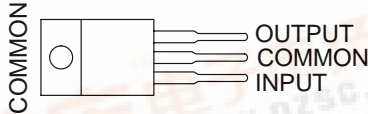


The  $\mu$ A78M10 and  $\mu$ A78M15 are obsolete and are no longer supplied

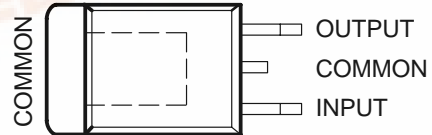
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- 3-Terminal Regulators
- Output Current Up To 500 mA
- No External Components
- Internal Thermal-Overload Protection
- High Power-Dissipation Capability
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation

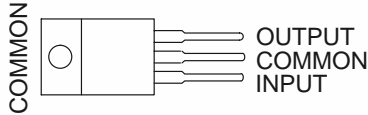
KC (TO-220) PACKAGE  
(TOP VIEW)



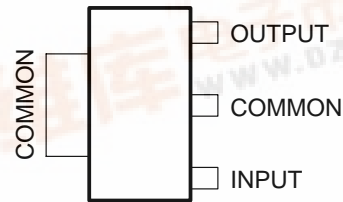
KTP PACKAGE  
(TOP VIEW)



KCS (TO-220) PACKAGE  
(TOP VIEW)



DCY (SOT-223) PACKAGE  
(TOP VIEW)



### description/ordering information

This series of fixed-voltage 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. Each of these regulators can deliver up to 500 mA of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them 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.

Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

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## ORDERING INFORMATION

| T <sub>J</sub> | V <sub>O(NOM)</sub><br>(V)   | PACKAGE†         |               | ORDERABLE<br>PART NUMBER | TOP-SIDE<br>MARKING |
|----------------|------------------------------|------------------|---------------|--------------------------|---------------------|
| 0°C to 125°C   | 3.3                          | Power Flex (KTP) | Reel of 3000  | μA78M33CKTTPR            | UA78M33C            |
|                |                              | SOT-223 (DCY)    | Tube of 80    | μA78M33CDCY              | C3                  |
|                |                              |                  | Reel of 2500  | μA78M33CDCYR             |                     |
|                | TO-220 (KC)                  | Tube of 50       | μA78M33CKC    | UA78M33C                 |                     |
|                | 5                            | Power Flex (KTP) | Reel of 3000  | μA78M05CKTTPR            | UA78M05C            |
|                |                              | SOT-223 (DCY)    | Tube of 80    | μA78M05CDCY              | C5                  |
|                |                              |                  | Reel of 2500  | μA78M05CDCYR             |                     |
|                |                              | TO-220 (KC)      | Tube of 50    | μA78M05CKC               | UA78M05C            |
|                | TO-220, short shoulder (KCS) | Tube of 20       | μA78M05CKCS   |                          |                     |
|                | 6                            | Power Flex (KTP) | Reel of 3000  | μA78M06CKTTPR            | UA78M06C            |
|                | 8                            | Power Flex (KTP) | Reel of 3000  | μA78M08CKTTPR            | UA78M08C            |
|                |                              | SOT-223 (DCY)    | Tube of 80    | μA78M08CDCY              | C8                  |
|                |                              |                  | Reel of 2500  | μA78M08CDCYR             |                     |
|                | TO-220 (KC)                  | Tube of 50       | μA78M08CKC    | UA78M08C                 |                     |
|                | 9                            | Power Flex (KTP) | Reel of 3000  | μA78M09CKTTPR            | UA78M09C            |
| 12             | Power Flex (KTP)             | Reel of 3000     | μA78M12CKTTPR | UA78M12C                 |                     |
|                | TO-220 (KC)                  | Tube of 50       | μA78M12CKC    | UA78M12C                 |                     |

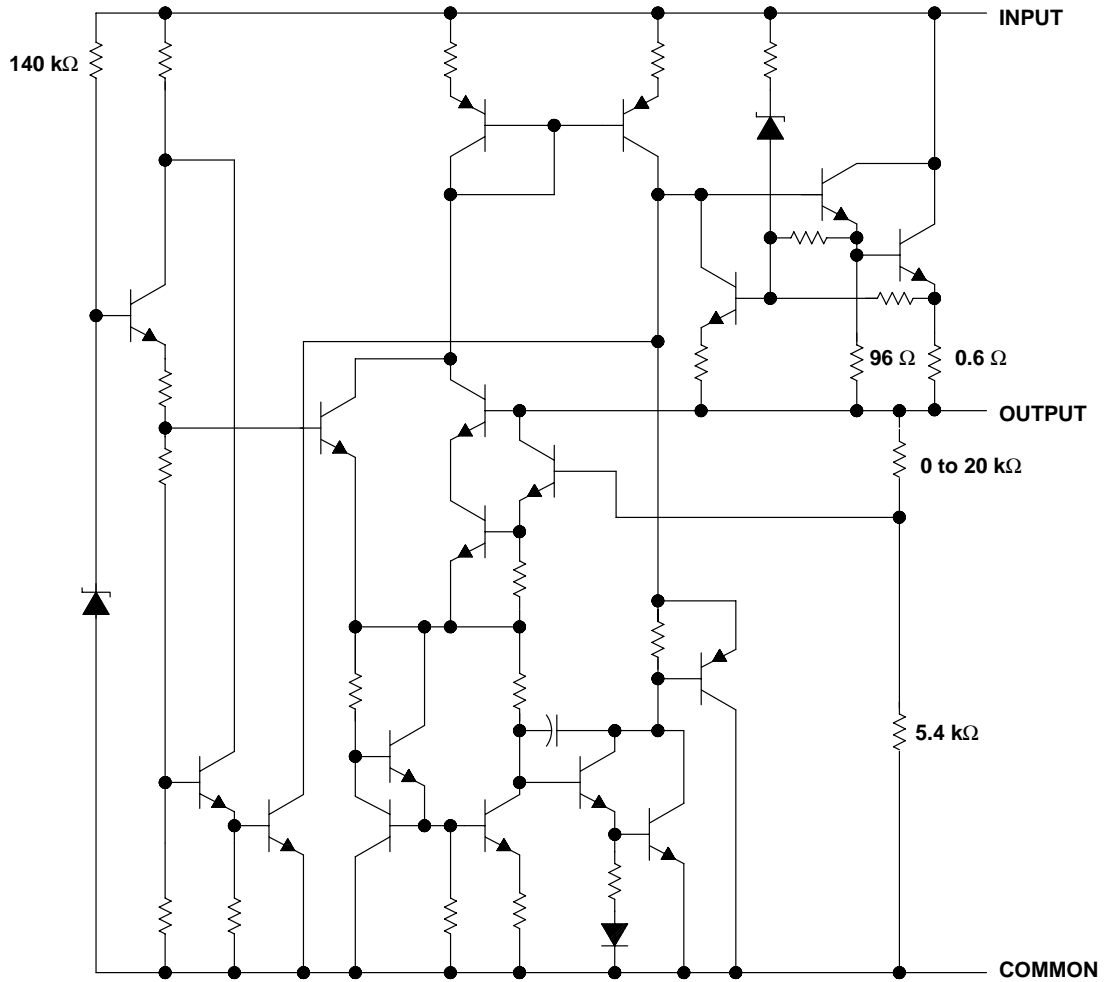
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

The  $\mu$ A78M10 and  $\mu$ A78M15 are  
obsolete and are no longer supplied

# $\mu$ A78M00 SERIES POSITIVE-VOLTAGE REGULATORS

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## schematic



Resistor values shown are nominal.

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

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## absolute maximum ratings over virtual junction temperature range (unless otherwise noted)†

|   |                |
|---|----------------|
| Input voltage, $V_I$  | 35 V           |
| Package thermal impedance, $\theta_{JA}$ (see Notes 1 and 2): DCY package | 53°C/W         |
| (see Notes 1 and 3): KC/KCS package                                       | 25°C/W         |
| (see Notes 1 and 3): KTP package  | 28°C/W         |
| Operating virtual junction temperature, $T_J$                             | 150°C          |
| Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds              | 260°C          |
| Storage temperature range, $T_{stg}$                                      | -65°C to 150°C |

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. Maximum power dissipation is a function of  $T_{J(max)}$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_{J(max)} - T_A)/\theta_{JA}$ . Selecting the maximum of 150°C can affect reliability.  
 2. The package thermal impedance is calculated in accordance with JESD 51-7.  
 3. The package thermal impedance is calculated in accordance with JESD 51-5.

## recommended operating conditions

|       |  | MIN     | MAX  | UNIT |   |
|-------|--|---------|------|------|---|
| $V_I$ | Input voltage                          | μA78M33 | 5.3  | 25   | V |
|       |  | μA78M05 | 7    | 25   |   |
|       |  | μA78M06 | 8    | 25   |   |
|       |  | μA78M08 | 10.5 | 25   |   |
|       |  | μA78M09 | 11.5 | 26   | V |
|       |  | μA78M10 | 12.5 | 28   |   |
|       |  | μA78M12 | 14.5 | 30   | V |
|       |  | μA78M15 | 17.5 | 30   |   |
| $I_O$ | Output current                         |         | 500  | mA   |   |
| $T_J$ | Operating virtual junction temperature | 0       | 125  | °C   |   |

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

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**electrical characteristics at specified virtual junction temperature,  $V_I = 8\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONST  |  | μA78M33C |     |       | UNIT |
|---|---|--|----------|-----|-------|------|
|   |   |  | MIN      | TYP | MAX   |      |
| Output voltage‡                           | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$V_I = 8\text{ V to }20\text{ V}$                                 |  | 3.2      | 3.3 | 3.4   | V    |
|   |   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                         | 3.1      | 3.3 | 3.5   |      |
| Input voltage regulation                  | $I_O = 200\text{ mA}$   | $V_I = 5.3\text{ V to }25\text{ V}$                                  |          | 9   | 100   | mV   |
|   |   | $V_I = 8\text{ V to }25\text{ V}$                                    |          | 3   | 50    |      |
| Ripple rejection                          | $V_I = 8\text{ V to }18\text{ V}$ ,<br>$f = 120\text{ Hz}$  | $I_O = 100\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 62       |     |       | dB   |
|   |   | $I_O = 300\text{ mA}$  | 62       | 80  |       |      |
| Output voltage regulation                 | $V_I = 8\text{ V}$ ,<br>$I_O = 5\text{ mA to }500\text{ mA}$  |  | 20       | 100 | mV    |      |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                                       |  | -1       |     | mV/°C |      |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$  |  | 40       | 200 | μV    |      |
| Dropout voltage                           |   |  | 2        |     | V     |      |
| Bias current                              |   |  | 4.5      | 6   | mA    |      |
| Bias current change                       | $I_O = 200\text{ mA}$ ,<br>$V_I = 8\text{ V to }25\text{ V}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |  |          |     | 0.8   | mA   |
|   | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                      |  |          |     | 0.5   |      |
| Short-circuit output current              | $V_I = 35\text{ V}$   |  | 300      |     | mA    |      |
| Peak output current                       |   |  | 700      |     | mA    |      |

† 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 maintain  $T_J$  as close to  $T_A$  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,  $V_I = 10\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONST  |  | μA78M05C |     |       | UNIT |
|---|---|--|----------|-----|-------|------|
|   |   |  | MIN      | TYP | MAX   |      |
| Output voltage                            | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$V_I = 7\text{ V to }20\text{ V}$                                 |  | 4.8      | 5   | 5.2   | V    |
|   |   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                         | 4.75     |     | 5.25  |      |
| Input voltage regulation                  | $I_O = 200\text{ mA}$   | $V_I = 7\text{ V to }25\text{ V}$                                    |          | 3   | 100   | mV   |
|   |   | $V_I = 8\text{ V to }25\text{ V}$                                    |          | 1   | 50    |      |
| Ripple rejection                          | $V_I = 8\text{ V to }18\text{ V}$ ,<br>$f = 120\text{ Hz}$  | $I_O = 100\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 62       |     |       | dB   |
|   |   | $I_O = 300\text{ mA}$  | 62       | 80  |       |      |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$  |  | 20       | 100 | mV    |      |
|   | $I_O = 5\text{ mA to }200\text{ mA}$  |  | 10       | 50  |       |      |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                                       |  | -1       |     | mV/°C |      |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$  |  | 40       | 200 | μV    |      |
| Dropout voltage                           |   |  | 2        |     | V     |      |
| Bias current                              |   |  | 4.5      | 6   | mA    |      |
| Bias current change                       | $I_O = 200\text{ mA}$ ,<br>$V_I = 8\text{ V to }25\text{ V}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |  |          |     | 0.8   | mA   |
|   | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                      |  |          |     | 0.5   |      |
| Short-circuit output current              | $V_I = 35\text{ V}$   |  | 300      |     | mA    |      |
| Peak output current                       |   |  | 0.7      |     | A     |      |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

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**electrical characteristics at specified virtual junction temperature,  $V_I = 11\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONS†  | μA78M06C |      |     | UNIT  |   |
|---|---|----------|------|-----|-------|---|
|   |   | MIN      | TYP  | MAX |       |   |
| Output voltage                            | $I_O = 5\text{ mA to }350\text{ mA}$ , $V_I = 8\text{ V to }21\text{ V}$<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$  |          | 5.75 | 6   | 6.25  | V |
|   |   |          | 5.7  |     | 6.3   |   |
| Input voltage regulation                  | $I_O = 200\text{ mA}$<br>$V_I = 8\text{ V to }25\text{ V}$<br>$V_I = 9\text{ V to }25\text{ V}$   |          | 5    | 100 | mV    |   |
|   |   |          | 1.5  | 50  |       |   |
| Ripple rejection                          | $V_I = 9\text{ V to }19\text{ V}$ , $f = 120\text{ Hz}$<br>$I_O = 100\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$<br>$I_O = 300\text{ mA}$  |          | 59   |     | dB    |   |
|   |   |          | 59   | 80  |       |   |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$<br>$I_O = 5\text{ mA to }200\text{ mA}$  |          | 20   | 120 | mV    |   |
|   |   |          | 10   | 60  |       |   |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$  |          | -1   |     | mV/°C |   |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$  |          | 45   |     | μV    |   |
| Dropout voltage                           |   |          | 2    |     | V     |   |
| Bias current                              |   |          | 4.5  | 6   | mA    |   |
| Bias current change                       | $V_I = 9\text{ V to }25\text{ V}$ , $I_O = 200\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$<br>$I_O = 5\text{ mA to }350\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |          |      | 0.8 | mA    |   |
|   |   |          |      | 0.5 |       |   |
| Short-circuit output current              | $V_I = 35\text{ V}$   |          | 270  |     | mA    |   |
| Peak output current                       |   |          | 0.7  |     | A     |   |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

**electrical characteristics at specified virtual junction temperature,  $V_I = 14\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONS†   | μA78M08C |     |     | UNIT  |   |
|---|--|----------|-----|-----|-------|---|
|   |  | MIN      | TYP | MAX |       |   |
| Output voltage                            | $V_I = 10.5\text{ V to }23\text{ V}$ , $I_O = 5\text{ mA to }350\text{ mA}$<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$  |          | 7.7 | 8   | 8.3   | V |
|   |  |          | 7.6 |     | 8.4   |   |
| Input voltage regulation                  | $I_O = 200\text{ mA}$<br>$V_I = 10.5\text{ V to }25\text{ V}$<br>$V_I = 11\text{ V to }25\text{ V}$  |          | 6   | 100 | mV    |   |
|   |  |          | 2   | 50  |       |   |
| Ripple rejection                          | $V_I = 11.5\text{ V to }21.5\text{ V}$ , $f = 120\text{ Hz}$<br>$I_O = 100\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$<br>$I_O = 300\text{ mA}$                                      |          | 56  |     | dB    |   |
|   |  |          | 56  | 80  |       |   |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$<br>$I_O = 5\text{ mA to }200\text{ mA}$   |          | 25  | 160 | mV    |   |
|   |  |          | 10  | 80  |       |   |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$   |          | -1  |     | mV/°C |   |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$   |          | 52  |     | μV    |   |
| Dropout voltage                           |  |          | 2   |     | V     |   |
| Bias current                              |  |          | 4.6 | 6   | mA    |   |
| Bias current change                       | $V_I = 10.5\text{ V to }25\text{ V}$ , $I_O = 200\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$<br>$I_O = 5\text{ mA to }350\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |          |     | 0.8 | mA    |   |
|   |  |          |     | 0.5 |       |   |
| Short-circuit output current              | $V_I = 35\text{ V}$  |          | 250 |     | mA    |   |
| Peak output current                       |  |          | 0.7 |     | A     |   |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

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**electrical characteristics at specified virtual junction temperature,  $V_I = 16\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONST   |   | μA78M09C |     |     | UNIT  |
|---|--|---|----------|-----|-----|-------|
|   |  |   | MIN      | TYP | MAX |       |
| Output voltage                            | $V_I = 11.5\text{ V to }24\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                            | 8.6      | 9   | 9.4 | V     |
|   |  |   | 8.5      |     | 9.5 |       |
| Input voltage regulation                  | $I_O = 200\text{ mA}$  | $V_I = 11.5\text{ V to }26\text{ V}$                                    |          | 6   | 100 | mV    |
|   |  | $V_I = 12\text{ V to }26\text{ V}$                                      |          | 2   | 50  |       |
| Ripple rejection                          | $V_I = 13\text{ V to }23\text{ V}$ ,<br>$f = 120\text{ Hz}$  | $I_O = 100\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 56       |     |     | dB    |
|   |  | $I_O = 300\text{ mA}$   | 56       | 80  |     |       |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$   |   |          | 25  | 180 | mV    |
|   | $I_O = 5\text{ mA to }200\text{ mA}$   |   |          | 10  | 90  |       |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$  |   |          | -1  |     | mV/°C |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$   |   |          | 58  |     | μV    |
| Dropout voltage                           |  |   |          | 2   |     | V     |
| Bias current                              |  |   |          | 4.6 | 6   | mA    |
| Bias current change                       | $V_I = 11.5\text{ V to }26\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | $I_O = 200\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ |          |     | 0.8 | mA    |
|   |  |   |          |     | 0.5 |       |
| Short-circuit output current              | $V_I = 35\text{ V}$  |   |          | 250 |     | mA    |
| Peak output current                       |  |   |          | 0.7 |     | A     |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

**electrical characteristics at specified virtual junction temperature,  $V_I = 17\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)**

| PARAMETER                                 | TEST CONDITIONST   |   | μA78M10C |     |      | UNIT  |
|---|--|---|----------|-----|------|-------|
|   |  |   | MIN      | TYP | MAX  |       |
| Output voltage                            | $V_I = 12.5\text{ V to }25\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                            | 9.6      | 10  | 10.4 | V     |
|   |  |   | 9.5      |     | 10.5 |       |
| Input voltage regulation                  | $I_O = 200\text{ mA}$  | $V_I = 12.5\text{ V to }28\text{ V}$                                    |          | 7   | 100  | mV    |
|   |  | $V_I = 14\text{ V to }28\text{ V}$                                      |          | 2   | 50   |       |
| Ripple rejection                          | $V_I = 15\text{ V to }25\text{ V}$ ,<br>$f = 120\text{ Hz}$  | $I_O = 100\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 59       |     |      | dB    |
|   |  | $I_O = 300\text{ mA}$   | 55       | 80  |      |       |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$   |   |          | 25  | 200  | mV    |
|   | $I_O = 5\text{ mA to }200\text{ mA}$   |   |          | 10  | 100  |       |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$  |   |          | -1  |      | mV/°C |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$   |   |          | 64  |      | μV    |
| Dropout voltage                           |  |   |          | 2   |      | V     |
| Bias current                              |  |   |          | 4.7 | 6    | mA    |
| Bias current change                       | $V_I = 12.5\text{ V to }28\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | $I_O = 200\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ |          |     | 0.8  | mA    |
|   |  |   |          |     | 0.5  |       |
| Short-circuit output current              | $V_I = 35\text{ V}$  |   |          | 245 |      | mA    |
| Peak output current                       |  |   |          | 0.7 |      | A     |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

# μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

The μA78M10 and μA78M15 are  
obsolete and are no longer supplied

SLVS059K – JUNE 1976 – REVISED FEBRUARY 2003

electrical characteristics at specified virtual junction temperature,  $V_I = 19\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)

| PARAMETER                                 | TEST CONDITIONS†  |   | μA78M12C |     |      | UNIT  |
|---|---|---|----------|-----|------|-------|
|   |   |   | MIN      | TYP | MAX  |       |
| Output voltage                            | $V_I = 14.5\text{ V to }27\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$                                    |   | 11.5     | 12  | 12.5 | V     |
|   |   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                            | 11.4     |     | 12.6 |       |
| Input voltage regulation                  | $I_O = 200\text{ mA}$   | $V_I = 14.5\text{ V to }30\text{ V}$                                    |          | 8   | 100  | mV    |
|   |   | $V_I = 16\text{ V to }30\text{ V}$                                      |          | 2   | 50   |       |
| Ripple rejection                          | $V_I = 15\text{ V to }25\text{ V}$ ,<br>$f = 120\text{ Hz}$   | $I_O = 100\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 55       |     |      | dB    |
|   |   | $I_O = 300\text{ mA}$   | 55       | 80  |      |       |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$  |   |          | 25  | 240  | mV    |
|   | $I_O = 5\text{ mA to }200\text{ mA}$  |   |          | 10  | 120  |       |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$   |   |          | -1  |      | mV/°C |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$  |   |          | 75  |      | μV    |
| Dropout voltage                           |   |   |          | 2   |      | V     |
| Bias current                              |   |   |          | 4.8 | 6    | mA    |
| Bias current change                       | $V_I = 14.5\text{ V to }30\text{ V}$ ,<br>$I_O = 200\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ |   |          |     | 0.8  | mA    |
|   | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                            |   |          |     | 0.5  |       |
| Short-circuit output current              | $V_I = 35\text{ V}$   |   |          | 240 |      | mA    |
| Peak output current                       |   |   |          | 0.7 |      | A     |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

electrical characteristics at specified virtual junction temperature,  $V_I = 23\text{ V}$ ,  $I_O = 350\text{ mA}$ ,  $T_J = 25^\circ\text{C}$   
(unless otherwise noted)

| PARAMETER                                 | TEST CONDITIONS†  |   | μA78M15C |     |       | UNIT  |
|---|---|---|----------|-----|-------|-------|
|   |   |   | MIN      | TYP | MAX   |       |
| Output voltage                            | $V_I = 17.5\text{ V to }30\text{ V}$ ,<br>$I_O = 5\text{ mA to }350\text{ mA}$                                    |   | 14.4     | 15  | 15.6  | V     |
|   |   | $T_J = 0^\circ\text{C to }125^\circ\text{C}$                            | 14.25    |     | 15.75 |       |
| Input voltage regulation                  | $I_O = 200\text{ mA}$   | $V_I = 17.5\text{ V to }30\text{ V}$                                    |          | 10  | 100   | mV    |
|   |   | $V_I = 20\text{ V to }30\text{ V}$                                      |          | 3   | 50    |       |
| Ripple rejection                          | $V_I = 18.5\text{ V to }28.5\text{ V}$ ,<br>$f = 120\text{ Hz}$   | $I_O = 100\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ | 54       |     |       | dB    |
|   |   | $I_O = 300\text{ mA}$   | 54       | 70  |       |       |
| Output voltage regulation                 | $I_O = 5\text{ mA to }500\text{ mA}$  |   |          | 25  | 300   | mV    |
|   | $I_O = 5\text{ mA to }200\text{ mA}$  |   |          | 10  | 150   |       |
| Temperature coefficient of output voltage | $I_O = 5\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$   |   |          | -1  |       | mV/°C |
| Output noise voltage                      | $f = 10\text{ Hz to }100\text{ kHz}$  |   |          | 90  |       | μV    |
| Dropout voltage                           |   |   |          | 2   |       | V     |
| Bias current                              |   |   |          | 4.8 | 6     | mA    |
| Bias current change                       | $V_I = 17.5\text{ V to }30\text{ V}$ ,<br>$I_O = 200\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$ |   |          |     | 0.8   | mA    |
|   | $I_O = 5\text{ mA to }350\text{ mA}$ ,<br>$T_J = 0^\circ\text{C to }125^\circ\text{C}$                            |   |          |     | 0.5   |       |
| Short-circuit output current              | $V_I = 35\text{ V}$   |   |          | 240 |       | mA    |
| Peak output current                       |   |   |          | 0.7 |       | A     |

† 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 maintain  $T_J$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately.

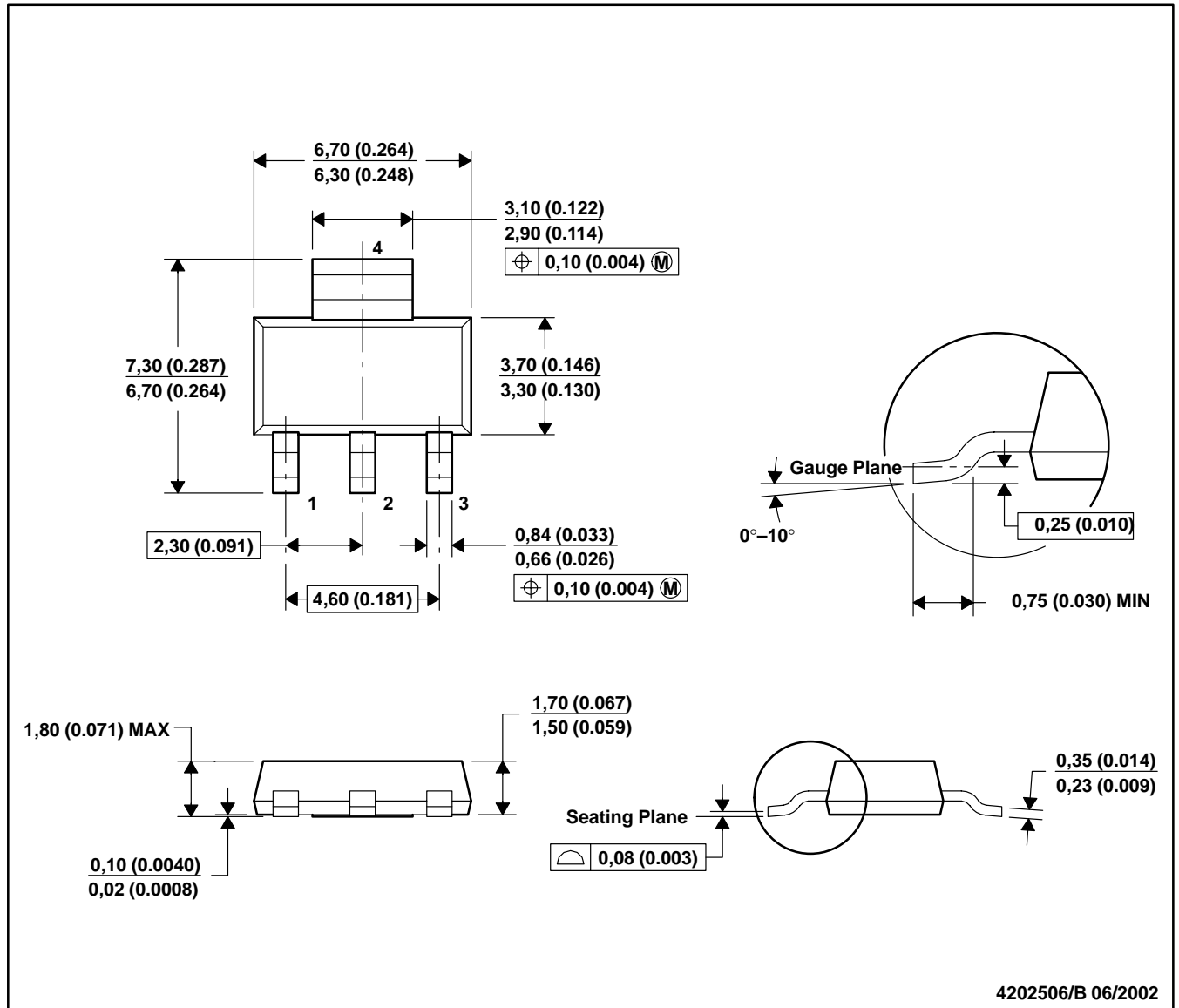


# MECHANICAL DATA

MPDS094A – APRIL 2001 – REVISED JUNE 2002

DCY (R-PDSO-G4)

PLASTIC SMALL-OUTLINE



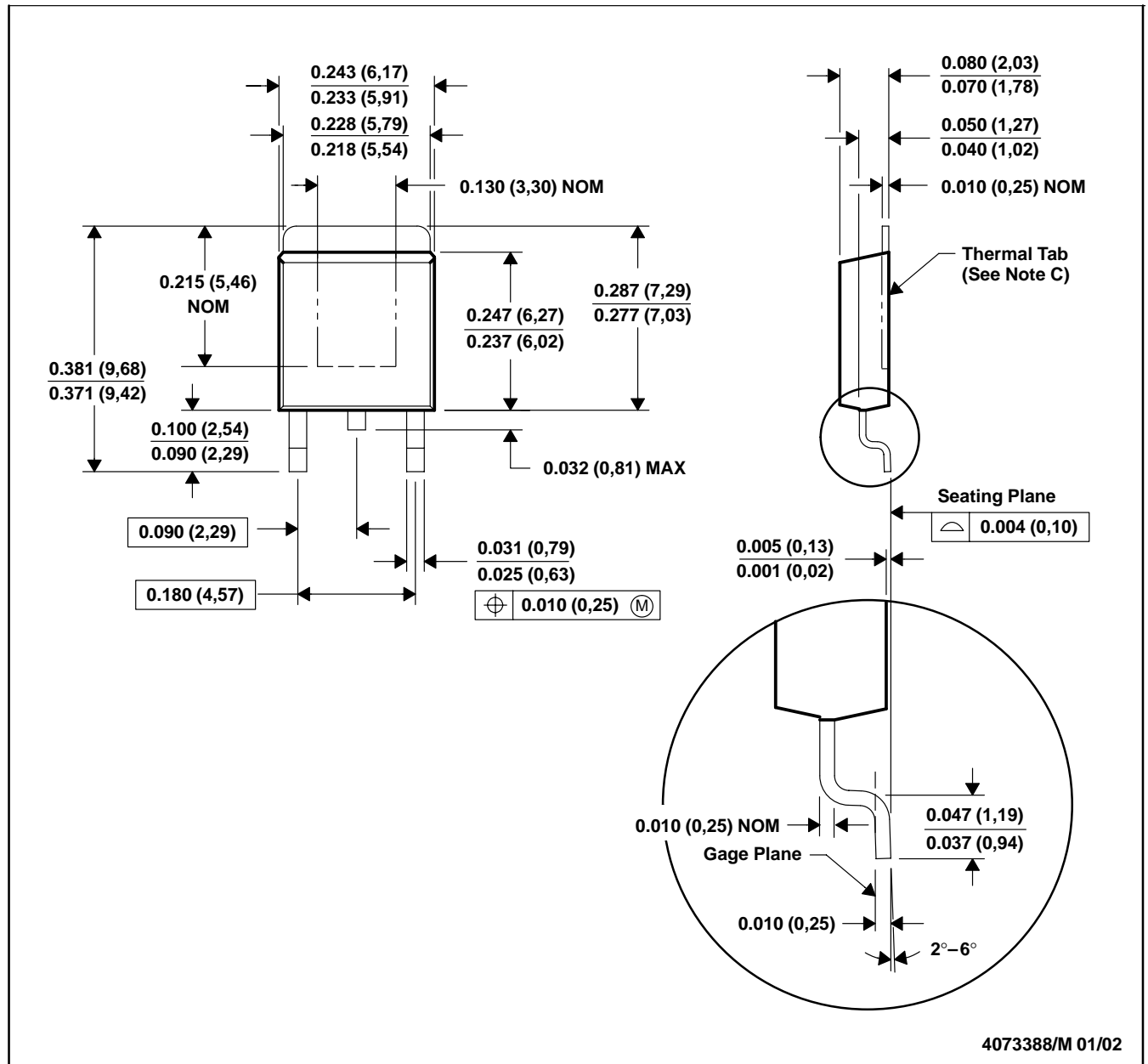
- NOTES: A. All linear dimensions are in millimeters (inches).  
 B. This drawing is subject to change without notice.  
 C. Body dimensions do not include mold flash or protrusion.  
 D. Falls within JEDEC TO-261 Variation AA.

# MECHANICAL DATA

MPSF001F – JANUARY 1996 – REVISED JANUARY 2002

KTP (R-PSFM-G2)

PowerFLEX™ PLASTIC FLANGE-MOUNT PACKAGE



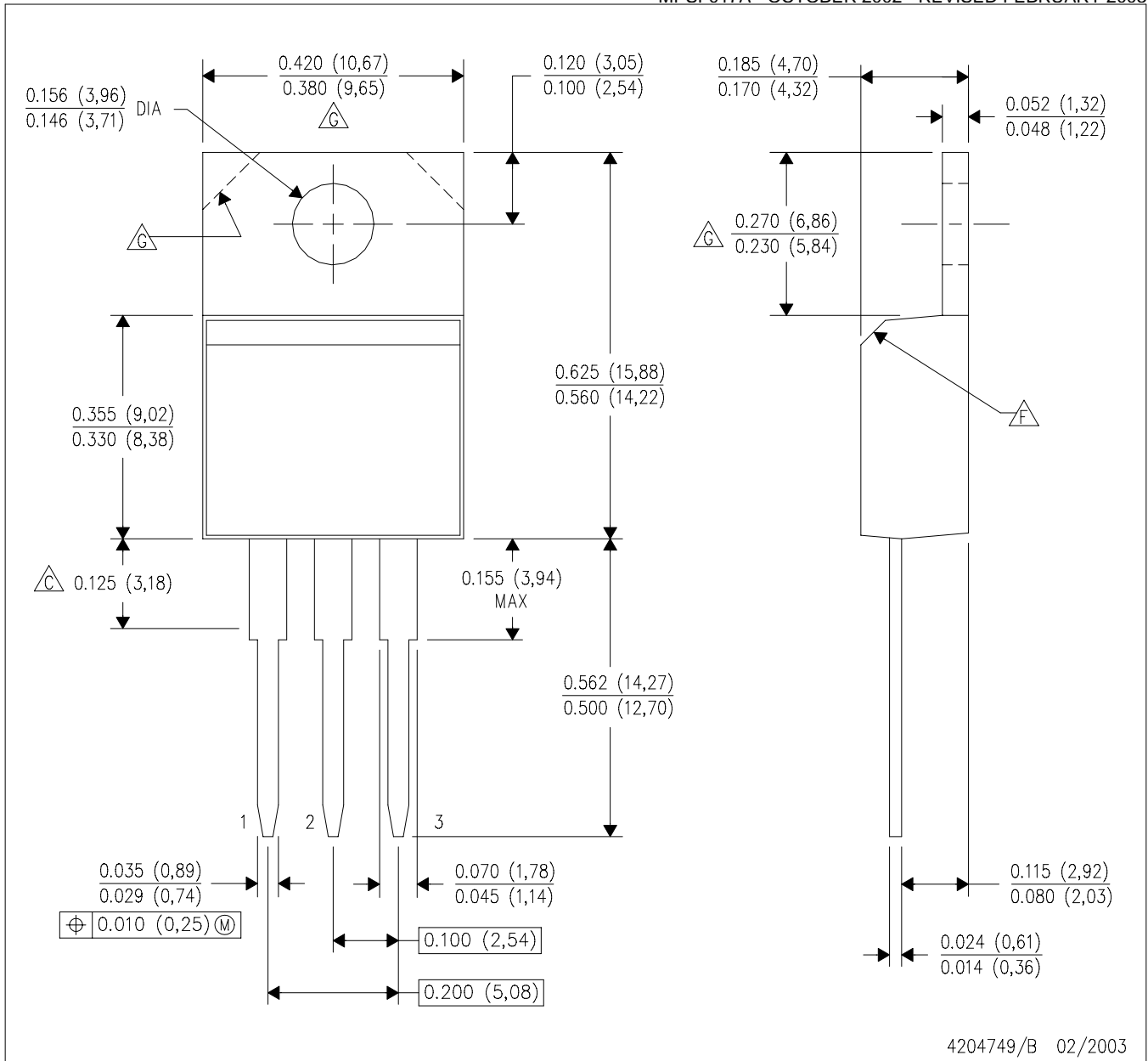
- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. The center lead is in electrical contact with the thermal tab.  
 D. Dimensions do not include mold protrusions, not to exceed 0.006 (0,15).  
 E. Falls within JEDEC TO-252 variation AC.

PowerFLEX is a trademark of Texas Instruments.

KCS (R-PSFM-T3)

PLASTIC FLANGE-MOUNT PACKAGE

MPSF017A - OCTOBER 2002 - REVISED FEBRUARY 2003



4204749/B 02/2003

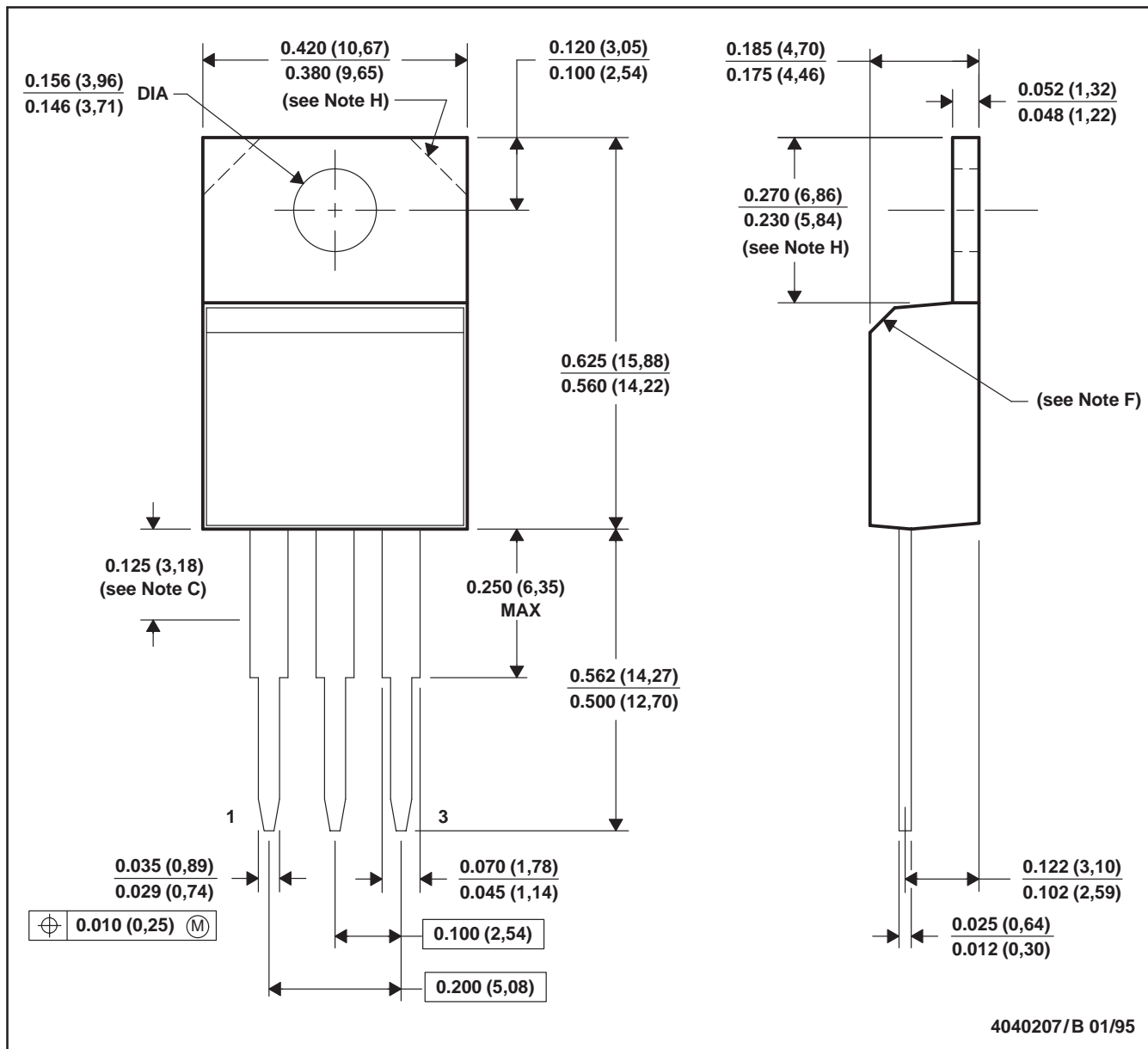
- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - $\triangle C$  Lead dimensions are not controlled within this area.
  - D. All lead dimensions apply before solder dip.
  - E. The center lead is in electrical contact with the mounting tab.
  - $\triangle F$  The chamfer is optional.
  - $\triangle G$  Tab contour optional within these dimensions.
  - H. Falls within JEDEC TO-220 variation AB.

# MECHANICAL DATA

MSOT007A – JANUARY 1995 – REVISED SEPTEMBER 1995

## KC (R-PSFM-T3)

## PLASTIC FLANGE-MOUNT PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Lead dimensions are not controlled within this area.
  - D. All lead dimensions apply before solder dip.
  - E. The center lead is in electrical contact with the mounting tab.
  - F. The chamfer is optional.
  - G. Falls within JEDEC TO-220AB
  - H. Tab contour optional within these dimensions

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