

Regulating Pulse Width Modulator

FEATURES

- Reduced Supply Current
- Oscillator Frequency to 600kHz
- Precision Band-Gap Reference
- 7 to 35V Operation
- Dual 200mA Source/Sink Outputs
- Minimum Output Cross-Conduction
- Double-Pulse Suppression Logic
- Under-Voltage Lockout
- Programmable Soft-Start
- Thermal Shutdown
- TTL/CMOS Compatible Logic Ports
- 5 Volt Operation ($V_{IN} = V_C = V_{REF} = 5.0V$)

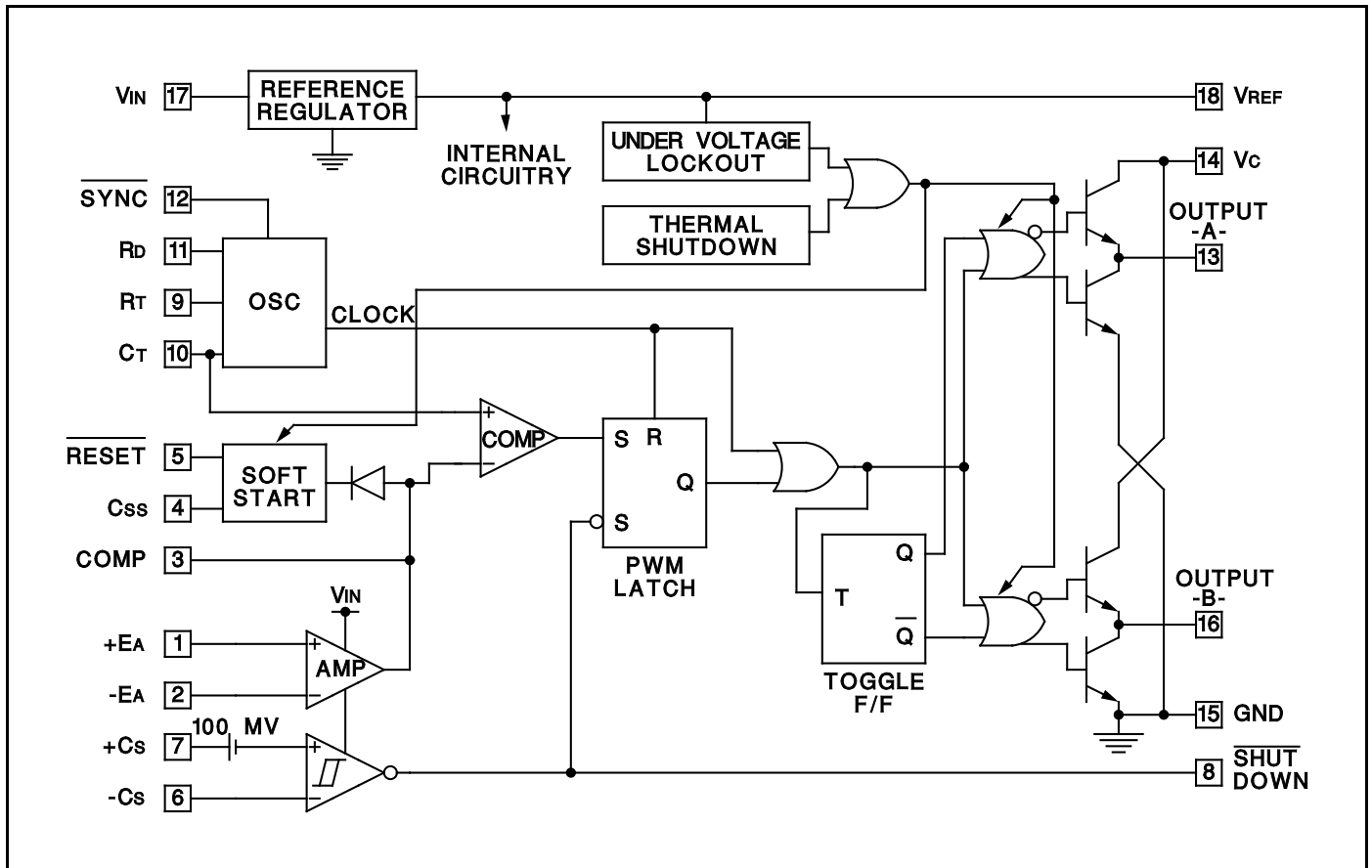
DESCRIPTION

The UC1526A Series are improved-performance pulse-width modulator circuits intended for direct replacement of equivalent non- "A" versions in all applications. Higher frequency operation has been enhanced by several significant improvements including: a more accurate oscillator with less minimum dead time, reduced circuit delays (particularly in current limiting), and an improved output stage with negligible cross-conduction current. Additional improvements include the incorporation of a precision, band-gap reference generator, reduced overall supply current, and the addition of thermal shutdown protection.

Along with these improvements, the UC1526A Series retains the protective features of under-voltage lockout, soft-start, digital current limiting, double pulse suppression logic, and adjustable deadtime. For ease of interfacing, all digital control ports are TTL compatible with active low logic.

Five volt (5V) operation is possible for "logic level" applications by connecting V_{IN} , V_C and V_{REF} to a precision 5V input supply. Consult factory for additional information.

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Note 1, 2)

| | |
|--|-----------------|
| Input Voltage (+VIN) | +40V |
| Collector Supply Voltage (+Vc) | +40V |
| Logic Inputs | -0.3V to +5.5V |
| Analog Inputs | -0.3V to +VIN |
| Source/Sink Load Current (each output) | 200mA |
| Reference Load Current | 50mA |
| Logic Sink Current | 15mA |
| Power Dissipation at TA = +25°C (Note 2) | 1000mW |
| Power Dissipation at Tc = +25°C (Note 2) | 3000mW |
| Operating Junction Temperature | +150°C |
| Storage Temperature Range | -65°C to +150°C |
| Lead Temperature (soldering, 10 seconds) | +300°C |

Note 1: Values beyond which damage may occur.
Note 2: Consult packaging Section of Databook for thermal limitations and considerations of package.

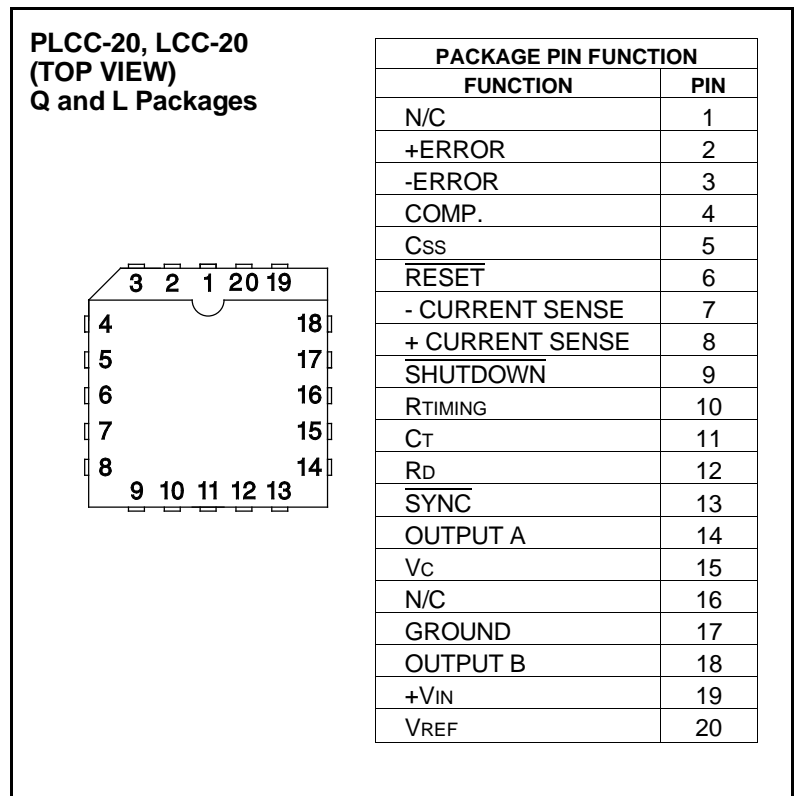
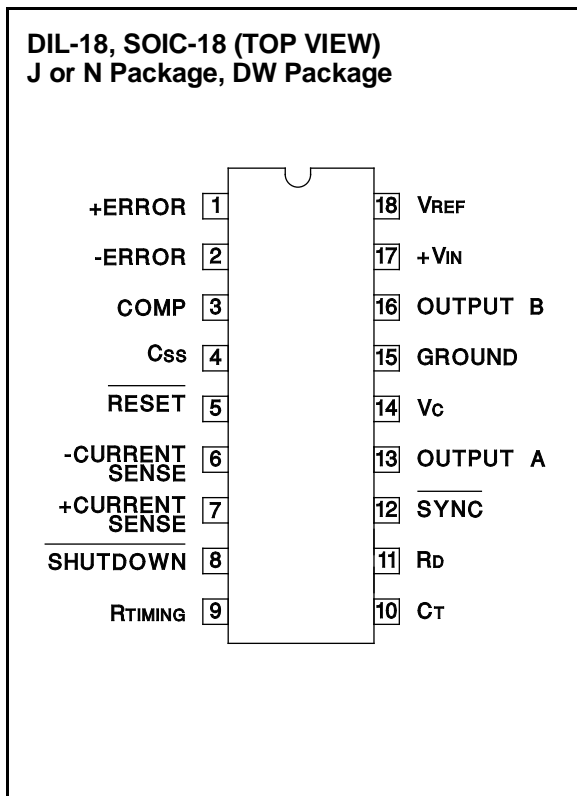
RECOMMENDED OPERATING CONDITIONS

(Note 3)

| | |
|--|-----------------|
| Input Voltage | +7V to +35V |
| Collector Supply Voltage | +4.5V to +35V |
| Sink/Source Load Current (each output) | 0 to 100mA |
| Reference Load Current | 0 to 20mA |
| Oscillator Frequency Range | 1Hz to 600kHz |
| Oscillator Timing Resistor | 2kΩ to 150kΩ |
| Oscillator Timing Capacitor | 400pF to 20μF |
| Available Deadtime Range at 40kHz | 1% to 50% |
| Operating Ambient Temperature Range | |
| UC1526A | -55°C to +125°C |
| UC2526A | -25°C to +85°C |
| UC3526A | 0°C to +70°C |

Note 3: Range over which the device is functional and parameter limits are guaranteed.

CONNECTION DIAGRAMS



ELECTRICAL CHARACTERISTICS: +V_{IN} = 15V, and over operating ambient temperature, unless otherwise specified T_A = T_J.

| PARAMETER | TEST CONDITIONS | UC1526A / UC2526A | | | UC3526A | | | UNITS |
|--|--|-------------------|------|-------|---------|------|-------|-------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Reference Section (Note 4) | | | | | | | | |
| Output Voltage | T _J = +25°C | 4.95 | 5.00 | 5.05 | 4.90 | 5.00 | 5.10 | V |
| Line Regulation | +V _{IN} = 7 to 35V | | 2 | 10 | | 2 | 15 | mV |
| Load Regulation | I _L = 0 to 20mA | | 5 | 20 | | 5 | 20 | mV |
| Temperature Stability | Over Operating T _J (Note 5) | | 15 | 50 | | 15 | 50 | mV |
| Total Output Voltage Range | Over Recommended Operating Conditions | 4.90 | 5.00 | 5.10 | 4.85 | 5.00 | 5.15 | V |
| Short Circuit Current | V _{REF} = 0V | 25 | 50 | 100 | 25 | 50 | 100 | mA |
| Under-Voltage Lockout | | | | | | | | |
| RESET Output Voltage | V _{REF} = 3.8V | | 0.2 | 0.4 | | 0.2 | 0.4 | V |
| | V _{REF} = 4.7V | 2.4 | 4.7 | | 2.4 | 4.8 | | V |
| Oscillator Section (Note 6) | | | | | | | | |
| Initial Accuracy | T _J = +25°C | | ±3 | ±8 | | ±3 | ±8 | % |
| Voltage Stability | +V _{IN} = 7 to 35V | | 0.5 | 1 | | 0.5 | 1 | % |
| Temperature Stability | Over Operating T _J (Note 5) | | 2 | 6 | | 1 | 3 | % |
| Minimum Frequency | R _T = 150kΩ, C _T = 20μF (Note 5) | | | 1 | | | 1 | Hz |
| Maximum Frequency | R _T = 2kΩ, C _T = 470pF | 550 | | | 650 | | | kHz |
| Sawtooth Peak Voltage | +V _{IN} = 35V | | 3.0 | 3.5 | | 3.0 | 3.5 | V |
| Sawtooth Valley Voltage | +V _{IN} = 7V | 0.5 | 1.0 | | 0.5 | 1.0 | | V |
| SYNC Pulse Width | T _J = 25°C, R _L = 2.7kΩ to V _{REF} | | 1.1 | | | 1.1 | | μs |
| Error Amplifier Section (Note 7) | | | | | | | | |
| Input Offset Voltage | R _S ≤ 2kΩ | | 2 | 5 | | 2 | 10 | mV |
| Input Bias Current | | | -350 | -1000 | | -350 | -2000 | nA |
| Input Offset Current | | | 35 | 100 | | 35 | 200 | nA |
| DC Open Loop Gain | R _L ≥ 10MΩ | 64 | 72 | | 60 | 72 | | dB |
| HIGH Output Voltage | V _{PIN 1} - V _{PIN 2} ≥ 150mV, I _{SOURCE} = 100μA | 3.6 | 4.2 | | 3.6 | 4.2 | | V |
| LOW Output Voltage | V _{PIN 2} - V _{PIN 1} ≥ 150mV, I _{SINK} = 100μA | | 0.2 | 0.4 | | 0.2 | 0.4 | V |
| Common Mode Rejection | R _S ≤ 2kΩ | 70 | 94 | | 70 | 94 | | dB |
| Supply Voltage Rejection | +V _{IN} = 12 to 18V | 66 | 80 | | 66 | 80 | | dB |
| PWM Comparator (Note 6) | | | | | | | | |
| Minimum Duty Cycle | V _{COMPENSATION} = +0.4V | | | 0 | | | 0 | % |
| Maximum Duty Cycle | V _{COMPENSATION} = +3.6V | 45 | 49 | | 45 | 49 | | % |
| Digital Ports (SYNC, SHUTDOWN, and RESET) | | | | | | | | |
| HIGH Output Voltage | I _{SOURCE} = 40μA | 2.4 | 4.0 | | 2.4 | 4.0 | | V |
| LOW Output Voltage | I _{SINK} = 3.6mA | | 0.2 | 0.4 | | 0.2 | 0.4 | V |
| HIGH Input Current | V _{IH} = +2.4V | | -125 | -200 | | -125 | -200 | μA |
| LOW Input Current | V _{IL} = +0.4V | | -225 | -360 | | -225 | -360 | μA |
| Shutdown Delay | From Pin 8, T _J = 25°C | | 160 | | | 160 | | ns |
| Current Limit Comparator (Note 8) | | | | | | | | |
| Sense Voltage | R _S ≤ 50Ω | 90 | 100 | 110 | 80 | 100 | 120 | mV |
| Input Bias Current | | | -3 | -10 | | -3 | -10 | μA |
| Shutdown Delay | From pin 7, 100mV Overdrive, T _J = 25°C | | 260 | | | 260 | | ns |

Note 4: I_L = 0mA.

Note 5: Guaranteed by design, not 100% tested in production.

Note 6: F_{OSC} = 40kHz, (R_T = 4.12kΩ ± 1%, C_T = 0.01μF ± 1%, R_D = 0Ω).

Note 7: V_{CM} = 0 to +5.2V

Note 8: V_{CM} = 0 to +12V.

Note 9: V_C = +15V.

Note 10: V_{IN} = +35V, R_T = 4.12kΩ.

ELECTRICAL CHARACTERISTICS: +VIN = 15V, and over operating ambient temperature, unless otherwise specified TA = TJ.

| PARAMETER | TEST CONDITIONS | UC1526A UC2526A | | | UC3526A | | | UNITS |
|--|---|--------------------|------|-----|---------|------|-----|---------------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Soft-Start Section | | | | | | | | |
| Error Clamp Voltage | $\overline{\text{RESET}} = +0.4\text{V}$ | | 0.1 | 0.4 | | 0.1 | 0.4 | V |
| Cs Charging Current | $\overline{\text{RESET}} = +2.4\text{V}$ | 50 | 100 | 150 | 50 | 100 | 150 | μA |
| Output Drivers (Each Output) (Note 9) | | | | | | | | |
| HIGH Output Voltage | ISOURCE = 20mA | 12.5 | 13.5 | | 12.5 | 13.5 | | V |
| | ISOURCE = 100mA | 12 | 13 | | 12 | 13 | | V |
| LOW Output Voltage | ISINK = 20mA | | 0.2 | 0.3 | | 0.2 | 0.3 | V |
| | ISINK = 100mA | | 1.2 | 2.0 | | 1.2 | 2.0 | V |
| Collector Leakage | VC = 40V | | 50 | 150 | | 50 | 150 | μA |
| Rise Time | CL = 1000pF (Note 5) | | 0.3 | 0.6 | | 0.3 | 0.6 | μs |
| Fall Time | CL = 1000pF (Note 5) | | 0.1 | 0.2 | | 0.1 | 0.2 | μs |
| Cross-Conduction Charge | Per cycle, TJ = 25°C | | 8 | | | 8 | | nC |
| Power Consumption (Note 10) | | | | | | | | |
| Standby Current | $\overline{\text{SHUTDOWN}} = +0.4\text{V}$ | | 14 | 20 | | 14 | 20 | mA |

Note 4: $I_L = 0\text{mA}$.

Note 5: Guaranteed by design, not 100% tested in production.

Note 6: $F_{\text{osc}} = 40\text{kHz}$, ($R_T = 4.12\text{k}\Omega \pm 1\%$, $C_T = 0.01\mu\text{F} \pm 1\%$, $R_D = 0\Omega$).

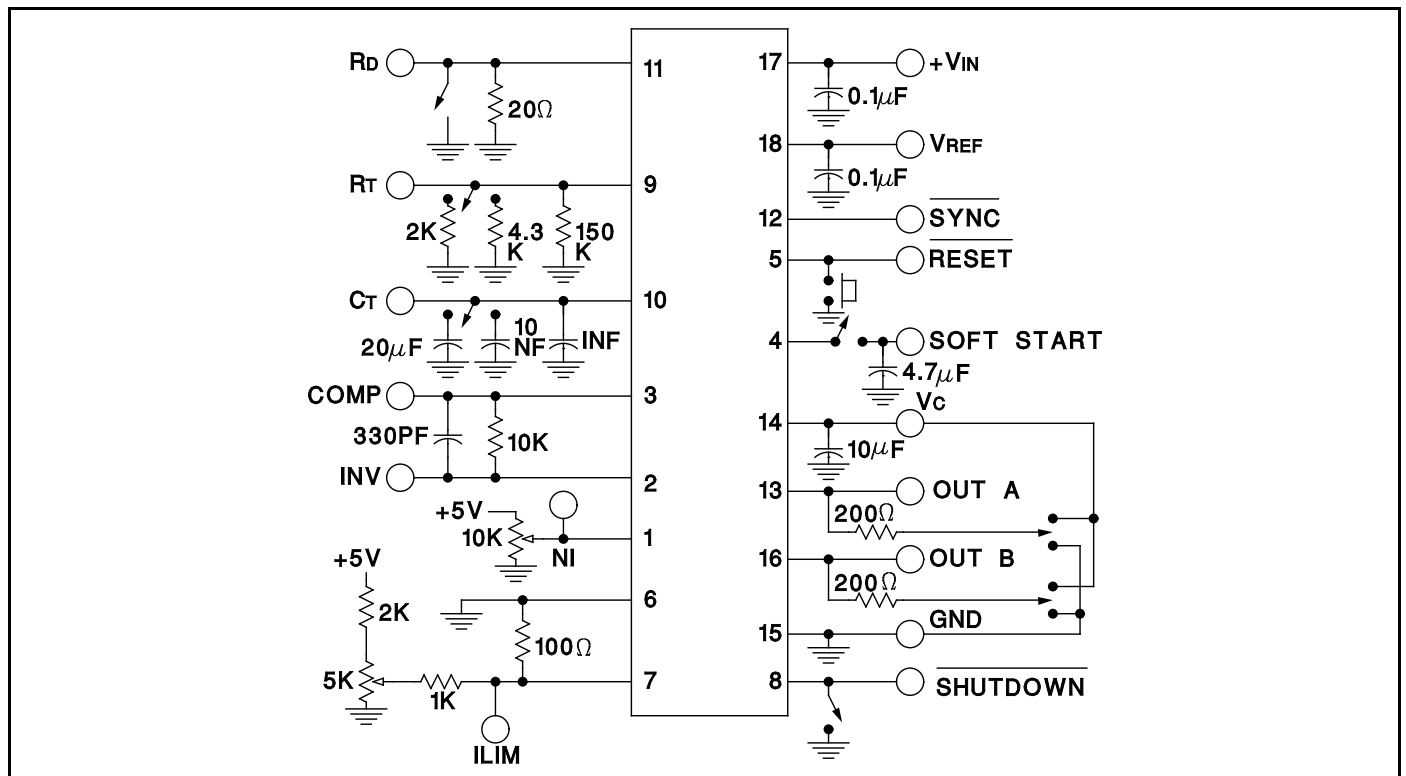
Note 7: $V_{\text{CM}} = 0$ to $+5.2\text{V}$

Note 8: $V_{\text{CM}} = 0$ to $+12\text{V}$.

Note 9: $V_C = +15\text{V}$.

Note 10: $V_{\text{IN}} = +35\text{V}$, $R_T = 4.12\text{k}\Omega$.

Open Loop Test Circuit UC1526A



APPLICATIONS INFORMATION

Voltage Reference

The reference regulator of the UC1526A is based on a precision band-gap reference, internally trimmed to $\pm 1\%$ accuracy. The circuitry is fully active at supply voltages above +7V, and provides up to 20mA of load current to external circuitry at +5.0V. In systems where additional current is required, an external PNP transistor can be used to boost the available current. A rugged low frequency audio-type transistor should be used, and lead lengths between the PWM and transistor should be as short as possible to minimize the risk of oscillations. Even so, some types of transistors may require collector-base capacitance for stability. Up to 1 amp of load current can be obtained with excellent regulation if the device selected maintains high current gain.

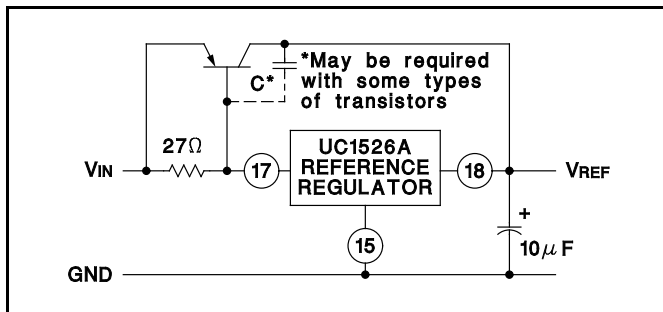


Figure 1. Extending Reference Output Current

Under-Voltage Lockout

The under-voltage lockout circuit protects the UC1526A and the power devices it controls from inadequate supply voltage. If +VIN is too low, the circuit disables the output drivers and holds the RESET pin LOW. This prevents spurious output pulses while the control circuitry is stabilizing, and holds the soft-start timing capacitor in a discharged state.

The circuit consists of a +1.2V bandgap reference and comparator circuit which is active when the reference voltage has risen to $3V_{BE}$ or +1.8V at 25°C. When the reference voltage rises to approximately +4.4V, the circuit enables the output drivers and releases the RESET pin, allowing a normal soft-start. The comparator has 350mV of hysteresis to minimize oscillation at the trip point. When +VIN to the PWM is removed and the reference drops to +4.2V, the under-voltage circuit pulls RESET LOW again. The soft-start capacitor is immediately discharged, and the PWM is ready for another soft-start cycle.

The UC1526A can operate from a +5V supply by connecting the VREF pin to the +VIN pin and maintaining the supply between +4.8 and +5.2V.

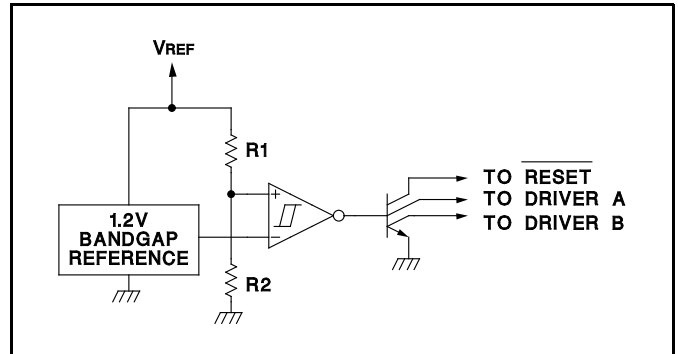


Figure 2. Under-Voltage Lockout Schematic

Soft-Start Circuit

The soft-start circuit protects the power transistors and rectifier diodes from high current surges during power supply turn-on. When supply voltage is first applied to the UC1526A, the under-voltage lockout circuit holds RESET LOW with Q3. Q1 is turned on, which holds the soft-start capacitor voltage at zero. The second collector of Q1 clamps the output of the error amplifier to ground, guaranteeing zero duty cycle at the driver outputs. When the supply voltage reaches normal operating range, RESET will go HIGH. Q1 turns off, allowing the internal 100µA current source to charge Cs. Q2 clamps the error amplifier output to $1V_{BE}$ above the voltage on Cs. As the soft-start voltage ramps up to +5V, the duty cycle of the PWM linearly increases to whatever value the voltage regulation loop requires for an error null.

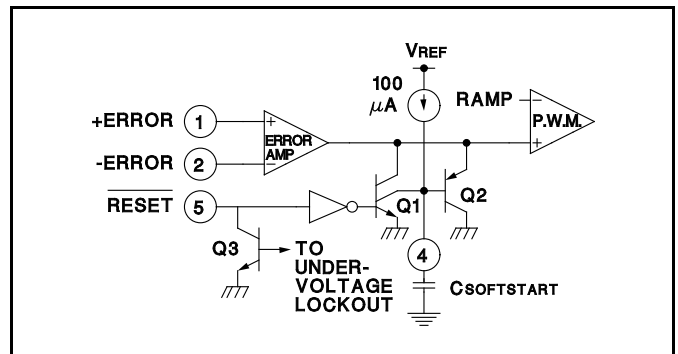


Figure 3. Soft-Start Circuit Schematic

Digital Control Ports

The three digital control ports of the UC1526A are bi-directional. Each pin can drive TTL and 5V CMOS logic directly, up to a fan-out of 10 low-power Schottky gates. Each pin can also be directly driven by open-collector TTL, open-drain CMOS, and open-collector voltage comparators; fan-in is equivalent to 1 low-power Schottky gate. Each port is normally HIGH; the pin is pulled LOW to activate the particular function. Driving SYNC LOW initiates a discharge cycle in the oscillator. Pulling SHUTDOWN LOW immediately inhibits all PWM output pulses. Holding RESET LOW discharges the soft-start

APPLICATIONS INFORMATION (cont.)

capacitor. The logic threshold is +1.1V at +25°C. Noise immunity can be gained at the expense of fan-out with an external 2k pull-up resistor to +5V.

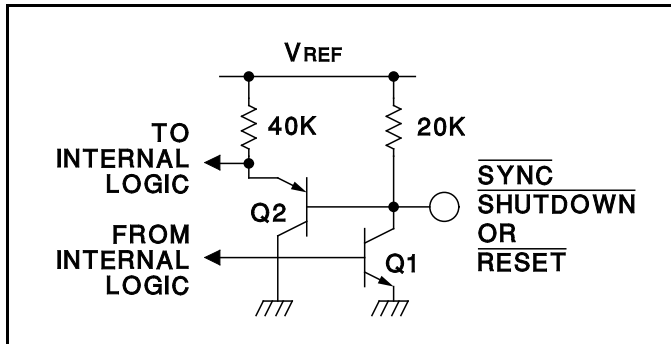


Figure 4. Digital Control Port Schematic

Oscillators

The oscillator is programmed for frequency and dead time with three components: RT, CT and RD. Two waveforms are generated: a sawtooth waveform at pin 10 for pulse width modulation, and a logic clock at pin 12. The following procedure is recommended for choosing timing values:

1. With RD= 0Ω (pin 11 shorted to ground) select values for RT and CT from the graph on page 4 to give the desired oscillator period. Remember that the frequency at each driver output is half the oscillator frequency, and the frequency at the +Vc terminal is the same as the oscillator frequency.
2. If more dead time is required, select a larger value of RD. At 40kHz dead time increases by 400ns/Ω.
3. Increasing the dead time will cause the oscillator frequency to decrease slightly. Go back and decrease the value of RT slightly to bring the frequency back to the nominal design value.

The UC1526A can be synchronized to an external logic clock by programming the oscillator to free-run at a frequency 10% slower than the SYNC frequency.

A periodic LOW logic pulse approximately 0.5μs wide at

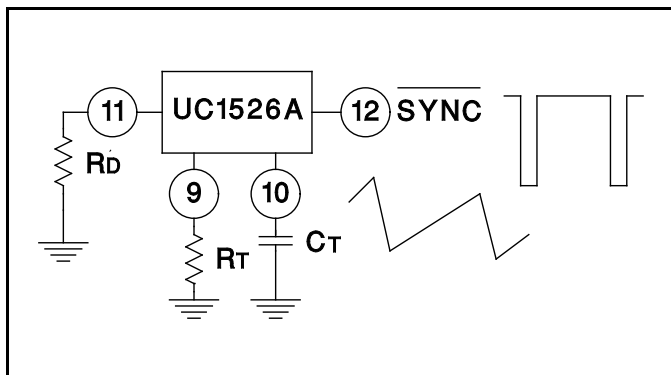


Figure 5. Oscillator Connections and Waveforms

the SYNC pin will then lock the oscillator to the external frequency.

Multiple devices can be synchronized together by programming one master unit for the desired frequency, and then sharing its sawtooth and clock waveforms with the slave units. All CT terminals are connected to the CT pin of the master and all SYNC terminals are likewise connected to the SYNC pin of the master. Slave RT terminals are left open or connected to VREF. Slave RD terminal may be either left open or grounded.

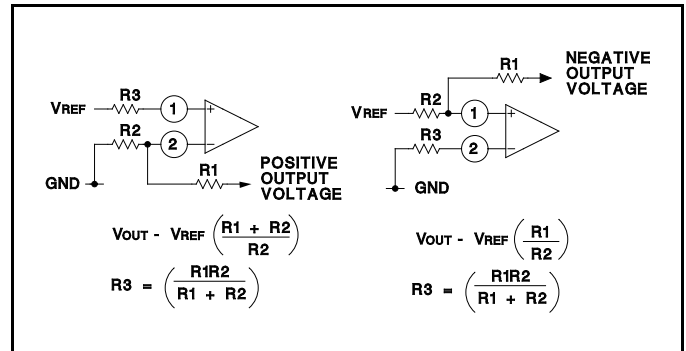


Figure 6. Error Amplifier Connections

Error Amplifier

The error amplifier is a transconductance design, with an output impedance of 2MΩ. Since all voltage gain takes place at the output pin, the open-loop gain/frequency characteristics can be controlled with shunt reactance to ground. When compensated for unity-gain stability with 100pF, the amplifier has an open-loop pole at 800Hz.

The input connections to the error amplifier are determined by the polarity of the switching supply output voltage. For positive supplies, the common-mode voltage is +5.0V and the feedback connections in Figure 6A are used. With negative supplies, the common-mode voltage is ground and the feedback divider is connected between the negative output and the +5.0V reference voltage, as shown in Figure 6B.

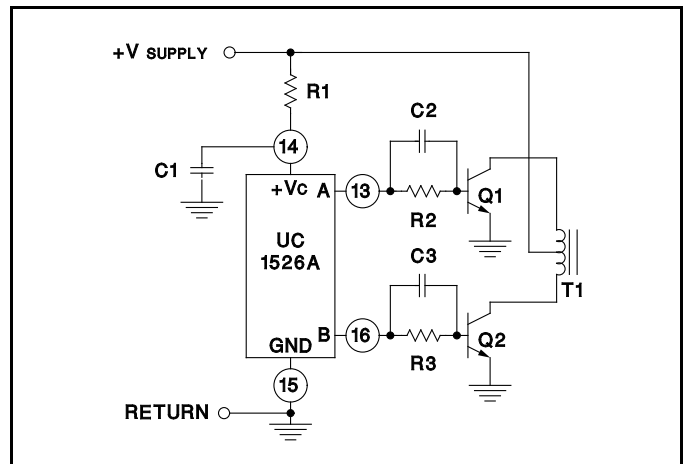


Figure 7. Push-Pull Configuration

APPLICATIONS INFORMATION (cont.)

Output Drivers

The totem pole output drivers of the UC1526A are designed to source and sink 100mA continuously and 200mA peak. Loads can be driven either from the output pins 13 and 16, or from the +Vc, as required.

Since the bottom transistor of the totem-pole is allowed to saturate, there is a momentary conduction path from the

+Vc terminal to ground during switching; however, improved design has limited this cross-conduction period to less than 50ns. Capacitor decoupling at Vc is recommended and careful grounding of Pin 15 is needed to insure that high peak sink currents from a capacitive load do not cause ground transients.

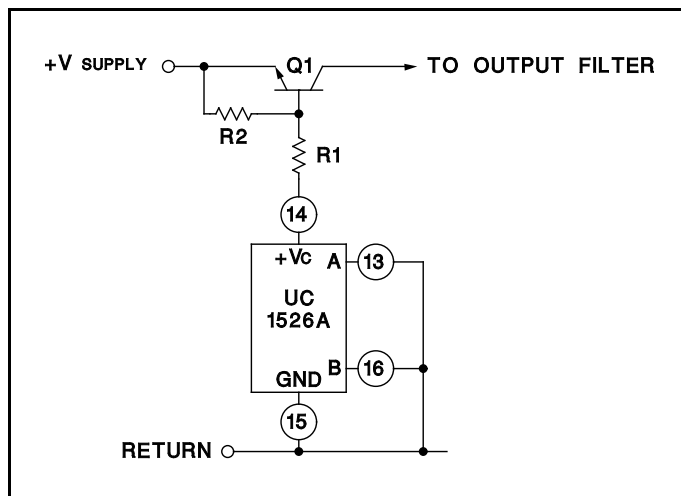


Figure 8. Single-Ended Configuration

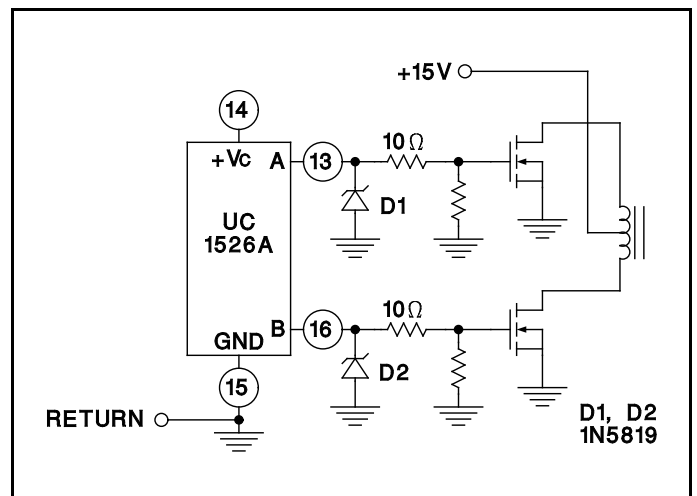
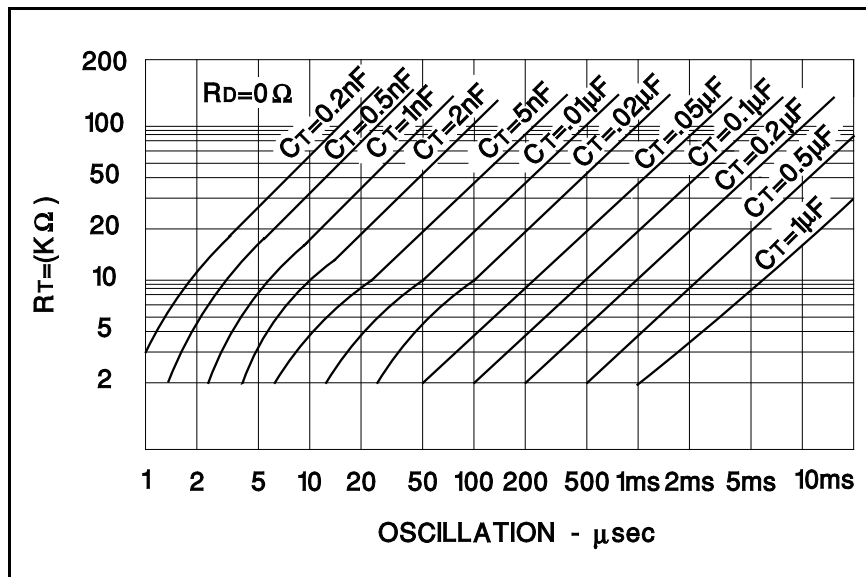


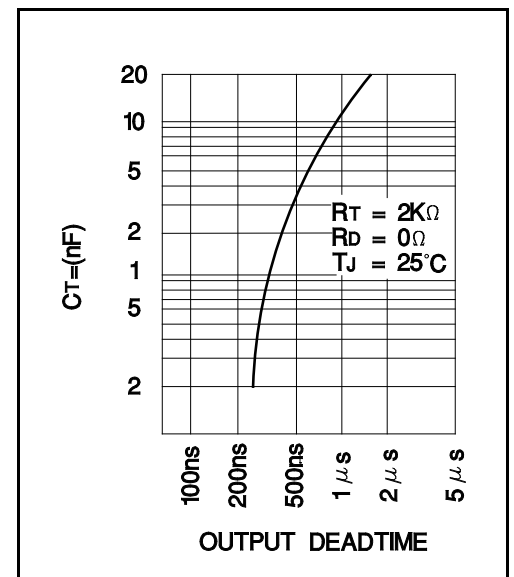
Figure 9. Driving N-Channel Power MOSFETs

TYPICAL CHARACTERISTICS

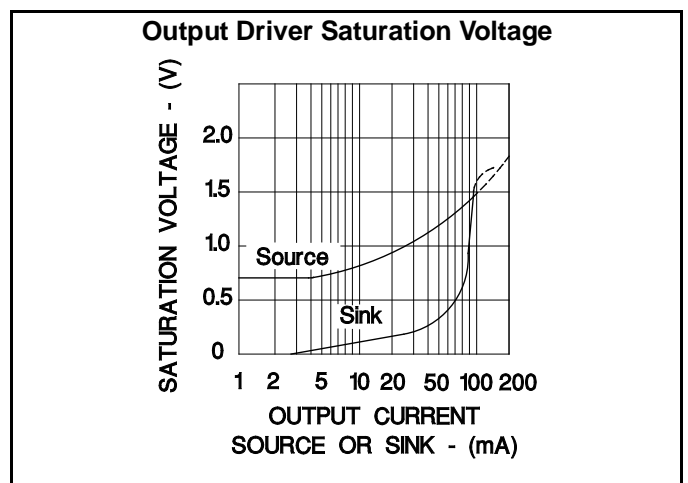
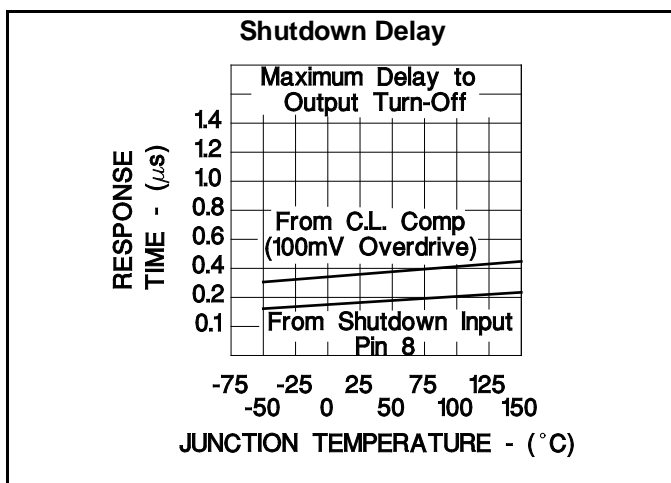
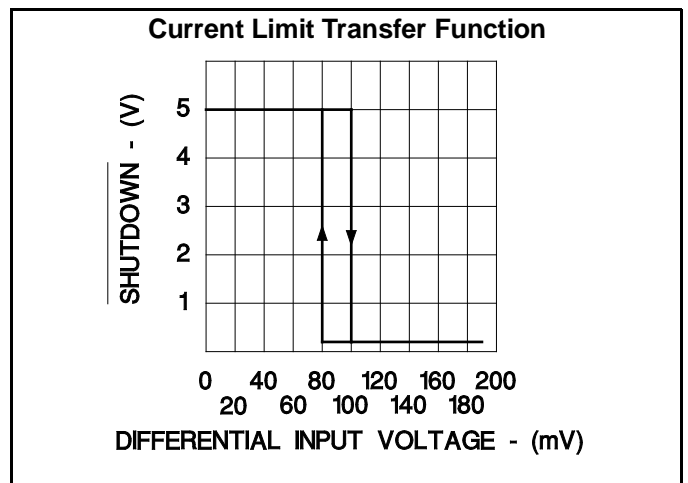
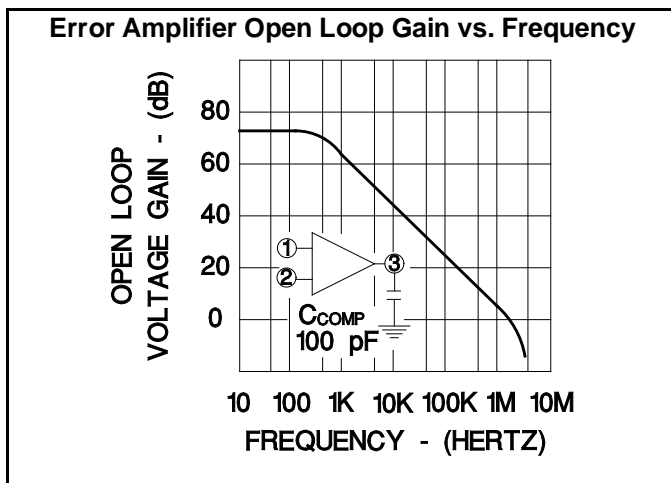
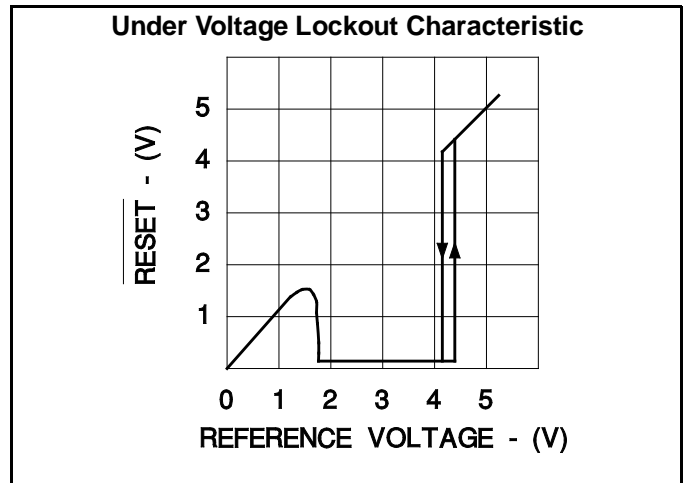
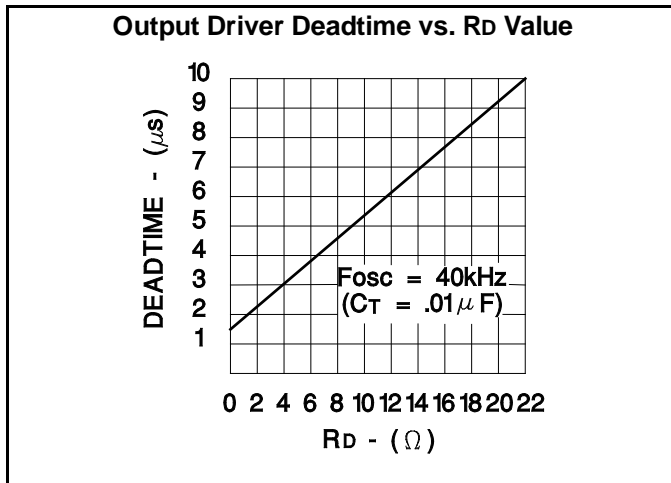
OSCILLATOR PERIOD vs RT and CT



OUTPUT BLANKING



TYPICAL CHARACTERISTICS (Cont.)



PACKAGING INFORMATION

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/ Ball Finish | MSL Peak Temp ⁽³⁾ | Samples (Requires Login) |
|------------------|-----------------------|--------------|-----------------|------|-------------|----------------------------|----------------------|------------------------------|-----------------------------|
| 85515022A | ACTIVE | LCCC | FK | 20 | 1 | TBD | Call TI | Call TI | |
| 8551502VA | ACTIVE | CDIP | J | 18 | 1 | TBD | Call TI | Call TI | |
| UC1526AJ | ACTIVE | CDIP | J | 18 | 1 | TBD | A42 | N / A for Pkg Type | |
| UC1526AJ883B | ACTIVE | CDIP | J | 18 | 1 | TBD | A42 | N / A for Pkg Type | |
| UC1526AL | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | |
| UC1526AL883B | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | |
| UC2526ADW | ACTIVE | SOIC | DW | 18 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC2526ADWG4 | ACTIVE | SOIC | DW | 18 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC2526ADWTR | ACTIVE | SOIC | DW | 18 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC2526ADWTRG4 | ACTIVE | SOIC | DW | 18 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC2526AN | ACTIVE | PDIP | N | 18 | 20 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | |
| UC2526ANG4 | ACTIVE | PDIP | N | 18 | 20 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | |
| UC2526AQ | ACTIVE | PLCC | FN | 20 | 46 | Green (RoHS & no Sb/Br) | CU SN | Level-2-260C-1 YEAR | |
| UC2526AQG3 | ACTIVE | PLCC | FN | 20 | 46 | Green (RoHS & no Sb/Br) | CU SN | Level-2-260C-1 YEAR | |
| UC2526J | ACTIVE | CDIP | J | 18 | 1 | TBD | A42 | N / A for Pkg Type | |
| UC3526ADW | ACTIVE | SOIC | DW | 18 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC3526ADWG4 | ACTIVE | SOIC | DW | 18 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC3526ADWTR | ACTIVE | SOIC | DW | 18 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC3526ADWTRG4 | ACTIVE | SOIC | DW | 18 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | |
| UC3526AN | ACTIVE | PDIP | N | 18 | 20 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | |

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/ Ball Finish | MSL Peak Temp ⁽³⁾ | Samples (Requires Login) |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|----------------------|------------------------------|-----------------------------|
| UC3526ANG4 | ACTIVE | PDIP | N | 18 | 20 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | |
| UC3526AQ | ACTIVE | PLCC | FN | 20 | 46 | Green (RoHS & no Sb/Br) | CU SN | Level-2-260C-1 YEAR | |
| UC3526AQG3 | ACTIVE | PLCC | FN | 20 | 46 | Green (RoHS & no Sb/Br) | CU SN | Level-2-260C-1 YEAR | |
| UC3526J | ACTIVE | CDIP | J | 18 | 1 | TBD | A42 | N / A for Pkg Type | |

⁽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.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF UC1526A, UC2526A, UC2526M, UC3526A, UC3526M :

- Catalog: [UC3526A](#), [UC2526](#), [UC3526AM](#), [UC3526](#)

- Military: [UC2526AM](#), [UC1526A](#), [UC1526](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



| | |
|----|---|
| A0 | Dimension designed to accommodate the component width |
| B0 | Dimension designed to accommodate the component length |
| K0 | Dimension designed to accommodate the component thickness |
| W | Overall width of the carrier tape |
| P1 | Pitch between successive cavity centers |

TAPE AND REEL INFORMATION

*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| UC2526ADWTR | SOIC | DW | 18 | 2000 | 330.0 | 24.4 | 10.9 | 12.0 | 2.7 | 12.0 | 24.0 | Q1 |
| UC3526ADWTR | SOIC | DW | 18 | 2000 | 330.0 | 24.4 | 10.9 | 12.0 | 2.7 | 12.0 | 24.0 | Q1 |

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|-------------|--------------|-----------------|------|------|-------------|------------|-------------|
| UC2526ADWTR | SOIC | DW | 18 | 2000 | 367.0 | 367.0 | 45.0 |
| UC3526ADWTR | SOIC | DW | 18 | 2000 | 367.0 | 367.0 | 45.0 |

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46C and to discontinue any product or service per JESD48B. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components which meet ISO/TS16949 requirements, mainly for automotive use. Components which have not been so designated are neither designed nor intended for automotive use; and TI will not be responsible for any failure of such components to meet such requirements.

Products

| | |
|------------------------|--|
| Audio | www.ti.com/audio |
| Amplifiers | amplifier.ti.com |
| Data Converters | dataconverter.ti.com |
| DLP® Products | www.dlp.com |
| DSP | dsp.ti.com |
| Clocks and Timers | www.ti.com/clocks |
| Interface | interface.ti.com |
| Logic | logic.ti.com |
| Power Mgmt | power.ti.com |
| Microcontrollers | microcontroller.ti.com |
| RFID | www.ti-rfid.com |
| OMAP Mobile Processors | www.ti.com/omap |
| Wireless Connectivity | www.ti.com/wirelessconnectivity |

Applications

| | |
|-------------------------------|--|
| Automotive and Transportation | www.ti.com/automotive |
| Communications and Telecom | www.ti.com/communications |
| Computers and Peripherals | www.ti.com/computers |
| Consumer Electronics | www.ti.com/consumer-apps |
| Energy and Lighting | www.ti.com/energy |
| Industrial | www.ti.com/industrial |
| Medical | www.ti.com/medical |
| Security | www.ti.com/security |
| Space, Avionics and Defense | www.ti.com/space-avionics-defense |
| Video and Imaging | www.ti.com/video |

TI E2E Community e2e.ti.com