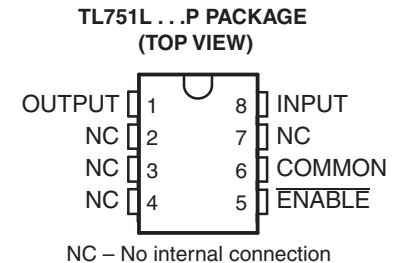
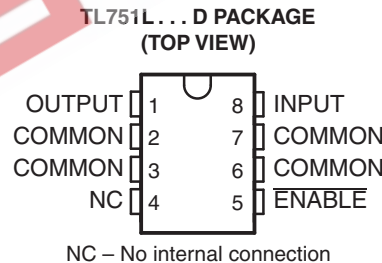
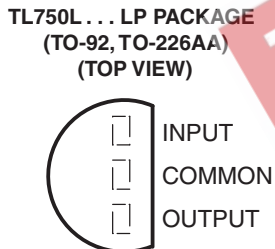
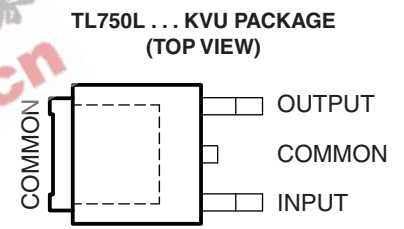
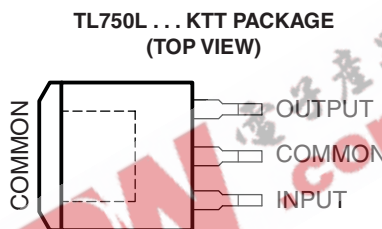
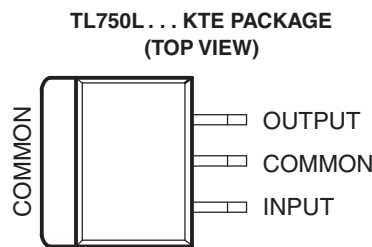
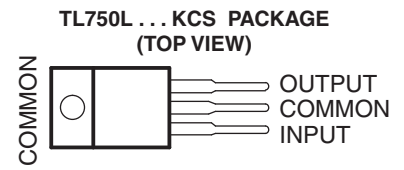
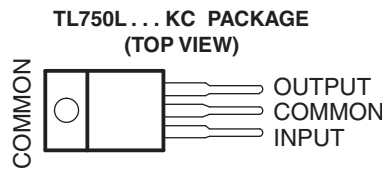
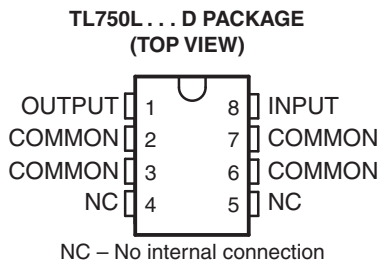


FEATURES

- 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-µA Disable (TL751L Series)



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.

PowerFLEX is a trademark of Texas Instruments.

TL750L, TL751L SERIES LOW-DROPOUT VOLTAGE REGULATORS

SLVS017T – SEPTEMBER 1987 – REVISED AUGUST 2007

ORDERING INFORMATION⁽¹⁾

| T _J | V _O TYP AT 25°C | PACKAGE ⁽²⁾ | | ORDERABLE PART NUMBER | TOP-SIDE MARKING | |
|-------------------|-------------------------------|------------------------|-------------------|-----------------------|------------------|---------|
| 0°C to 125°C | 5 V | PowerFLEX™ – 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 | |
| | | TO-220 – KCS | Tube of 50 | TL750L05CKCS | TL750L05C | |
| | | TO-252 – KVU | Reel of 2500 | TL750L05CKVUR | 750L05C | |
| | | TO-263 – KTT | Reel of 500 | TL750L05CKTTR | 750L05C | |
| | | 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 | | |

- (1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
- (2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.

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

Absolute Maximum Ratings⁽¹⁾

over operating junction temperature range (unless otherwise noted)

| | | MIN | MAX | UNIT | |
|------------------|--|---------------------------|-----|------------------|------------------|
| | Continuous input voltage | | 26 | V | |
| | Transient input voltage ⁽²⁾ | $T_A = 25^\circ\text{C}$ | 60 | V | |
| | Continuous reverse input voltage | | -15 | V | |
| | Transient reverse input voltage | $t \leq 100 \text{ ms}$ | -50 | V | |
| T_J | Operating virtual junction temperature | | 150 | $^\circ\text{C}$ | |
| | Lead temperature | 1,6 mm (1/16 in) for 10 s | 260 | $^\circ\text{C}$ | |
| T_{stg} | Storage temperature range | | -65 | 150 | $^\circ\text{C}$ |

- (1) 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.
- (2) The transient input voltage rating applies to the waveform shown in Figure 1.

Package Thermal Data⁽¹⁾

| PACKAGE | BOARD | θ_{JC} | θ_{JA} |
|-------------------|-------------------|------------------------------|--------------------------------|
| PDIP (P) | High K, JESD 51-7 | 57 $^\circ\text{C}/\text{W}$ | 85 $^\circ\text{C}/\text{W}$ |
| PowerFLEX™ (KTE) | High K, JESD 51-5 | 3 $^\circ\text{C}/\text{W}$ | 23 $^\circ\text{C}/\text{W}$ |
| SOIC (D) | High K, JESD 51-7 | 39 $^\circ\text{C}/\text{W}$ | 97 $^\circ\text{C}/\text{W}$ |
| TO-226/TO-92 (LP) | High K, JESD 51-7 | 55 $^\circ\text{C}/\text{W}$ | 140 $^\circ\text{C}/\text{W}$ |
| TO-220 (KC) | High K, JESD 51-5 | 3 $^\circ\text{C}/\text{W}$ | 19 $^\circ\text{C}/\text{W}$ |
| TO-220 (KCS) | High K, JESD 51-5 | 3 $^\circ\text{C}/\text{W}$ | 19 $^\circ\text{C}/\text{W}$ |
| TO-252 (KVU) | High K, JESD 51-5 | – | 30.3 $^\circ\text{C}/\text{W}$ |
| TO-263 (KTT) | High K, JESD 51-5 | 18 $^\circ\text{C}/\text{W}$ | 25.3 $^\circ\text{C}/\text{W}$ |

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

Recommended Operating Conditions

over recommended operating junction temperature range (unless otherwise noted)

| | | | MIN | MAX | UNIT |
|-----------------------|---|---|-------|-----|------------------|
| 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 | TL75xLxx | 2 | 15 | V |
| $V_{\text{IL}}^{(1)}$ | Low-level $\overline{\text{ENABLE}}$ input voltage | $T_J = 25^\circ\text{C}$ | -0.3 | 0.8 | V |
| | | $T_J = 0^\circ\text{C to } 125^\circ\text{C}$ | -0.15 | 0.8 | |
| I_O | Output current | TL75xLxx | 0 | 150 | mA |
| T_J | Operating virtual junction temperature | TL75xLxxC | 0 | 125 | $^\circ\text{C}$ |

- (1) 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

SLVS017T – SEPTEMBER 1987 – REVISED AUGUST 2007

TL75xL05 Electrical Characteristics⁽¹⁾

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

| PARAMETER | TEST CONDITIONS | TL750L05 TL751L05 | | | UNIT | |
|---------------------------|---|---|------|-----|---------------|---|
| | | MIN | TYP | MAX | | |
| Output voltage | $V_I = 6\text{ V to } 26\text{ V}$, $I_O = 0\text{ to } 150\text{ mA}$ | $T_J = 25^\circ\text{C}$ | 4.8 | 5 | 5.2 | V |
| | | $T_J = 0^\circ\text{C to } 125^\circ\text{C}$ | 4.75 | | 5.25 | |
| Input regulation voltage | $V_I = 9\text{ V to } 16\text{ V}$ | | 5 | 10 | mV | |
| | $V_I = 6\text{ V to } 26\text{ V}$ | | 6 | 30 | | |
| Ripple rejection | $V_I = 8\text{ V to } 18\text{ V}$, $f = 120\text{ Hz}$ | 60 | 65 | | dB | |
| Output regulation voltage | $I_O = 5\text{ mA to } 150\text{ mA}$ | | 20 | 50 | mV | |
| Dropout voltage | $I_O = 10\text{ mA}$ | | | 0.2 | V | |
| | $I_O = 150\text{ mA}$ | | | 0.6 | | |
| Output noise voltage | $f = 10\text{ Hz to } 100\text{ kHz}$ | | 500 | | μV | |
| Input bias current | $I_O = 150\text{ mA}$ | | 10 | 12 | mA | |
| | $V_I = 6\text{ V to } 26\text{ V}$, $I_O = 10\text{ mA}$, $T_J = 0^\circ\text{C to } 125^\circ\text{C}$ | | 1 | 2 | | |
| | $\text{ENABLE} \geq 2\text{ V}$ | | | 0.5 | | |

(1) 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.

TL75xL08 Electrical Characteristics⁽¹⁾

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

| PARAMETER | TEST CONDITIONS | TL750L08 TL751L08 | | | UNIT | |
|---------------------------|---|---|------|-----|---------------|---|
| | | MIN | TYP | MAX | | |
| Output voltage | $V_I = 9\text{ V to } 26\text{ V}$, $I_O = 0\text{ to } 150\text{ mA}$ | $T_J = 25^\circ\text{C}$ | 7.68 | 8 | 8.32 | V |
| | | $T_J = 0^\circ\text{C to } 125^\circ\text{C}$ | 7.6 | | 8.4 | |
| Input regulation voltage | $V_I = 10\text{ V to } 17\text{ V}$ | | 10 | 20 | mV | |
| | $V_I = 9\text{ V to } 26\text{ V}$ | | 25 | 50 | | |
| Ripple rejection | $V_I = 11\text{ V to } 21\text{ V}$, $f = 120\text{ Hz}$ | 60 | 65 | | dB | |
| Output regulation voltage | $I_O = 5\text{ mA to } 150\text{ mA}$ | | 40 | 80 | mV | |
| Dropout voltage | $I_O = 10\text{ mA}$ | | | 0.2 | V | |
| | $I_O = 150\text{ mA}$ | | | 0.6 | | |
| Output noise voltage | $f = 10\text{ Hz to } 100\text{ kHz}$ | | 500 | | μV | |
| Input bias current | $I_O = 150\text{ mA}$ | | 10 | 12 | mA | |
| | $V_I = 9\text{ V to } 26\text{ V}$, $I_O = 10\text{ mA}$, $T_J = 0^\circ\text{C to } 125^\circ\text{C}$ | | 1 | 2 | | |
| | $\text{ENABLE} \geq 2\text{ V}$ | | | 0.5 | | |

(1) 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.

TL75xL10 Electrical Characteristics⁽¹⁾

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

| PARAMETER | TEST CONDITIONS | TL750L10 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 | | μV | |
| 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 | | |
| | $\text{ENABLE} \geq 2\text{ V}$ | | | 0.5 | | |

(1) 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.

TL75xL12 Electrical Characteristics⁽¹⁾

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

| PARAMETER | TEST CONDITIONS | TL750L12 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 | | μV | |
| 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 | | |
| | $\text{ENABLE} \geq 2\text{ V}$ | | | 0.5 | | |

(1) 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.

PARAMETER MEASUREMENT INFORMATION

The TL750L, TL751L series are low-dropout regulators. This means that capacitance loading is important to the performance of the regulator because it is a vital part of the control loop. The capacitor value and its equivalent series resistance (ESR) both affect the control loop and must be defined for the load range and temperature range. [Figure 1](#) shows the recommended range of ESR for a given load with a $10\text{-}\mu\text{F}$ capacitor on the output.

TYPICAL CHARACTERISTICS

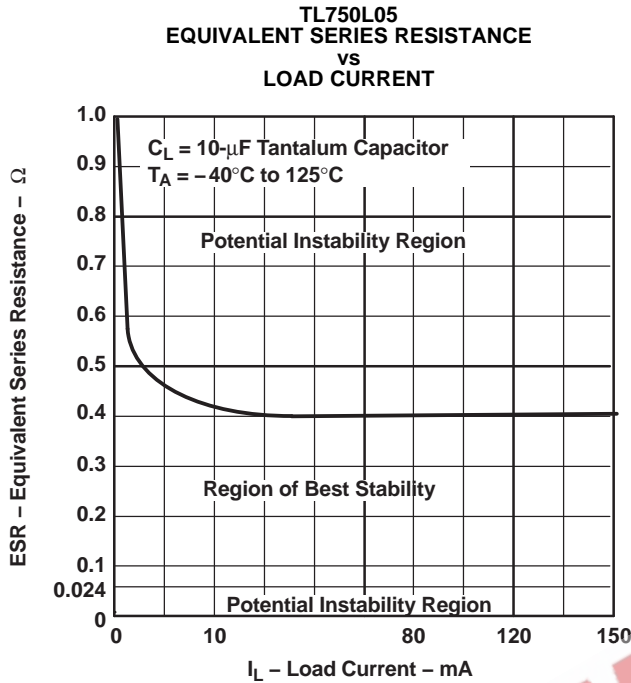


Figure 1.

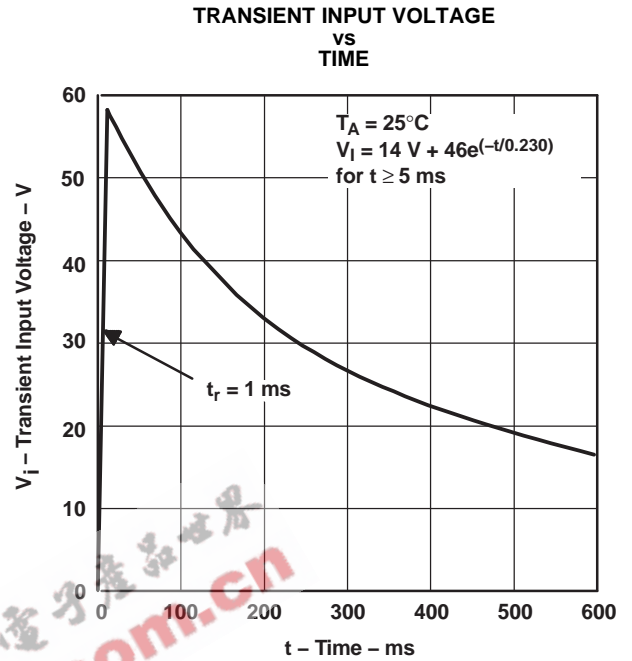


Figure 2.

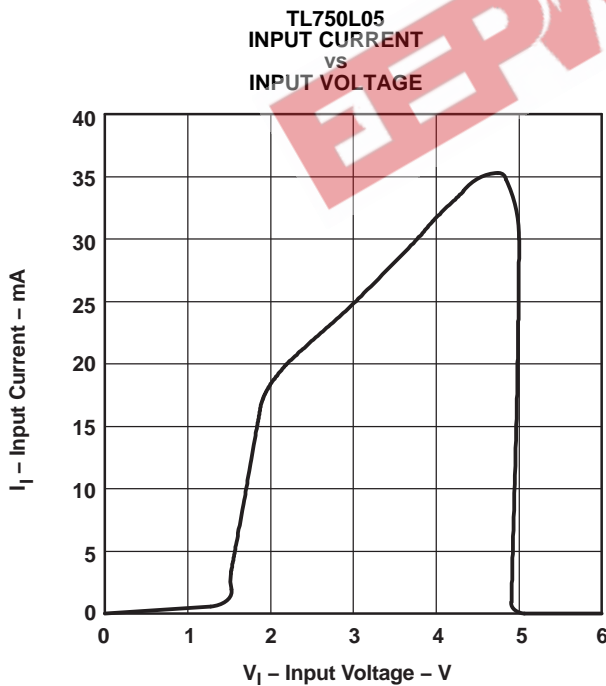


Figure 3.

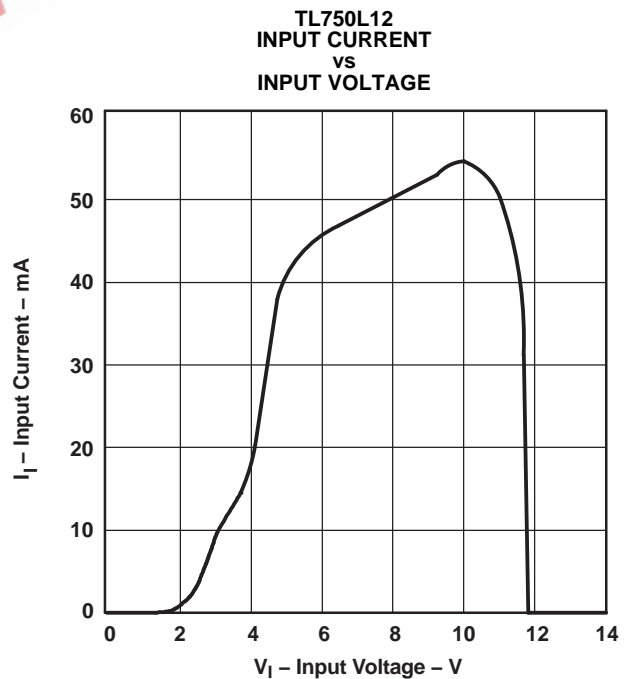


Figure 4.

PACKAGING INFORMATION

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|------------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 5962-9166901Q2A | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI |
| 5962-9166901QPA | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI |
| TL750L05CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L05CKC | NRND | TO-220 | KC | 3 | 50 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CKCE3 | NRND | TO-220 | KC | 3 | 50 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CKCS | ACTIVE | TO-220 | KCS | 3 | 50 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CKCSE3 | ACTIVE | TO-220 | KCS | 3 | 50 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CKTER | NRND | PFM | KTE | 3 | 2000 | TBD | CU SN | Level-3-240C-168 HR |
| TL750L05CKTTR | ACTIVE | DDPAK/ TO-263 | KTT | 3 | 500 | Green (RoHS & no Sb/Br) | CU SN | Level-3-245C-168 HR |
| TL750L05CKTTRG3 | ACTIVE | DDPAK/ TO-263 | KTT | 3 | 500 | Green (RoHS & no Sb/Br) | CU SN | Level-3-245C-168 HR |
| TL750L05CKVURG3 | ACTIVE | PFM | KVU | 3 | 2500 | Green (RoHS & no Sb/Br) | CU SN | Level-3-260C-168 HR |
| TL750L05CLP | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CLPE3 | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CLPM | OBSOLETE | TO-92 | LP | 3 | | TBD | Call TI | Call TI |
| TL750L05CLPR | ACTIVE | TO-92 | LP | 3 | 2000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CLPRE3 | ACTIVE | TO-92 | LP | 3 | 2000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L05CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L05QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L05QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L05QKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L05QLP | OBSOLETE | TO-92 | LP | 3 | | TBD | Call TI | Call TI |
| TL750L05QP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L08CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |
| TL750L08CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| TL750L08CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |
| TL750L08CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |
| TL750L08CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |
| TL750L08CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR |
| TL750L08CKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L08CLP | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L08CLPE3 | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L08CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L08QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L08QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L08QKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L08QLP | OBSOLETE | TO-92 | LP | 3 | | TBD | Call TI | Call TI |
| TL750L10CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L10CKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L10CLP | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L10CLPE3 | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L10CLPR | ACTIVE | TO-92 | LP | 3 | 2000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L10CLPRE3 | ACTIVE | TO-92 | LP | 3 | 2000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L10CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L10QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L10QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L10QKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L10QLP | OBSOLETE | TO-92 | LP | 3 | | TBD | Call TI | Call TI |
| TL750L10QP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L12CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L12CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| TL750L12CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L12CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L12CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L12CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL750L12CKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L12CLP | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L12CLPE3 | ACTIVE | TO-92 | LP | 3 | 1000 | Pb-Free (RoHS) | CU SN | N / A for Pkg Type |
| TL750L12CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL750L12QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L12QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL750L12QKC | OBSOLETE | TO-220 | KC | 3 | | TBD | Call TI | Call TI |
| TL750L12QLP | OBSOLETE | TO-92 | LP | 3 | | TBD | Call TI | Call TI |
| TL750L12QP | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L05CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L05CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL751L05MFKB | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI |
| TL751L05MJGB | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI |
| TL751L05QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L05QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L05QP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL751L10CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L10CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L10CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L10CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L10CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L10CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| TL751L10CP | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| TL751L10CPE4 | ACTIVE | PDIP | P | 8 | 50 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type |
| TL751L10QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L10QP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL751L12CD | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CDE4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CDG4 | ACTIVE | SOIC | D | 8 | 75 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CDR | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CDRE4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CDRG4 | ACTIVE | SOIC | D | 8 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| TL751L12CP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |
| TL751L12MFKB | OBSOLETE | LCCC | FK | 20 | | TBD | Call TI | Call TI |
| TL751L12MJGB | OBSOLETE | CDIP | JG | 8 | | TBD | Call TI | Call TI |
| TL751L12QD | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L12QDR | OBSOLETE | SOIC | D | 8 | | TBD | Call TI | Call TI |
| TL751L12QP | OBSOLETE | PDIP | P | 8 | | TBD | Call TI | Call TI |

⁽¹⁾ 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.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

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.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

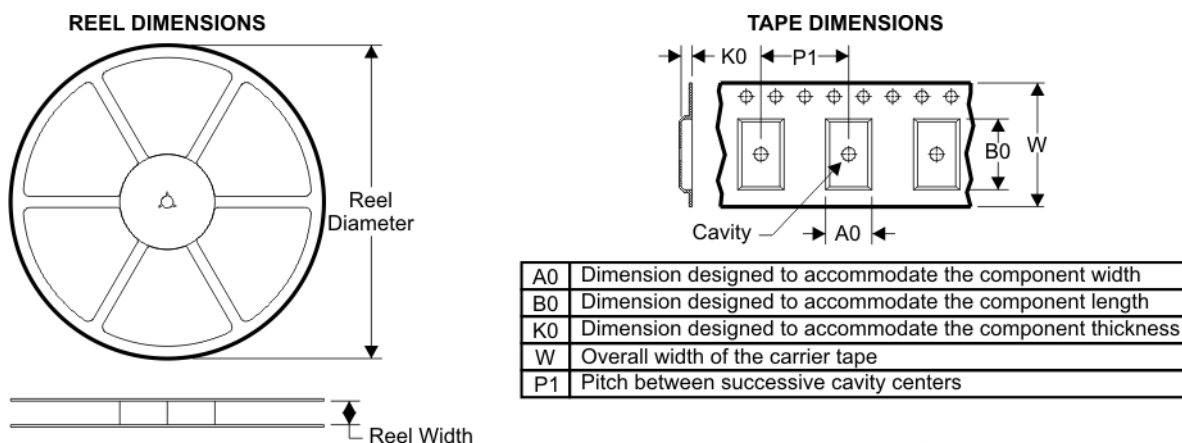
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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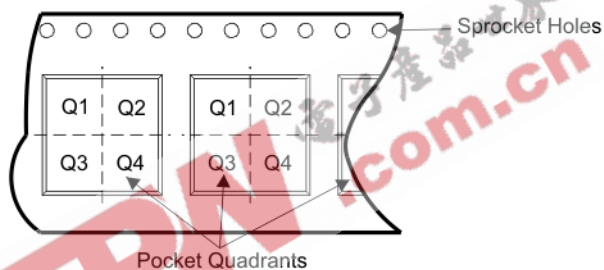
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TAPE AND REEL BOX INFORMATION

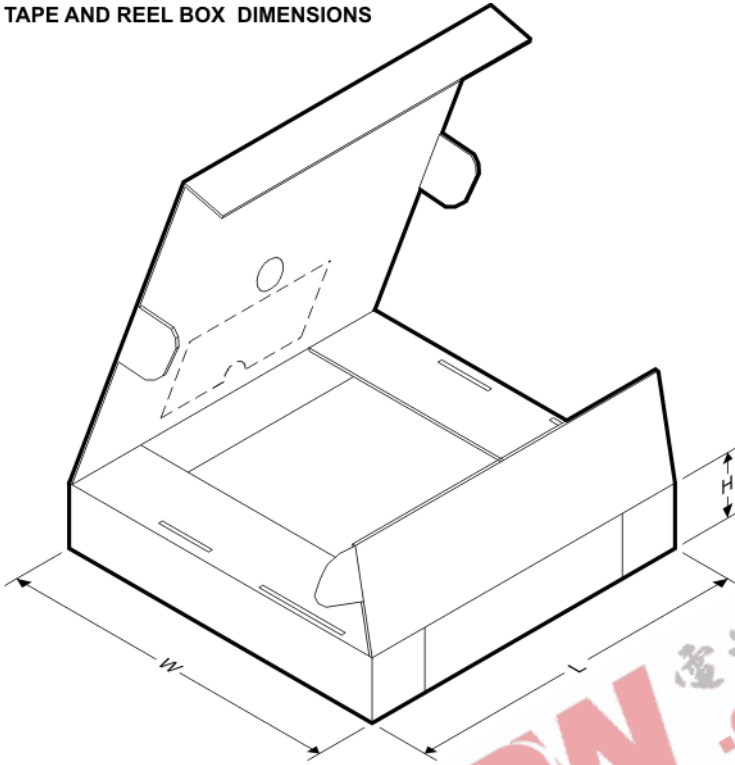


QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



| Device | Package | Pins | Site | Reel Diameter (mm) | Reel Width (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-----------------|---------|------|---------|--------------------|-----------------|---------|---------|---------|---------|--------|---------------|
| TL750L05CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL750L05CKTTR | KTT | 3 | SITE 45 | 330 | 24 | 10.6 | 15.8 | 4.9 | 16 | 24 | Q2 |
| TL750L05CKVURG3 | KVU | 3 | SITE 45 | 330 | 16 | 6.9 | 10.5 | 2.7 | 8 | 16 | Q2 |
| TL750L08CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL750L10CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL750L12CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL751L05CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL751L10CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |
| TL751L12CDR | D | 8 | SITE 27 | 330 | 12 | 6.4 | 5.2 | 2.1 | 8 | 12 | Q1 |

TAPE AND REEL BOX DIMENSIONS



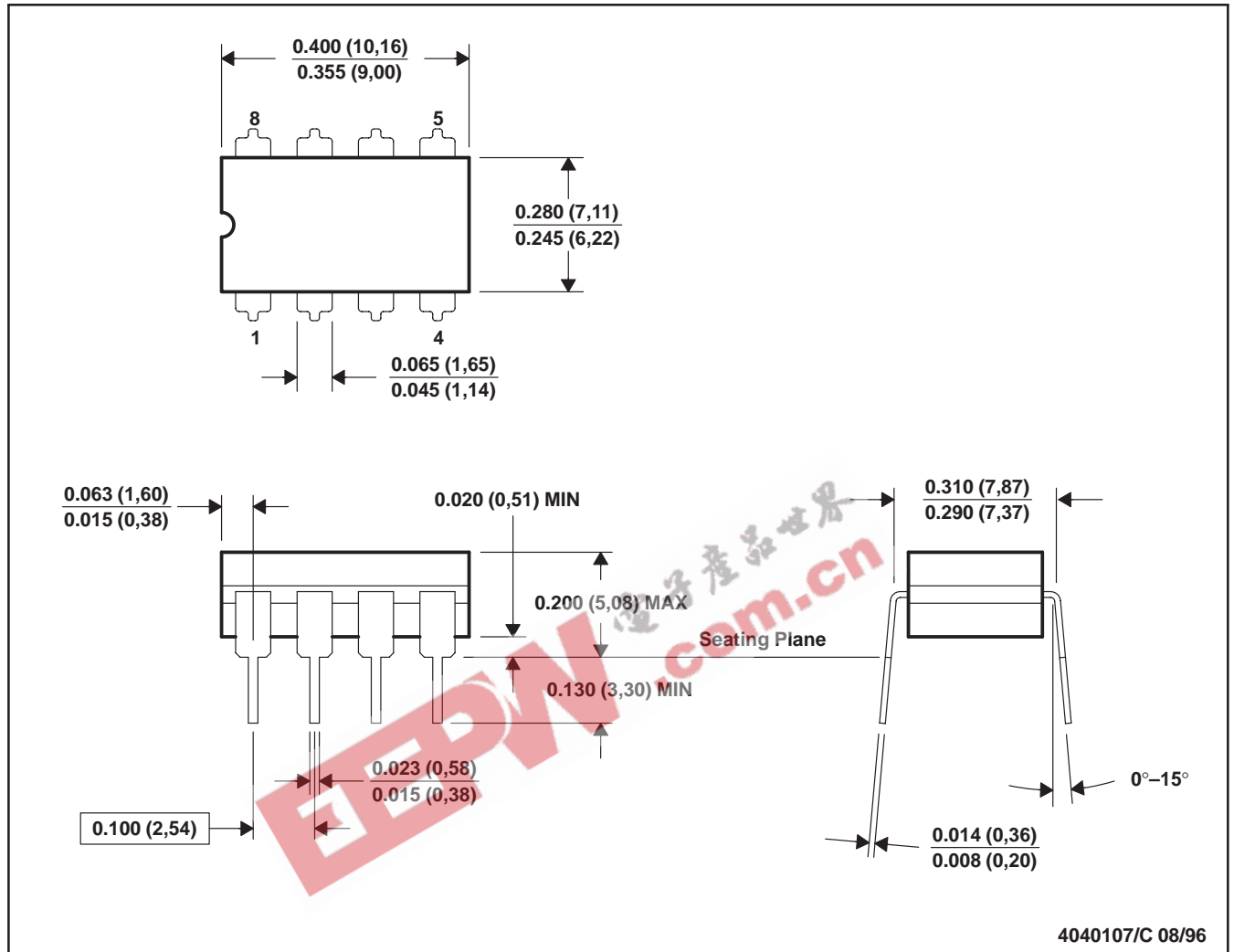
| Device | Package | Pins | Site | Length (mm) | Width (mm) | Height (mm) |
|-----------------|---------|------|---------|-------------|------------|-------------|
| TL750L05CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL750L05CKTTR | KTT | 3 | SITE 45 | 340.0 | 340.0 | 38.0 |
| TL750L05CKVURG3 | KVU | 3 | SITE 45 | 340.0 | 340.0 | 38.0 |
| TL750L08CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL750L10CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL750L12CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL751L05CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL751L10CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |
| TL751L12CDR | D | 8 | SITE 27 | 342.9 | 336.6 | 20.64 |

MECHANICAL DATA

MCER001A – JANUARY 1995 – REVISED JANUARY 1997

JG (R-GDIP-T8)

CERAMIC DUAL-IN-LINE



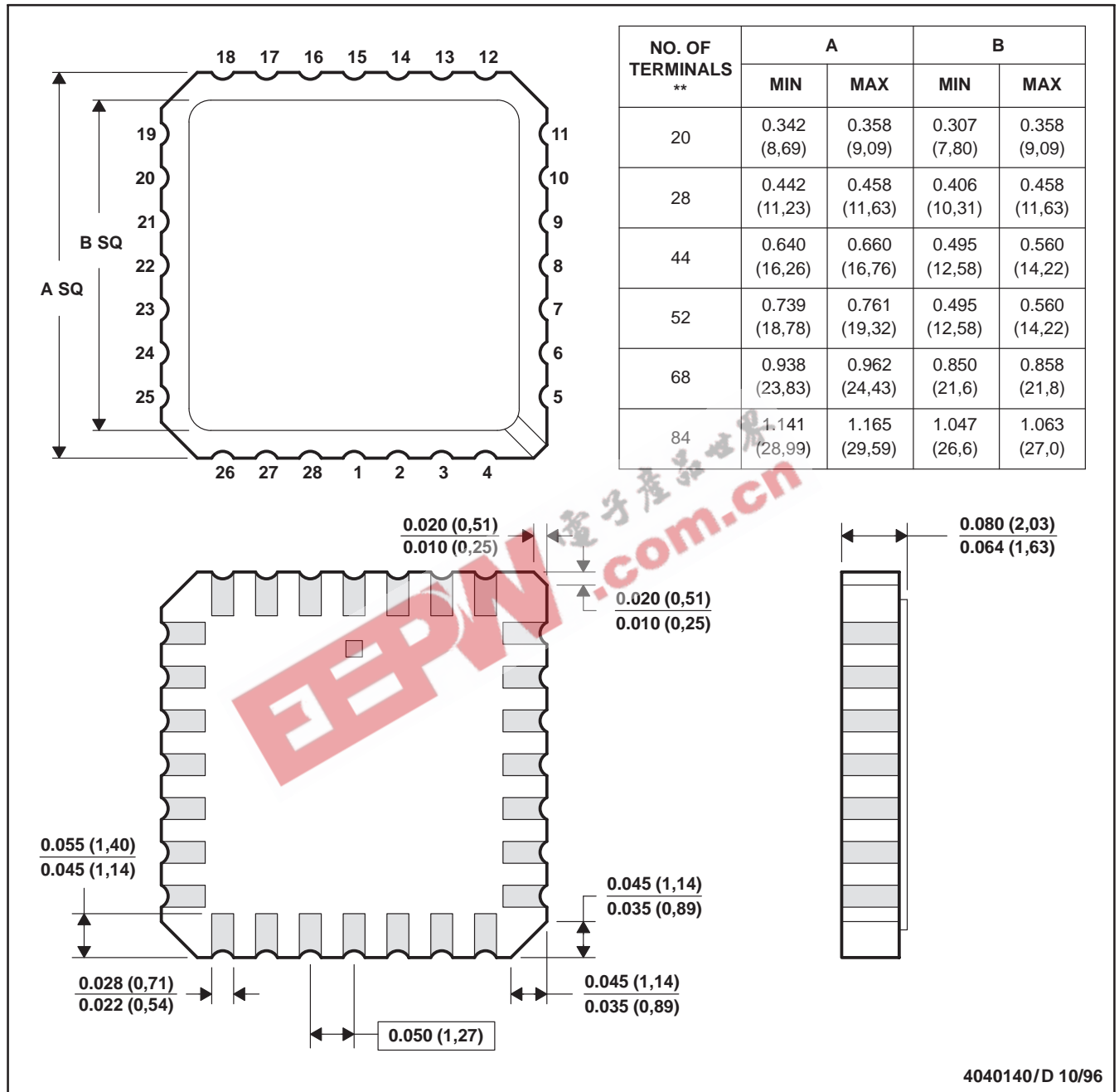
4040107/C 08/96

- 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



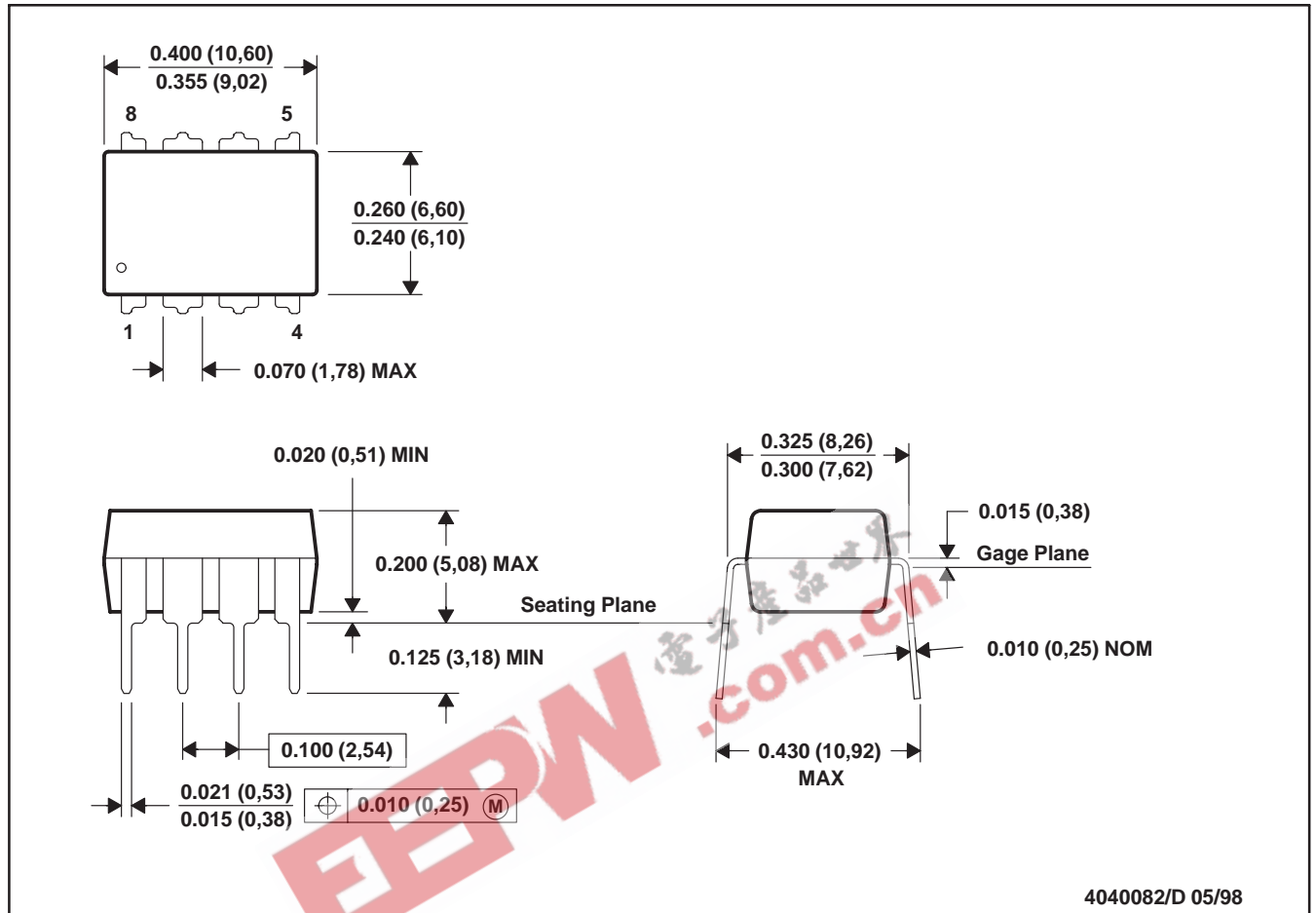
- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a metal lid.
 - D. The terminals are gold plated.
 - E. Falls within JEDEC MS-004

MECHANICAL DATA

MPDI001A – JANUARY 1995 – REVISED JUNE 1999

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



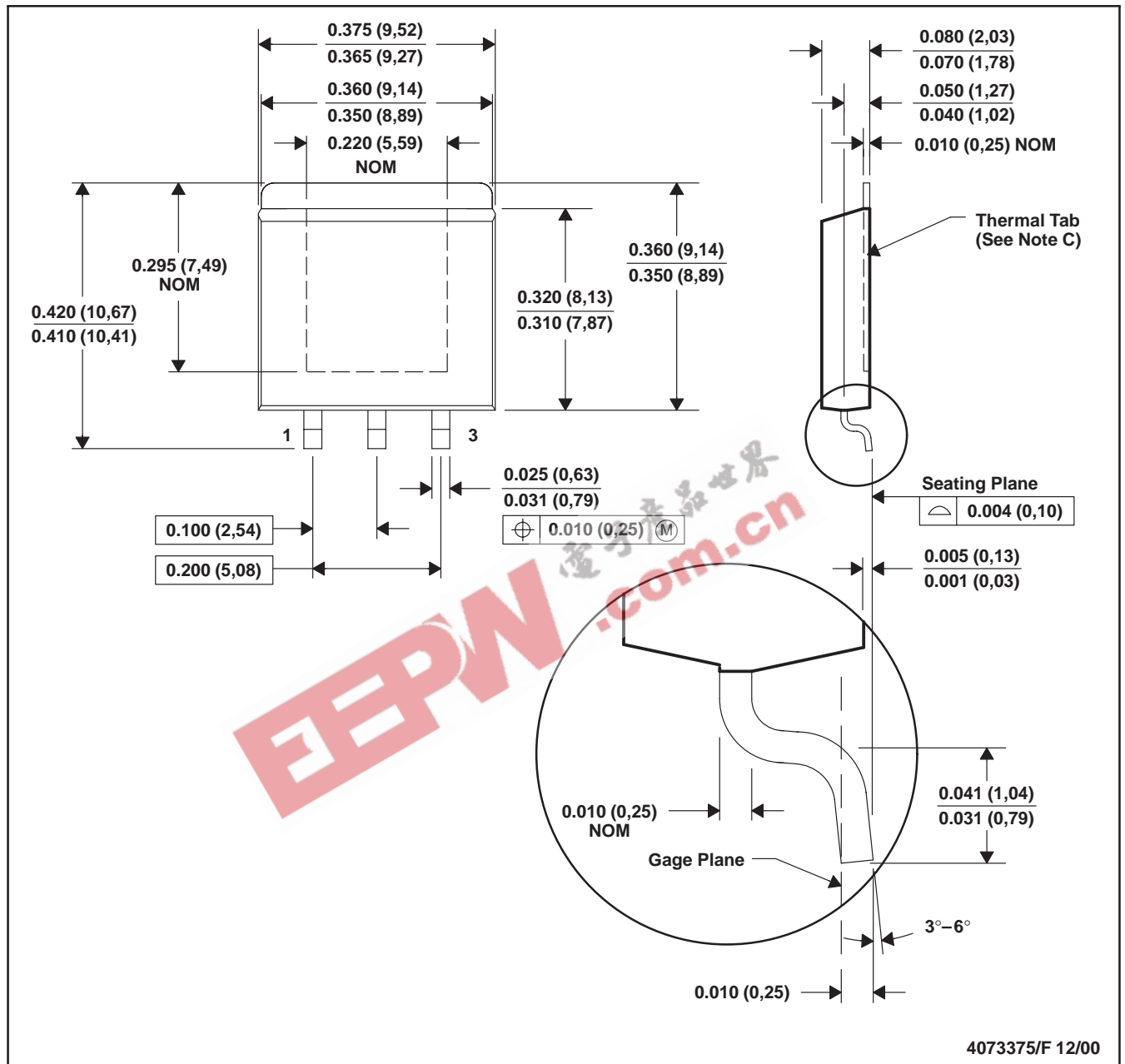
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

MECHANICAL DATA

MPFM001E – OCTOBER 1994 – REVISED JANUARY 2001

KTE (R-PSFM-G3)

PowerFLEX™ PLASTIC FLANGE-MOUNT



- 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 MO-169

PowerFLEX is a trademark of Texas Instruments.

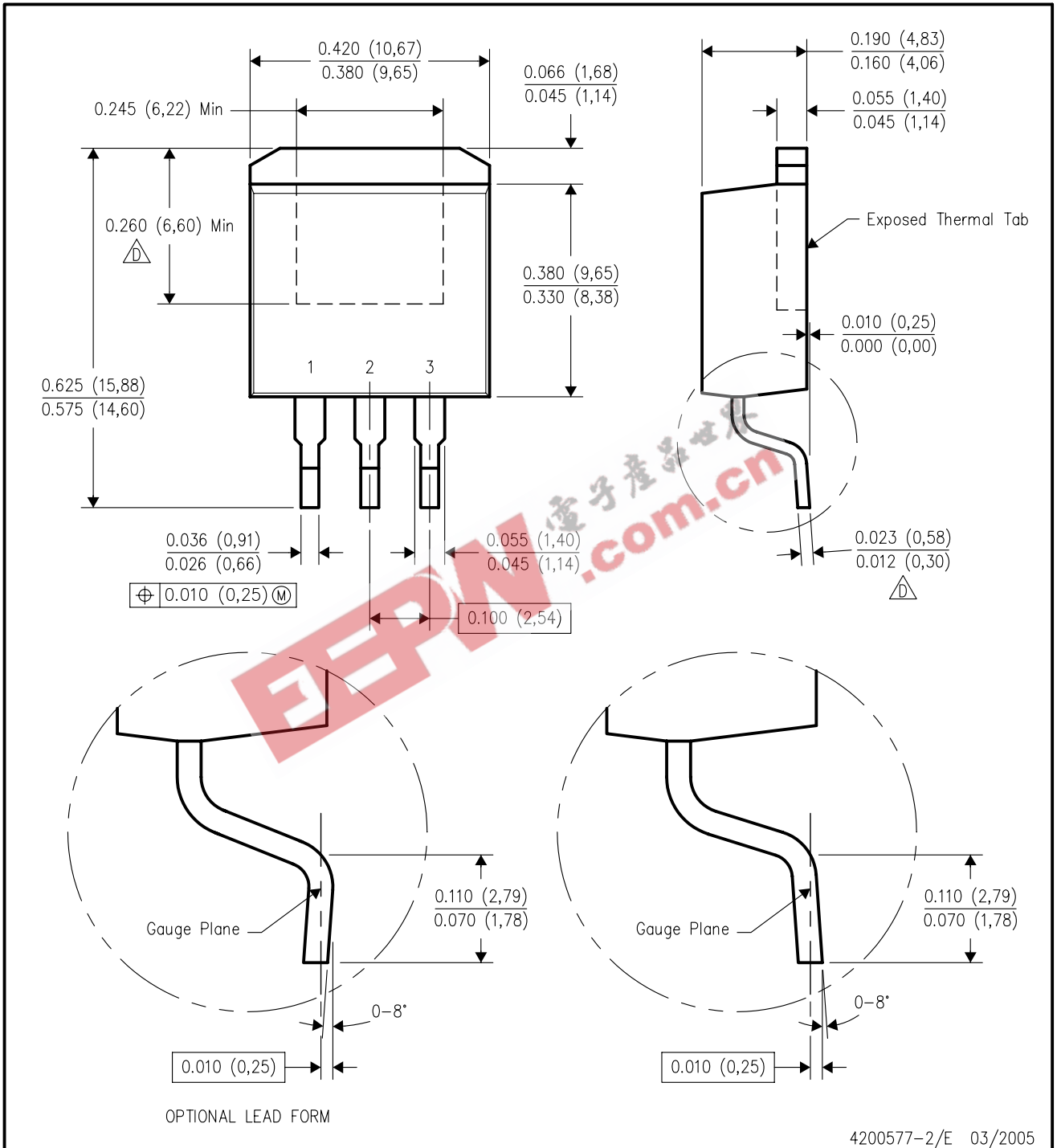
 **TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

MECHANICAL DATA

KTT (R-PSFM-G3)

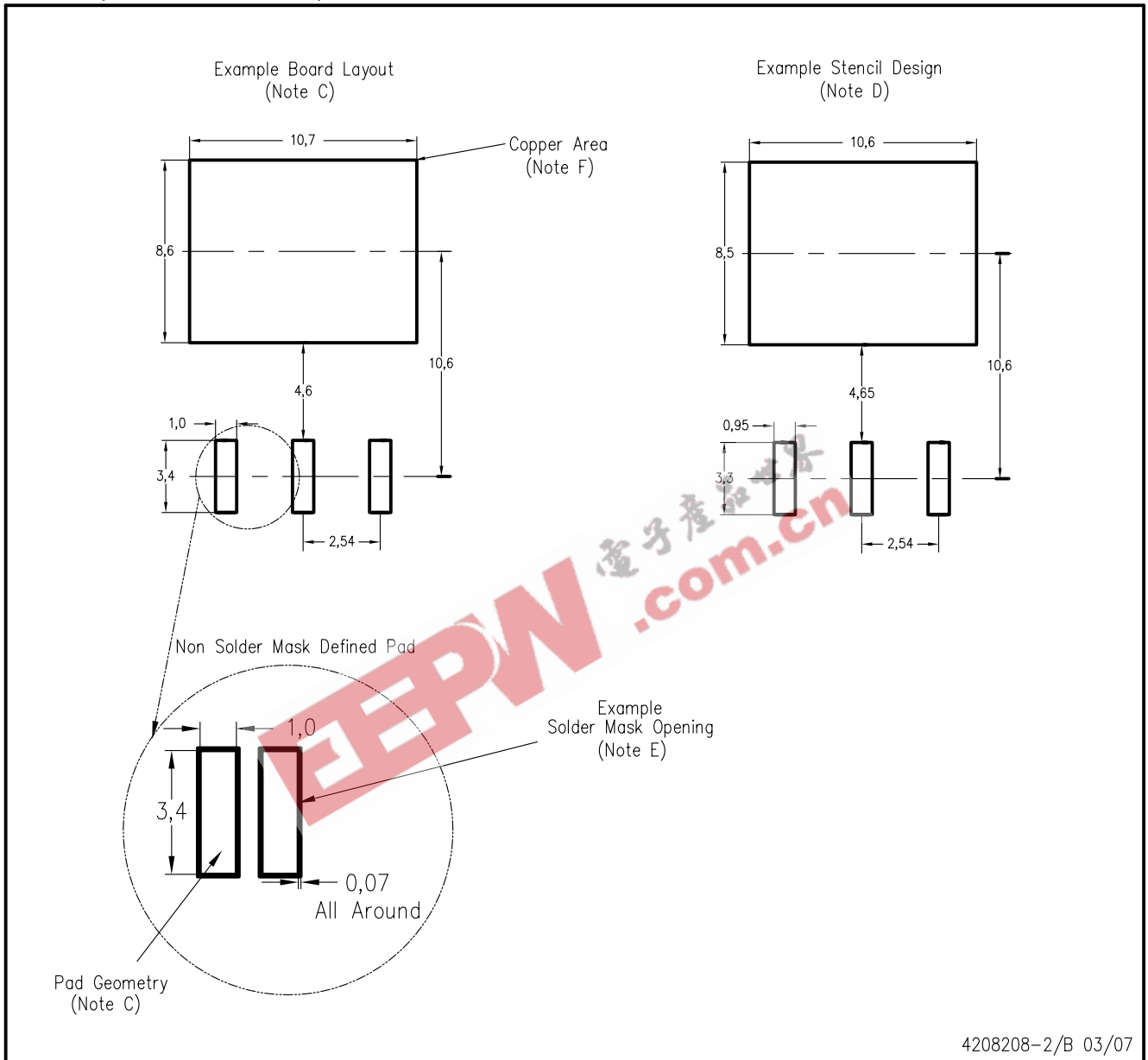
PLASTIC FLANGE-MOUNT PACKAGE



4200577-2/E 03/2005

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion. Mold flash or protrusion not to exceed 0.005 (0,13) per side.
- \triangle Falls within JEDEC TO-263 variation AA, except minimum lead thickness and minimum exposed pad length.

KTT (R-PSFM-G3)

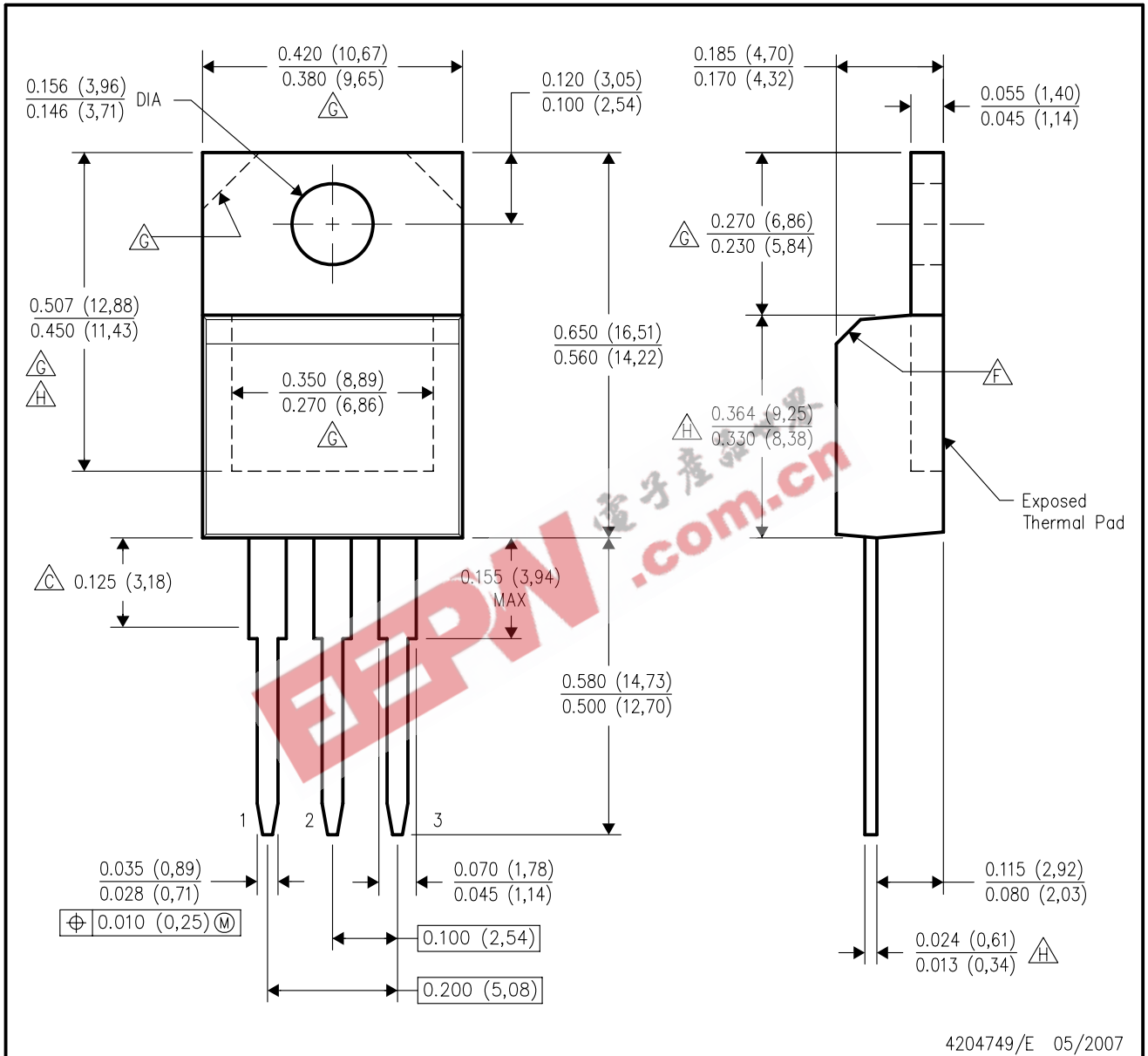


- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-SM-782 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.
 - This package is designed to be soldered to a thermal pad on the board. Refer to the Product Datasheet for specific thermal information, via requirements, and recommended thermal pad size. For thermal pad sizes larger than shown a solder mask defined pad is recommended in order to maintain the solderable pad geometry while increasing copper area.

MECHANICAL DATA

KCS (R-PSFM-T3)

PLASTIC FLANGE-MOUNT PACKAGE

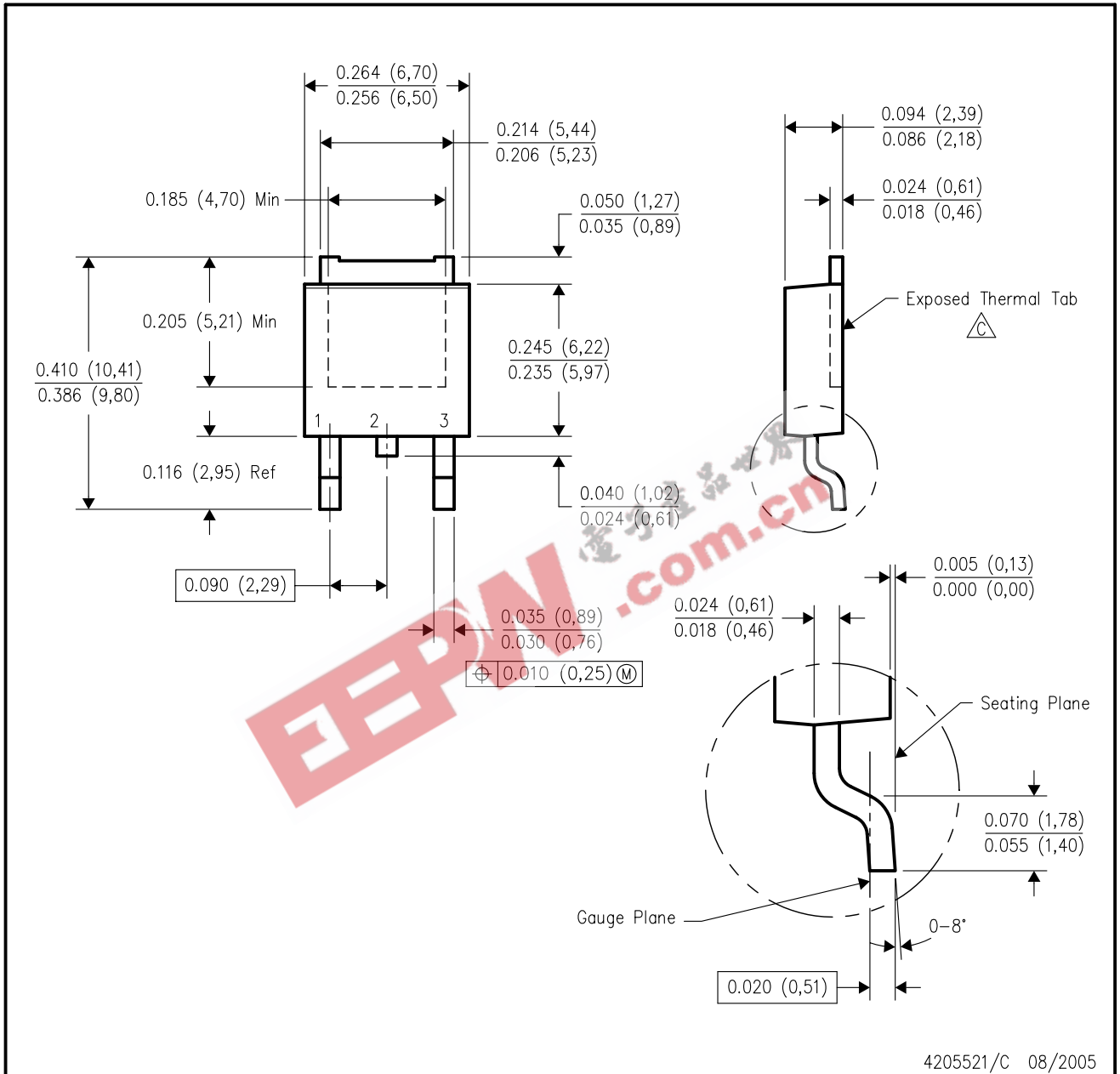


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Lead dimensions are not controlled within this area.
 - D. All lead dimensions apply before solder dip.
 - E. The center lead is in electrical contact with the mounting tab.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

MECHANICAL DATA

KVU (R-PSFM-G3)

PLASTIC FLANGE-MOUNT PACKAGE

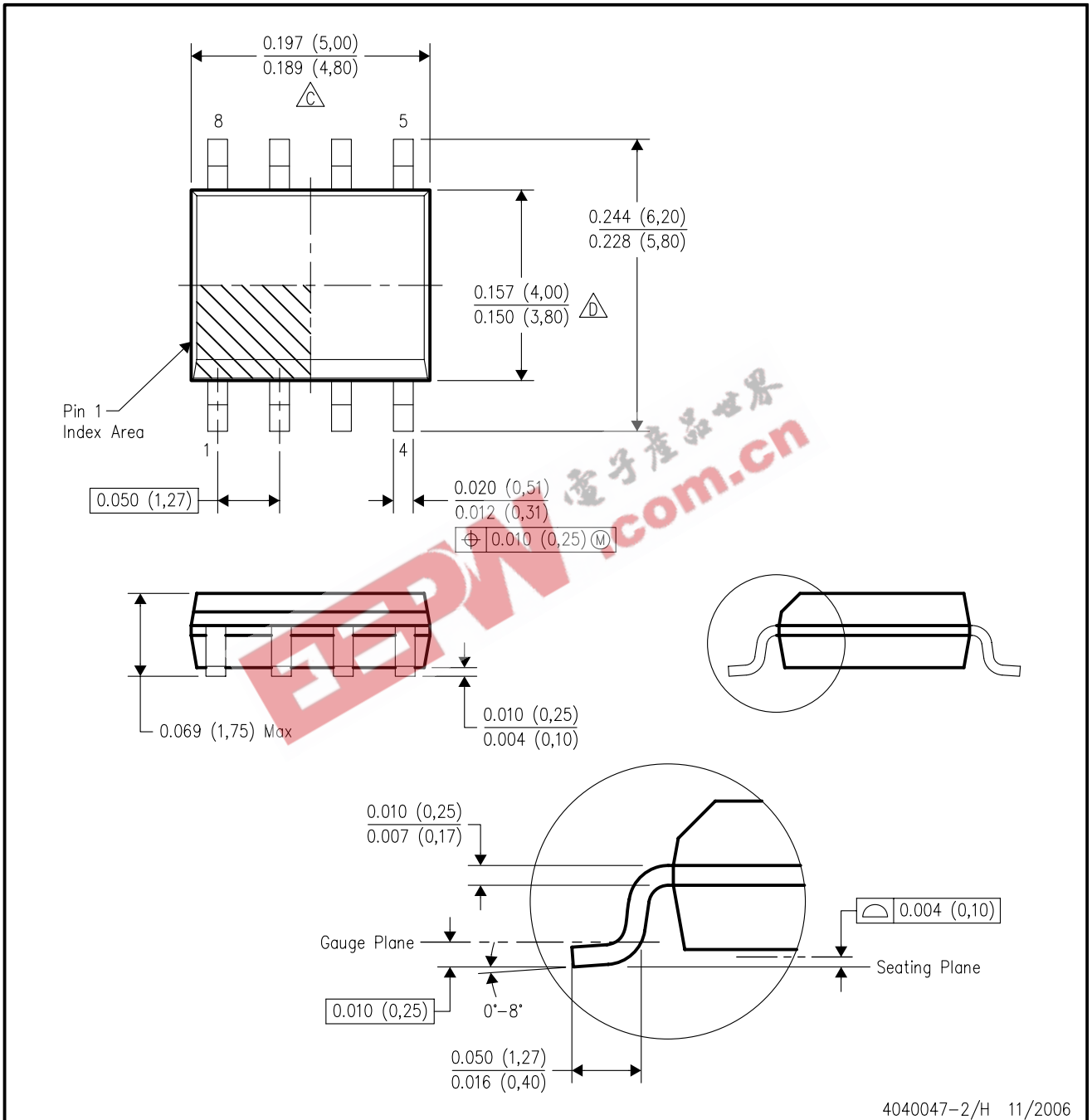


- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - $\triangle C$ The center lead is in electrical contact with the exposed thermal tab.
 - D. Body Dimensions do not include mold flash or protrusions. Mold flash and protrusion shall not exceed 0.006 (0,15) per side.
 - E. Falls within JEDEC TO-252 variation AA.

MECHANICAL DATA

D (R-PDSO-G8)

PLASTIC SMALL-OUTLINE PACKAGE



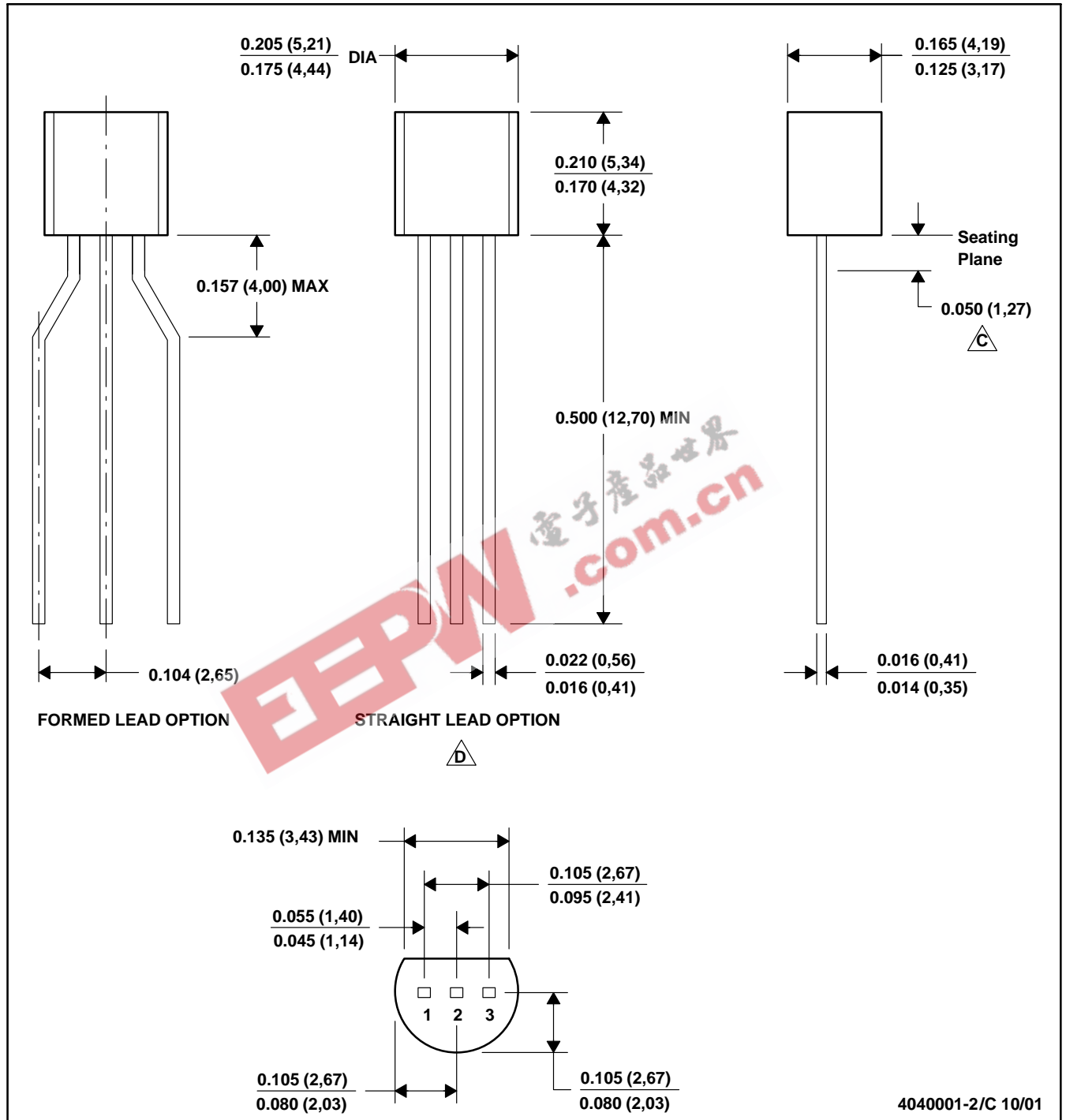
- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - $\triangle C$ Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed .006 (0,15) per end.
 - $\triangle D$ Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AA.

MECHANICAL DATA

MSOT002A – OCTOBER 1994 – REVISED NOVEMBER 2001

LP (O-PBCY-W3)

PLASTIC CYLINDRICAL PACKAGE



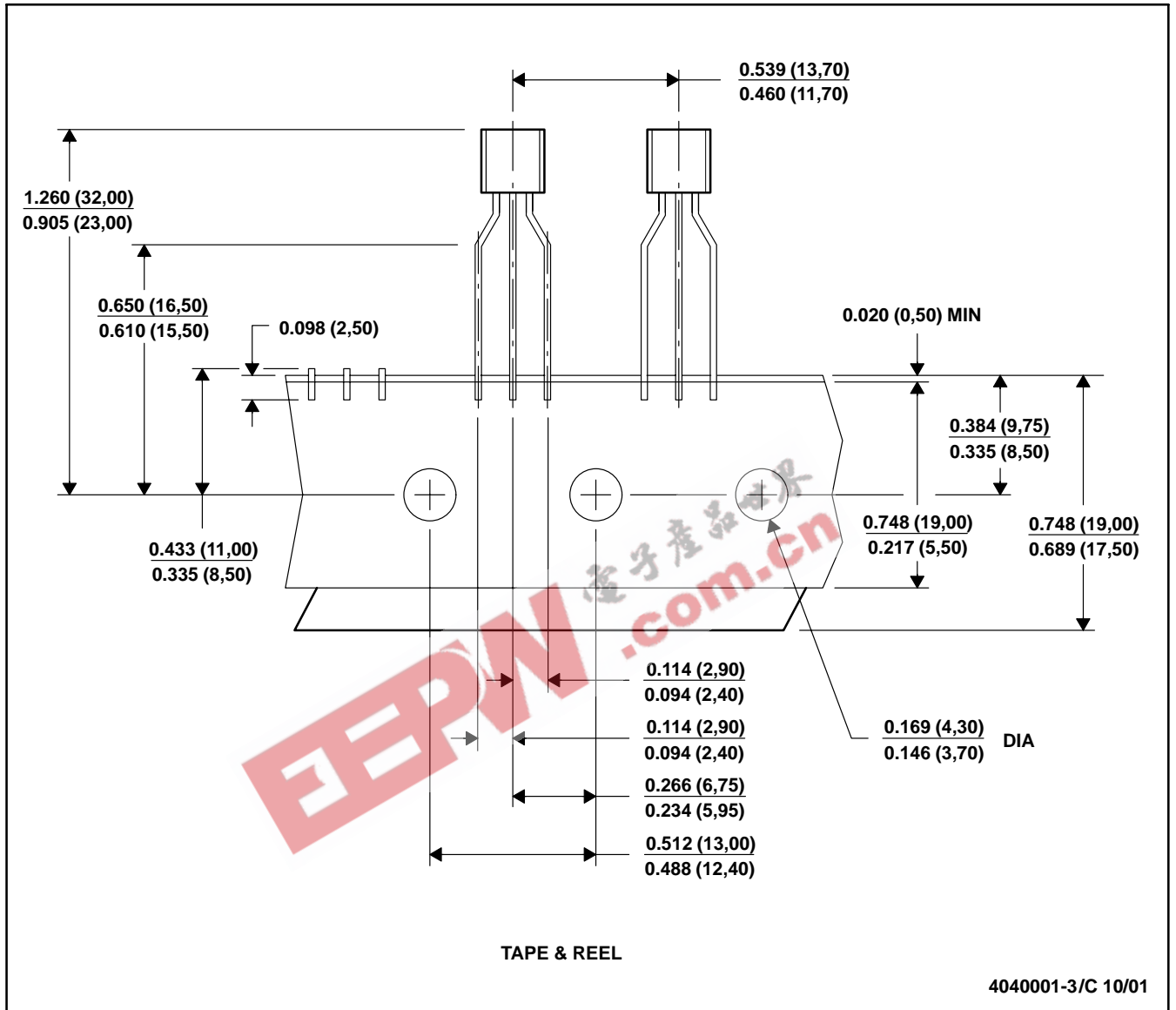
- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Lead dimensions are not controlled within this area
 - D. Falls within JEDEC TO-226 Variation AA (TO-226 replaces TO-92)
 - E. Shipping Method:
 - Straight lead option available 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

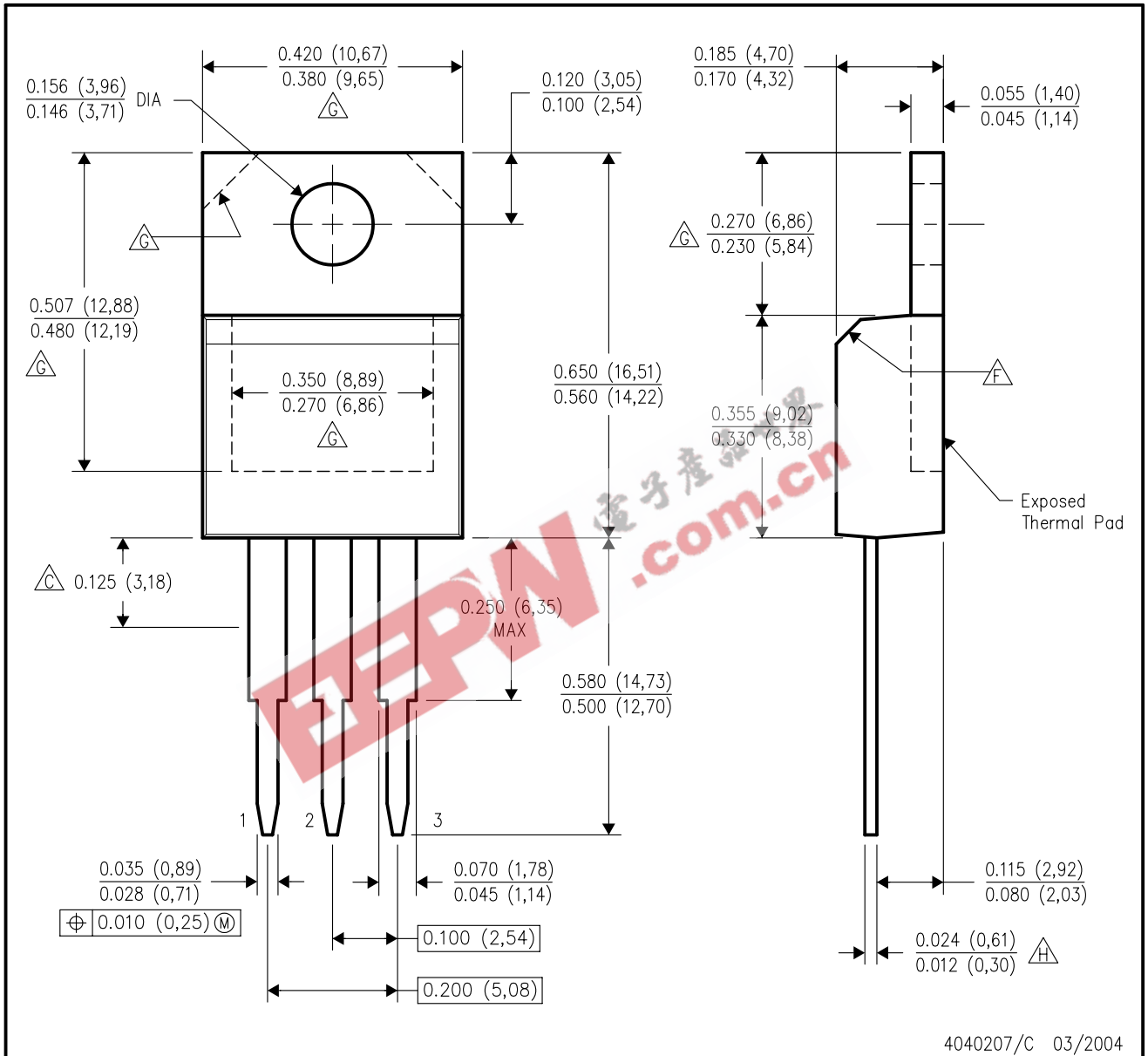


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - Tape and Reel information for the Format Lead Option package.

MECHANICAL DATA

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

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
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