

LINEAR INTEGRATED CIRCUITS

SERIES μ A78M00 POSITIVE-VOLTAGE REGULATORS

BULLETIN NO. DL S 12403, JUNE 1976—REVISED SEPTEMBER 1977

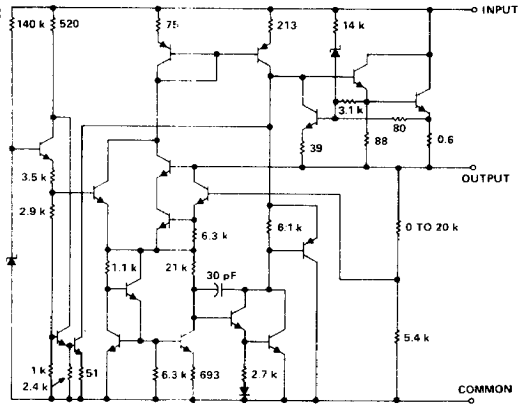
- 3-Terminal Regulators
- Output Current up to 500 mA
- No external components
- Internal Thermal Overload Protection
- Direct Replacements for Fairchild μ A78M00 Series and National LM341 Series
- High Power Dissipation Capability
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation

| NOMINAL OUTPUT VOLTAGE | -55°C TO 150°C OPERATING TEMPERATURE RANGE | 0°C TO 125°C OPERATING TEMPERATURE RANGE |
|------------------------|--|--|
| 5 V | μ A78M05M | μ A78M05C |
| 6 V | μ A78M06M | μ A78M06C |
| 8 V | μ A78M08M | μ A78M08C |
| 12 V | μ A78M12M | μ A78M12C |
| 15 V | μ A78M15M | μ A78M15C |
| 20 V | μ A78M20M | μ A78M20C |
| 22 V | μ A78M22M | μ A78M22C |
| 24 V | μ A78M24M | μ A78M24C |
| PACKAGES | LA | KC, KD, and LA |

description

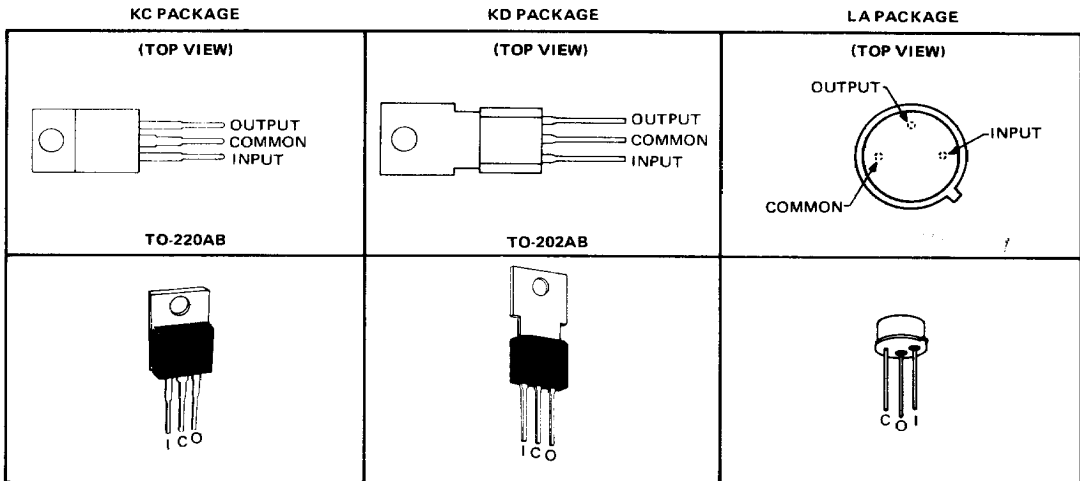
This series of fixed-voltage monolithic integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. One of these regulators can deliver up to 500 milliamperes of output current. The internal current limiting and thermal shutdown features of these regulators make them essentially immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents and also as the power pass element in precision regulators.

schematic



Resistor values shown are nominal and in ohms.

terminal assignments



SERIES μ A78M00

POSITIVE-VOLTAGE REGULATORS

absolute maximum ratings over operating temperature range (unless otherwise noted)

| | | μ A78M05M THRU μ A78M24M | μ A78M05C THRU μ A78M24C | UNIT |
|---|--------------------------------|--|--|------|
| Input voltage | μ A78M20 thru μ A78M24 | 40 | 40 | V |
| | All others | 35 | 35 | |
| Continuous total dissipation at 25°C free-air temperature (see Note 1) | KC (TO-220AB) package | 2 | 2 | W |
| | KD(TO-202AB) package | 1.5 | 1.5 | |
| | LA package | 0.6 | 0.6 | |
| Continuous total dissipation at (or below) 25°C case temperature (see Note 1) | KC and KD packages | 7.5 | 7.5 | W |
| | LA package | 5 | 5 | |
| Operating free-air, case, or virtual junction temperature range | | -65 to 150 | 0 to 150 | °C |
| Storage temperature range | | -65 to 150 | -65 to 150 | °C |
| Lead temperature 1/16 inch from case for 10 seconds | | KC and KD packages | | °C |
| Lead temperature 1/16 inch from case for 60 seconds | | LA package | | °C |

NOTE 1: For operation above 25°C free-air or case temperature, refer to Dissipation Derating Curves, Figures 1 through 4, page 188.

recommended operating conditions

| | | MIN | MAX | UNIT |
|---|----------------------------------|------|-----|------|
| Input voltage, V_I | μ A78M05M, μ A78M05C | 7 | 25 | V |
| | μ A78M06M, μ A78M06C | 8 | 25 | |
| | μ A78M08M, μ A78M08C | 10.5 | 25 | |
| | μ A78M12M, μ A78M12C | 14.5 | 30 | |
| | μ A78M15M, μ A78M15C | 17.5 | 30 | |
| | μ A78M20M, μ A78M20C | 23 | 35 | |
| | μ A78M22M, μ A78M22C | 24 | 38 | |
| Output current, I_O | | 500 | | mA |
| Operating virtual junction temperature, T_J | μ A78M05M thru μ A78M24M | -55 | 150 | °C |
| | μ A78M05C thru μ A78M24C | 0 | 125 | |

TYPES μ A78M05M, μ A78M05C POSITIVE-VOLTAGE REGULATORS

μ A78M05M, μ A78M05C electrical characteristics at specified virtual junction temperature,
 $V_I = 10\text{ V}$, $I_O = 350\text{ mA}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M05M | | | μ A78M05C | | | UNIT | |
|---|--|----------------|-----|-----|---------------|-----|------|------|---------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| Output voltage | $I_O = 5\text{ mA}$ to 350 mA | 25°C | | 4.8 | 5 | 5.2 | 4.8 | 5 | V |
| | | -55°C to 150°C | | 4.7 | | 5.3 | | | |
| | | 0°C to 125°C | | | | | 4.75 | 5.25 | |
| Input regulation | $I_O = 200\text{ mA}$ | 25°C | | | 3 | 50 | | 3 | mV |
| | | -55°C to 150°C | | | 1 | 25 | | 1 | |
| | | 0°C to 125°C | | | | | | | |
| | | 25°C | | 62 | | | | 50 | |
| Ripple rejection | $V_I = 8\text{ V}$ to 18 V , $f = 120\text{ Hz}$ | -55°C to 150°C | | | | | 62 | dB | |
| | | 0°C to 125°C | | 62 | 80 | 62 | 80 | | |
| Output regulation | $I_O = 5\text{ mA}$ to 500 mA $I_O = 5\text{ mA}$ to 200 mA | 25°C | | | 20 | 50 | | 20 | mV |
| | | -55°C to 150°C | | | 10 | 25 | | 10 | |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ | -55°C to 150°C | | | | | | | mV/°C |
| | | 0°C to 125°C | | | | | | -1 | |
| Output noise voltage | $f = 10\text{ Hz}$ to 100 kHz | 25°C | | | 40 | | | 40 | μ V |
| | | -55°C to 150°C | | | 2 | | | 2 | |
| Dropout voltage | | 25°C | | | 4.5 | 6 | | 4.5 | V |
| | | -55°C to 150°C | | | | 0.8 | | | |
| Bias current change | $I_O = 200\text{ mA}$, $V_I = 8\text{ V}$ to 25 V | -55°C to 150°C | | | | | | | mA |
| | | 0°C to 125°C | | | | | | 0.8 | |
| | | -55°C to 150°C | | | | | | 0.5 | |
| Short-circuit output current | $V_I = 35\text{ V}$ | 25°C | | | 300 | | | 300 | mA |
| | | -55°C to 150°C | | | 700 | | | 700 | |
| Peak output current | | 25°C | | | | | | A | |

† All characteristics are measured with a capacitor across the input of $0.33\ \mu\text{F}$ and a capacitor across the output of $0.1\ \mu\text{F}$. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10\text{ ms}$, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M06M, μ A78M06C POSITIVE-VOLTAGE REGULATORS

μ A78M06M, μ A78M06C electrical characteristics at specified virtual junction temperature,
 $V_I = 11\text{ V}$, $I_O = 350\text{ mA}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M06M | | | μ A78M06C | | | UNIT | |
|---|--|----------------|-----|------|---------------|------|------|---------|---|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| Output voltage | $I_O = 5\text{ mA to }350\text{ mA}$ | 25°C | | 5.75 | 6 | 6.25 | 5.75 | 6 | V |
| | | -55°C to 150°C | | 5.7 | 6.3 | 5.7 | 6.3 | | |
| | | 0°C to 125°C | | | | | | | |
| Input regulation | $I_O = 200\text{ mA}$ | 25°C | | 5 | 60 | 5 | 100 | mV | |
| | | -55°C to 150°C | | 1.5 | 30 | 1.5 | 50 | | |
| | | 0°C to 125°C | | | | | | | |
| | | -55°C to 150°C | | 59 | | 59 | | | |
| Ripple rejection | $V_I = 9\text{ V to }19\text{ V}$, $f = 120\text{ Hz}$ | 25°C | | 59 | 80 | 59 | 80 | dB | |
| | | 0°C to 125°C | | 59 | 80 | 59 | 80 | | |
| Output regulation | $I_O = 5\text{ mA to }500\text{ mA}$ $I_O = 5\text{ mA to }200\text{ mA}$ | 25°C | | 20 | 60 | 20 | 120 | mV | |
| | | -55°C to 150°C | | 10 | 30 | 10 | 60 | | |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ | 25°C | | -0.5 | | -0.5 | | mV/°C | |
| | | 0°C to 125°C | | | | | | | |
| Output noise voltage | $f = 10\text{ Hz to }100\text{ kHz}$ | 25°C | | 45 | | 45 | | μ V | |
| | | -55°C to 150°C | | 2 | | 2 | | | |
| Dropout voltage | | 25°C | | 4.5 | 6 | 4.5 | 6 | V | |
| | | -55°C to 150°C | | 0.8 | | 0.8 | | | |
| Bias current change | $I_O = 200\text{ mA}$, $V_I = 9\text{ V to }25\text{ V}$ | 25°C | | 0.5 | | 0.5 | | mA | |
| | | 0°C to 125°C | | | | | | | |
| | | -55°C to 150°C | | | | | | | |
| Short-circuit output current | $V_I = 35\text{ V}$ | 25°C | | 270 | | 270 | | mA | |
| | | -55°C to 150°C | | 700 | | 700 | | | |
| Peak output current | | 25°C | | 700 | | 700 | | A | |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_{pw} \leq 10\text{ ms}$, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

TYPES μ A78M08M, μ A78M08C POSITIVE-VOLTAGE REGULATORS

μ A78M08M, μ A78M08C electrical characteristics at specified virtual junction temperature,
 $V_I = 14$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M08M | | | μ A78M08C | | | UNIT | | |
|---|--|----------------|-----|-----|---------------|-----|-----|------|-----|---------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | | |
| Output voltage | $I_O = 5$ mA to 350 mA | 25°C | | 7.7 | 8 | 8.3 | 7.7 | 8 | 8.3 | V |
| | | -55°C to 150°C | | 7.6 | | 8.4 | | | | |
| Input regulation | $I_O = 200$ mA | 0°C to 125°C | | | 6 | 60 | 7.6 | 6 | 100 | mV |
| | | -55°C to 150°C | | | 2 | 30 | | | | |
| | | 25°C | | | | | | 2 | 50 | |
| | | -55°C to 150°C | | 56 | | | | | | |
| Ripple rejection | $V_I = 11.5$ V to 21.5 V, $f = 120$ Hz | 0°C to 125°C | | | | | 56 | | | dB |
| | | 25°C | | 56 | 80 | 80 | 56 | 80 | | |
| Output regulation | $I_O = 5$ mA to 500 mA $I_O = 5$ mA to 200 mA | 25°C | | | 25 | 80 | | 25 | 160 | mV |
| | | -55°C to 150°C | | | 10 | 40 | | 10 | 80 | |
| Temperature coefficient of output voltage | $I_O = 5$ mA | -55°C to 150°C | | | | | | | | mV/°C |
| Output noise voltage | $f = 10$ Hz to 100 kHz | 0°C to 125°C | | | | | | | | μ V |
| Dropout voltage | | 25°C | | | 52 | | | 52 | | V |
| | | -55°C to 150°C | | | 2 | | | 2 | | |
| Bias current | | 25°C | | | 4.6 | 6 | | 4.6 | 6 | mA |
| | | -55°C to 150°C | | | | 0.8 | | | | |
| Bias current change | $I_O = 200$ mA | 0°C to 125°C | | | | | | | | mA |
| | | -55°C to 150°C | | | | 0.5 | | | 0.8 | |
| Short-circuit output current | $V_I = 35$ V | 0°C to 125°C | | | | | | | | mA |
| | | 25°C | | | 250 | | | 250 | | |
| Peak output current | | 25°C | | | 700 | | | 700 | | A |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M12M, μ A78M12C

POSITIVE-VOLTAGE REGULATORS

μ A78M12M, μ A78M12C electrical characteristics at specified virtual junction temperature,
 $V_I = 19$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | | μ A78M12M | | | μ A78M12C | | | UNIT |
|---|---------------------------------------|--|---------------|-----|------|---------------|-----|------|---------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage | $I_O = 5$ mA to 350 mA | $V_I = 15.5$ V to 27 V | 11.5 | 12 | 12.5 | 11.5 | 12 | 12.5 | V |
| | | $V_I = 14.5$ V to 27 V | 11.4 | | 12.6 | 11.4 | | 12.6 | |
| | | $V_I = 14.5$ V to 30 V | | | | 8 | 60 | 8 | |
| Input regulation | $I_O = 200$ mA | $V_I = 16$ V to 25 V | | 2 | 30 | | 2 | 50 | mV |
| | | $V_I = 16$ V to 30 V | | | | | | | |
| | | $I_O = 100$ mA | 55 | | | | | | |
| Ripple rejection | $V_I = 15$ V to 25 V, $f = 120$ Hz | -55°C to 150°C | | | | 55 | | | dB |
| | | 0°C to 125°C | 55 | 80 | | 55 | 80 | | |
| Output regulation | $I_O = 5$ mA to 500 mA | 25°C | | 25 | 120 | | 25 | 240 | mV |
| | | -55°C to 150°C | | 10 | 60 | | 10 | 120 | |
| Temperature coefficient of output voltage | $I_O = 5$ mA | -55°C to 150°C | | | | | | -1 | mV/°C |
| Output noise voltage | $f = 10$ Hz to 100 kHz | 25°C | | 75 | | | 75 | | μ V |
| | | 25°C | | 2 | | | 2 | | V |
| Dropout voltage | Bias current | 25°C | | 4.8 | 6 | | 4.8 | 6 | mA |
| | | 25°C | | | 0.8 | | | | |
| Bias current change | $I_O = 200$ mA | $V_I = 15$ V to 30 V | | | | | | | mA |
| | | $V_I = 14.5$ V to 30 V | | | 0.5 | | | 0.5 | |
| | | $I_O = 5$ mA to 350 mA | | | | | | | |
| Short-circuit output current | $V_I = 35$ V | 25°C | | 240 | | | 240 | | mA |
| | | 25°C | | 700 | | | 700 | | |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M15M, μ A78M15C POSITIVE-VOLTAGE REGULATORS

μ A78M15M, μ A78M15C electrical characteristics at specified virtual junction temperature,
 $V_I = 23$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M15M | | | μ A78M15C | | | UNIT | | |
|---|--|----------------|-----|-------|---------------|-------|-------|------|-------|---------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | | |
| Output voltage | $I_O = 5$ mA to 350 mA $V_I = 18.5$ V to 30 V | 25°C | | 14.4 | 15 | 15.6 | 14.4 | 15 | 15.6 | V |
| | | -55°C to 150°C | | 14.25 | | 15.75 | | | | |
| Input regulation | $I_O = 200$ mA $V_I = 17.5$ V to 30 V | 25°C | | | | | 14.25 | 10 | 15.75 | mV |
| | | 0°C to 125°C | | | | | | 3 | 50 | |
| Ripple rejection | $V_I = 18.5$ V to 28.5 V, $f = 120$ Hz | -55°C to 150°C | | 54 | | | | | | dB |
| | | 0°C to 125°C | | 54 | 70 | | 54 | 70 | | |
| Output regulation | $I_O = 5$ mA to 500 mA $I_O = 5$ mA to 200 mA | 25°C | | | 25 | 150 | | 25 | 300 | mV |
| | | -55°C to 150°C | | | 10 | 75 | | 10 | 150 | |
| Temperature coefficient of output voltage | $I_O = 5$ mA $f = 10$ Hz to 100 kHz | 25°C | | | | | | | | mV/°C |
| | | 0°C to 125°C | | | -1 | | | -1 | | |
| Dropout voltage | | 25°C | | | 90 | | | 90 | | μ V |
| | | -55°C to 150°C | | | 2 | | | 2 | | |
| Bias current | $I_O = 5$ mA to 350 mA $V_I = 18.5$ V to 30 V | 25°C | | | 4.8 | 6 | | 4.8 | 6 | mA |
| | | -55°C to 150°C | | | | 0.8 | | | | |
| Bias current change | $I_O = 5$ mA to 350 mA $V_I = 17.5$ V to 30 V | 25°C | | | | | | | | mA |
| | | -55°C to 150°C | | | | 0.5 | | | 0.8 | |
| Short-circuit output current | $V_I = 35$ V | 25°C | | | 240 | | | 240 | | mA |
| | | -55°C to 150°C | | | | | | | 0.5 | |
| Peak output current | | 25°C | | | 700 | | | 700 | | A |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M20M, μ A78M20C POSITIVE-VOLTAGE REGULATORS

μ A78M20M, μ A78M20C electrical characteristics at specified virtual junction temperature,
 $V_I = 29$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M20M | | | μ A78M20C | | | UNIT | |
|---|---------------------------------------|----------------|-----|------|---------------|------|------|------|---------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| Output voltage | $I_O = 5$ mA to 350 mA | 25°C | | 19 | 20 | 20.8 | 19.2 | 20 | V |
| | | -55°C to 150°C | | 19 | 21 | 21 | 19 | 21 | |
| Input regulation | $I_O = 200$ mA | 25°C | | 5 | 5 | 30 | 5 | 50 | mV |
| | | -55°C to 150°C | | 53 | | | 53 | | |
| | | 0°C to 125°C | | 53 | | | 53 | | |
| Ripple rejection | $V_I = 24$ V to 34 V, $f = 120$ Hz | 25°C | | 53 | 70 | 70 | 53 | 70 | dB |
| | | -55°C to 150°C | | 53 | 70 | 70 | 53 | 70 | |
| Output regulation | $I_O = 5$ mA to 500 mA | 25°C | | 30 | 30 | 400 | 30 | 400 | mV |
| | | -55°C to 150°C | | 10 | 100 | 200 | 10 | 200 | |
| Temperature coefficient of output voltage | $I_O = 5$ mA | 25°C | | -1.1 | | | -1.1 | | mV/°C |
| | | -55°C to 150°C | | -1.1 | | | -1.1 | | |
| Output noise voltage | $f = 10$ Hz to 100 kHz | 25°C | | 110 | | | 110 | | μ V |
| | | -55°C to 150°C | | 110 | | | 110 | | |
| Dropout voltage | | 25°C | | 2 | | | 2 | | V |
| | | -55°C to 150°C | | 2 | | | 2 | | |
| Bias current | $V_I = 24$ V to 35 V | 25°C | | 4.9 | 6 | 6 | 4.9 | 6 | mA |
| | | -55°C to 150°C | | 4.9 | 6 | 6 | 4.9 | 6 | |
| Bias current change | $I_O = 200$ mA | 25°C | | 0.8 | | | 0.8 | | mA |
| | | -55°C to 150°C | | 0.8 | | | 0.8 | | |
| | | 0°C to 125°C | | 0.8 | | | 0.8 | | |
| Short-circuit output current | $V_I = 35$ V | 25°C | | 240 | | | 240 | | mA |
| | | -55°C to 150°C | | 240 | | | 240 | | |
| Peak output current | | 25°C | | 700 | | | 700 | | A |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M22M, μ A78M22C POSITIVE-VOLTAGE REGULATORS

μ A78M22M, μ A78M22C electrical characteristics at specified virtual junction temperature,
 $V_I = 31$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | | μ A78M22M | | | μ A78M22C | | | UNIT |
|---|--|--|---------------|------|------|---------------|------|------|----------------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage | $I_O = 5$ mA to 350 mA | $V_I = 26$ V to 36 V | 21.1 | 22 | 22.9 | 21.1 | 22 | 22.9 | V |
| | | $V_I = 25$ V to 36 V | 20.9 | | 23.1 | 20.9 | | 23.1 | |
| | | $V_I = 26$ V to 34 V | | 10 | 60 | | 10 | 100 | |
| Input regulation | $I_O = 200$ mA | $V_I = 25$ V to 36 V | | 5 | 30 | | 5 | 50 | mV |
| | | $V_I = 26$ V to 34 V | | | | | | | |
| Ripple rejection | $V_I = 26$ V to 36 V, $f = 120$ Hz | $I_O = 100$ mA | | 51 | | | 51 | | dB |
| | | $I_O = 300$ mA | | 51 | 70 | | 51 | 70 | |
| Output regulation | $I_O = 5$ mA to 500 mA $I_O = 5$ mA to 200 mA | 25°C | | 30 | 220 | | 30 | 440 | mV |
| | | 25°C | | 10 | 110 | | 10 | 220 | |
| Temperature coefficient of output voltage | $I_O = 5$ mA | -55°C to 150°C | | -1.1 | | | -1.1 | | mV/ $^\circ\text{C}$ |
| | | 0°C to 125°C | | | | | | | |
| Output noise voltage | $f = 10$ Hz to 100 kHz | 25°C | | 160 | | | 160 | | μV |
| | | 25°C | | 2 | | | 2 | | |
| Bias current | | 25°C | | 4.9 | 6 | | 4.9 | 6 | mA |
| | | 25°C | | | 0.8 | | | 0.8 | |
| Riak current change | $I_O = 200$ mA | $V_I = 26$ V to 36 V | | | | | | | mA |
| | | $V_I = 25$ V to 36 V | | | 0.5 | | | 0.5 | |
| Short-circuit output current | $I_O = 5$ mA to 350 mA | 25°C | | 240 | | | 240 | | mA |
| | | 25°C | | 700 | | | 700 | | |
| Peak output current | $V_I = 35$ V | | | | | | | | A |

† All characteristics are measured with a capacitor across the input of 0.33 μF and a capacitor across the output of 0.1 μF . All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_{pw} \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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TYPES μ A78M24M, μ A78M24C POSITIVE-VOLTAGE REGULATORS

μ A78M24M, μ A78M24C electrical characteristics at specified virtual junction temperature,
 $V_I = 33$ V, $I_O = 350$ mA (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | μ A78M24M | | | μ A78M24C | | | UNIT |
|---|--|---------------|-----|------|---------------|------|------|---------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage | $V_I = 28$ V to 38 V $I_O = 5$ mA to 350 mA | 23 | 24 | 25 | 23 | 24 | 25 | V |
| | $V_I = 27$ V to 38 V $I_O = 200$ mA | 22.8 | | 25.2 | 22.8 | | 25.2 | |
| Input regulation | $V_I = 27$ V to 38 V | | 10 | 60 | | 10 | 100 | mV |
| | $V_I = 30$ V to 36 V | | 5 | 30 | | 5 | 50 | |
| | $V_I = 28$ V to 38 V | | | | | | | |
| | $I_O = 100$ mA $f = 120$ Hz | 50 | | | 50 | | | |
| Ripple rejection | $V_I = 28$ V to 38 V, $f = 120$ Hz | 50 | 70 | | 50 | 70 | | dB |
| | $I_O = 5$ mA to 500 mA $I_O = 5$ mA to 200 mA | 50 | 30 | 240 | 50 | 30 | 480 | |
| Output regulation | $I_O = 5$ mA | | 10 | 120 | | 10 | 240 | mV |
| | $f = 10$ Hz to 100 kHz | | | | | | | |
| Temperature coefficient of output voltage | $I_O = 5$ mA | | | | | -1.2 | | mV/°C |
| Output noise voltage | $f = 10$ Hz to 100 kHz | | 170 | | | 170 | | μ V |
| | | | 2 | | | 2 | | |
| Dropout voltage | | | 5 | 6 | | 5 | 6 | mA |
| | | | | | | | | |
| Bias current | $V_I = 28$ V to 38 V $V_I = 27$ V to 38 V | | | 0.8 | | | 0.8 | mA |
| | $I_O = 200$ mA $I_O = 5$ mA to 350 mA | | | 0.5 | | | 0.5 | |
| Short-circuit output current | $V_I = 35$ V | | 240 | | | 240 | | mA |
| | | | 700 | | | 700 | | |
| Peak output current | | | | | | | | A |

† All characteristics are measured with a capacitor across the input of 0.33 μ F and a capacitor across the output of 0.1 μ F. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_w \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

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