

# MC79M00 Series

# MC79M00

## MAXIMUM RATINGS (T<sub>A</sub> = 25°C, unless otherwise noted.)

| Rating                                                                                                                                                                                                                                                                             | Symbol                                                                                                           | Value                                                                  | Unit                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------|
| Input Voltage                                                                                                                                                                                                                                                                      | V <sub>I</sub>                                                                                                   | –35                                                                    | Vdc                                        |
| Power Dissipation<br>Case 221A<br>T <sub>A</sub> = 25°C<br>Thermal Resistance, Junction-to-Ambient<br>Thermal Resistance, Junction-to-Case<br>Case 369 and 369A (DPAK)<br>T <sub>A</sub> = 25°C<br>Thermal Resistance, Junction-to-Ambient<br>Thermal Resistance, Junction-to-Case | P <sub>D</sub><br>θ <sub>JA</sub><br>θ <sub>JC</sub><br><br>P <sub>D</sub><br>θ <sub>JA</sub><br>θ <sub>JC</sub> | Internally Limited<br>65<br>5.0<br><br>Internally Limited<br>92<br>6.0 | W<br>°C/W<br>°C/W<br><br>W<br>°C/W<br>°C/W |
| Storage Junction Temperature                                                                                                                                                                                                                                                       | T <sub>stg</sub>                                                                                                 | –65 to +150                                                            | °C                                         |
| Junction Temperature                                                                                                                                                                                                                                                               | T <sub>J</sub>                                                                                                   | 150                                                                    | °C                                         |

NOTE: ESD data available upon request.

## THERMAL CHARACTERISTICS

| Characteristic                          | Symbol           | Value | Unit |
|-----------------------------------------|------------------|-------|------|
| Thermal Resistance, Junction-to-Ambient | R <sub>θJA</sub> | 65    | °C/W |
| Thermal Resistance, Junction-to-Case    | R <sub>θJC</sub> | 5.0   | °C/W |

## MC79M05B, C

### ELECTRICAL CHARACTERISTICS (V<sub>I</sub> = –10 V, I<sub>O</sub> = 350 mA, T<sub>low</sub> to T<sub>high</sub> [Note 2], unless otherwise noted.)

| Characteristic                                                                                                                                        | Symbol                         | Min    | Typ        | Max        | Unit  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------|------------|------------|-------|
| Output Voltage (T <sub>J</sub> = 25°C)                                                                                                                | V <sub>O</sub>                 | –4.8   | –5.0       | –5.2       | Vdc   |
| Line Regulation, T <sub>J</sub> = 25°C (Note 1)<br>–7.0 Vdc ≥ V <sub>I</sub> ≥ –25 Vdc<br>–8.0 Vdc ≥ V <sub>I</sub> ≥ –18 Vdc                         | Reg <sub>line</sub>            | –<br>– | 7.0<br>2.0 | 50<br>30   | mV    |
| Load Regulation, T <sub>J</sub> = 25°C (Note 1)<br>5.0 mA ≤ I <sub>O</sub> ≤ 500 mA                                                                   | Reg <sub>load</sub>            | –      | 30         | 100        | mV    |
| Output Voltage<br>–7.0 Vdc ≥ V <sub>I</sub> ≥ –25 Vdc, 5.0 mA ≤ I <sub>O</sub> ≤ 350 mA                                                               | V <sub>O</sub>                 | –4.75  | –          | –5.25      | Vdc   |
| Input Bias Current (T <sub>J</sub> = 25°C)                                                                                                            | I <sub>IB</sub>                | –      | 4.3        | 8.0        | mA    |
| Input Bias Current Change<br>–8.0 Vdc ≥ V <sub>I</sub> ≥ –25 Vdc, I <sub>O</sub> = 350 mA<br>5.0 mA ≤ I <sub>O</sub> ≤ 350 mA, V <sub>I</sub> = –10 V | ΔI <sub>IB</sub>               | –<br>– | –<br>–     | 0.4<br>0.4 | mA    |
| Output Noise Voltage, T <sub>A</sub> = 25°C, 10 Hz ≤ f ≤ 100 kHz                                                                                      | V <sub>n</sub>                 | –      | 40         | –          | μV    |
| Ripple Rejection (f = 120 Hz)                                                                                                                         | RR                             | 54     | 66         | –          | dB    |
| Dropout Voltage<br>I <sub>O</sub> = 500 mA, T <sub>J</sub> = 25°C                                                                                     | V <sub>I</sub> –V <sub>O</sub> | –      | 1.1        | –          | Vdc   |
| Average Temperature Coefficient of Output Voltage<br>I <sub>O</sub> = 5.0 mA, 0°C ≤ T <sub>J</sub> ≤ 125°C                                            | ΔV <sub>O</sub> /ΔT            | –      | 0.2        | –          | mV/°C |

NOTES: 1. Load and line regulation are specified at constant temperature. Change in V<sub>O</sub> due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.

2. B = T<sub>low</sub> to T<sub>high</sub>, –40°C < T<sub>J</sub> < 125°C

C = T<sub>low</sub> to T<sub>high</sub>, 0°C < T<sub>J</sub> < 125°C

## MC79M00

### MC79M08B, C

**ELECTRICAL CHARACTERISTICS** ( $V_I = -10\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_{\text{low}}$  to  $T_{\text{high}}$  [Note 2], unless otherwise noted.)

| Characteristic                                                                                                                                              | Symbol                     | Min    | Typ        | Max        | Unit                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------|------------|------------|----------------------|
| Output Voltage ( $T_J = 25^\circ\text{C}$ )                                                                                                                 | $V_O$                      | -7.7   | -8.0       | -8.3       | Vdc                  |
| Line Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>-7.0 Vdc $\geq V_I \geq -25\text{ Vdc}$<br>-8.0 Vdc $\geq V_I \geq -18\text{ Vdc}$                    | $\text{Reg}_{\text{line}}$ | -<br>- | 5.0<br>3.0 | 80<br>50   | mV                   |
| Load Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>5.0 mA $\leq I_O \leq 500\text{ mA}$                                                                  | $\text{Reg}_{\text{load}}$ | -      | 30         | 100        | mV                   |
| Output Voltage<br>-7.0 Vdc $\geq V_I \geq -25\text{ Vdc}$ , 5.0 mA $\leq I_O \leq 350\text{ mA}$                                                            | $V_O$                      | -7.6   | -8.0       | -8.4       | Vdc                  |
| Input Bias Current ( $T_J = 25^\circ\text{C}$ )                                                                                                             | $I_{\text{IB}}$            | -      | -          | 8.0        | mA                   |
| Input Bias Current Change<br>-8.0 Vdc $\geq V_I \geq -25\text{ Vdc}$ , $I_O = 350\text{ mA}$<br>5.0 mA $\leq I_O \leq 350\text{ mA}$ , $V_I = -10\text{ V}$ | $\Delta I_{\text{IB}}$     | -<br>- | -<br>-     | 0.4<br>0.4 | mA                   |
| Output Noise Voltage, $T_A = 25^\circ\text{C}$ , 10 Hz $\leq f \leq 100\text{ kHz}$                                                                         | $V_n$                      | -      | 60         | -          | $\mu\text{V}$        |
| Ripple Rejection ( $f = 120\text{ Hz}$ )                                                                                                                    | RR                         | 54     | 63         | -          | dB                   |
| Dropout Voltage<br>$I_O = 500\text{ mA}$ , $T_J = 25^\circ\text{C}$                                                                                         | $V_I - V_O$                | -      | 1.1        | -          | Vdc                  |
| Average Temperature Coefficient of Output Voltage<br>$I_O = 5.0\text{ mA}$ , $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$                              | $\Delta V_O / \Delta T$    | -      | 0.4        | -          | mV/ $^\circ\text{C}$ |

### MC79M12B, C

**ELECTRICAL CHARACTERISTICS** ( $V_I = -19\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_{\text{low}}$  to  $T_{\text{high}}$  [Note 2], unless otherwise noted.)

| Characteristic                                                                                                                                               | Symbol                     | Min    | Typ        | Max        | Unit                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------|------------|------------|----------------------|
| Output Voltage ( $T_J = 25^\circ\text{C}$ )                                                                                                                  | $V_O$                      | -11.5  | -12        | -12.5      | Vdc                  |
| Line Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>-14.5 Vdc $\geq V_I \geq -30\text{ Vdc}$<br>-15 Vdc $\geq V_I \geq -25\text{ Vdc}$                     | $\text{Reg}_{\text{line}}$ | -<br>- | 5.0<br>3.0 | 80<br>50   | mV                   |
| Load Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>5.0 mA $\leq I_O \leq 500\text{ mA}$                                                                   | $\text{Reg}_{\text{load}}$ | -      | 30         | 240        | mV                   |
| Output Voltage<br>-14.5 Vdc $\geq V_I \geq -30\text{ Vdc}$ , 5.0 mA $\leq I_O \leq 350\text{ mA}$                                                            | $V_O$                      | -11.4  | -          | -12.6      | Vdc                  |
| Input Bias Current ( $T_J = 25^\circ\text{C}$ )                                                                                                              | $I_{\text{IB}}$            | -      | 4.4        | 8.0        | mA                   |
| Input Bias Current Change<br>-14.5 Vdc $\geq V_I \geq -30\text{ Vdc}$ , $I_O = 350\text{ mA}$<br>5.0 mA $\leq I_O \leq 350\text{ mA}$ , $V_I = -19\text{ V}$ | $\Delta I_{\text{IB}}$     | -<br>- | -<br>-     | 0.4<br>0.4 | mA                   |
| Output Noise Voltage, $T_A = 25^\circ\text{C}$ , 10 Hz $\leq f \leq 100\text{ kHz}$                                                                          | $V_n$                      | -      | 75         | -          | $\mu\text{V}$        |
| Ripple Rejection ( $f = 120\text{ Hz}$ )                                                                                                                     | RR                         | 54     | 60         | -          | dB                   |
| Dropout Voltage<br>$I_O = 500\text{ mA}$ , $T_J = 25^\circ\text{C}$                                                                                          | $V_I - V_O$                | -      | 1.1        | -          | Vdc                  |
| Average Temperature Coefficient of Output Voltage<br>$I_O = 5.0\text{ mA}$ , $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$                               | $\Delta V_O / \Delta T$    | -      | -0.8       | -          | mV/ $^\circ\text{C}$ |

**NOTES:** 1. Load and line regulation are specified at constant temperature. Change in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.  
2. B =  $T_{\text{low}}$  to  $T_{\text{high}}$ ,  $-40^\circ\text{C} < T_J < 125^\circ\text{C}$   
C =  $T_{\text{low}}$  to  $T_{\text{high}}$ ,  $0^\circ\text{C} < T_J < 125^\circ\text{C}$

MC79M15B, C

ELECTRICAL CHARACTERISTICS ( $V_I = -23\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_{\text{low}}$  to  $T_{\text{high}}$  [Note 2], unless otherwise noted.)

| Characteristic                                                                                                                                              | Symbol                     | Min    | Typ        | Max        | Unit                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------|------------|------------|----------------------|
| Output Voltage ( $T_J = 25^\circ\text{C}$ )                                                                                                                 | $V_O$                      | -14.4  | -15        | -15.6      | Vdc                  |
| Line Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>-17.5 Vdc $\geq V_I \geq$ -30 Vdc<br>-18 Vdc $\geq V_I \geq$ -28 Vdc                                  | $\text{Reg}_{\text{line}}$ | -      | 5.0<br>3.0 | 80<br>50   | mV                   |
| Load Regulation, $T_J = 25^\circ\text{C}$ (Note 1)<br>$5.0\text{ mA} \leq I_O \leq 500\text{ mA}$                                                           | $\text{Reg}_{\text{load}}$ | -      | 30         | 240        | mV                   |
| Output Voltage<br>-17.5 Vdc $\geq V_I \geq$ -30 Vdc, $5.0\text{ mA} \leq I_O \leq 350\text{ mA}$                                                            | $V_O$                      | -14.25 | -          | -15.75     | Vdc                  |
| Input Bias Current ( $T_J = 25^\circ\text{C}$ )                                                                                                             | $I_{\text{IB}}$            | -      | 4.4        | 8.0        | mA                   |
| Input Bias Current Change<br>-17.5 Vdc $\geq V_I \geq$ -30 Vdc, $I_O = 350\text{ mA}$<br>$5.0\text{ mA} \leq I_O \leq 350\text{ mA}$ , $V_I = -23\text{ V}$ | $\Delta I_{\text{IB}}$     | -      | -          | 0.4<br>0.4 | mA                   |
| Output Noise Voltage, $T_A = 25^\circ\text{C}$ , $10\text{ Hz} \leq f \leq 100\text{ kHz}$                                                                  | $V_n$                      | -      | 90         | -          | $\mu\text{V}$        |
| Ripple Rejection ( $f = 120\text{ Hz}$ )                                                                                                                    | RR                         | 54     | 60         | -          | dB                   |
| Dropout Voltage<br>$I_O = 500\text{ mA}$ , $T_J = 25^\circ\text{C}$                                                                                         | $V_I - V_O$                | -      | 1.1        | -          | Vdc                  |
| Average Temperature Coefficient of Output Voltage<br>$I_O = 5.0\text{ mA}$ , $0^\circ\text{C} \leq T_J \leq 125^\circ\text{C}$                              | $\Delta V_O / \Delta T$    | -      | -1.0       | -          | mV/ $^\circ\text{C}$ |

**NOTES:** 1. Load and line regulation are specified at constant temperature. Change in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.  
2. B =  $T_{\text{low}}$  to  $T_{\text{high}}$ ,  $-40^\circ\text{C} < T_J < 125^\circ\text{C}$   
C =  $T_{\text{low}}$  to  $T_{\text{high}}$ ,  $0^\circ\text{C} < T_J < 125^\circ\text{C}$

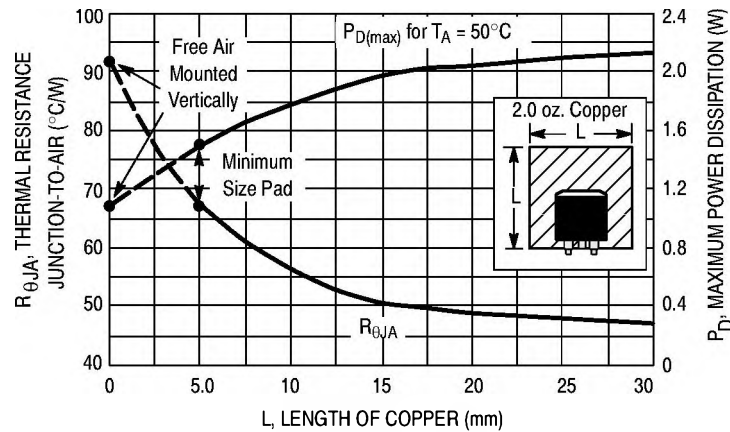


Figure 1. DPAK Thermal Resistance and Maximum Power Dissipation versus P.C.B. Copper Length