INTEGRATED CIRCUITS

UNITRODE

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 modu-lator 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 ac-curate oscillator with less minimum dead time, reduced circuit de-lays (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 gener-ator, 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 cur-rent 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
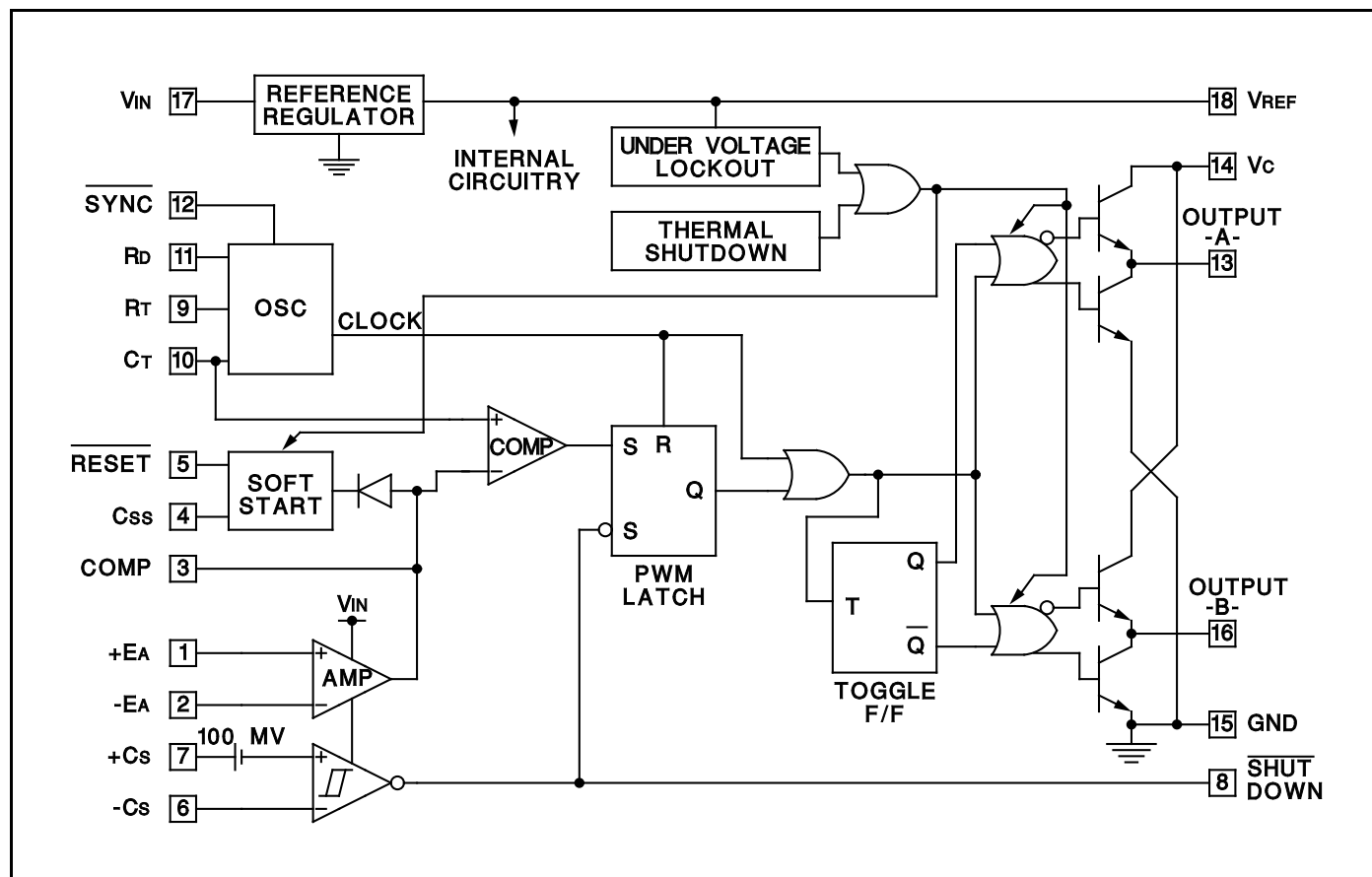
ABSOLUTE MAXIMUM RATINGS (Note 1, 2)

Input Voltage (+V_{IN}) . . . . +40V
Collector Supply Voltage (+V_C) . . . . +40V
Logic Inputs . . . . -0.3V to +5.5V
Analog Inputs . . . . -0.3V to +V_{IN}
Source/Sink Load Current (each output) 200mA
Reference Load Current. 50mA
Logic Sink Current 15mA
Power Dissipation at T_A = +25°C (Note 2) 1000mW
Power Dissipation at T_C = +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.
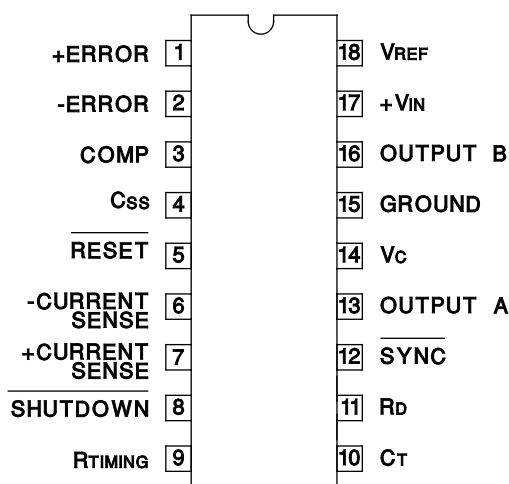
RECOMMENDED OPERATING CONDITIONS

(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
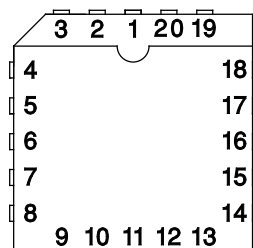 UC3526A. . . . . 0°C to +70°C

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

CONNECTION DIAGRAMS

DIL-18, SOIC-18 (TOP VIEW)
J or N Package, DW Package

	Pin		Pin	
+ERROR	1		18	V_{REF}
-ERROR	2		17	+V_{IN}
COMP	3		16	OUTPUT B
C_{SS}	4		15	GROUND
$\overline{RESET}$	5		14	V_C
-CURRENT SENSE	6		13	OUTPUT A
+CURRENT SENSE	7		12	$\overline{SYNC}$
$\overline{SHUTDOWN}$	8		11	R_D
R_{TIMING}	9		10	C_T

PLCC-20, LCC-20 (TOP VIEW)
Q and L Packages

PACKAGE PIN FUNCTION	
FUNCTION	PIN
N/C	1
+ERROR	2
-ERROR	3
COMP.	4
C_{SS}	5
$\overline{RESET}$	6
- CURRENT SENSE	7
+ CURRENT SENSE	8
$\overline{SHUTDOWN}$	9
R_{TIMING}	10
C_T	11
R_D	12
$\overline{SYNC}$	13
OUTPUT A	14
V_C	15
N/C	16
GROUND	17
OUTPUT B	18
+V_{IN}	19
V_{REF}	20

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$_D$ = 0 Ω).

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: $+V_{IN}$ = 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	
Soft-Start Section								
Error Clamp Voltage	$\overline{RESET}$ = +0.4V		0.1	0.4		0.1	0.4	V
C_S Charging Current	$\overline{RESET}$ = +2.4V	50	100	150	50	100	150	µA
Output Drivers (Each Output) (Note 9)								
HIGH Output Voltage	I_{SOURCE} = 20mA	12.5	13.5		12.5	13.5		V
	I_{SOURCE} = 100mA	12	13		12	13		V
LOW Output Voltage	I_{SINK} = 20mA		0.2	0.3		0.2	0.3	V
	I_{SINK} = 100mA		1.2	2.0		1.2	2.0	V
Collector Leakage	V_C = 40V		50	150		50	150	µA
Rise Time	C_L = 1000pF (Note 5)		0.3	0.6		0.3	0.6	µs
Fall Time	C_L = 1000pF (Note 5)		0.1	0.2		0.1	0.2	µs
Cross-Conduction Charge	Per cycle, T_J = 25°C		8			8		nC
Power Consumption (Note 10)								
Standby Current	$\overline{SHUTDOWN}$ = +0.4V		14	20		14	20	mA

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 = 0 Ω).
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.

Open Loop Test Circuit UC1526A
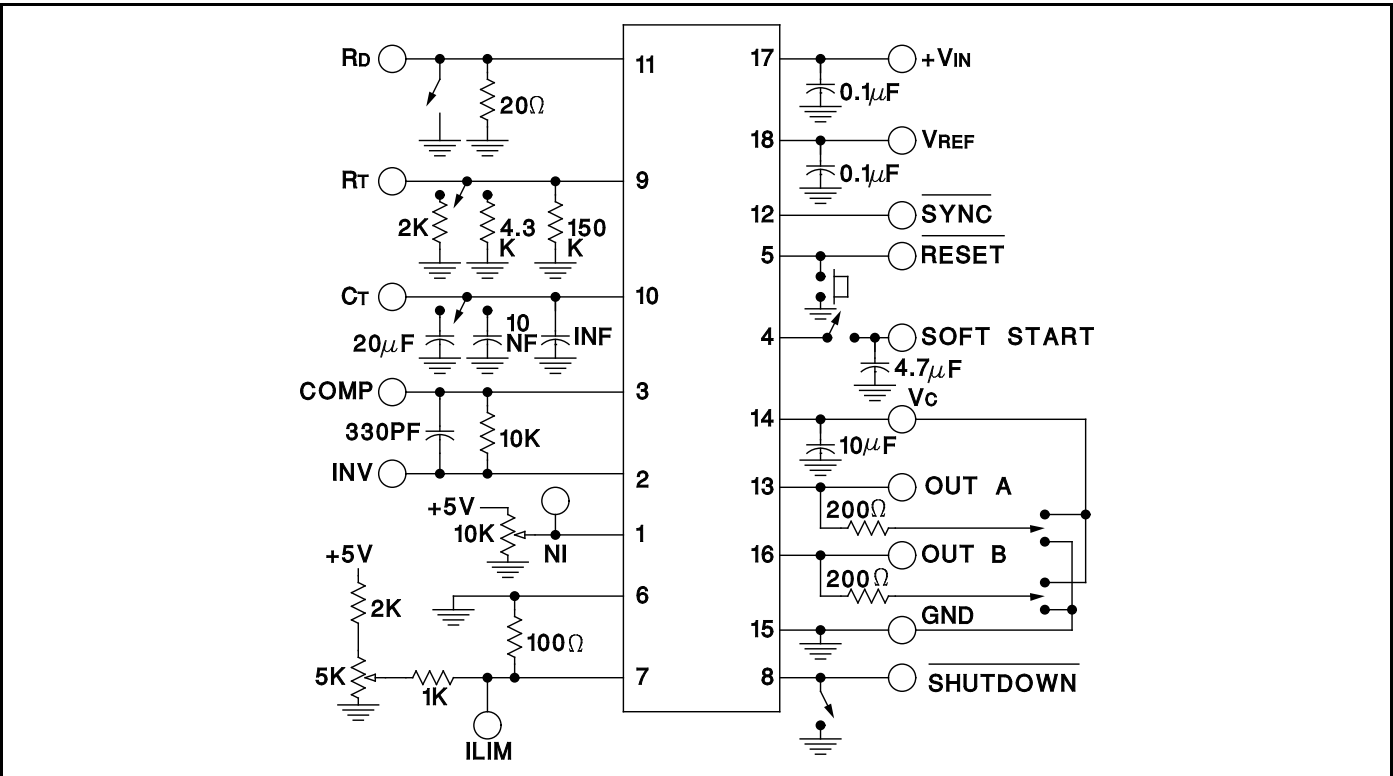
APPLICATIONS INFORMATION

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.
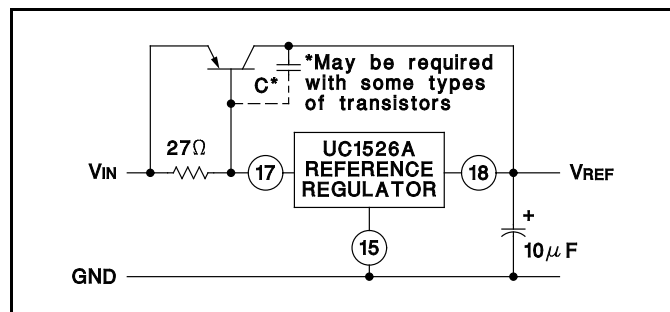
Figure 1. Extending Reference Output Current

Under-Voltage Lockout

The under-voltage lockout circuit protects the UC1526A and the power devices it controls from inadequate supply voltage, If $+V_{IN}$ is too low, the circuit disables the output drivers and holds the $\overline{RESET}$ 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 $\overline{RESET}$ pin, allowing a normal soft-start. The comparator has 350mV of hysteresis to minimize oscillation at the trip point. When $+V_{IN}$ to the PWM is removed and the reference drops to +4.2V, the under-voltage circuit pulls $\overline{RESET}$ 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 V_{REF} pin to the $+V_{IN}$ pin and maintaining the supply between +4.8 and +5.2V.
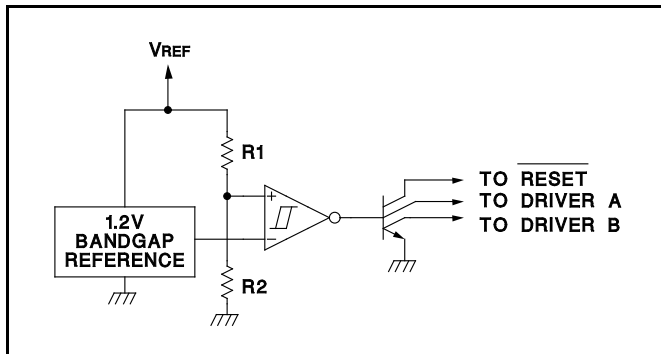

Figure 2. Under-Voltage Lockout Schematic

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 $\overline{RESET}$ LOW with Q_3. Q_1 is turned on, which holds the soft-start capacitor voltage at zero. The second collector of Q_1 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, $\overline{RESET}$ will go HIGH. Q_1 turns off, allowing the internal 100µA current source to charge C_S. Q_2 clamps the error amplifier output to $1V_{BE}$ above the voltage on C_S. 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.
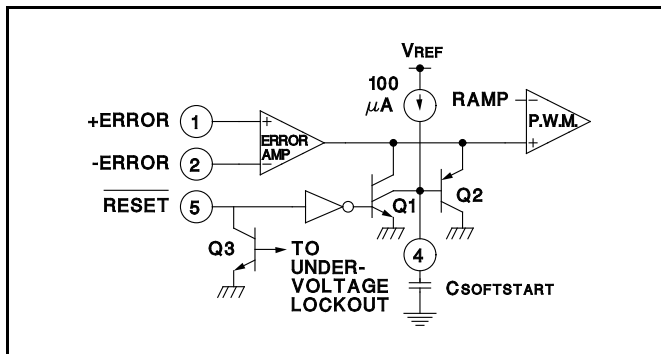

Figure 3. Soft-Start Circuit Schematic

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 $\overline{RESET}$ 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.
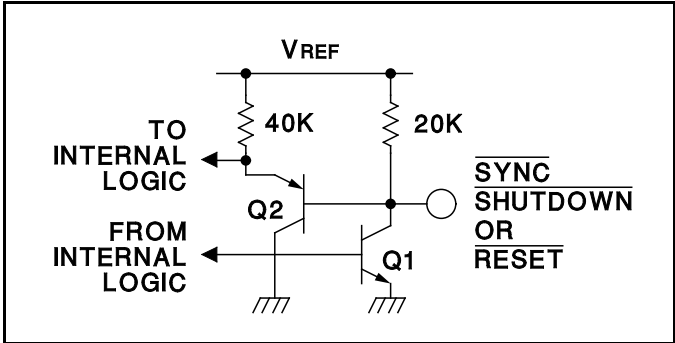

Figure 4. Digital Control Port Schematic

Oscillators

The oscillator is programmed for frequency and dead time with three components: R_T, C_T and R_D. 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 $R_D= 0\Omega$ (pin 11 shorted to ground) select values for R_T and C_T 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 +V_C terminal is the same as the oscillator frequency.

2. If more dead time is required, select a larger value of R_D. 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 R_T 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 $\overline{SYNC}$ frequency.

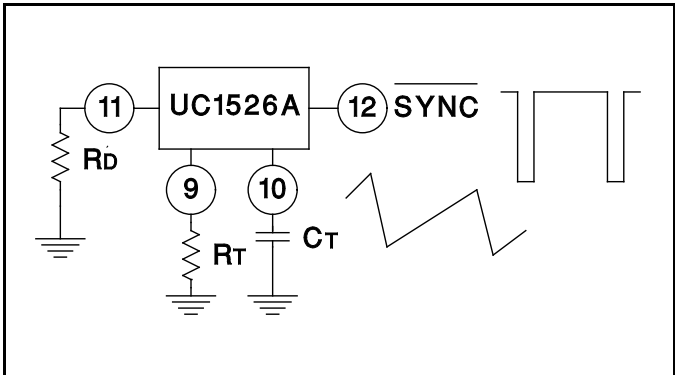A periodic LOW logic pulse approximately 0.5μs wide at

Figure 5. Oscillator Connections and Waveforms

the $\overline{SYNC}$ 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 C_T terminals are connected to the C_T pin of the master and all $\overline{SYNC}$ terminals are likewise connected to the $\overline{SYNC}$ pin of the master. Slave R_T terminals are left open or connected to V_{REF}. Slave R_D terminal may be either left open or grounded.
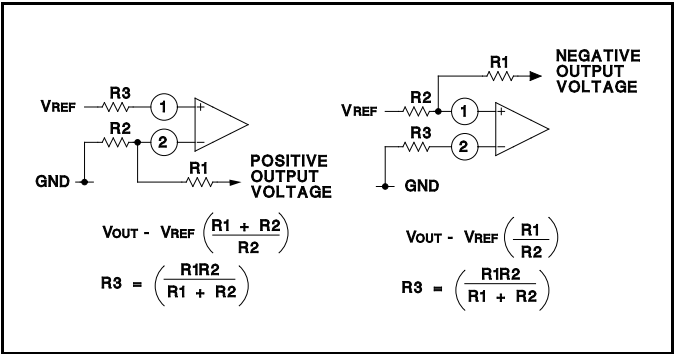

Figure 6. Error Amplifier Connections

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.
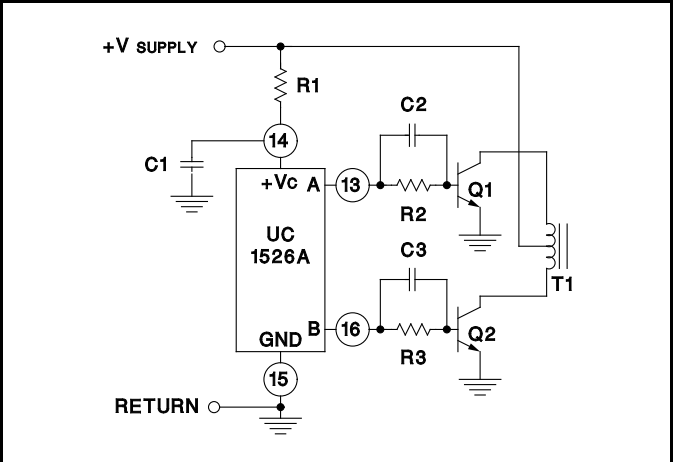

Figure 7. Push-Pull Configuration

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.
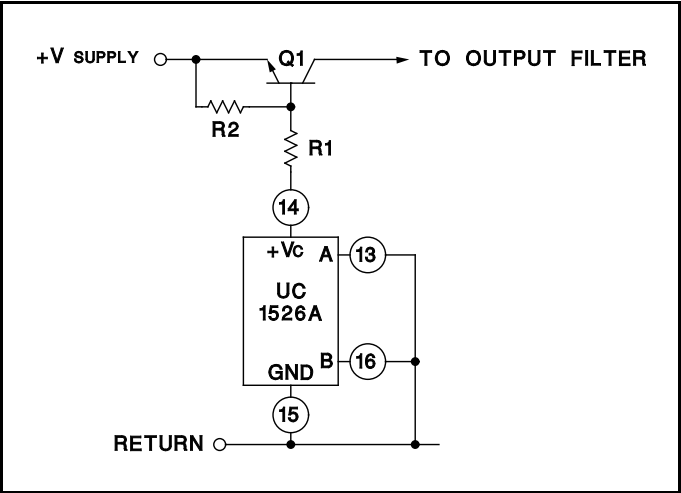

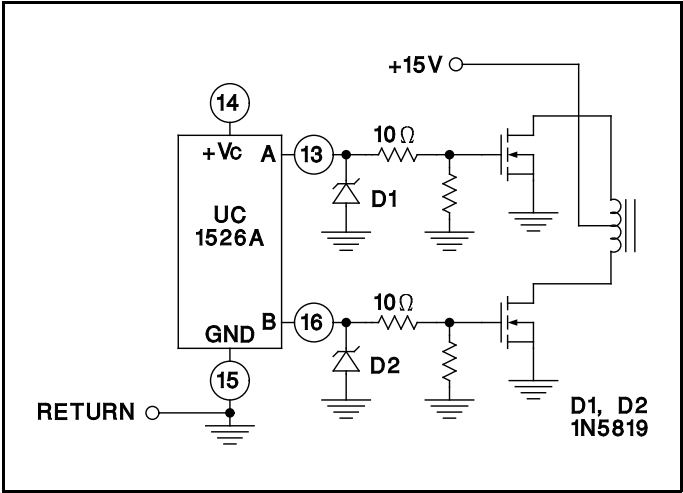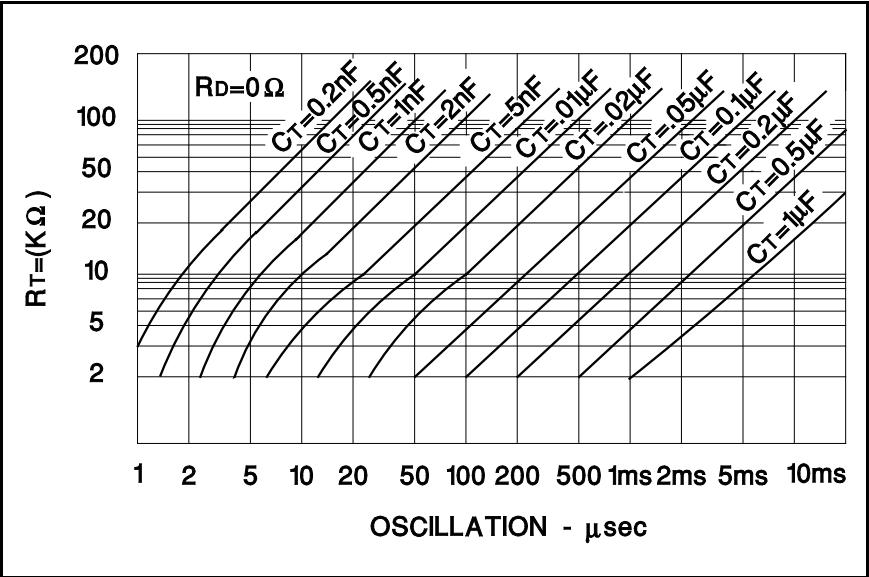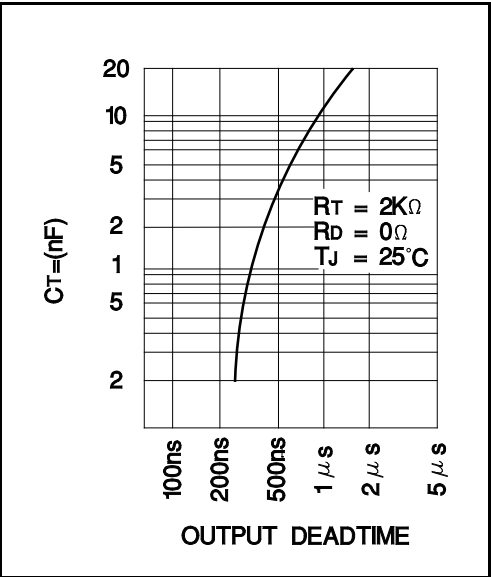
Figure 8. Single-Ended Configuration

Figure 9. Driving N-Channel Power MOSFETs
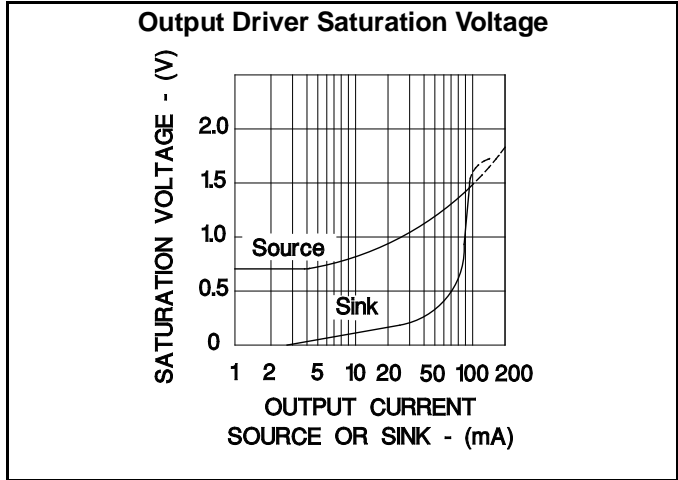
TYPICAL CHARACTERISTICS

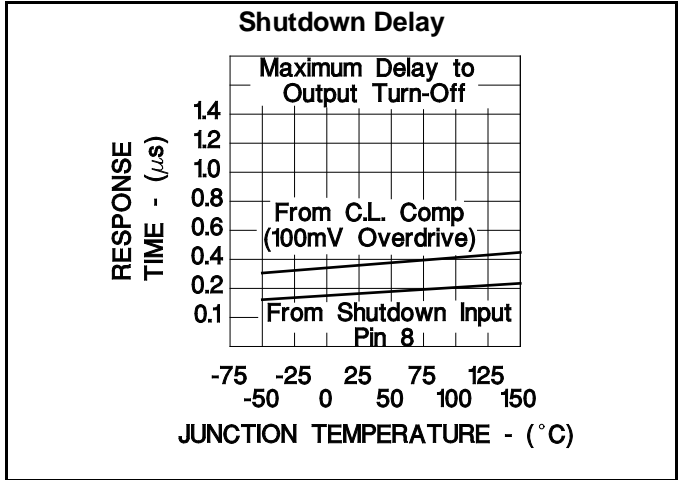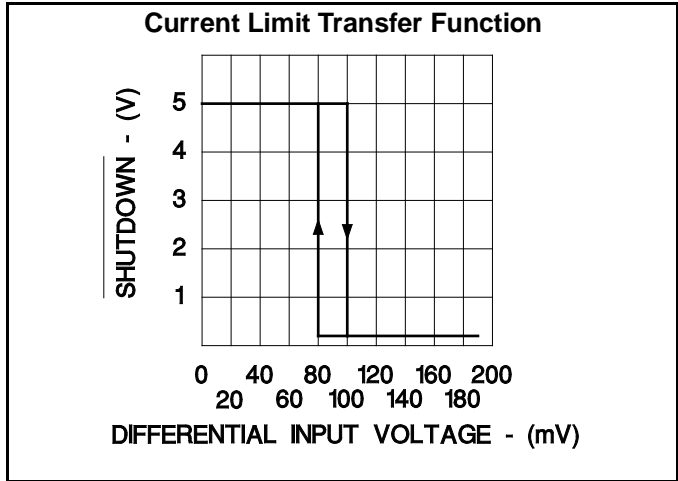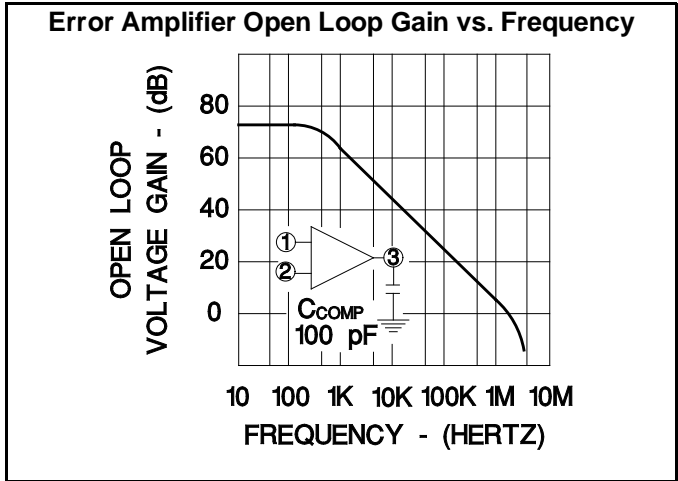### OSCILLATOR PERIOD vs R_T and C_T

OUTPUT BLANKING

7

TYPICAL CHARACTERISTICS (Cont.)

Output Driver Deadtime vs. R_D Value

DEADTIME - (μs)

F_{osc} = 40kHz
(C_T = .01μF)

R_D - (Ω)

Under Voltage Lockout Characteristic

$\overline{RESET}$ - (V)

REFERENCE VOLTAGE - (V)

Error Amplifier Open Loop Gain vs. Frequency

OPEN LOOP VOLTAGE GAIN - (dB)

①
②
③
C_{COMP}
100 pF

FREQUENCY - (HERTZ)

Current Limit Transfer Function

$\overline{SHUTDOWN}$ - (V)

DIFFERENTIAL INPUT VOLTAGE - (mV)

Shutdown Delay

RESPONSE TIME - (μs)

Maximum Delay to
Output Turn-Off

From C.L. Comp
(100mV Overdrive)

From Shutdown Input
Pin 8

JUNCTION TEMPERATURE - (°C)

Output Driver Saturation Voltage

SATURATION VOLTAGE - (V)

Source

Sink

OUTPUT CURRENT
SOURCE OR SINK - (mA)

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
85515022A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	85515022A UC1526AL/ 883B
8551502VA	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	8551502VA UC1526AJ/883B
UC1526AJ	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1526AJ
UC1526AJ.A	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1526AJ
UC1526AJ883B	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	8551502VA UC1526AJ/883B
UC1526AJ883B.A	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	8551502VA UC1526AJ/883B
UC1526AL	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1526AL
UC1526AL.A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1526AL
UC1526AL883B	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	85515022A UC1526AL/ 883B
UC1526AL883B.A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	85515022A UC1526AL/ 883B
UC2526ADW	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	-25 to 85	UC2526ADW
UC2526ADW.A	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	-25 to 85	UC2526ADW
UC2526ADWG4	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	-25 to 85	UC2526ADW
UC2526ADWTR	Active	Production	SOIC (DW) | 18	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-25 to 85	UC2526ADW
UC2526ADWTR.A	Active	Production	SOIC (DW) | 18	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-25 to 85	UC2526ADW
UC2526AN	Active	Production	PDIP (N) | 18	20 | TUBE	Yes	NIPDAU	N/A for Pkg Type	-25 to 85	UC2526AN
UC2526AN.A	Active	Production	PDIP (N) | 18	20 | TUBE	Yes	NIPDAU	N/A for Pkg Type	-25 to 85	UC2526AN
UC2526ANG4	Active	Production	PDIP (N) | 18	20 | TUBE	Yes	NIPDAU	N/A for Pkg Type	-25 to 85	UC2526AN
UC3526ADW	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3526ADW
UC3526ADW.A	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3526ADW
UC3526ADWG4	Active	Production	SOIC (DW) | 18	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3526ADW
UC3526ADWTR	Active	Production	SOIC (DW) | 18	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3526ADW

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
UC3526ADWTR.A	Active	Production	SOIC (DW) | 18	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3526ADW
UC3526AN	Active	Production	PDIP (N) | 18	20 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3526AN
UC3526AN.A	Active	Production	PDIP (N) | 18	20 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3526AN
UC3526J	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	0 to 70	UC3526J
UC3526J.A	Active	Production	CDIP (J) | 18	20 | TUBE	No	SNPB	N/A for Pkg Type	0 to 70	UC3526J

(1) Status: For more details on status, see our product life cycle.

(2) Material type: When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) RoHS values: Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

(4) Lead finish/Ball material: Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

(5) MSL rating/Peak reflow: The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) Part marking: There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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

• Catalog : UC3526A, UC3526AM, UC3526

• Military : UC2526AM, UC1526A, UC1526

NOTE: Qualified Version Definitions:

   • Catalog - TI's standard catalog product

   • Military - QML certified for Military and Defense Applications

TUBE

T - Tube height

L - Tube length

W - Tube width

B - Alignment groove width

*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
85515022A	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1526AL	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1526AL.A	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1526AL883B	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1526AL883B.A	FK	LCCC	20	55	506.98	12.06	2030	NA
UC2526AN	N	PDIP	18	20	506	13.97	11230	4.32
UC2526AN.A	N	PDIP	18	20	506	13.97	11230	4.32
UC2526ANG4	N	PDIP	18	20	506	13.97	11230	4.32
UC3526ADW	DW	SOIC	18	40	507	12.83	5080	6.6
UC3526ADW.A	DW	SOIC	18	40	507	12.83	5080	6.6
UC3526ADWG4	DW	SOIC	18	40	507	12.83	5080	6.6
UC3526AN	N	PDIP	18	20	506	13.97	11230	4.32
UC3526AN.A	N	PDIP	18	20	506	13.97	11230	4.32

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