

## Current Mode PWM Controller

### FEATURES

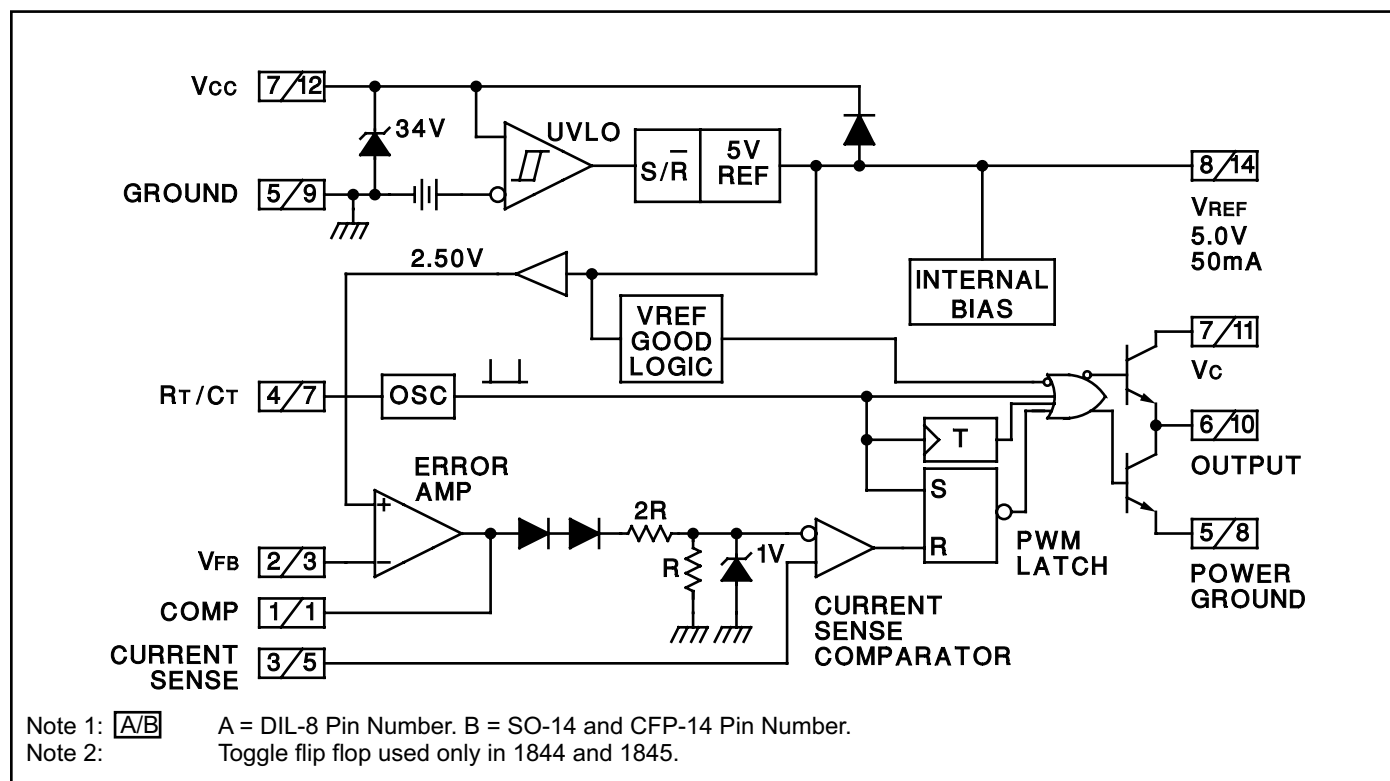
- Optimized For Off-line And DC To DC Converters
- Low Start Up Current (<1mA)
- Automatic Feed Forward Compensation
- Pulse-by-pulse Current Limiting
- Enhanced Load Response Characteristics
- Under-voltage Lockout With Hysteresis
- Double Pulse Suppression
- High Current Totem Pole Output
- Internally Trimmed Bandgap Reference
- 500khz Operation
- Low Ro Error Amp

### DESCRIPTION

The UC1842/3/4/5 family of control ICs provides the necessary features to implement off-line or DC to DC fixed frequency current mode control schemes with a minimal external parts count. Internally implemented circuits include under-voltage lockout featuring start up current less than 1mA, a precision reference trimmed for accuracy at the error amp input, logic to insure latched operation, a PWM comparator which also provides current limit control, and a totem pole output stage designed to source or sink high peak current. The output stage, suitable for driving N Channel MOSFETs, is low in the off state.

Differences between members of this family are the under-voltage lockout thresholds and maximum duty cycle ranges. The UC1842 and UC1844 have UVLO thresholds of 16V (on) and 10V (off), ideally suited to off-line applications. The corresponding thresholds for the UC1843 and UC1845 are 8.4V and 7.6V. The UC1842 and UC1843 can operate to duty cycles approaching 100%. A range of zero to 50% is obtained by the UC1844 and UC1845 by the addition of an internal toggle flip flop which blanks the output off every other clock cycle.

### BLOCK DIAGRAM



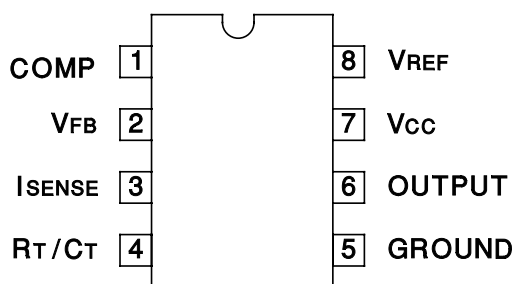
## ABSOLUTE MAXIMUM RATINGS(Note 1)

Supply Voltage (Low Impedance Source) . . . . . 30V  
Supply Voltage ( $I_{CC} < 30\text{mA}$ ) . . . . . Self Limiting  
Output Current. . . . .  $\pm 1\text{A}$   
Output Energy (Capacitive Load) . . . . .  $5\text{ }\mu\text{J}$   
Analog Inputs (Pins 2, 3). . . . .  $-0.3\text{V}$  to  $+6.3\text{V}$   
Error Amp Output Sink Current . . . . .  $10\text{ mA}$   
Power Dissipation at  $T_A \leq 25^\circ\text{C}$  (DIL-8) . . . . .  $1\text{ W}$   
Power Dissipation at  $T_A \leq 25^\circ\text{C}$  (SOIC-14) . . . . .  $725\text{ mW}$   
Storage Temperature Range . . . . .  $-65^\circ\text{C}$  to  $+150^\circ\text{C}$   
Junction Temperature Range . . . . .  $-55^\circ\text{C}$  to  $+150^\circ\text{C}$   
Lead Temperature (soldering, 10 seconds) . . . . .  $300^\circ\text{C}$

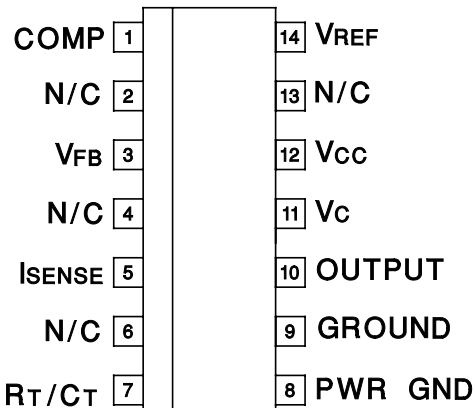
Note 1: All voltages are with respect to Pin 5.  
All currents are positive into the specified terminal.  
Consult Packaging Section of Databook for thermal limitations and considerations of packages.

## CONNECTION DIAGRAMS

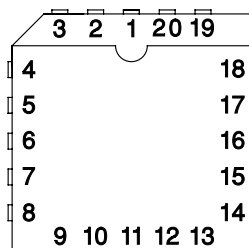
**DIL-8, SOIC-8 (TOP VIEW)**  
N or J Package, D8 Package



**SOIC-14, CFP-14. (TOP VIEW)**  
D or W Package



**PLCC-20 (TOP VIEW)**  
Q Package



| PACKAGE PIN FUNCTION |     |
|----------------------|-----|
| FUNCTION             | PIN |
| N/C                  | 1   |
| COMP                 | 2   |
| N/C                  | 3   |
| N/C                  | 4   |
| VFB                  | 5   |
| N/C                  | 6   |
| ISENSE               | 7   |
| N/C                  | 8   |
| N/C                  | 9   |
| RT/CT                | 10  |
| N/C                  | 11  |
| PWR GND              | 12  |
| GROUND               | 13  |
| N/C                  | 14  |
| OUTPUT               | 15  |
| N/C                  | 16  |
| VC                   | 17  |
| VCC                  | 18  |
| N/C                  | 19  |
| VREF                 | 20  |

## DISSIPATION RATING TABLE

| Package | $T_A \leq 25^\circ\text{C}$<br>Power Rating | Derating Factor<br>Above $T_A \leq 25^\circ\text{C}$ | $T_A \leq 70^\circ\text{C}$<br>Power Rating | $T_A \leq 85^\circ\text{C}$<br>Power Rating | $T_A \leq 125^\circ\text{C}$<br>Power Rating |
|---------|---------------------------------------------|------------------------------------------------------|---------------------------------------------|---------------------------------------------|----------------------------------------------|
| W       | $700\text{ mW}$                             | $5.5\text{ mW}/^\circ\text{C}$                       | $452\text{ mW}$                             | $370\text{ mW}$                             | $150\text{ mW}$                              |

**ELECTRICAL CHARACTERISTICS:** Unless otherwise stated, these specifications apply for  $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$  for the UC184X;  $-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$  for the UC284X;  $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$  for the 384X;  $V_{CC} = 15\text{V}$  (Note 5);  $R_T = 10\text{k}$ ;  $C_T = 3.3\text{nF}$ ,  $T_A = T_J$ .

| PARAMETER              | TEST CONDITIONS                                               | UC1842/3/4/5<br>UC2842/3/4/5 |      |      | UC3842/3/4/5 |      |      | UNITS |
|------------------------|---------------------------------------------------------------|------------------------------|------|------|--------------|------|------|-------|
|                        |                                                               | MIN                          | TYP  | MAX  | MIN          | TYP  | MAX  |       |
| Reference Section      |                                                               |                              |      |      |              |      |      |       |
| Output Voltage         | T <sub>J</sub> = 25°C, I <sub>o</sub> = 1mA                   | 4.95                         | 5.00 | 5.05 | 4.90         | 5.00 | 5.10 | V     |
| Line Regulation        | 12 ≤ V <sub>IN</sub> ≤ 25V                                    |                              | 6    | 20   |              | 6    | 20   | mV    |
| Load Regulation        | 1 ≤ I <sub>o</sub> ≤ 20mA                                     |                              | 6    | 25   |              | 6    | 25   | mV    |
| Temp. Stability        | (Note 2) (Note 7)                                             |                              | 0.2  | 0.4  |              | 0.2  | 0.4  | mV/°C |
| Total Output Variation | Line, Load, Temp. (Note 2)                                    | 4.9                          |      | 5.1  | 4.82         |      | 5.18 | V     |
| Output Noise Voltage   | 10Hz ≤ f ≤ 10kHz, T <sub>J</sub> = 25°C (Note2)               |                              | 50   |      |              | 50   |      | μV    |
| Long Term Stability    | T <sub>A</sub> = 125°C, 1000Hrs. (Note 2)                     |                              | 5    | 25   |              | 5    | 25   | mV    |
| Output Short Circuit   |                                                               | -30                          | -100 | -180 | -30          | -100 | -180 | mA    |
| Oscillator Section     |                                                               |                              |      |      |              |      |      |       |
| Initial Accuracy       | T <sub>J</sub> = 25°C (Note 6)                                | 47                           | 52   | 57   | 47           | 52   | 57   | kHz   |
| Voltage Stability      | 12 ≤ V <sub>CC</sub> ≤ 25V                                    |                              | 0.2  | 1    |              | 0.2  | 1    | %     |
| Temp. Stability        | T <sub>MIN</sub> ≤ T <sub>A</sub> ≤ T <sub>MAX</sub> (Note 2) |                              | 5    |      |              | 5    |      | %     |
| Amplitude              | V <sub>PIN 4</sub> peak to peak (Note 2)                      |                              | 1.7  |      |              | 1.7  |      | V     |
| Error Amp Section      |                                                               |                              |      |      |              |      |      |       |
| Input Voltage          | V <sub>PIN 1</sub> = 2.5V                                     | 2.45                         | 2.50 | 2.55 | 2.42         | 2.50 | 2.58 | V     |
| Input Bias Current     |                                                               |                              | -0.3 | -1   |              | -0.3 | -2   | μA    |
| AVOL                   | 2 ≤ V <sub>O</sub> ≤ 4V                                       | 65                           | 90   |      | 65           | 90   |      | dB    |
| Unity Gain Bandwidth   | (Note 2) T <sub>J</sub> = 25°C                                | 0.7                          | 1    |      | 0.7          | 1    |      | MHz   |
| PSRR                   | 12 ≤ V <sub>CC</sub> ≤ 25V                                    | 60                           | 70   |      | 60           | 70   |      | dB    |
| Output Sink Current    | V <sub>PIN 2</sub> = 2.7V, V <sub>PIN 1</sub> = 1.1V          | 2                            | 6    |      | 2            | 6    |      | mA    |
| Output Source Current  | V <sub>PIN 2</sub> = 2.3V, V <sub>PIN 1</sub> = 5V            | -0.5                         | -0.8 |      | -0.5         | -0.8 |      | mA    |
| V <sub>OUT</sub> High  | V <sub>PIN 2</sub> = 2.3V, R <sub>L</sub> = 15k to ground     | 5                            | 6    |      | 5            | 6    |      | V     |
| V <sub>OUT</sub> Low   | V <sub>PIN 2</sub> = 2.7V, R <sub>L</sub> = 15k to Pin 8      |                              | 0.7  | 1.1  |              | 0.7  | 1.1  | V     |
| Current Sense Section  |                                                               |                              |      |      |              |      |      |       |
| Gain                   | (Notes 3 and 4)                                               | 2.85                         | 3    | 3.15 | 2.85         | 3    | 3.15 | V/V   |
| Maximum Input Signal   | V <sub>PIN 1</sub> = 5V (Note 3)                              | 0.9                          | 1    | 1.1  | 0.9          | 1    | 1.1  | V     |
| PSRR                   | 12 ≤ V <sub>CC</sub> ≤ 25V (Note 3) (Note 2)                  |                              | 70   |      |              | 70   |      | dB    |
| Input Bias Current     |                                                               |                              | -2   | -10  |              | -2   | -10  | μA    |
| Delay to Output        | V <sub>PIN 3</sub> = 0 to 2V (Note 2)                         |                              | 150  | 300  |              | 150  | 300  | ns    |

Note 2: These parameters, although guaranteed, are not 100% tested in production.

Note 3: Parameter measured at trip point of latch with  $V_{PIN\ 2} = 0$ .

Note 4: Gain defined as  

$$A = \frac{\Delta V_{PIN\ 1}}{\Delta V_{PIN\ 3}}, 0 \leq V_{PIN\ 3} \leq 0.8\text{V}$$

Note 5: Adjust  $V_{CC}$  above the start threshold before setting at 15V.

Note 6: Output frequency equals oscillator frequency for the UC1842 and UC1843.

Output frequency is one half oscillator frequency for the UC1844 and UC1845.

Note 7: Temperature stability, sometimes referred to as average temperature coefficient, is described by the equation:

$$\text{Temp Stability} = \frac{V_{REF\ (max)} - V_{REF\ (min)}}{T_J\ (max) - T_J\ (min)}$$

$V_{REF\ (max)}$  and  $V_{REF\ (min)}$  are the maximum and minimum reference voltages measured over the appropriate temperature range. Note that the extremes in voltage do not necessarily occur at the extremes in temperature.

# ELECTRICAL CHARACTERISTICS:

Unless otherwise stated, these specifications apply for  $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$  for the UC184X;  $-40^{\circ}\text{C} \leq T_A \leq 85^{\circ}\text{C}$  for the UC284X;  $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$  for the 384X;  $V_{CC} = 15\text{V}$  (Note 5);  $R_T = 10\text{k}$ ;  $C_T = 3.3\text{nF}$ ,  $T_A = T_J$ .

| PARAMETER                               | TEST CONDITION               | UC1842/3/4/5<br>UC2842/3/4/5 |      |     | UC3842/3/4/5 |      |      | UNITS |
|-----------------------------------------|------------------------------|------------------------------|------|-----|--------------|------|------|-------|
|                                         |                              | MIN                          | TYP  | MAX | MIN          | TYP  | MAX  |       |
| Output Section                          |                              |                              |      |     |              |      |      |       |
| Output Low Level                        | ISINK = 20mA                 |                              | 0.1  | 0.4 |              | 0.1  | 0.4  | V     |
|                                         | ISINK = 200mA                |                              | 1.5  | 2.2 |              | 1.5  | 2.2  | V     |
| Output High Level                       | ISOURCE = 20mA               | 13                           | 13.5 |     | 13           | 13.5 |      | V     |
|                                         | ISOURCE = 200mA              | 12                           | 13.5 |     | 12           | 13.5 |      | V     |
| Rise Time                               | TJ = 25°C, CL = 1nF (Note 2) |                              | 50   | 150 |              | 50   | 150  | ns    |
| Fall Time                               | TJ = 25°C, CL = 1nF (Note 2) |                              | 50   | 150 |              | 50   | 150  | ns    |
| Under-voltage Lockout Section           |                              |                              |      |     |              |      |      |       |
| Start Threshold                         | X842/4                       | 15                           | 16   | 17  | 14.5         | 16   | 17.5 | V     |
|                                         | X843/5                       | 7.8                          | 8.4  | 9.0 | 7.8          | 8.4  | 9.0  | V     |
| Min. Operating Voltage<br>After Turn On | X842/4                       | 9                            | 10   | 11  | 8.5          | 10   | 11.5 | V     |
|                                         | X843/5                       | 7.0                          | 7.6  | 8.2 | 7.0          | 7.6  | 8.2  | V     |
| PWM Section                             |                              |                              |      |     |              |      |      |       |
| Maximum Duty Cycle                      | X842/3                       | 95                           | 97   | 100 | 95           | 97   | 100  | %     |
|                                         | X844/5                       | 46                           | 48   | 50  | 47           | 48   | 50   | %     |
| Minimum Duty Cycle                      |                              |                              |      | 0   |              |      | 0    | %     |
| Total Standby Current                   |                              |                              |      |     |              |      |      |       |
| Start-Up Current                        |                              |                              | 0.5  | 1   |              | 0.5  | 1    | mA    |
| Operating Supply Current                | VPIN 2 = VPIN 3 = 0V         |                              | 11   | 17  |              | 11   | 17   | mA    |
| Vcc Zener Voltage                       | ICC = 25mA                   | 30                           | 34   |     | 30           | 34   |      | V     |

Note 2: These parameters, although guaranteed, are not 100% tested in production.

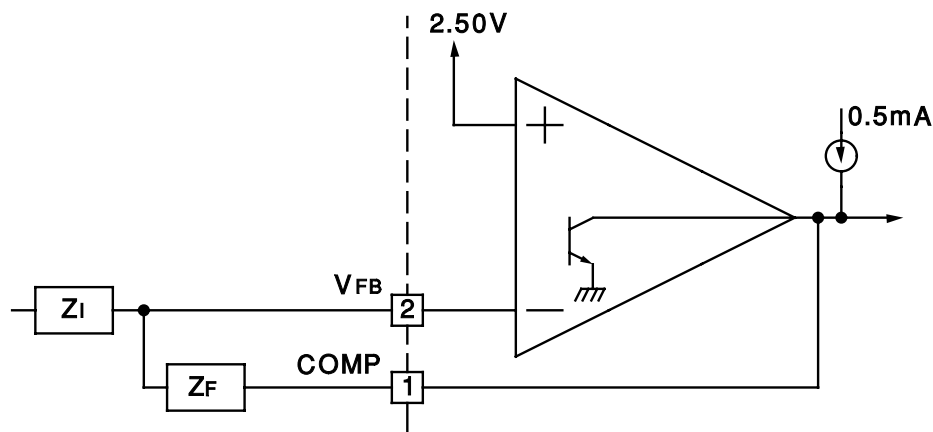
Note 3: Parameter measured at trip point of latch with  $V_{\text{PIN } 2} = 0$

Note 4: Gain defined as:  $A = \frac{\Delta V_{\text{PIN } 1}}{\Delta V_{\text{PIN } 3}}$ ;  $0 \leq V_{\text{PIN } 3} \leq 0.8\text{V}$ .

Note 5: Adjust Vcc above the start threshold before setting at 15V.

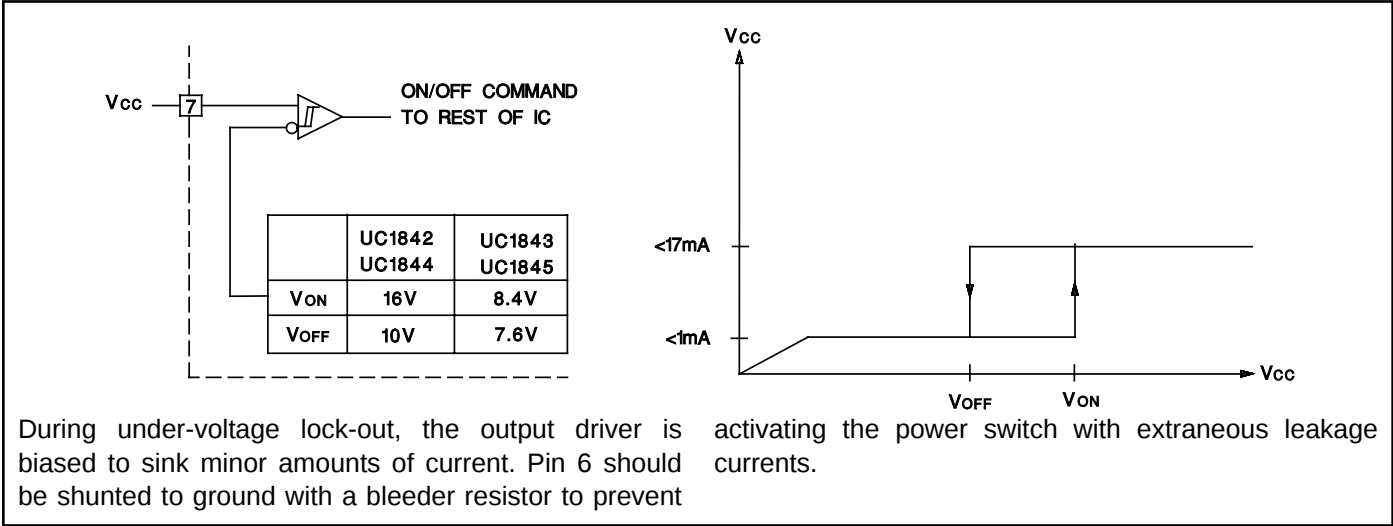
Note 6: Output frequency equals oscillator frequency for the UC1842 and UC1843.  
Output frequency is one half oscillator frequency for the UC1844 and UC1845.

## ERROR AMP CONFIGURATION

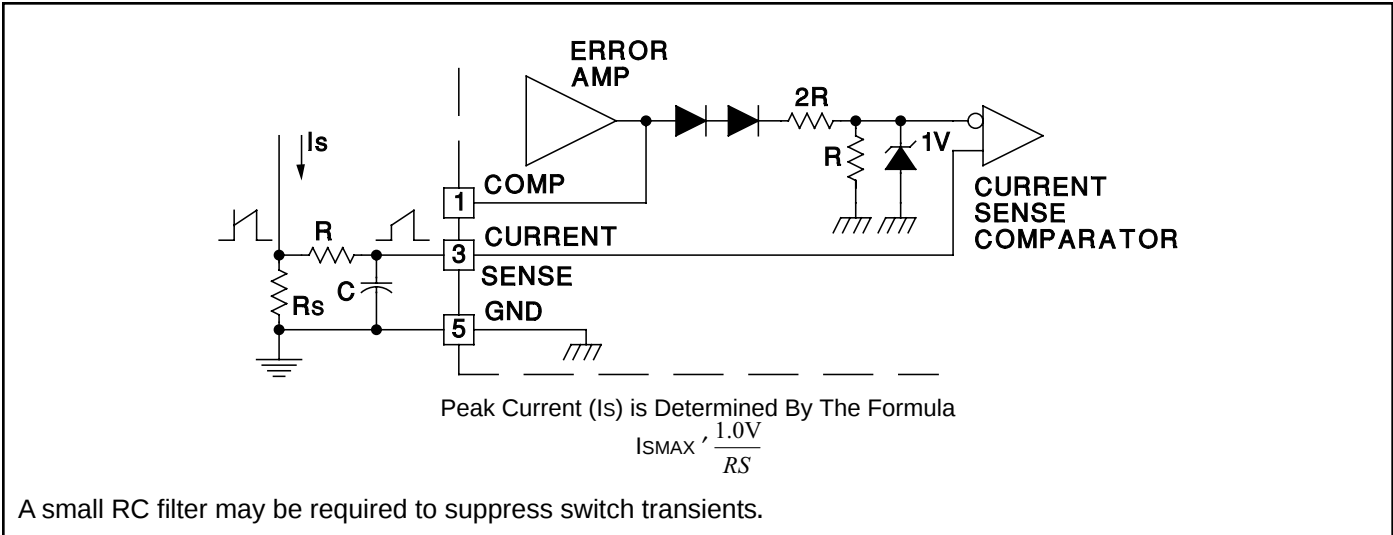


Error Amp can Source or Sink up to 0.5mA

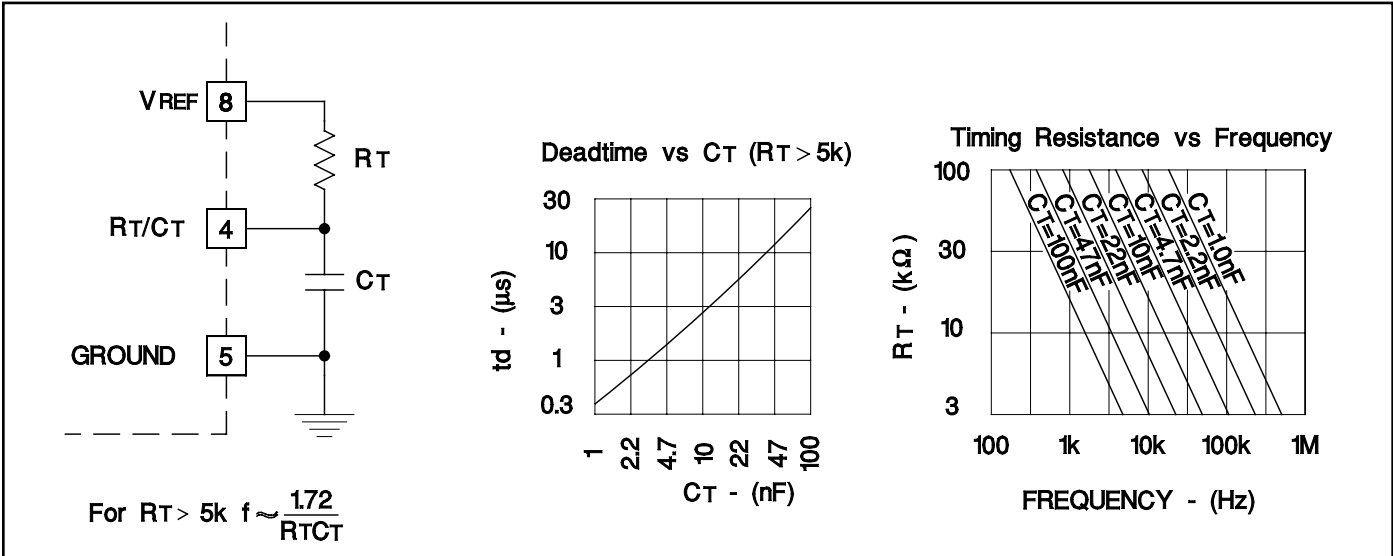
UNDER-VOLTAGE LOCKOUT



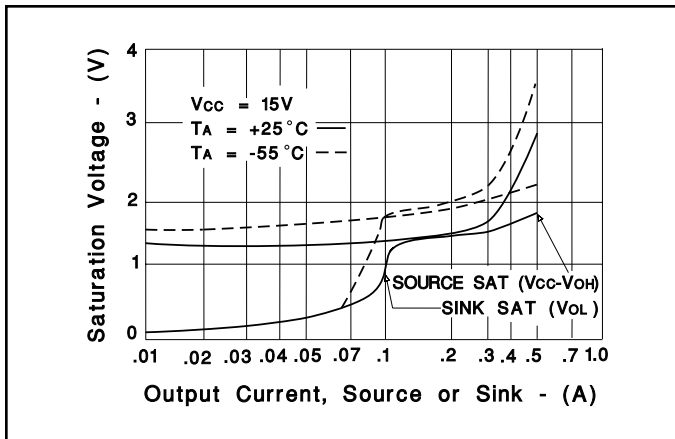
CURRENT SENSE CIRCUIT



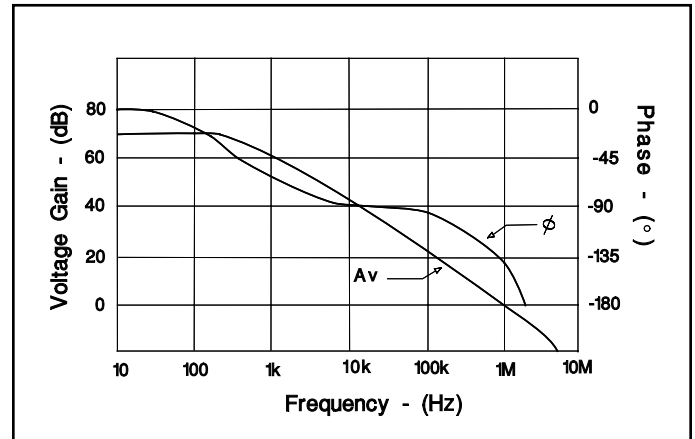
OSCILLATOR SECTION



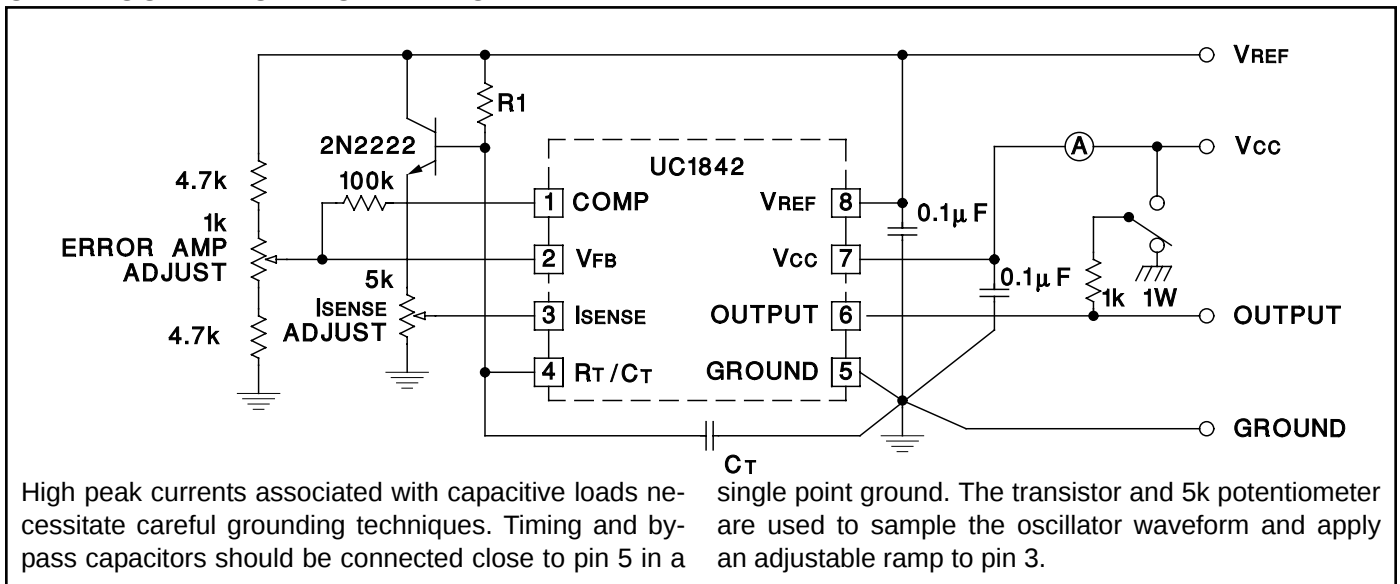
## OUTPUT SATURATION CHARACTERISTICS



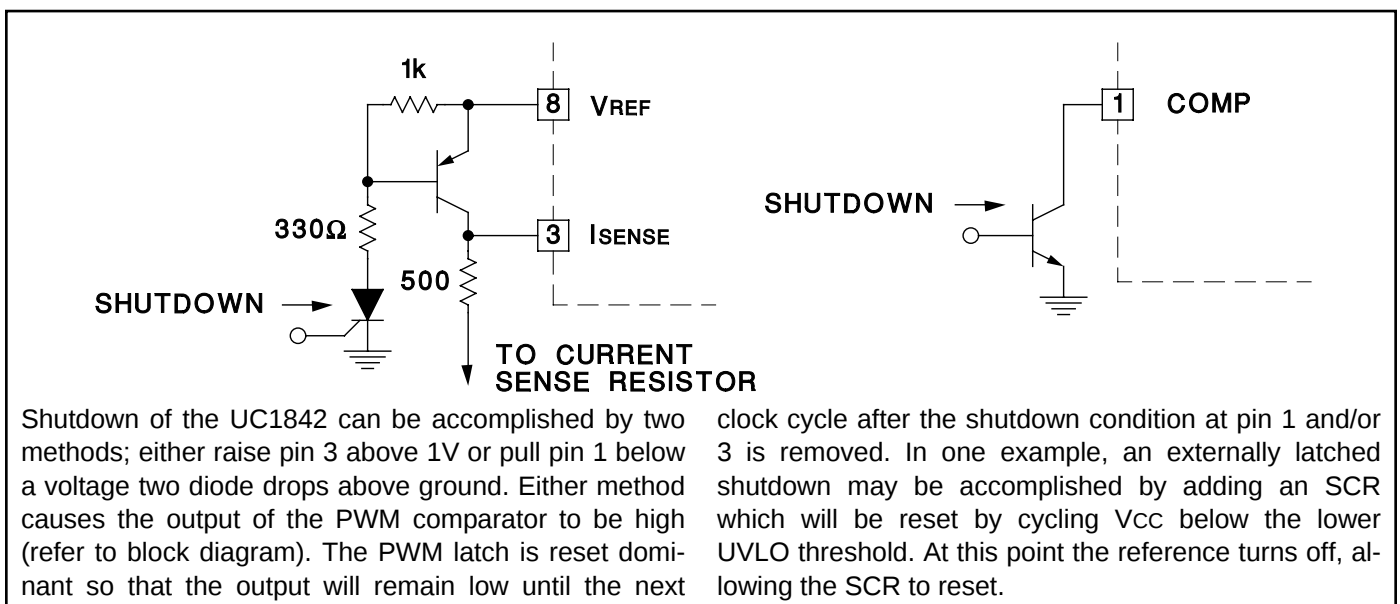
## ERROR AMPLIFIER OPEN-LOOP FREQUENCY RESPONSE



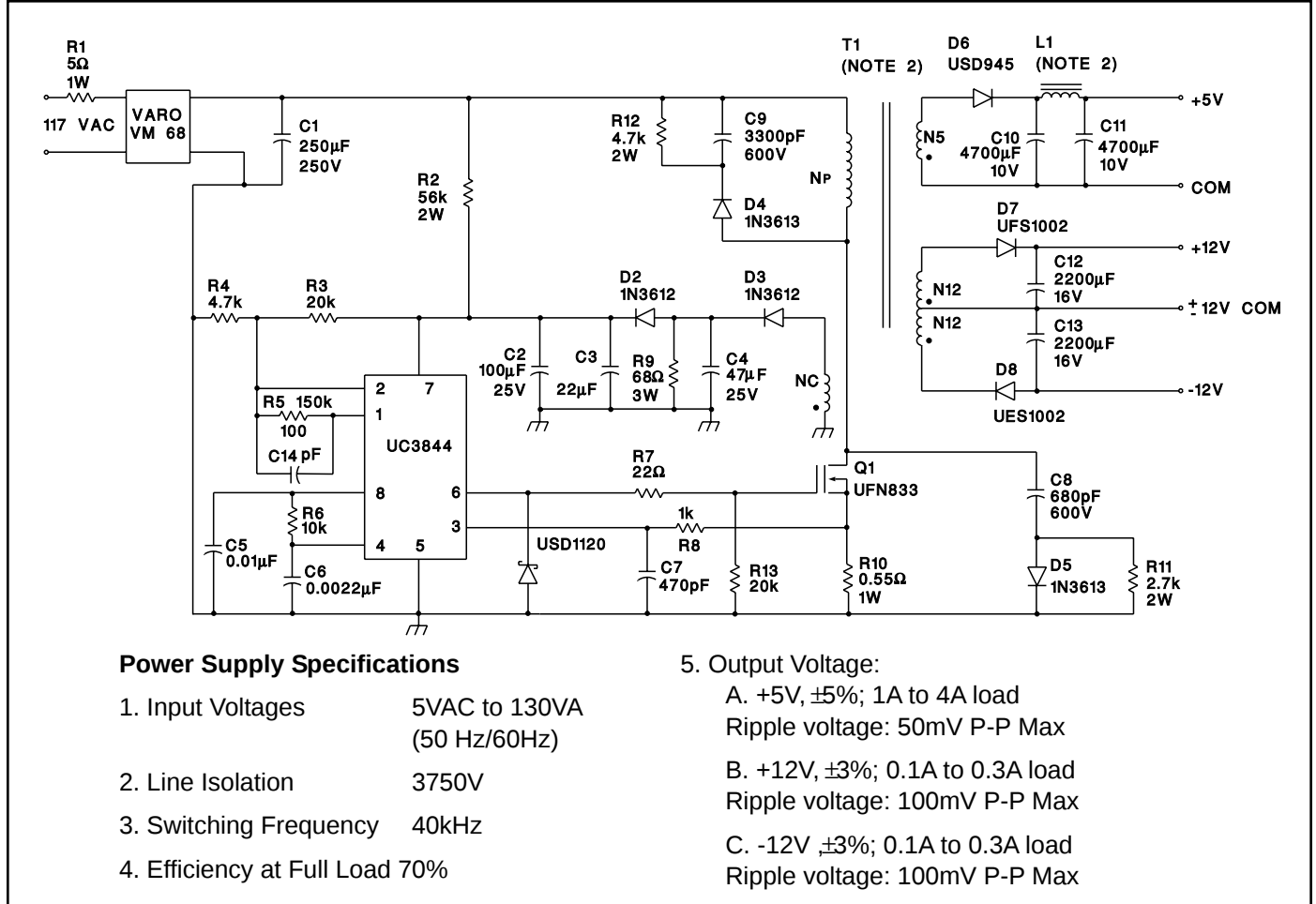
## OPEN-LOOP LABORATORY FIXTURE



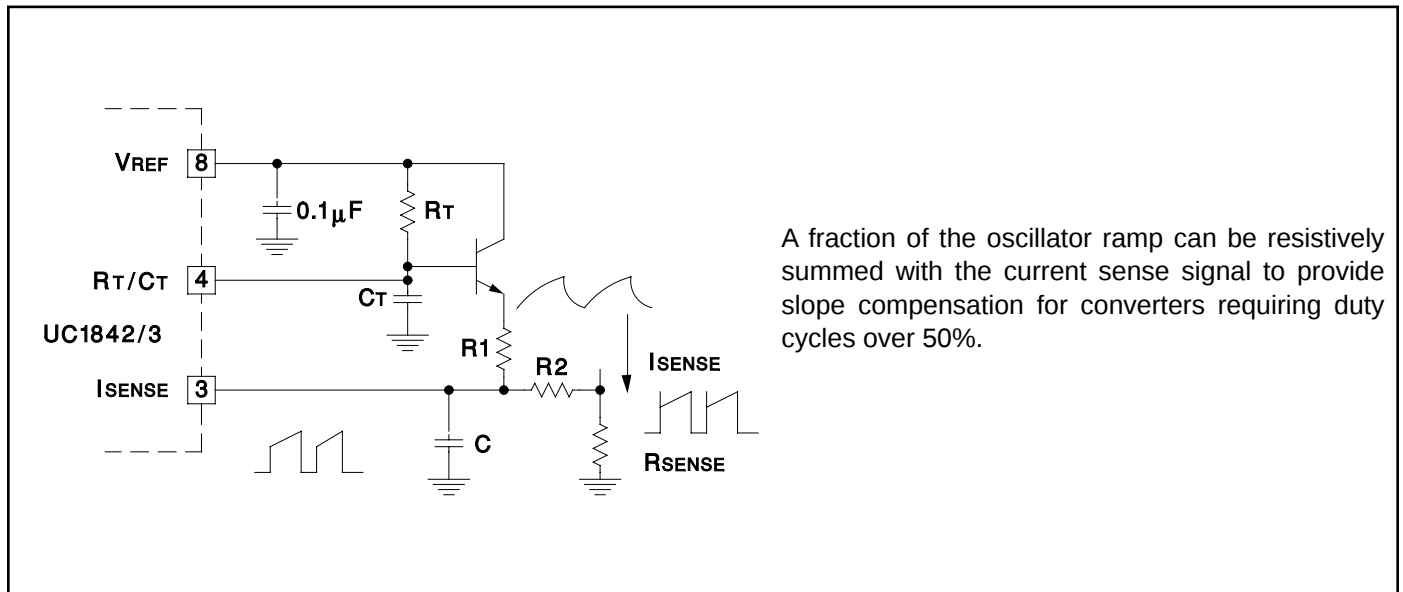
## SHUT DOWN TECHNIQUES



## OFFLINE FLYBACK REGULATOR



## SLOPE COMPENSATION



**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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| 5962-8670401PA   | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| 5962-8670401VPA  | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670401VXA  | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670401XA   | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| 5962-8670402PA   | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| 5962-8670402VPA  | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670402VXA  | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670402XA   | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| 5962-8670403PA   | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| 5962-8670403VPA  | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670403VXA  | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670403XA   | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| 5962-8670404PA   | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| 5962-8670404VPA  | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670404VXA  | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | Call TI          | Level-NC-NC-NC               |
| 5962-8670404XA   | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1842J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1842J883B      | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1842JQMLV      | ACTIVE                | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC1842L883B      | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1842W          | ACTIVE                | CFP          | W               | 14   | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1843J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1843J883B      | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1843JQMLV      | ACTIVE                | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC1843L          | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1843L883B      | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1843LQMLV      | ACTIVE                | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| UC1843W          | ACTIVE                | CFP          | W               | 14   | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1844J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1844J883B      | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1844JQMLV      | ACTIVE                | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC1844L          | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1844L883B      | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1844LQMLV      | ACTIVE                | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| UC1844W          | ACTIVE                | CFP          | W               | 14   | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1845J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1845J883B      | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC1845JQMLV      | ACTIVE                | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC1845L          | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1845L883B      | ACTIVE                | LCCC         | FK              | 20   | 1           | None                    | POST-PLATE       | Level-NC-NC-NC               |
| UC1845LQMLV      | ACTIVE                | LCCC         | FK              | 20   |             | None                    | Call TI          | Call TI                      |
| UC1845W          | ACTIVE                | CFP          | W               | 14   | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |

| 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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| UC2842D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2842D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2842D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2842DR         | ACTIVE                | SOIC         | D               | 14   |             | None                    | Call TI          | Call TI                      |
| UC2842DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2842DW         | ACTIVE                | SOIC         | DW              | 16   | 40          | None                    | CU NIPDAU        | Level-2-220C-1 YEAR          |
| UC2842DWTR       | ACTIVE                | SOIC         | DW              | 16   | 2000        | None                    | CU NIPDAU        | Level-2-220C-1 YEAR          |
| UC2842J          | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC2842N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC2842P          | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| UC2843D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2843D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2843D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2843DR         | OBSOLETE              | SOIC         | D               | 14   |             | None                    | Call TI          | Call TI                      |
| UC2843DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2843J          | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC2843N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC2844D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2844D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2844D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2844DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2844N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC2845D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2845D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2845D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2845DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC2845J          | OBSOLETE              | CDIP         | JG              | 8    |             | None                    | Call TI          | Call TI                      |
| UC2845N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC3842D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3842D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3842D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3842DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3842J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC3842N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC3842P          | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| UC3843D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3843D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3843D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3843DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3843J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |

| 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> |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| UC3843N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC3843P          | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| UC3843QTR        | OBSOLETE              | PLCC         | FN              | 20   |             | None                    | Call TI          | Call TI                      |
| UC3844D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3844D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3844D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3844DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3844J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC3844N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC3844P          | OBSOLETE              | PDIP         | P               | 8    |             | None                    | Call TI          | Call TI                      |
| UC3845D          | ACTIVE                | SOIC         | D               | 14   | 50          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3845D8         | ACTIVE                | SOIC         | D               | 8    | 75          | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3845D8TR       | ACTIVE                | SOIC         | D               | 8    | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3845DTR        | ACTIVE                | SOIC         | D               | 14   | 2500        | None                    | CU NIPDAU        | Level-1-220C-UNLIM           |
| UC3845J          | ACTIVE                | CDIP         | JG              | 8    | 1           | None                    | A42 SNPB         | Level-NC-NC-NC               |
| UC3845N          | ACTIVE                | PDIP         | P               | 8    | 50          | Pb-Free (RoHS)          | CU SNPB          | Level-NC-NC-NC               |
| UC3845P          | 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.

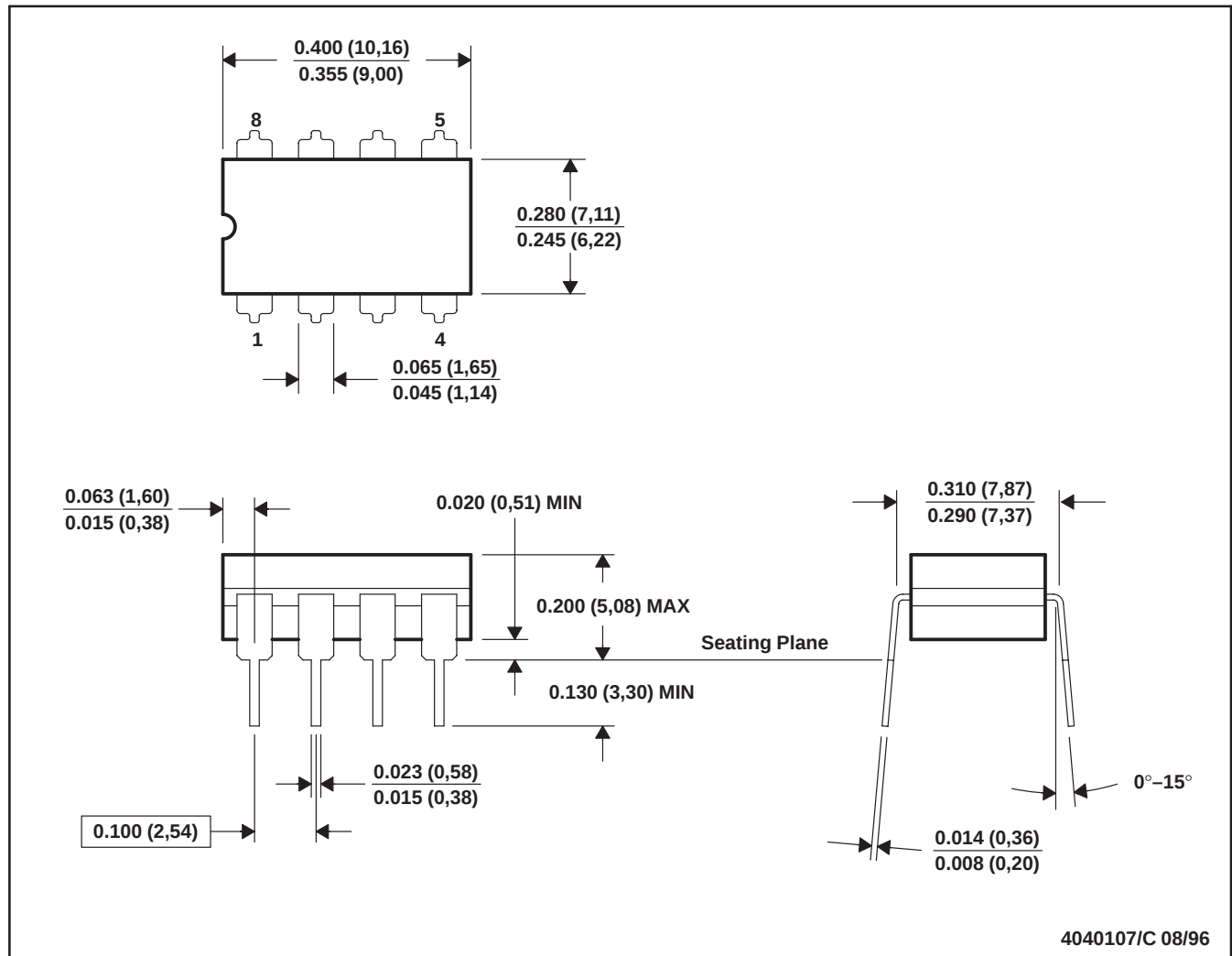
<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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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

Technical drawing of a 14-pin connector assembly, showing dimensions in inches (mm).

**Top View Dimensions:**

- Overall width: 0.260 (6,60) / 0.235 (5,97)
- Pin pitch (center-to-center): 0.045 (1,14) / 0.026 (0,66)
- Pin width: 0.080 (2,03) / 0.045 (1,14)
- Pin thickness: 0.006 (0,15) / 0.004 (0,10)
- Overall height: 0.390 (9,91) / 0.335 (8,51)
- Pin length: 0.360 (9,14) / 0.250 (6,35)
- Pin spacing (center-to-center): 0.360 (9,14) / 0.250 (6,35)
- Pin thickness: 0.005 (0,13) MIN 4 Places
- Pin width: 0.050 (1,27)
- Pin length: 0.019 (0,48) / 0.015 (0,38)

**Side View Dimensions:**

- Overall width: 0.280 (7,11) MAX
- Pin pitch (center-to-center): 0.045 (1,14) / 0.026 (0,66)
- Pin width: 0.080 (2,03) / 0.045 (1,14)
- Pin thickness: 0.006 (0,15) / 0.004 (0,10)
- Pin length: 0.360 (9,14) / 0.250 (6,35)
- Pin spacing (center-to-center): 0.360 (9,14) / 0.250 (6,35)
- Pin thickness: 0.005 (0,13) MIN 4 Places
- Pin width: 0.050 (1,27)
- Pin length: 0.019 (0,48) / 0.015 (0,38)

**Notes:**

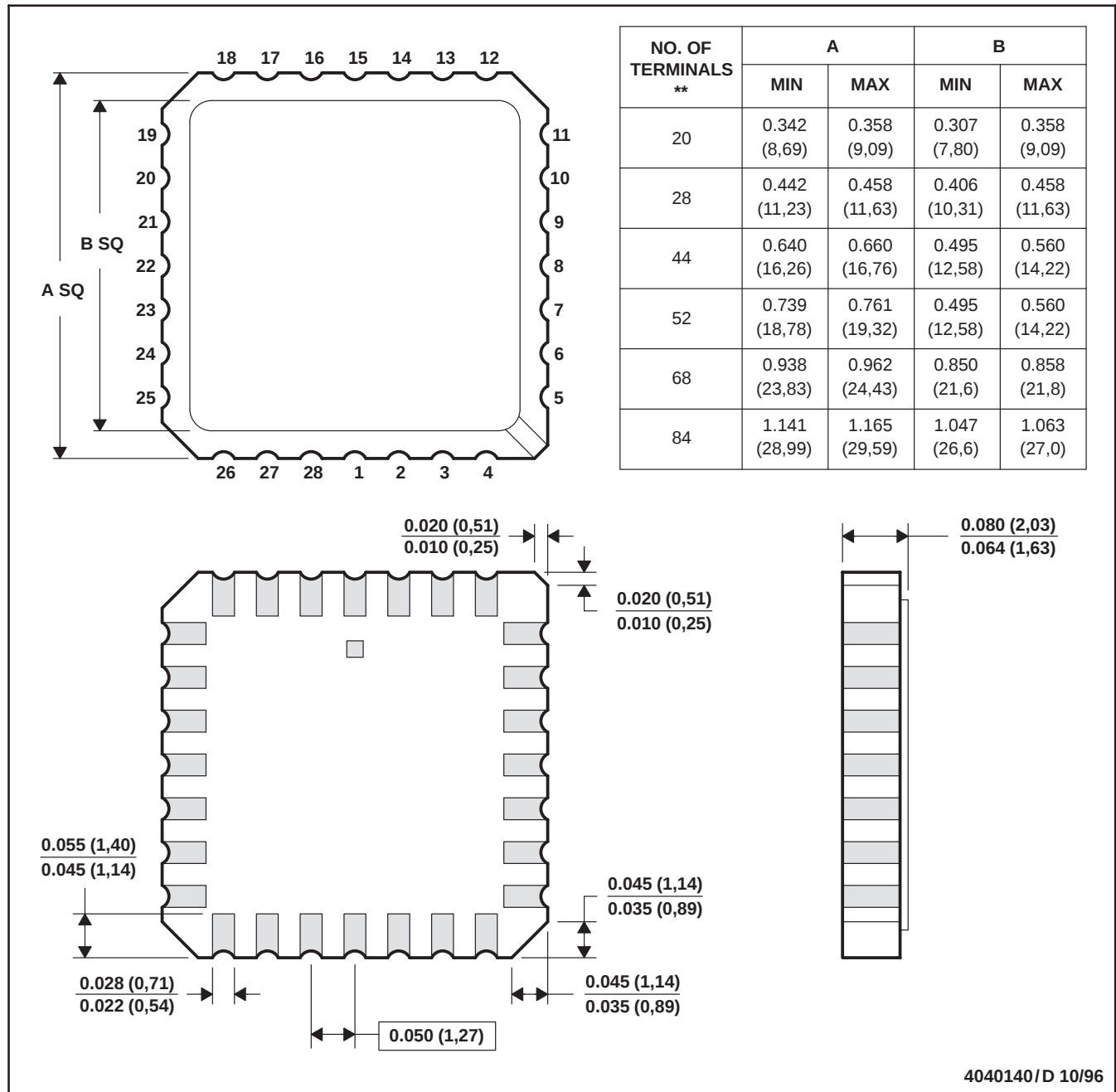
- Base and Seating Plane
- 14
- 7
- 8

- 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 only.
- E. Falls within MIL STD 1835 GDFP1-F14 and JEDEC MO-092AB

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

LEADLESS CERAMIC CHIP CARRIER

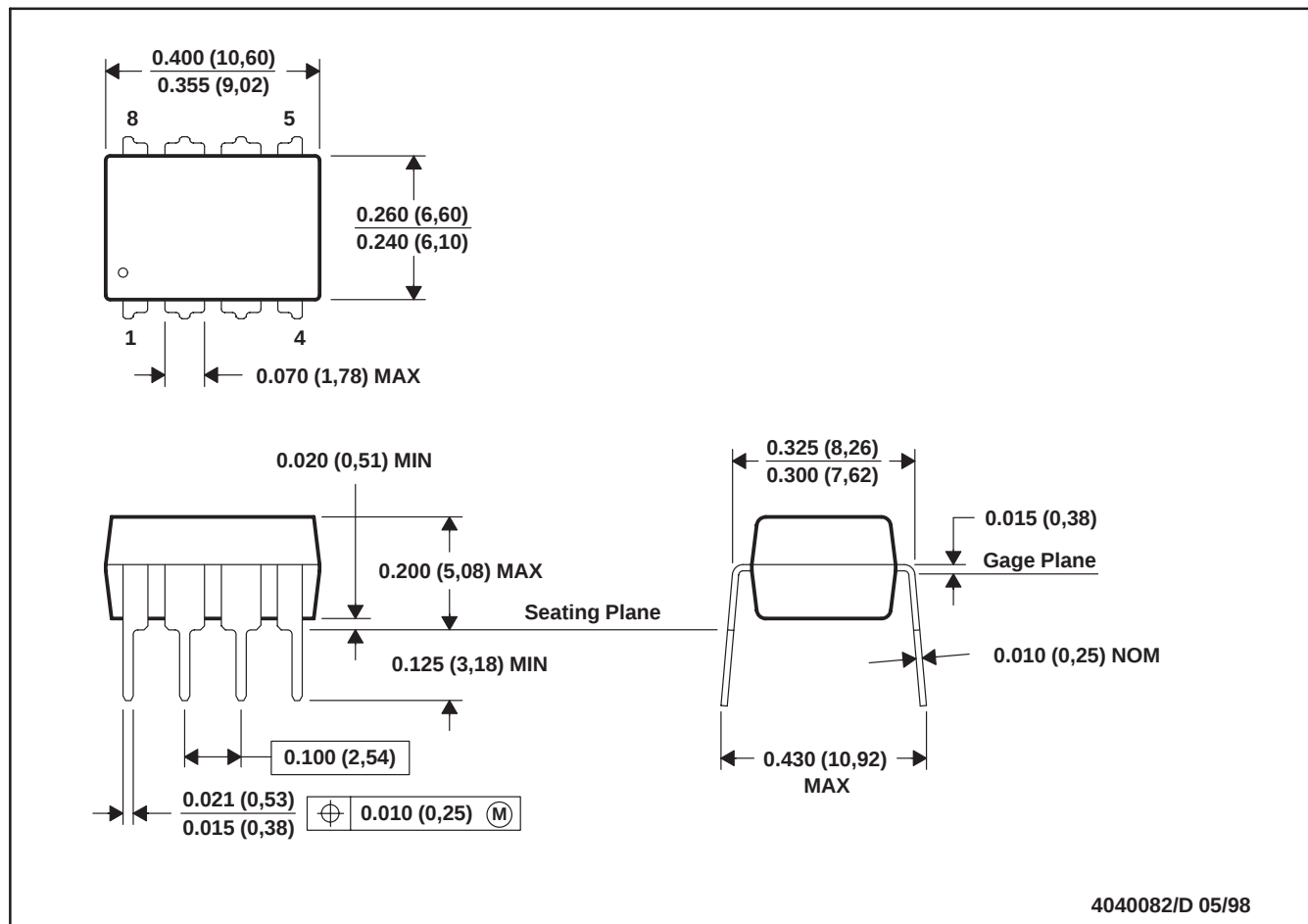
28 TERMINAL SHOWN



- 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

## P (R-PDIP-T8)

## PLASTIC DUAL-IN-LINE

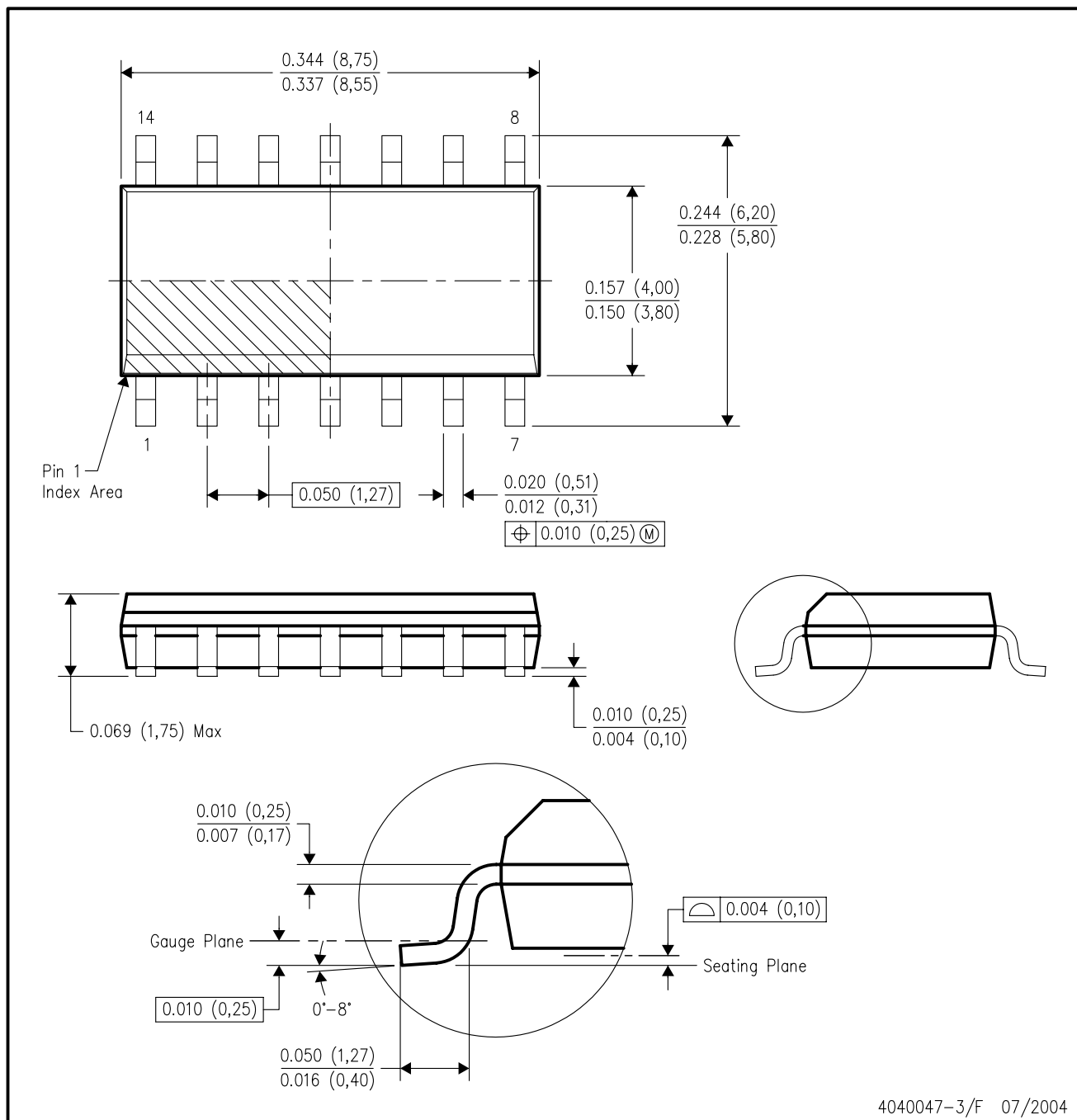


- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-001

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)

## D (R-PDSO-G14)

## PLASTIC SMALL-OUTLINE PACKAGE

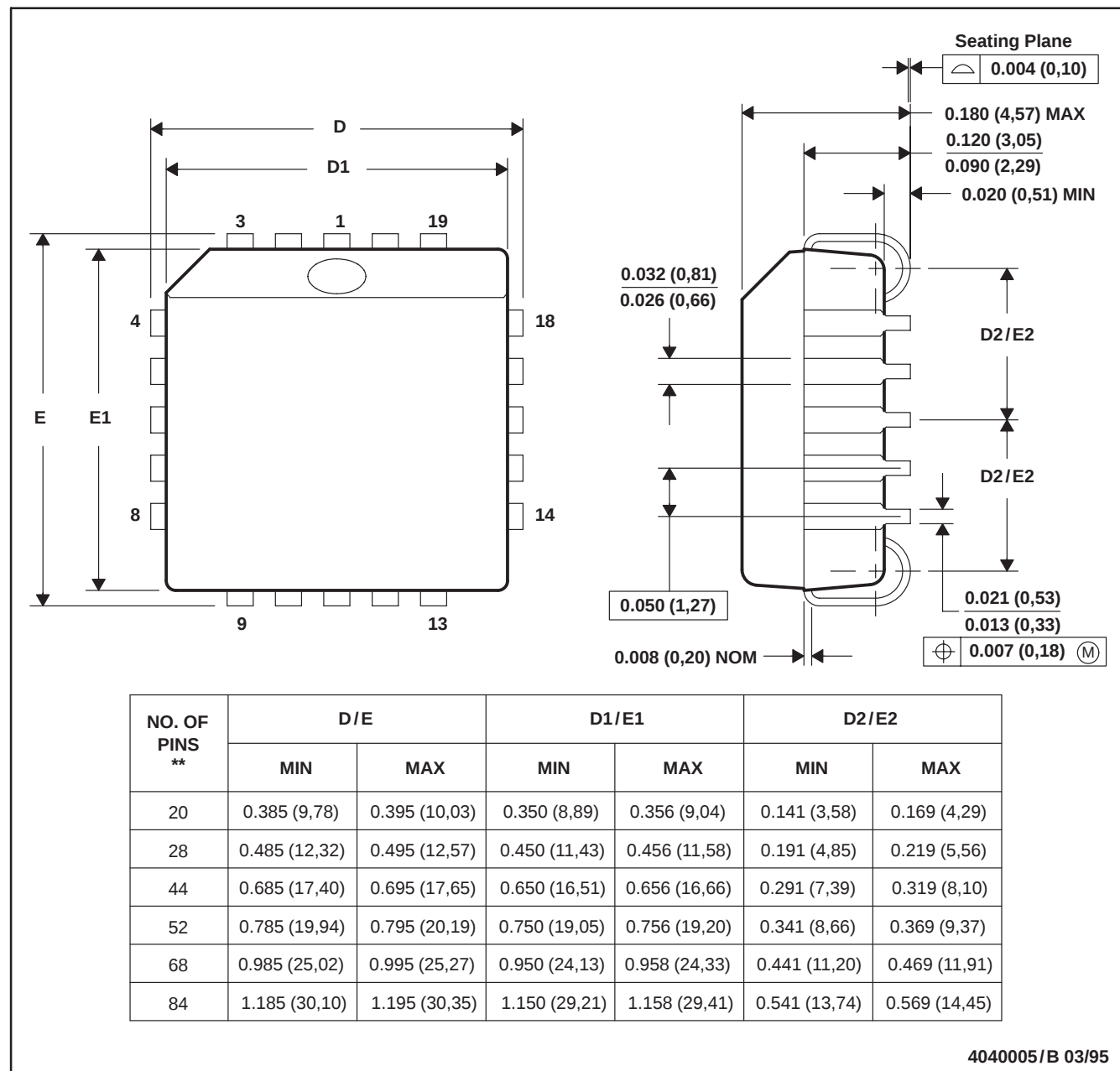


- NOTES:
- All linear dimensions are in inches (millimeters).
  - This drawing is subject to change without notice.
  - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
  - Falls within JEDEC MS-012 variation AB.

## FN (S-PQCC-J\*\*)

## PLASTIC J-LEADED CHIP CARRIER

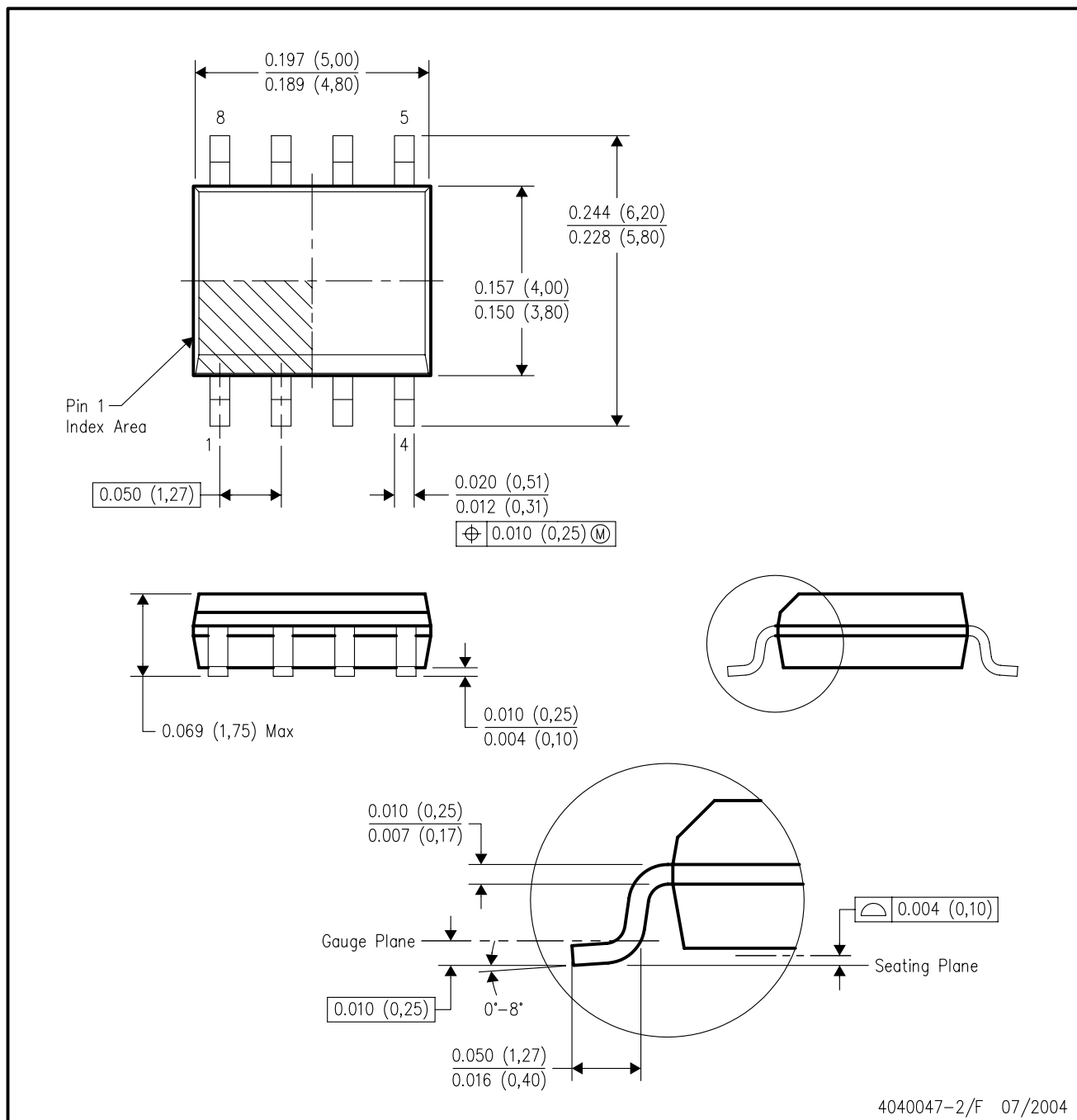
20 PIN SHOWN



- NOTES: A. All linear dimensions are in inches (millimeters).  
 B. This drawing is subject to change without notice.  
 C. Falls within JEDEC MS-018

## D (R-PDSO-G8)

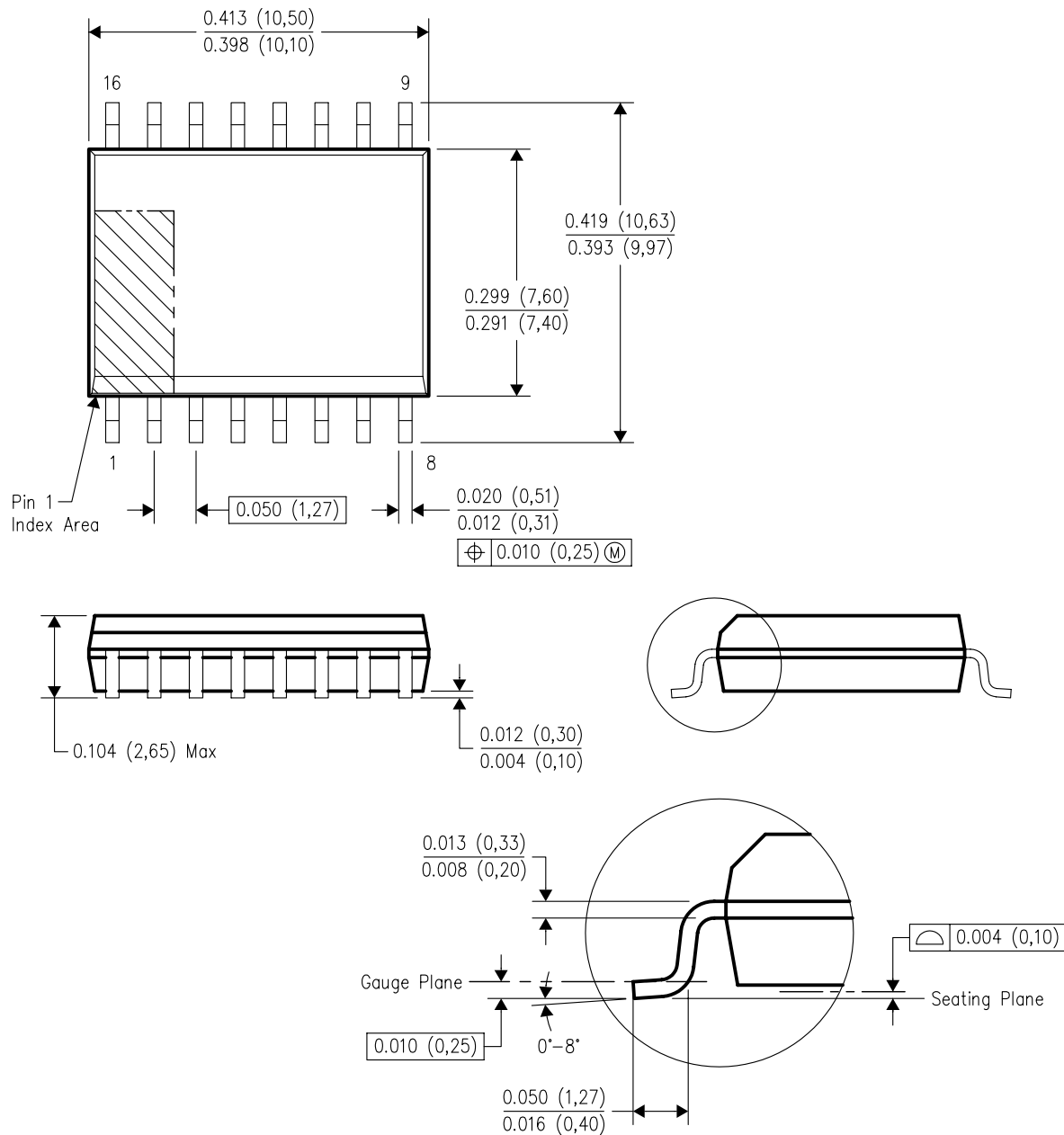
## PLASTIC SMALL-OUTLINE PACKAGE



- 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 not to exceed 0.006 (0,15).
  - Falls within JEDEC MS-012 variation AA.

## DW (R-PDSO-G16)

## PLASTIC SMALL-OUTLINE PACKAGE



4040000-2/F 06/2004

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