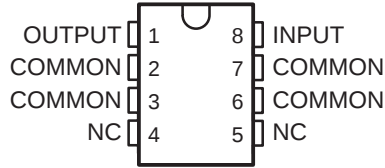


# TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

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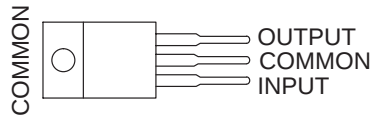
- Very Low Dropout Voltage, Less Than 0.6 V at 150 mA
- Very Low Quiescent Current
- TTL- and CMOS-Compatible Enable on TL751L Series
- 60-V Load-Dump Protection
- Reverse Transient Protection Down To -50 V
- Internal Thermal-Overload Protection
- Overvoltage Protection
- Internal Overcurrent-Limiting Circuitry
- Less Than 500- $\mu$ A Disable (TL751L Series)

TL750L ... D PACKAGE  
(TOP VIEW)

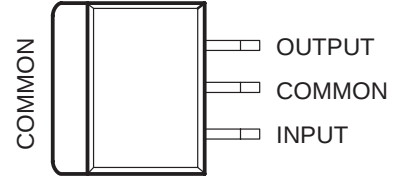


NC – No internal connection

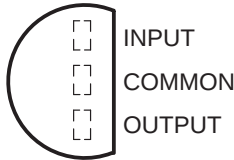
TL750L ... KC PACKAGE  
(TOP VIEW)



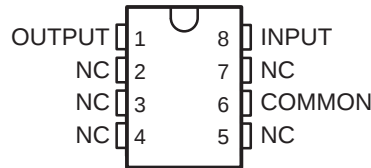
TL750L ... KTE PACKAGE  
(TOP VIEW)



TL750L ... LP PACKAGE  
(TO-92, TO-226AA)  
(TOP VIEW)

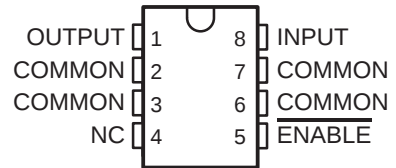


TL750L ... P PACKAGE  
(TOP VIEW)



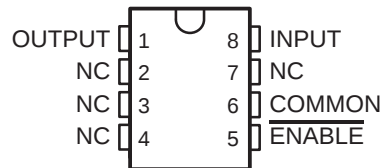
NC – No internal connection

TL751L ... D PACKAGE  
(TOP VIEW)



NC – No internal connection

TL751L ... P PACKAGE  
(TOP VIEW)



NC – No internal connection

## description/ordering information

The TL750L and TL751L series of fixed-output voltage regulators offer 5-V, 8-V, 10-V, and 12-V options. The TL751L series also has an enable (ENABLE) input. When ENABLE is high, the regulator output is placed in the high-impedance state. This gives the designer complete control over power up, power down, or emergency shutdown.

The TL750L and TL751L series are low-dropout positive-voltage regulators specifically designed for battery-powered systems. These devices incorporate overvoltage and current-limiting protection circuitry, along with internal reverse-battery protection circuitry to protect the devices and the regulated system. The series is fully protected against 60-V load-dump and reverse-battery conditions. Extremely low quiescent current during full-load conditions makes these devices ideal for standby power systems.



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.

**TEXAS  
INSTRUMENTS**

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# TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

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## description/ordering information (continued)

### ORDERING INFORMATION

| $T_J$        | $V_O$ TYP<br>AT 25°C | PACKAGE†            |              | ORDERABLE<br>PART NUMBER | TOP-SIDE<br>MARKING |
|--------------|----------------------|---------------------|--------------|--------------------------|---------------------|
| 0°C to 125°C | 5 V                  | POWER-FLEX (KTE)    | Reel of 2000 | TL750L05CKTER            | TL750L05C           |
|              |                      | SOIC (D)            | Tube of 75   | TL750L05CD               | 50L05C              |
|              |                      |                     | Reel of 2500 | TL750L05CDR              |                     |
|              |                      |                     | Tube of 75   | TL751L05CD               | 51L05C              |
|              |                      |                     | Reel of 2500 | TL751L05CDR              |                     |
|              |                      | TO-226 / TO-92 (LP) | Bulk of 1000 | TL750L05CLP              | 750L05C             |
|              |                      |                     | Reel of 2000 | TL750L05CLPR             |                     |
|              |                      | TO-220 (KC)         | Tube of 50   | TL750L05CKC              | TL750L05C           |
|              | 8 V                  | SOIC (D)            | Tube of 75   | TL750L08CD               | 50L08C              |
|              |                      |                     | Reel of 2500 | TL750L08CDR              |                     |
|              |                      | TO-226 / TO-92 (LP) | Bulk of 1000 | TL750L08CLP              | 750L08C             |
|              | 10 V                 | PDIP (P)            | Tube of 50   | TL751L10CP               | TL751L10C           |
|              |                      | SOIC (D)            | Tube of 75   | TL750L10CD               | 50L10C              |
|              |                      |                     | Reel of 2500 | TL750L10CDR              |                     |
|              |                      |                     | Tube of 75   | TL751L10CD               | 51L10C              |
|              |                      |                     | Reel of 2500 | TL751L10CDR              |                     |
|              |                      | TO-226 / TO-92 (LP) | Bulk of 1000 | TL750L10CLP              | 750L10C             |
|              |                      |                     | Reel of 2000 | TL750L10CLPR             |                     |
|              | 12 V                 | SOIC (D)            | Tube of 75   | TL750L12CD               | 50L12C              |
|              |                      |                     | Reel of 2500 | TL750L12CDR              |                     |
|              |                      |                     | Tube of 75   | TL751L12CD               | 51L12C              |
|              |                      |                     | Reel of 2500 | TL751L12CDR              |                     |
|              |                      | TO-226 / TO-92 (LP) | Bulk of 1000 | TL750L12CLP              | 750L12C             |

† 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).

| DEVICE<br>COMPONENT<br>COUNT |    |
|------------------------------|----|
| Transistors                  | 20 |
| JFETs                        | 2  |
| Diodes                       | 5  |
| Resistors                    | 16 |

# TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

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## absolute maximum ratings over operating junction temperature range (unless otherwise noted)<sup>†</sup>

|                                                                |                |
|----------------------------------------------------------------|----------------|
| Continuous input voltage                                       | 26 V           |
| Transient input voltage, $T_A = 25^\circ\text{C}$ (see Note 1) | 60 V           |
| Continuous reverse input voltage                               | -15 V          |
| Transient reverse input voltage, $t \leq 100$ ms               | -50 V          |
| Operating virtual junction temperature, $T_J$                  | 150°C          |
| Lead temperature 1,6 mm (1/16 inch) for 10 seconds             | 260 °C         |
| Storage temperature range, $T_{\text{Stg}}$                    | -65°C to 150°C |

<sup>†</sup> 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.

NOTE 1: The transient input voltage rating applies to the waveform shown in Figure 1.

## package thermal data (see Note 2)

| PACKAGE             | BOARD             | $\theta_{JC}$ | $\theta_{JA}$ |
|---------------------|-------------------|---------------|---------------|
| PDIP (P)            | High K, JESD 51-7 | 57°C/W        | 85°C/W        |
| POWER-FLEX (KTE)    | High K, JESD 51-5 | 3°C/W         | 23°C/W        |
| SOIC (D)            | High K, JESD 51-7 | 39°C/W        | 97°C/W        |
| TO-226 / TO-92 (LP) | High K, JESD 51-7 | 55°C/W        | 140°C/W       |
| TO-220 (KC)         | High K, JESD 51-5 | 3°C/W         | 19°C/W        |

NOTE 2: Maximum power dissipation is a function of  $T_J(\text{max})$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$ . Operating at the absolute maximum  $T_J$  of 150°C can affect reliability.

## recommended operating conditions over recommended operating junction temperature range (unless otherwise noted)

|                   |                                                     |                                                |           | MIN   | MAX | UNITS |
|-------------------|-----------------------------------------------------|------------------------------------------------|-----------|-------|-----|-------|
| $V_I$             | Input voltage                                       |                                                | TL75xL05  | 6     | 26  | V     |
|                   |                                                     |                                                | TL75xL08  | 9     | 26  |       |
|                   |                                                     |                                                | TL75xL10  | 11    | 26  |       |
|                   |                                                     |                                                | TL75xL12  | 13    | 26  |       |
| $V_{IH}$          | High-level $\overline{\text{ENABLE}}$ input voltage |                                                | TL751Lxx  | 2     | 15  | V     |
| $V_{IL}^\ddagger$ | Low-level $\overline{\text{ENABLE}}$ input voltage  | $T_J = 25^\circ\text{C}$                       | TL751Lxx  | -0.3  | 0.8 | V     |
|                   |                                                     | $T_J = 0^\circ\text{C}$ to $125^\circ\text{C}$ | TL751Lxx  | -0.15 | 0.8 |       |
| $I_O$             | Output current range                                |                                                | TL75xLxx  | 0     | 150 | mA    |
| $T_J$             | Operating virtual junction temperature              |                                                | TL75xLxxC | 0     | 125 | °C    |

<sup>‡</sup> The algebraic convention, in which the least positive (most negative) value is designated minimum, is used in this data sheet for  $\overline{\text{ENABLE}}$  voltage levels and temperature only.



# TL750L, TL751L SERIES

## LOW-DROPOUT VOLTAGE REGULATORS

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electrical characteristics,  $V_I = 14\text{ V}$ ,  $I_O = 10\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)

| PARAMETER                 | TEST CONDITIONS†                                                                              |                               | TL750L05<br>TL751L05 |     |     | UNIT |
|---------------------------|-----------------------------------------------------------------------------------------------|-------------------------------|----------------------|-----|-----|------|
|                           |                                                                                               |                               | MIN                  | TYP | MAX |      |
| Output voltage            | V <sub>I</sub> = 6 V to 26 V,      I <sub>O</sub> = 0 to 150 mA                               | T <sub>J</sub> = 25°C         | 4.80                 | 5   | 5.2 | V    |
|                           |                                                                                               | T <sub>J</sub> = 0°C to 125°C | 4.75      5.25       |     |     |      |
| Input regulation voltage  | V <sub>I</sub> = 9 V to 16 V                                                                  |                               | 5                    |     | 10  | mV   |
|                           | V <sub>I</sub> = 6 V to 26 V                                                                  |                               | 6                    |     | 30  |      |
| Ripple rejection          | V <sub>I</sub> = 8 V to 18 V,      f = 120 Hz                                                 |                               | 60                   | 65  |     | dB   |
| Output regulation voltage | I <sub>O</sub> = 5 mA to 150 mA                                                               |                               | 20                   |     | 50  | mV   |
| Dropout voltage           | I <sub>O</sub> = 10 mA                                                                        |                               |                      |     | 0.2 | V    |
|                           | I <sub>O</sub> = 150 mA                                                                       |                               |                      |     | 0.6 |      |
| Output noise voltage      | f = 10 Hz to 100 kHz                                                                          |                               | 500                  |     |     | μV   |
| Input bias current        | I <sub>O</sub> = 150 mA                                                                       |                               | 10                   |     | 12  | mA   |
|                           | V <sub>I</sub> = 6 V to 26 V,      I <sub>O</sub> = 10 mA,      T <sub>J</sub> = 0°C to 125°C |                               | 1                    |     | 2   |      |
|                           | ENABLE > 2 V                                                                                  |                               |                      |     | 0.5 |      |

<sup>†</sup> 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. All characteristics are measured with a  $0.1\text{-}\mu\text{F}$  capacitor across the input and a  $10\text{-}\mu\text{F}$  capacitor, with equivalent series resistance of less than  $0.4\ \Omega$ , across the output.

electrical characteristics,  $V_I = 14\text{ V}$ ,  $I_O = 10\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)

| PARAMETER                 | TEST CONDITIONS†                                                                    |                               | TL750L08<br>TL751L08 |     |      | UNIT |
|---------------------------|-------------------------------------------------------------------------------------|-------------------------------|----------------------|-----|------|------|
|                           |                                                                                     |                               | MIN                  | TYP | MAX  |      |
| Output voltage            | V <sub>I</sub> = 9 V to 26 V, I <sub>O</sub> = 0 to 150 mA                          | T <sub>J</sub> = 25°C         | 7.68                 | 8   | 8.32 | V    |
|                           |                                                                                     | T <sub>J</sub> = 0°C to 125°C | 7.6                  |     | 8.4  |      |
| Input regulation voltage  | V <sub>I</sub> = 10 V to 17 V                                                       |                               | 10                   |     | 20   | mV   |
|                           | V <sub>I</sub> = 9 V to 26 V                                                        |                               | 25                   |     | 50   |      |
| Ripple rejection          | V <sub>I</sub> = 11 V to 21 V, f = 120 Hz                                           |                               | 60                   | 65  |      | dB   |
| Output regulation voltage | I <sub>O</sub> = 5 mA to 150 mA                                                     |                               | 40                   |     | 80   | mV   |
| Dropout voltage           | I <sub>O</sub> = 10 mA                                                              |                               |                      |     | 0.2  | V    |
|                           | I <sub>O</sub> = 150 mA                                                             |                               |                      |     | 0.6  |      |
| Output noise voltage      | f = 10 Hz to 100 kHz                                                                |                               | 500                  |     |      | μV   |
| Input bias current        | I <sub>O</sub> = 150 mA                                                             |                               | 10                   |     | 12   | mA   |
|                           | V <sub>I</sub> = 9 V to 26 V, I <sub>O</sub> = 10 mA, T <sub>J</sub> = 0°C to 125°C |                               | 1                    |     | 2    |      |
|                           | ENABLE > 2 V                                                                        |                               |                      |     | 0.5  |      |

<sup>†</sup> 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. All characteristics are measured with a  $0.1\text{-}\mu\text{F}$  capacitor across the input and a  $10\text{-}\mu\text{F}$  capacitor, with equivalent series resistance of less than  $0.4\ \Omega$ , across the output.



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# TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

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electrical characteristics,  $V_I = 14\text{ V}$ ,  $I_O = 10\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)

| PARAMETER                 | TEST CONDITIONS <sup>†</sup>                                                                             | TL750L10<br>TL751L10                         |        |             | UNIT          |
|---------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------|--------|-------------|---------------|
|                           |                                                                                                          | MIN                                          | TYP    | MAX         |               |
| Output voltage            | $V_I = 11\text{ V to }26\text{ V}$ , $I_O = 0\text{ to }150\text{ mA}$                                   | $T_J = 25^\circ\text{C}$                     |        | 9.6 10 10.4 | V             |
|                           |                                                                                                          | $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |        | 9.5 10.5    |               |
| Input regulation voltage  | $V_I = 12\text{ V to }19\text{ V}$                                                                       |                                              |        | 10 25       | mV            |
|                           | $V_I = 11\text{ V to }26\text{ V}$                                                                       |                                              |        | 30 60       |               |
| Ripple rejection          | $V_I = 12\text{ V to }22\text{ V}$ , $f = 120\text{ Hz}$                                                 | 60                                           | 65     |             | dB            |
| Output regulation voltage | $I_O = 5\text{ mA to }150\text{ mA}$                                                                     |                                              | 50 100 |             | mV            |
| Dropout voltage           | $I_O = 10\text{ mA}$                                                                                     |                                              |        | 0.2         | V             |
|                           | $I_O = 150\text{ mA}$                                                                                    |                                              |        | 0.6         |               |
| Output noise voltage      | $f = 10\text{ Hz to }100\text{ kHz}$                                                                     |                                              | 700    |             | $\mu\text{V}$ |
| Input bias current        | $I_O = 150\text{ mA}$                                                                                    |                                              | 10 12  |             | mA            |
|                           | $V_I = 11\text{ V to }26\text{ V}$ , $I_O = 10\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |                                              | 1 2    |             |               |
|                           | $\text{ENABLE} > 2\text{ V}$                                                                             |                                              |        | 0.5         |               |

<sup>†</sup> 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. All characteristics are measured with a 0.1- $\mu\text{F}$  capacitor across the input and a 10- $\mu\text{F}$  capacitor, with equivalent series resistance of less than 0.4  $\Omega$ , across the output.

electrical characteristics,  $V_I = 14\text{ V}$ ,  $I_O = 10\text{ mA}$ ,  $T_J = 25^\circ\text{C}$  (unless otherwise noted)

| PARAMETER                 | TEST CONDITIONS <sup>†</sup>                                                                             | TL750L12<br>TL751L12                         |        |                | UNIT          |
|---------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------|--------|----------------|---------------|
|                           |                                                                                                          | MIN                                          | TYP    | MAX            |               |
| Output voltage            | $V_I = 13\text{ V to }26\text{ V}$ , $I_O = 0\text{ to }150\text{ mA}$                                   | $T_J = 25^\circ\text{C}$                     |        | 11.52 12 12.48 | V             |
|                           |                                                                                                          | $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |        | 11.4 12.6      |               |
| Input regulation voltage  | $V_I = 14\text{ V to }19\text{ V}$                                                                       |                                              |        | 15 30          | mV            |
|                           | $V_I = 13\text{ V to }26\text{ V}$                                                                       |                                              |        | 20 40          |               |
| Ripple rejection          | $V_I = 13\text{ V to }23\text{ V}$ , $f = 120\text{ Hz}$                                                 | 50                                           | 55     |                | dB            |
| Output regulation voltage | $I_O = 5\text{ mA to }150\text{ mA}$                                                                     |                                              | 50 120 |                | mV            |
| Dropout voltage           | $I_O = 10\text{ mA}$                                                                                     |                                              |        | 0.2            | V             |
|                           | $I_O = 150\text{ mA}$                                                                                    |                                              |        | 0.6            |               |
| Output noise voltage      | $f = 10\text{ Hz to }100\text{ kHz}$                                                                     |                                              | 700    |                | $\mu\text{V}$ |
| Input bias current        | $I_O = 150\text{ mA}$                                                                                    |                                              | 10 12  |                | mA            |
|                           | $V_I = 13\text{ V to }26\text{ V}$ , $I_O = 10\text{ mA}$ , $T_J = 0^\circ\text{C to }125^\circ\text{C}$ |                                              | 1 2    |                |               |
|                           | $\text{ENABLE} > 2\text{ V}$                                                                             |                                              |        | 0.5            |               |

<sup>†</sup> 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. All characteristics are measured with a 0.1- $\mu\text{F}$  capacitor across the input and a 10- $\mu\text{F}$  capacitor, with equivalent series resistance of less than 0.4  $\Omega$ , across the output.



# TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

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## TYPICAL CHARACTERISTICS

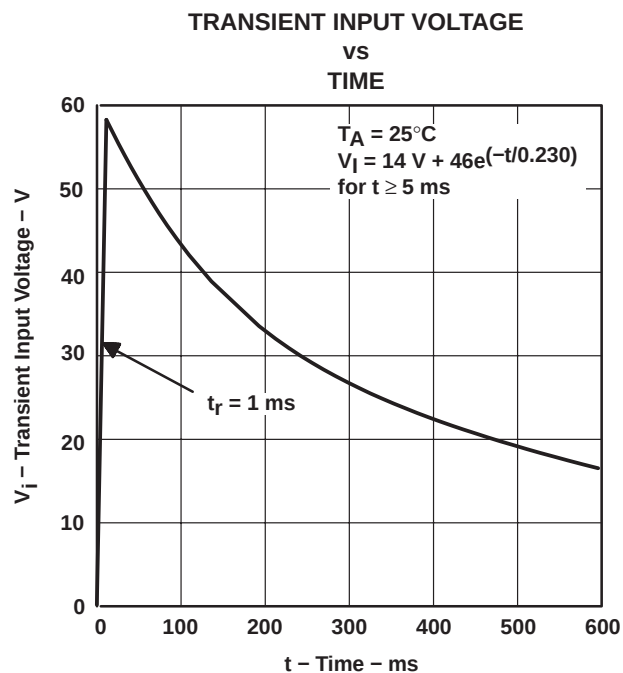


Figure 1

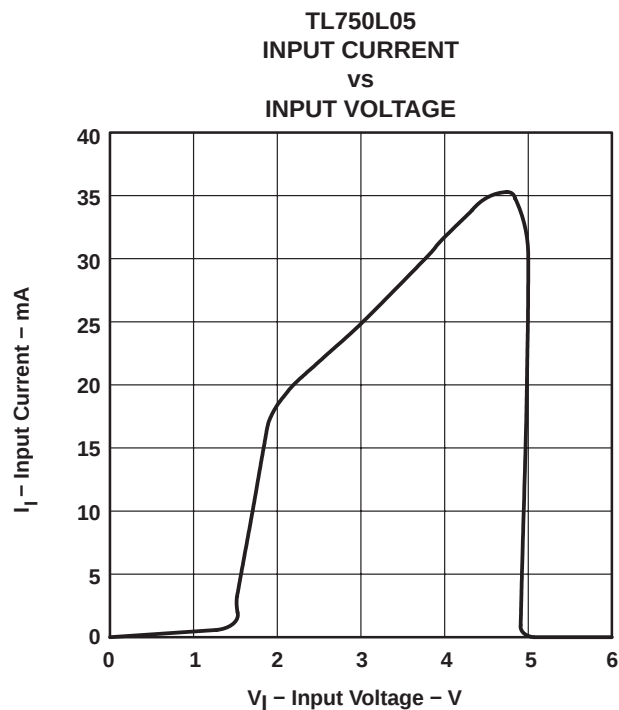


Figure 2

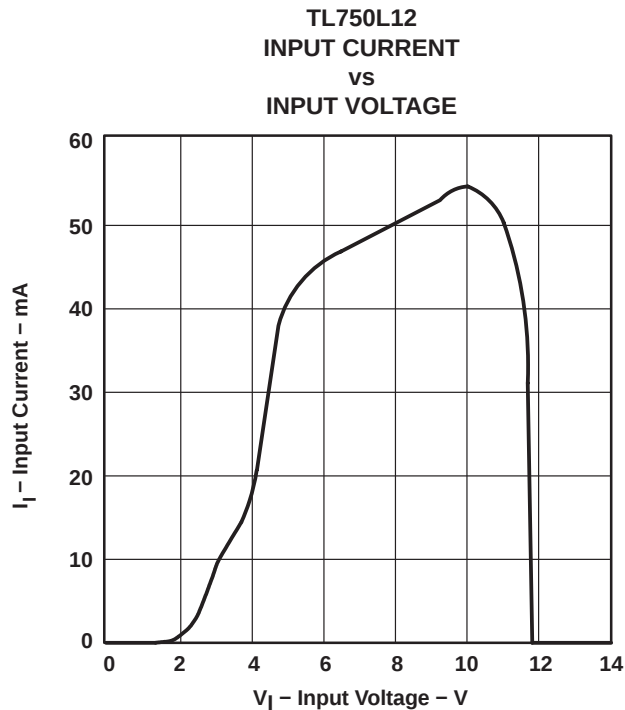
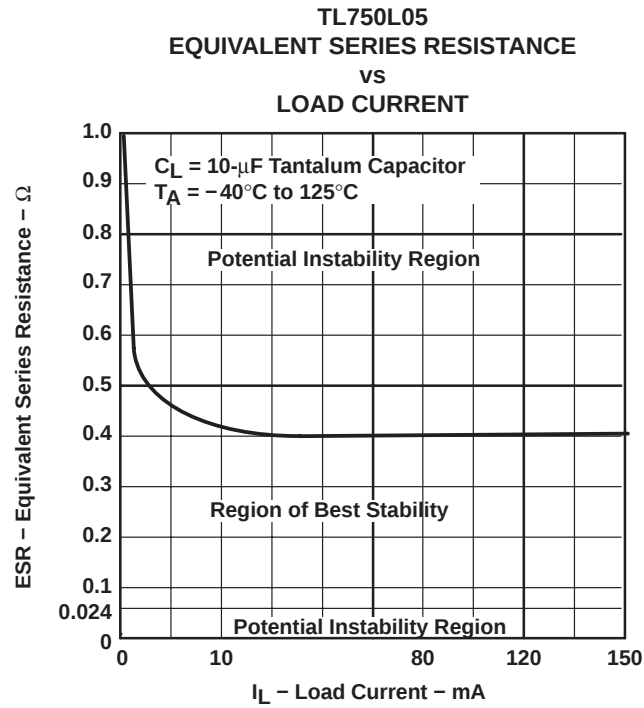


Figure 3

**TYPICAL CHARACTERISTICS**



**Figure 4**

**PACKAGING INFORMATION**

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 5962-9166901Q2A  | OBSOLETE              | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| 5962-9166901QPA  | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L05CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L05CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L05CKC      | ACTIVE                | TO-220       | KC              | 3    | 50          | None                    | Call TI          | Level-1-220C-UNLIM           |
| TL750L05CKTER    | ACTIVE                | PFM          | KTE             | 3    | 2000        | None                    | Call TI          | Level-1-220C-UNLIM           |
| TL750L05CLP      | ACTIVE                | TO-92        | LP              | 3    | 1000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L05CLPM     | OBSOLETE              | TO-92        | LP              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L05CLPR     | ACTIVE                | TO-92        | LP              | 3    | 2000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L05CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L05QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L05QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L05QKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L05QLP      | OBSOLETE              | TO-92        | LP              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L05QP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L08CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L08CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L08CKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L08CLP      | ACTIVE                | TO-92        | LP              | 3    | 1000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L08CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L08QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L08QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L08QKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L08QLP      | OBSOLETE              | TO-92        | LP              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L10CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L10CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L10CKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L10CLP      | ACTIVE                | TO-92        | LP              | 3    | 1000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L10CLPR     | ACTIVE                | TO-92        | LP              | 3    | 2000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L10CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L10QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L10QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L10QKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L10QLP      | OBSOLETE              | TO-92        | LP              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L10QP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L12CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL750L12CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free                 | CU NIPDAU        | Level-2-250C-1 YEAR          |

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| (RoHS)           |                       |              |                 |      |             |                         |                  |                              |
| TL750L12CKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L12CLP      | ACTIVE                | TO-92        | LP              | 3    | 1000        | None                    | CU SNPB          | Level-NC-NC-NC               |
| TL750L12CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L12QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L12QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL750L12QKC      | OBSOLETE              | TO-220       | KC              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L12QLP      | OBSOLETE              | TO-92        | LP              | 3    |             | None                    | Call TI          | Call TI                      |
| TL750L12QP       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L05CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L05CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L05CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L05MFKB     | OBSOLETE              | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| TL751L05MJGB     | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L05QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L05QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L05QP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L08CD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L08CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L08QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L08QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L10CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L10CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L10CP       | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC               |
| TL751L10QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L10QP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L12CD       | ACTIVE                | SOIC         | D               | 8    | 75          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L12CDR      | ACTIVE                | SOIC         | D               | 8    | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-250C-1 YEAR          |
| TL751L12CP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L12MFKB     | OBSOLETE              | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| TL751L12MJGB     | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L12QD       | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L12QDR      | OBSOLETE              | SOIC         | D               | 8    |             | None                    | Call TI          | Call TI                      |
| TL751L12QP       | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - May not be currently available - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**None:** Not yet available Lead (Pb-Free).

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean "Pb-Free" and in addition, uses package materials that do not contain halogens, including bromine (Br) or antimony (Sb) above 0.1% of total product weight.

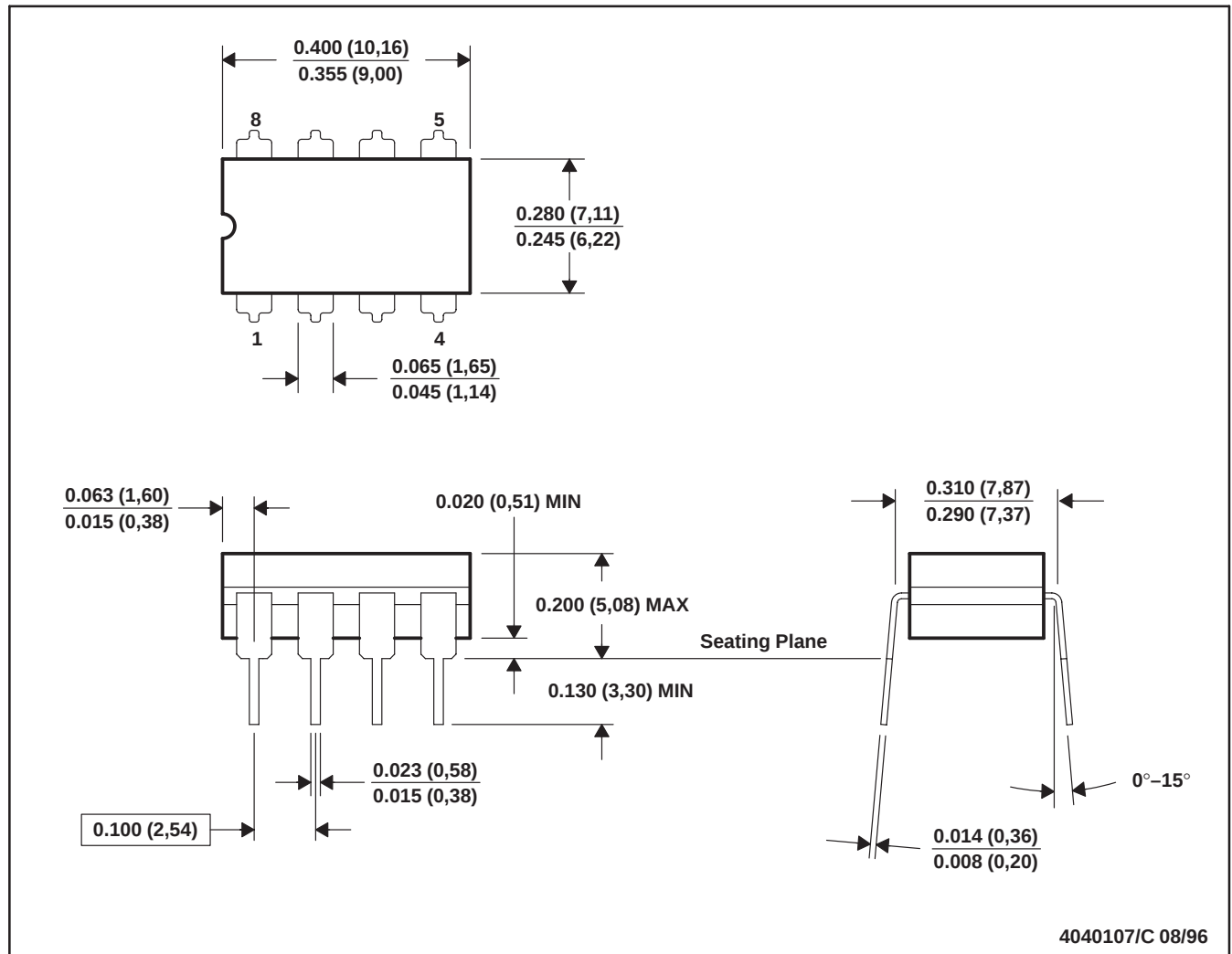
<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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## JG (R-GDIP-T8)

## CERAMIC DUAL-IN-LINE



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. This package can be hermetically sealed with a ceramic lid using glass frit.  
 D. Index point is provided on cap for terminal identification.  
 E. Falls within MIL STD 1835 GDIP1-T8

FK (S-CQCC-N\*\*)

LEADLESS CERAMIC CHIP CARRIER

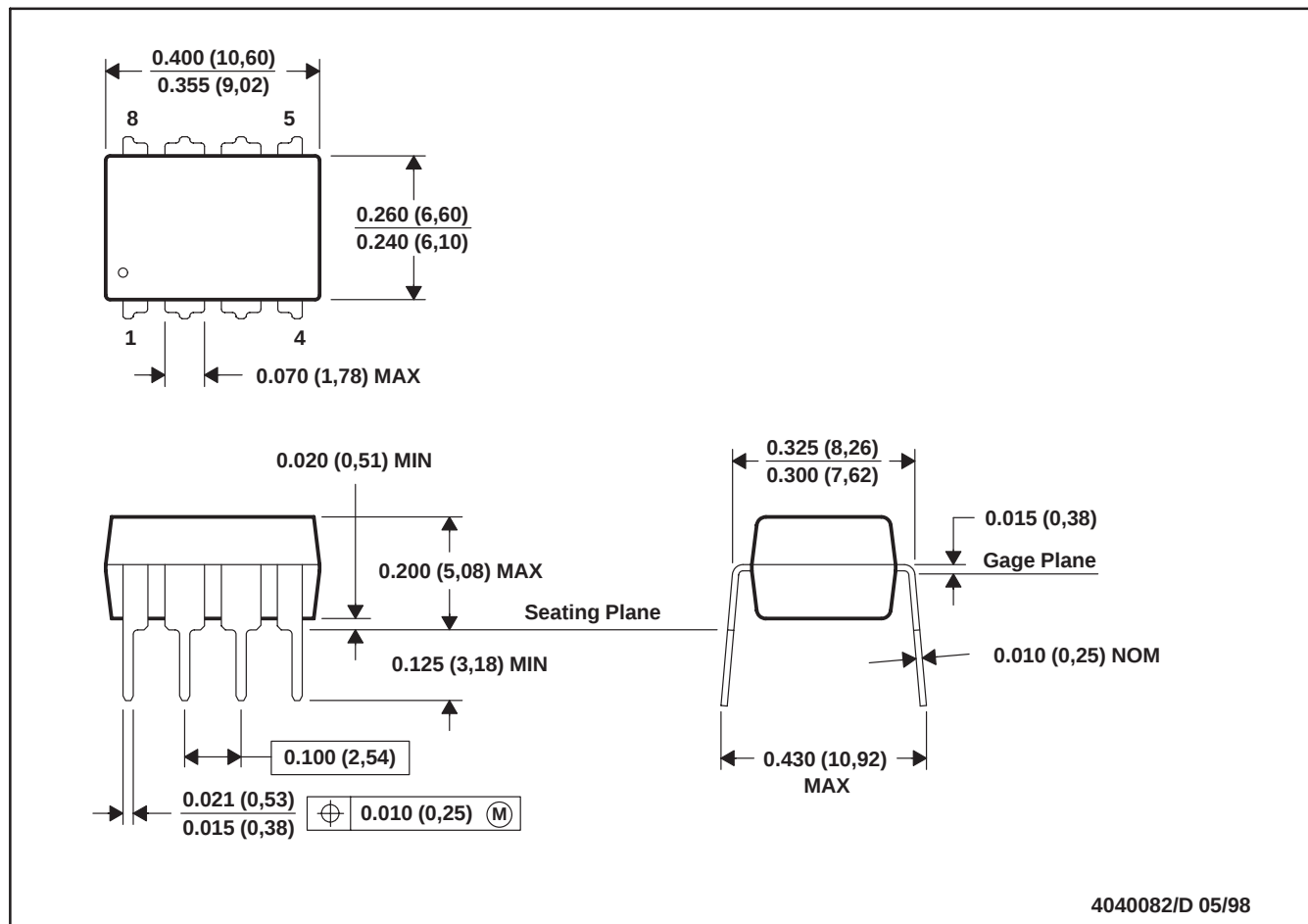
28 TERMINAL SHOWN



- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - This package can be hermetically sealed with a metal lid.
  - The terminals are gold plated.
  - Falls within JEDEC MS-004

## P (R-PDIP-T8)

## PLASTIC DUAL-IN-LINE

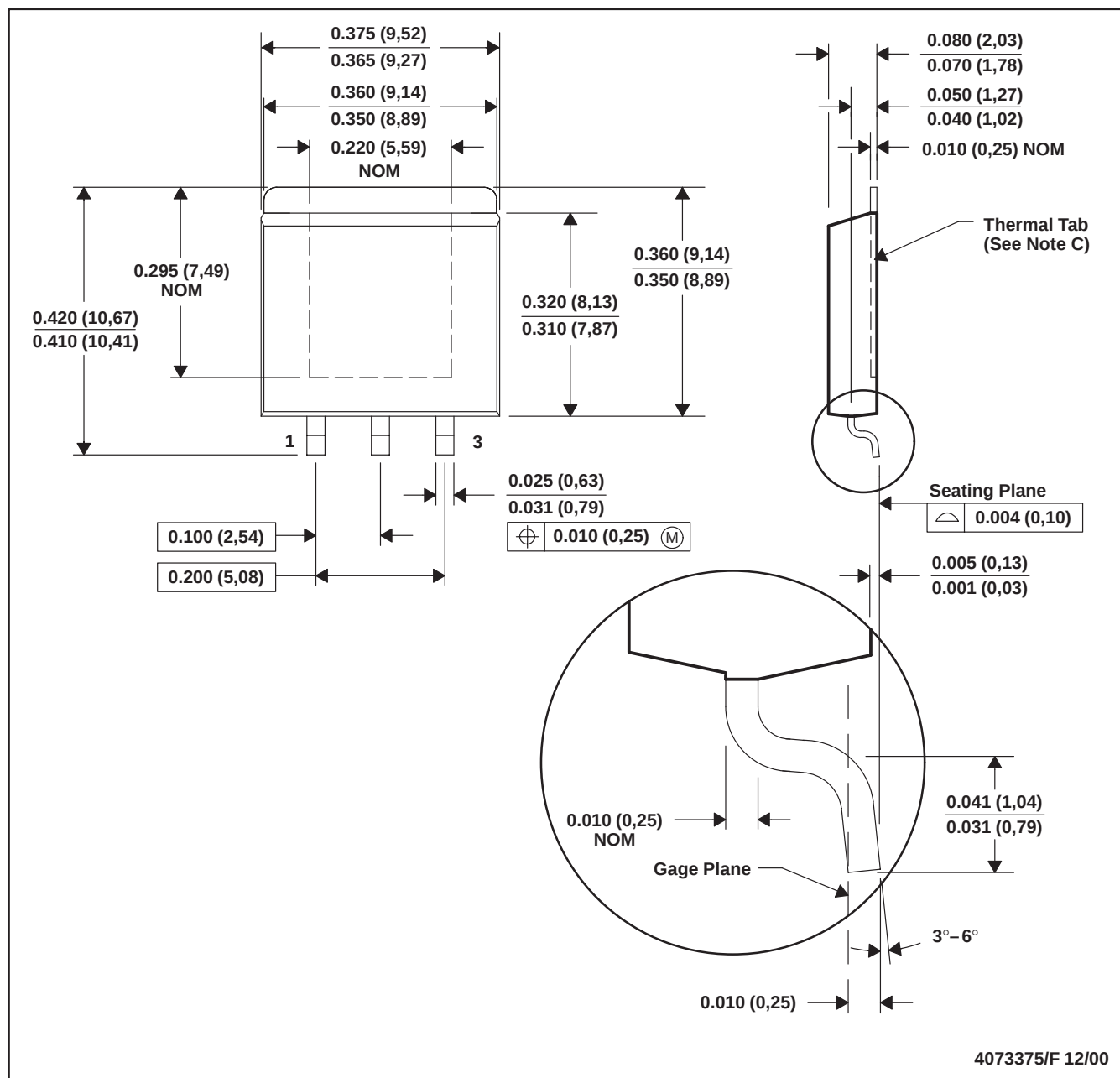


- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-001

For the latest package information, go to [http://www.ti.com/sc/docs/package/pkg\\_info.htm](http://www.ti.com/sc/docs/package/pkg_info.htm)

KTE (R-PSFM-G3)

PowerFLEX™ PLASTIC FLANGE-MOUNT



- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - The center lead is in electrical contact with the thermal tab.
  - Dimensions do not include mold protrusions, not to exceed 0.006 (0,15).
  - Falls within JEDEC MO-169

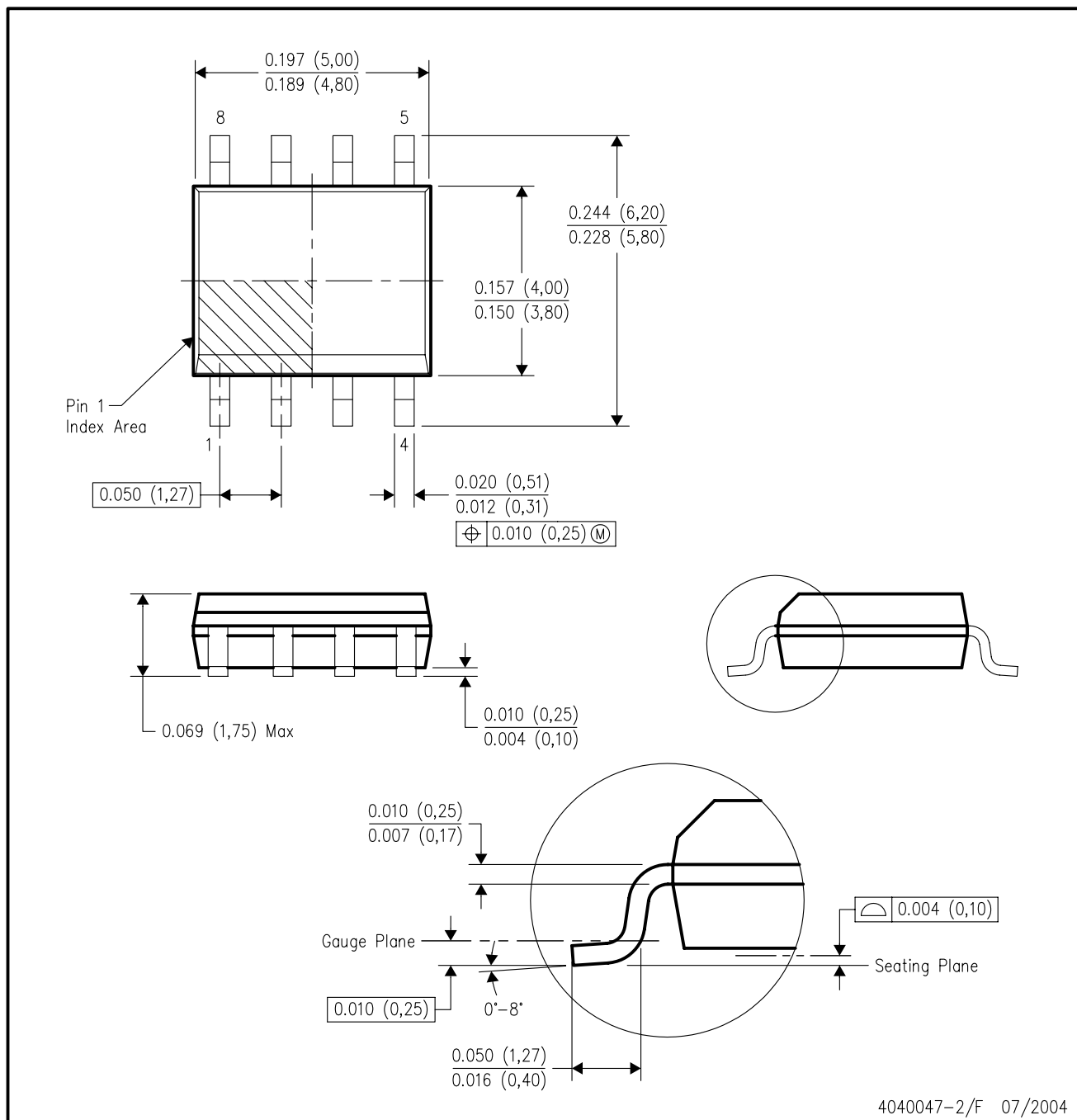
PowerFLEX is a trademark of Texas Instruments.



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## D (R-PDSO-G8)

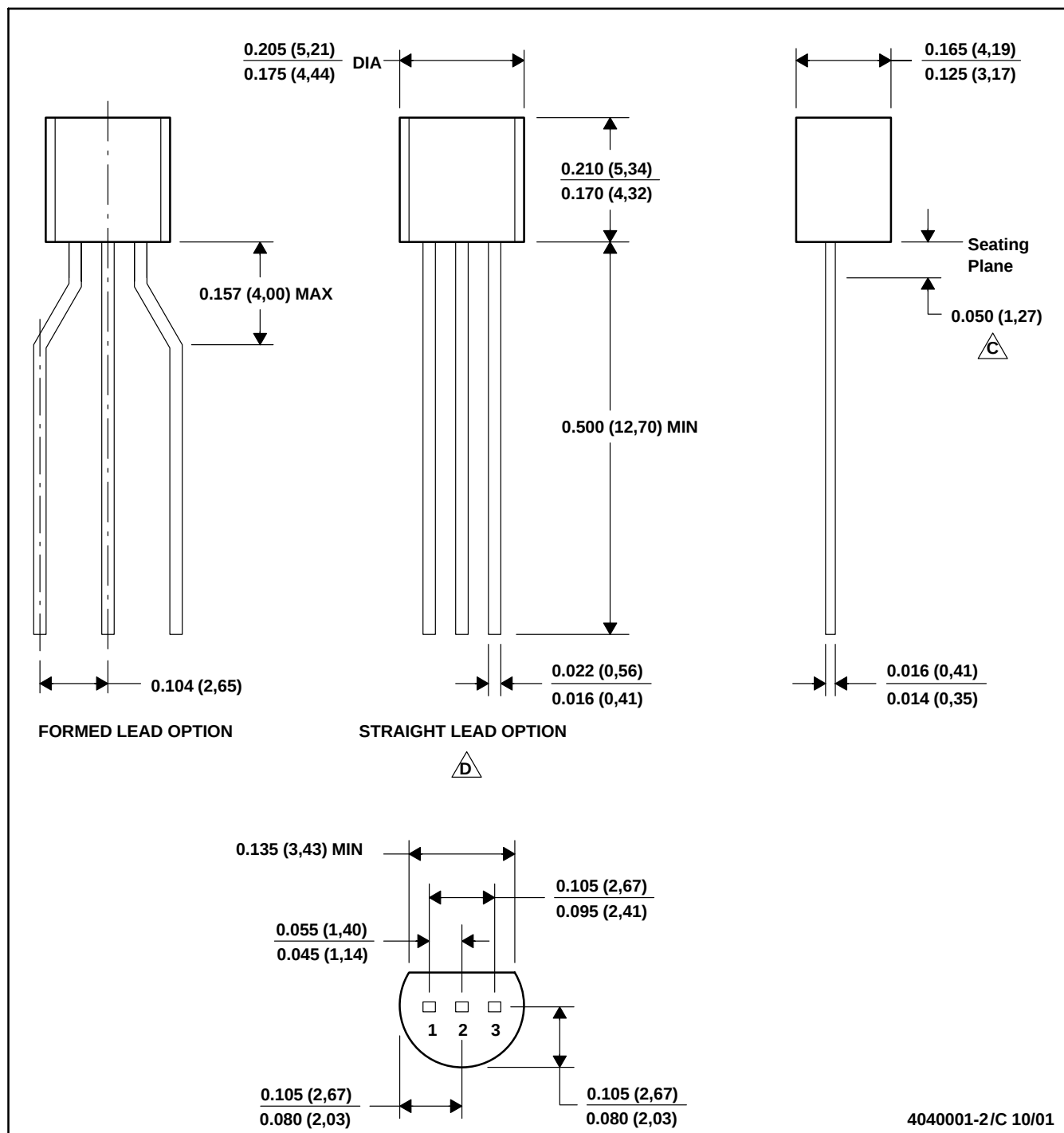
## PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - D. Falls within JEDEC MS-012 variation AA.

## LP (O-PBCY-W3)

## PLASTIC CYLINDRICAL PACKAGE



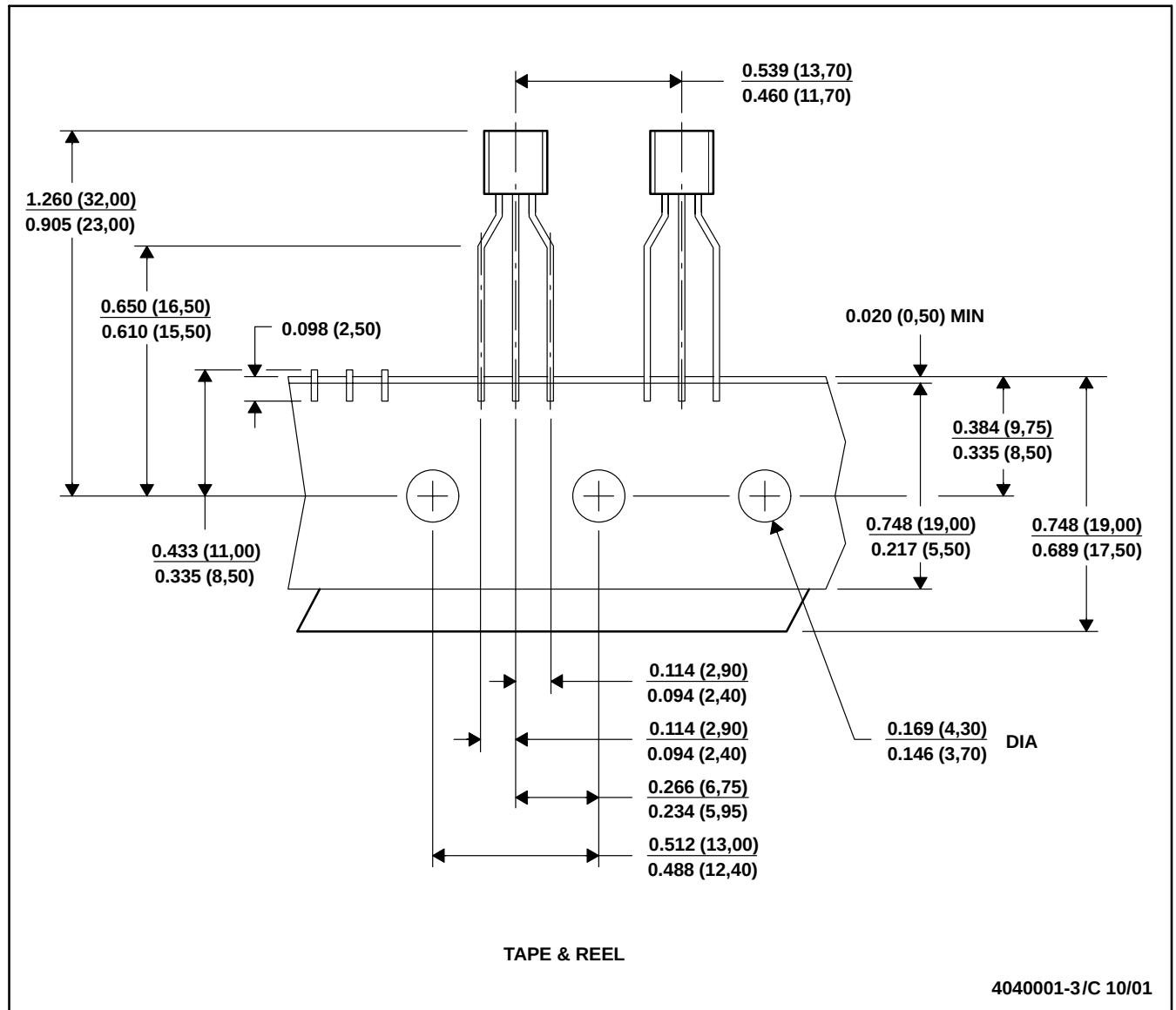
- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 $\triangle C$  Lead dimensions are not controlled within this area  
 $\triangle D$  Falls within JEDEC TO -226 Variation AA (TO-226 replaces TO-92)  
 E. Shipping Method:  
     Straight lead option available in bulk pack only.  
     Formed lead option available in tape & reel or ammo pack.

# MECHANICAL DATA

MSOT002A – OCTOBER 1994 – REVISED NOVEMBER 2001

LP (O-PBCY-W3)

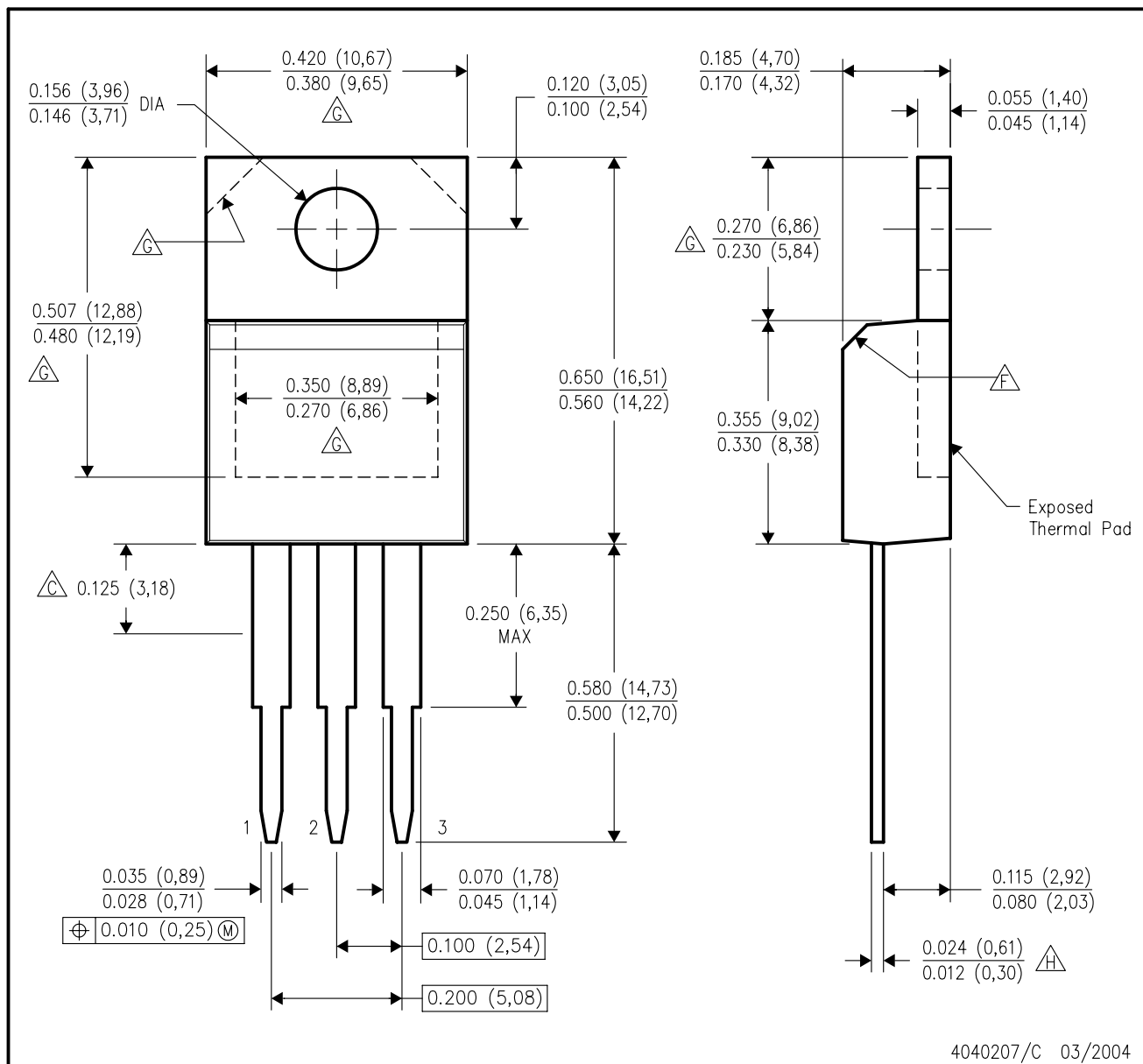
PLASTIC CYLINDRICAL PACKAGE



- NOTES: A. All linear dimensions are in inches (millimeters).  
B. This drawing is subject to change without notice.  
C. Tape and Reel information for the Format Lead Option package.

## KC (R-PSFM-T3)

## PLASTIC FLANGE-MOUNT PACKAGE



4040207/C 03/2004

## 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. Thermal pad contour optional within these dimensions.
- H. Falls within JEDEC TO-220 variation AB, except minimum lead thickness.

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