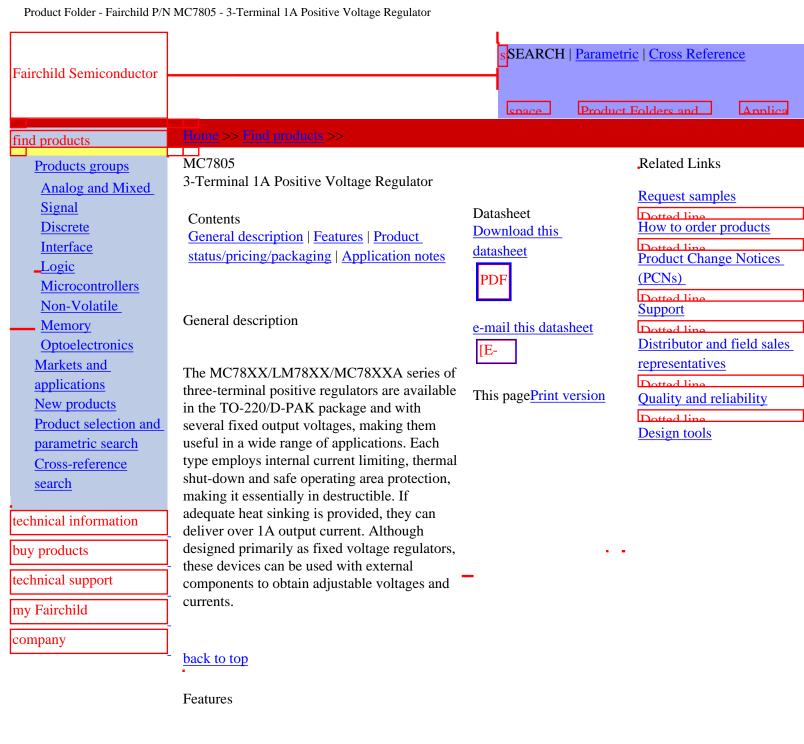
FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

- Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
- A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

www.fairchildsemi.com



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

back to top

Product status/pricing/packaging

| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | g, F | | |

Product Folder - Fairchild P/N MC7805 - 3-Terminal 1A Positive Voltage Regulator

| MC7805CT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------------|---|-----------|
| MC7805CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
| MC7805CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |

back to top

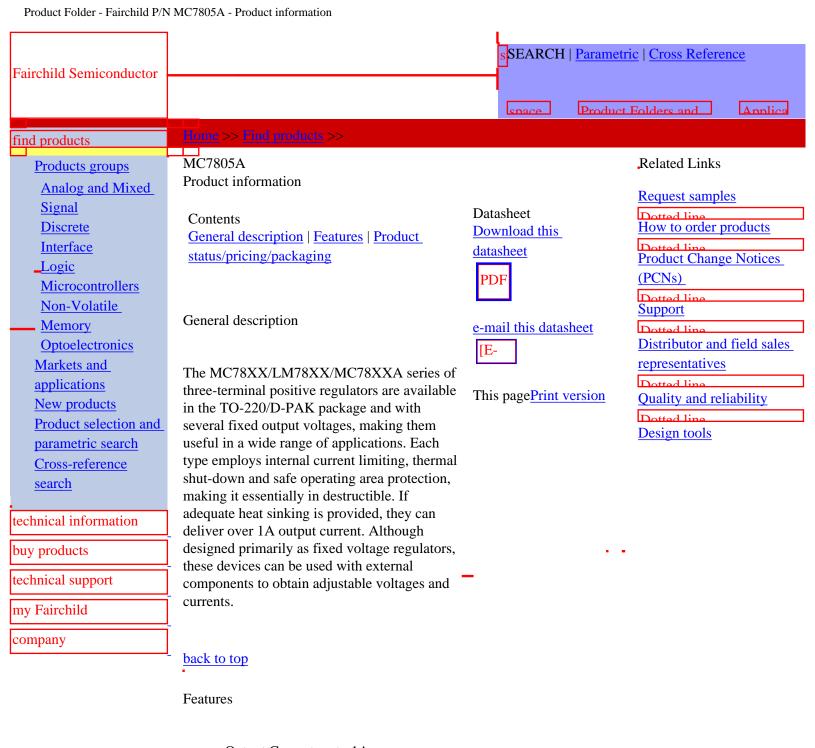
Application notes

AN-4108: AN-4108 A Fairchild Power Switch based on Switched Mode Power Supply for CRT Monitor Use (256 K) Jul 19, 2002

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>

© Copyright 2002 Fairchild Semiconductor



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

back to top

Product status/pricing/packaging

| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | | | |

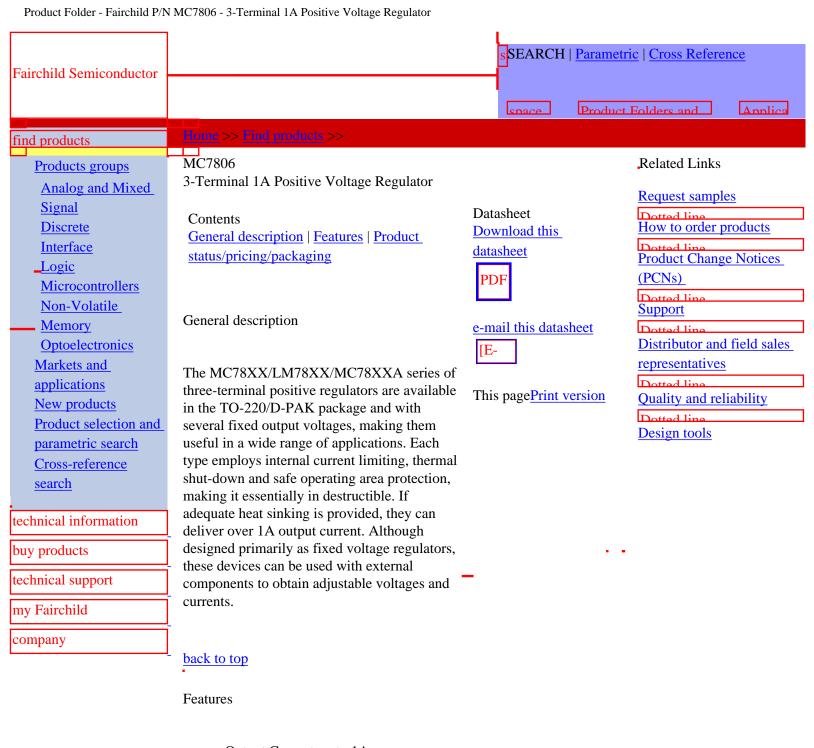
Product Folder - Fairchild P/N MC7805A - Product information

| MC7805ACT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------|---|------|
| MC7805ACTBU | Full Production | TO-220 | 3 | BULK |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>

© Copyright 2002 Fairchild Semiconductor



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

back to top

Product status/pricing/packaging

| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|

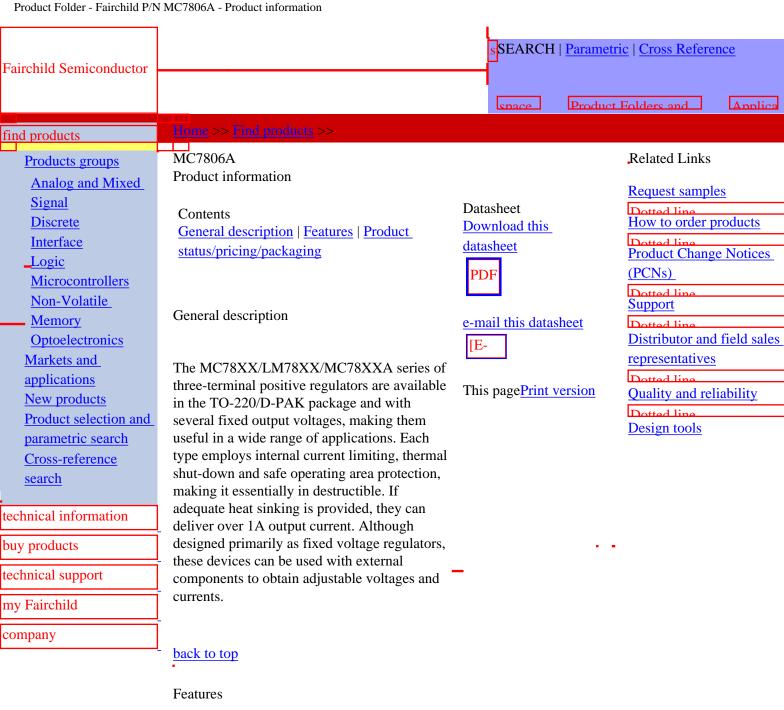
Product Folder - Fairchild P/N MC7806 - 3-Terminal 1A Positive Voltage Regulator

| MC7806CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
|-------------|-----------------|--------------|---|-----------|
| MC7806CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
| MC7806CT | Full Production | TO-220 | 3 | RAIL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>

© Copyright 2002 Fairchild Semiconductor



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

back to top

Product status/pricing/packaging

| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|---------------|-------|----------------|
| Trouder | 110ddct status | r ackage type | Deads | T deking memod |

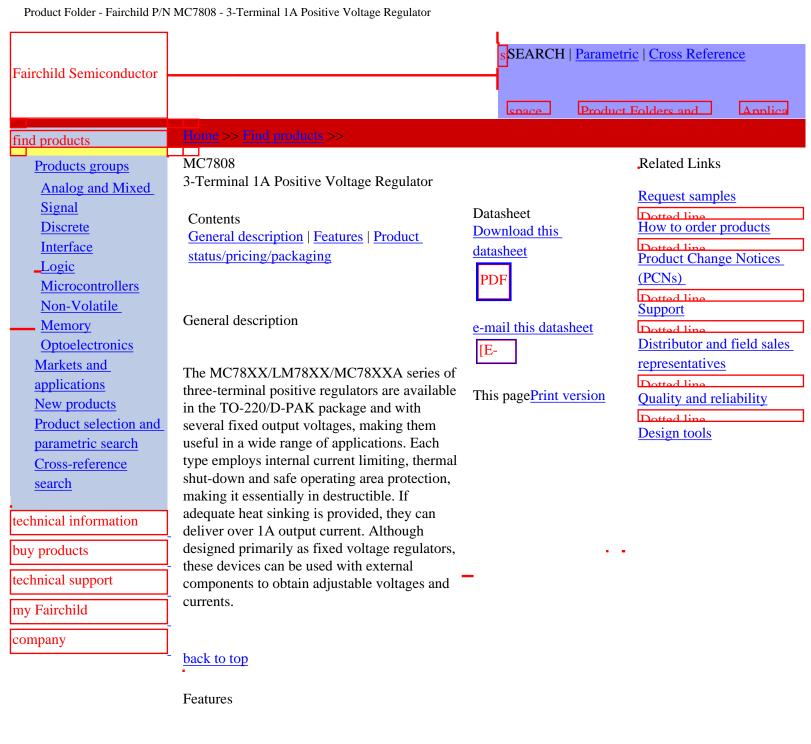
Product Folder - Fairchild P/N MC7806A - Product information

| MC7806ACTBU | Full Production | TO-220 | 3 | BULK |
|-------------|-----------------|--------|---|------|
| MC7806ACT | Full Production | TO-220 | 3 | RAIL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>

© Copyright 2002 Fairchild Semiconductor



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

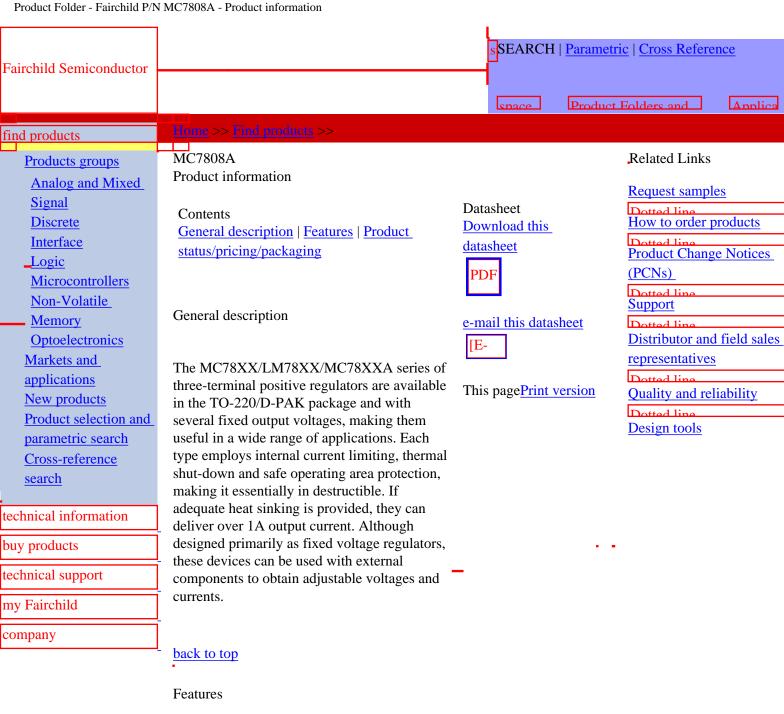
| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | g, F | | |

Product Folder - Fairchild P/N MC7808 - 3-Terminal 1A Positive Voltage Regulator

| MC7808CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
|-------------|-----------------|--------------|---|-----------|
| MC7808CT | Full Production | TO-220 | 3 | RAIL |
| MC7808CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

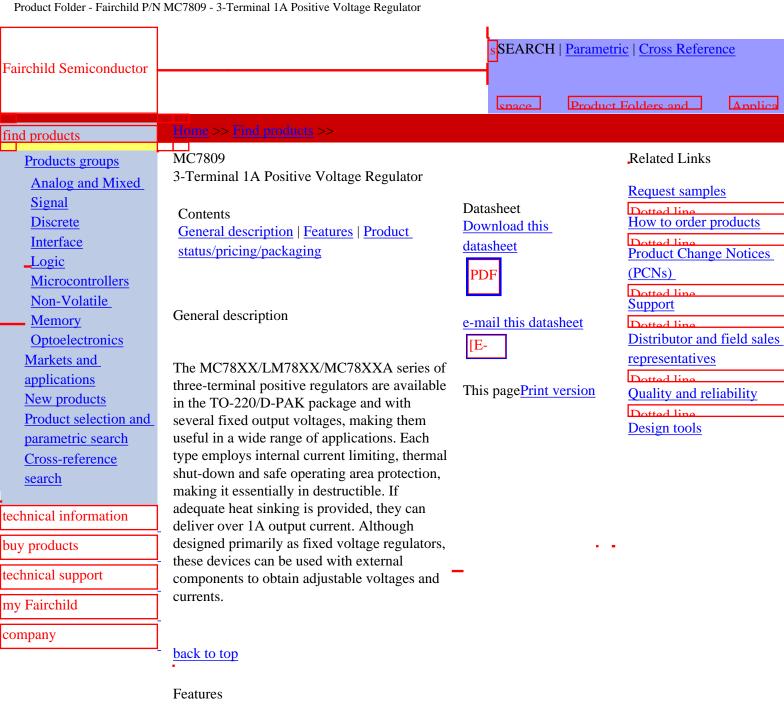
| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | | | |

Product Folder - Fairchild P/N MC7808A - Product information

| MC7808ACT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------|---|------|
| MC7808ACTBU | Full Production | TO-220 | 3 | BULK |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

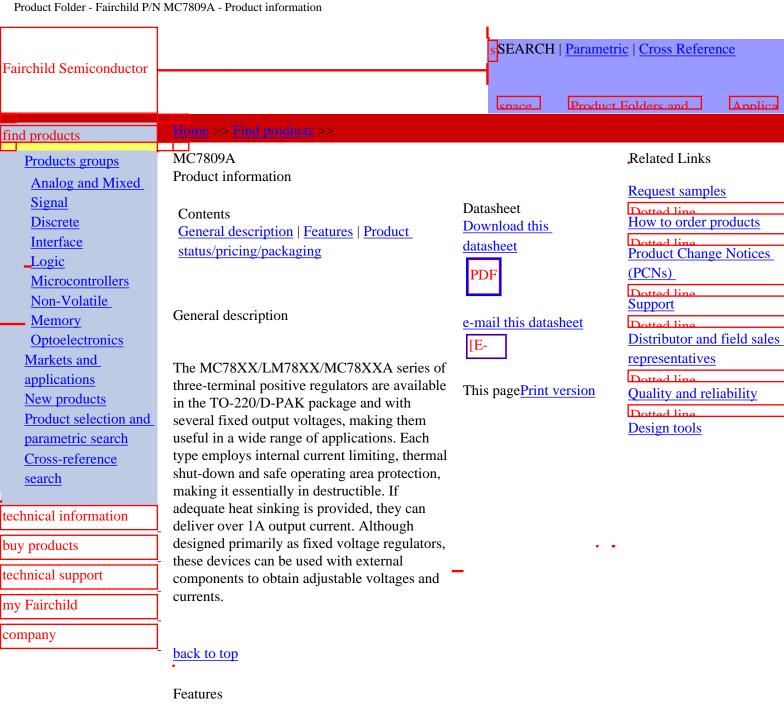
| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | g, F | | |

Product Folder - Fairchild P/N MC7809 - 3-Terminal 1A Positive Voltage Regulator

| MC7809CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
|-------------|-----------------|--------------|---|-----------|
| MC7809CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
| MC7809CT | Full Production | TO-220 | 3 | RAIL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

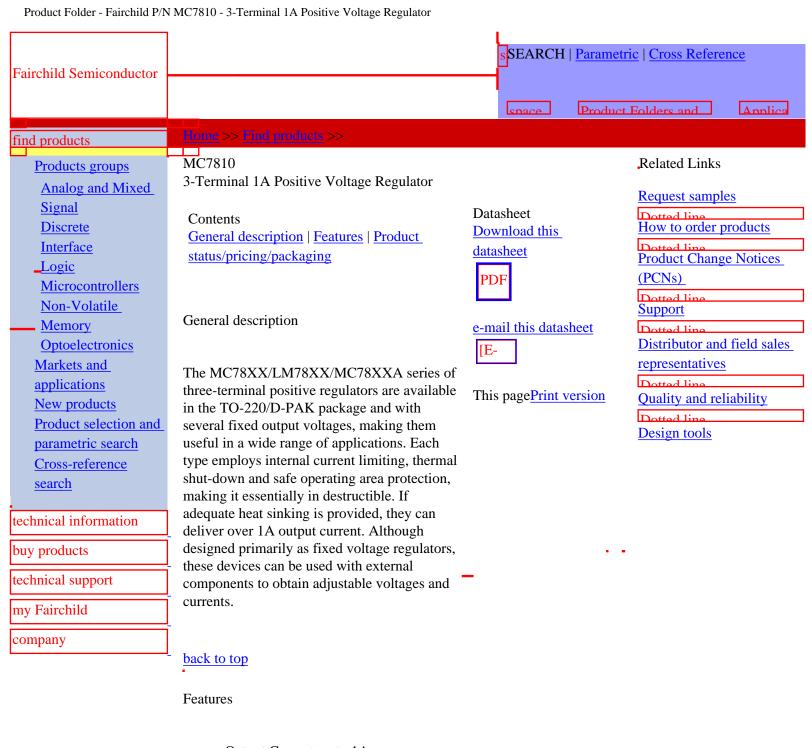
| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|
| | | | | |

Product Folder - Fairchild P/N MC7809A - Product information

| MC7809ACT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------|---|------|
| MC7809ACTBU | Full Production | TO-220 | 3 | BULK |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

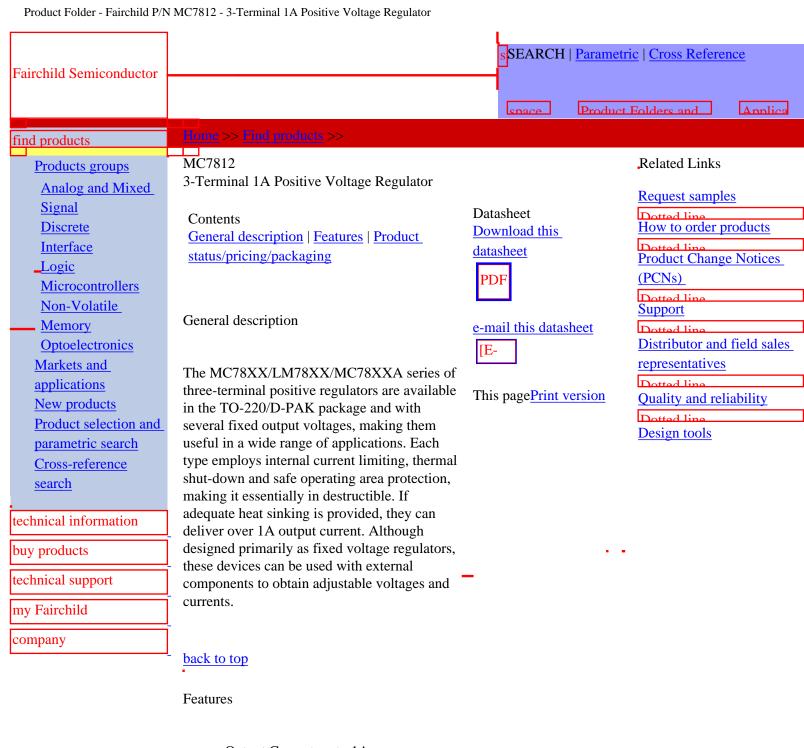
| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|--------------|-------|----------------|

Product Folder - Fairchild P/N MC7810 - 3-Terminal 1A Positive Voltage Regulator

| MC7810CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
|-------------|-----------------|--------------|---|-----------|
| MC7810CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

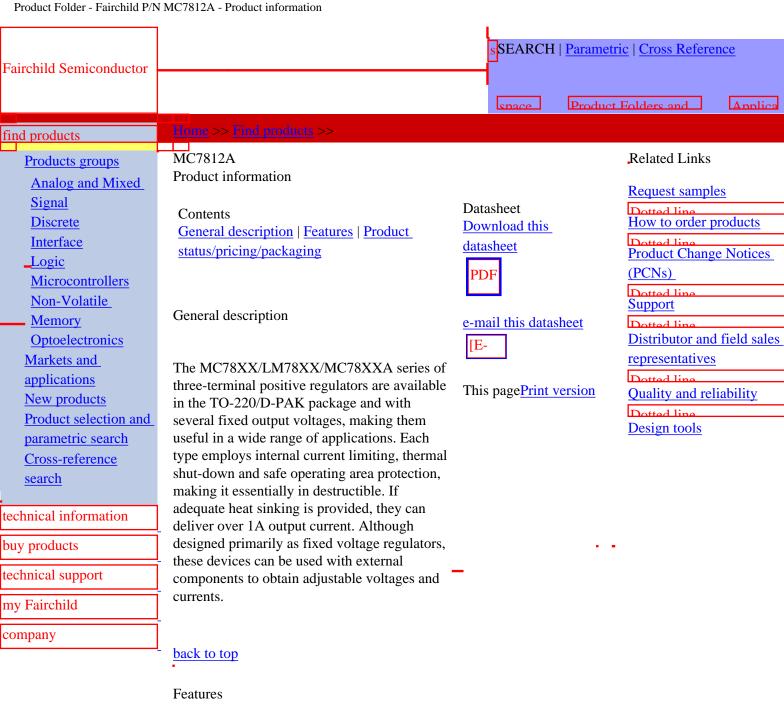
| Product | Product status | Package type | Leads | Packing method |
|---------|-----------------|---------------|-------|-----------------|
| Trouder | 1 Todact Status | I denage type | Deads | r deking method |

Product Folder - Fairchild P/N MC7812 - 3-Terminal 1A Positive Voltage Regulator

| MC7812CDTXM | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
|-------------|-----------------|--------------|---|-----------|
| MC7812CDTX | Full Production | TO-252(DPAK) | 2 | TAPE REEL |
| MC7812CT | Full Production | TO-220 | 3 | RAIL |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

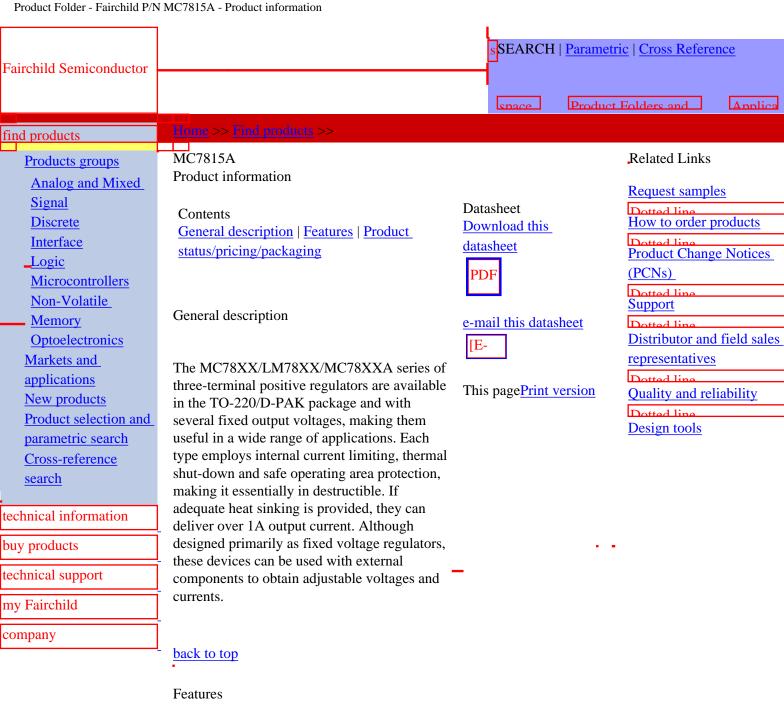
| Product | Product status | Package type | Leads | Packing method |
|---------|-----------------|---------------|-------|----------------|
| Troudet | 1 Todact Status | I dekage type | Leads | r acking memou |

Product Folder - Fairchild P/N MC7812A - Product information

| MC7812ACT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------|---|------|
| MC7812ACTBU | Full Production | TO-220 | 3 | BULK |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>



- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

| Product | Product status | Package type | Leads | Packing method |
|---------|----------------|---------------|-------|----------------|
| Trouder | 110ddct status | r ackage type | Deads | T deking memod |

Product Folder - Fairchild P/N MC7815A - Product information

| MC7815ACT | Full Production | TO-220 | 3 | RAIL |
|-------------|-----------------|--------|---|------|
| MC7815ACTBU | Full Production | TO-220 | 3 | BULK |

back to top

<u>Home</u> | <u>Find products</u> | <u>Technical information</u> | <u>Buy products</u> | <u>Support</u> | <u>Company</u> | <u>Contact us</u> | <u>Site index</u> | <u>Privacy policy</u>