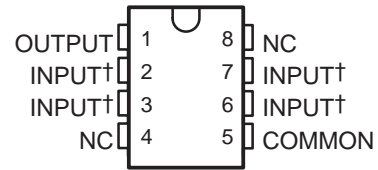


MC79L00 SERIES NEGATIVE-VOLTAGE REGULATORS

SLVS011B – OCTOBER 1982 – REVISED FEBRUARY 2000

- 3-Terminal Regulators
- Output Current Up to 100 mA
- No External Components Required
- Internal Thermal-Overload Protection
- Internal Short-Circuit Current Limiting
- Direct Replacement for Motorola MC79L00 Series
- Available in 5% or 10% Selections

**D PACKAGE
(TOP VIEW)**



† Internally connected
NC—No internal connection

description

This series of fixed negative-voltage integrated-circuit voltage regulators is designed for a wide range of applications. These include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used to control series pass elements to make high-current voltage-regulator circuits. One of these regulators can deliver up to 100 mA of output current. The internal current-limiting and thermal-shutdown features make them essentially immune to overload. When used as a replacement for a zener-diode and resistor combination, these devices can provide an effective improvement in output impedance of two orders of magnitude, with lower bias current.

The MC79L00C series is characterized for operation over the virtual junction temperature range of 0°C to 125°C.

**LP PACKAGE
(TOP VIEW)**



AVAILABLE OPTIONS

| T _J | NOMINAL OUTPUT VOLTAGE (V) | PACKAGED DEVICES | | | |
|----------------|-------------------------------------|--------------------------|-----------|-----------------------------|------------|
| | | OUTPUT VOLTAGE TOLERANCE | | | |
| | | SMALL OUTLINE (D) | | PLASTIC CYLINDRICAL (LP) | |
| | | 5% | 10% | 5% | 10% |
| 0°C to 125°C | -5 | MC79L05ACD† | — | MC79L05ACLP† | — |
| | -12 | MC79L12ACD† | MC79L12CD | MC79L12ACLP† | MC79L12CLP |
| | -15 | MC79L15ACD | MC79L15CD | MC79L15ACLP§ | — |

† This device is available taped and reeled. Add the suffix R to the device type (e.g., MC79L05ACDR).

§ This device is available taped and reeled or in ammo pack. Add the suffix M to the device type for ammo pack (e.g., MC79L15ACLP M).

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electrical characteristics at specified virtual junction temperature, $V_I = -10\text{ V}$, $I_O = 40\text{ mA}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | T_J | MC79L05C | | | MC79L05AC | | | UNIT |
|----------------------|--|--------------|----------|-----|------|-----------|-----|-------|---------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage‡ | | 25°C | -4.6 | -5 | -5.4 | -4.8 | -5 | -5.2 | V |
| | $V_I = -7\text{ V to }-20\text{ V}$, $I_O = 1\text{ mA to }40\text{ mA}$ | 0°C to 125°C | -4.5 | | -5.5 | -4.75 | | -5.25 | |
| | $V_I = -10\text{ V}$, $I_O = 1\text{ mA to }70\text{ mA}$ | 0°C to 125°C | -4.5 | | -5.5 | -4.75 | | -5.25 | |
| Input regulation | $V_I = -7\text{ V to }-20\text{ V}$ | 25°C | | | 200 | | | 150 | mV |
| | $V_I = -8\text{ V to }-20\text{ V}$ | | | | 150 | | | 100 | |
| Ripple rejection | $V_I = -8\text{ V to }-18\text{ V}$, $f = 120\text{ Hz}$ | 25°C | 40 | 49 | | 41 | 49 | | dB |
| Output regulation | $I_O = 1\text{ mA to }100\text{ mA}$ | 25°C | | | 60 | | | 60 | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | | | 30 | | | 30 | |
| Output noise voltage | $f = 10\text{ Hz to }100\text{ kHz}$ | 25°C | | 40 | | | 40 | | μV |
| Dropout voltage | $I_O = 40\text{ mA}$ | 25°C | | 1.7 | | | 1.7 | | V |
| Bias current | | 25°C | | | 6 | | | 6 | mV |
| | | 125°C | | | 5.5 | | | 5.5 | |
| Bias current change | $V_I = -8\text{ V to }-20\text{ V}$ | 0°C to 125°C | | | 1.5 | | | 1.5 | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | | | 0.2 | | | 0.1 | |

† All characteristics are measured with a 0.33- μF capacitor across the input and a 0.1- μF capacitor across the output. Pulse-testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = -19\text{ V}$, $I_O = 40\text{ mA}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | T_J | MC79L12C | | | MC79L12AC | | | UNIT |
|----------------------|---|--------------|----------|-----|-------|-----------|-----|-------|---------------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage‡ | | 25°C | -11.1 | -12 | -12.9 | -11.5 | -12 | -12.5 | V |
| | $V_I = -14.5\text{ V to }-27\text{ V}$, $I_O = 1\text{ mA to }40\text{ mA}$ | 0°C to 125°C | -10.8 | | -13.2 | -11.4 | | -12.6 | |
| | $V_I = -19\text{ V}$, $I_O = 1\text{ mA to }70\text{ mA}$ | 0°C to 125°C | -10.8 | | -13.2 | -11.4 | | -12.6 | |
| Input regulation | $V_I = -14.5\text{ V to }-27\text{ V}$ | 25°C | | | 250 | | | 250 | mV |
| | $V_I = -16\text{ V to }-27\text{ V}$ | | | | 200 | | | 200 | |
| Ripple rejection | $V_I = -15\text{ V to }-25\text{ V}$, $f = 120\text{ Hz}$ | 25°C | 36 | 42 | | 37 | 42 | | dB |
| Output regulation | $I_O = 1\text{ mA to }100\text{ mA}$ | 25°C | | | 100 | | | 100 | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | | | 50 | | | 50 | |
| Output noise voltage | $f = 10\text{ Hz to }100\text{ kHz}$ | 25°C | | 80 | | | 80 | | μV |
| Dropout voltage | $I_O = 40\text{ mA}$ | 25°C | | 1.7 | | | 1.7 | | V |
| Bias current | | 25°C | | | 6.5 | | | 6.5 | mV |
| | | 125°C | | | 6 | | | 6 | |
| Bias current change | $V_I = -16\text{ V to }-27\text{ V}$ | 0°C to 125°C | | | 1.5 | | | 1.5 | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | | | 0.2 | | | 0.1 | |

† All characteristics are measured with a 0.33- μF capacitor across the input and a 0.1- μF capacitor across the output. Pulse-testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

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electrical characteristics at specified virtual junction temperature, $V_I = -23\text{ V}$, $I_O = 40\text{ mA}$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS† | T _J | MC79L15C | | | MC79L15AC | | | UNIT |
|----------------------|---|----------------|----------|-----|-------|-----------|-----|--------|------|
| | | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Output voltage‡ | | 25°C | -13.8 | -15 | -16.2 | -14.4 | -15 | -15.6 | V |
| | $V_I = -17.5\text{ V to }-30\text{ V}$, $I_O = 1\text{ mA to }40\text{ mA}$ | 0°C to 125°C | -13.5 | | -16.5 | -14.25 | | -15.75 | |
| | $V_I = -23\text{ V}$, $I_O = 1\text{ mA to }70\text{ mA}$ | 0°C to 125°C | -13.5 | | -16.5 | -14.25 | | -15.75 | |
| Input regulation | $V_I = -17.5\text{ V to }-30\text{ V}$ | 25°C | | | | 300 | | | mV |
| | $V_I = -17.5\text{ V to }-30\text{ V}$ | | | | | 250 | | | |
| Ripple rejection | $V_I = -18.5\text{ V to }-28.5\text{ V}$, $f = 120\text{ Hz}$ | 25°C | 33 | 39 | | 34 | 39 | | dB |
| Output regulation | $I_O = 1\text{ mA to }100\text{ mA}$ | 25°C | | | | 150 | | | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | | | | 75 | | | |
| Output noise voltage | $f = 10\text{ Hz to }100\text{ kHz}$ | 25°C | 90 | | | 90 | | | μV |
| Dropout voltage | $I_O = 40\text{ mA}$ | 25°C | 1.7 | | | 1.7 | | | V |
| Bias current | | 25°C | 6.5 | | | 6.5 | | | mV |
| | | 125°C | 6 | | | 6 | | | |
| Bias current change | $V_I = -20\text{ V to }-30\text{ V}$ | 0°C to 125°C | 1.5 | | | 1.5 | | | mV |
| | $I_O = 1\text{ mA to }40\text{ mA}$ | | 0.2 | | | 0.1 | | | |

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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