

DESCRIPTION

The on-chip +5.1 V reference is trimmed to 1% and the error amplifier has an input common-mode voltage range that includes the reference voltage, thus eliminating the need for external divider resistors. A sync input to the oscillator enables multiple units to be slaved or a single unit to be synchronized to an external system clock. A wide range of deadtime can be programmed by a single resistor connected between the CT and Discharge pins. This device also features built-in soft-start circuitry, requiring only an external timing capacitor.

The output stages are totem-pole design capable of sinking and sourcing in excess of 150 mA. The output stage of the CN3525 features NOR logic resulting in a low output for an off-state.

FEATURES

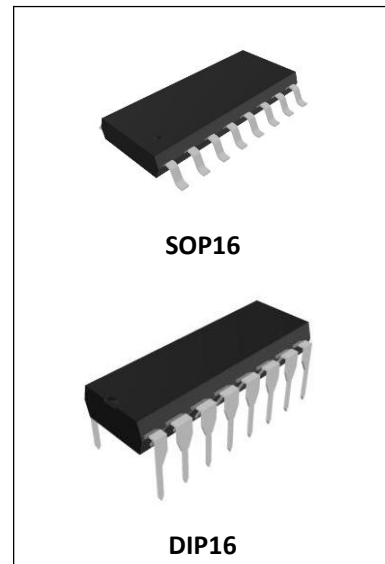
- 8.0 V to 35 V Operation
- 5.1 V 1.0% Trimmed Reference
- 100 Hz to 500 kHz Oscillator Range

- Separate Oscillator Sync Pin
- Adjustable Deadtime Control
- Internal SOFT-START
- Pulse-by-Pulse Shutdown
- Input Undervoltage Lockout
- Latching PWM to Prevent Multiple Pulses

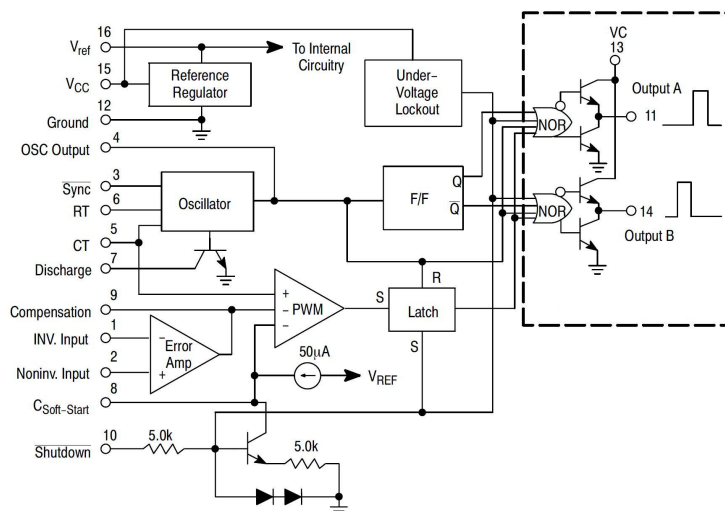
APPLICATIONS

- electric welding machine
- DC-AC inverter

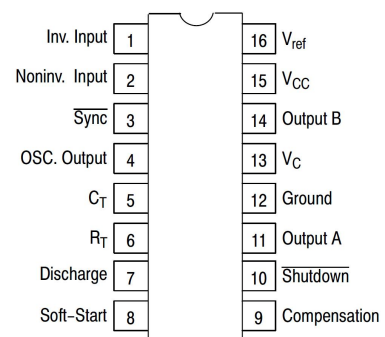
Top View



Simplified Schematic



Pin Configuration



Absolute Maximum Ratings

(Over operating free-air temperature range, unless otherwise noted)

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage	V _{CC}	-	40	V
Collector Supply Voltage	V _C	-	40	V
Oscillator Charging Current	I _{osc}	-	5	mA
Output Source Current	I _O	-	400	mA
Reference Output Current	I _R	-	50	mA
Operating temperature	T _A	-20	+85	°C
Maximum Junction Temperature	T _J	-20	+125	°C
Lead Temperature(soldering, 10sec)	T _W	-	+260	°C
Storage Temperature Range	T _S	-55	+150	°C

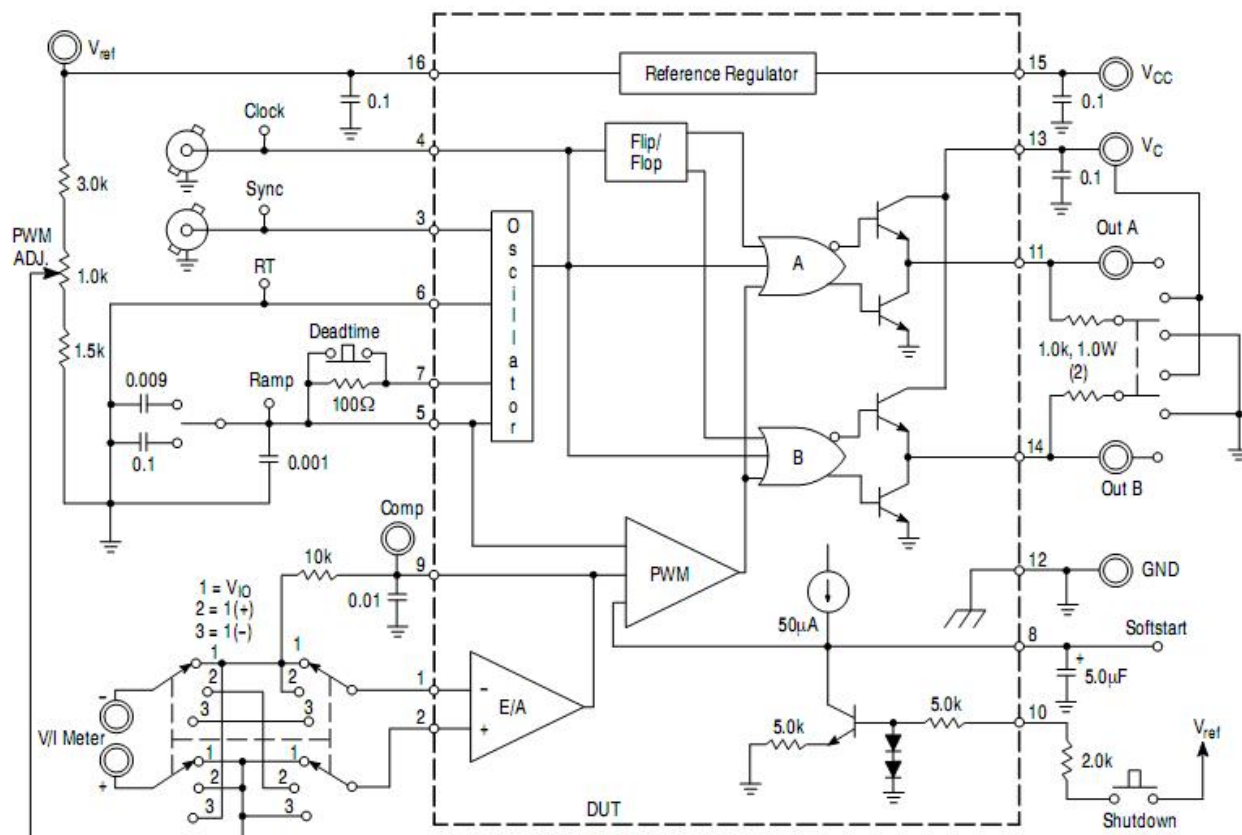
Electrical Characteristics

(V_{CC}=20V, T_A=25°C, unless otherwise noted.)

CHARACTERISTIC	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
REFERENCE SECTION						
Reference Output Voltage	V _{REF}		5.0	5.1	5.2	V
Line Regulation	Δ V _{REF}	V _{CC} = 8 to 35V	-	9	20	mV
Load Regulation	Δ V _{REF}	I _{REF} = 0 to 20mA	-	20	50	mV
Short Circuit Current	I _{SC}	V _{REF} = 0	-	80	100	mA
Total Output Variation	Δ V _{REF}	Includes Line and Load Regulation over Temperature	4.95	-	5.25	V
Temperature Stability	STT		-	20	50	mV
Long Term Stability	ST	T _A = 125°C, 1 KHRS	-	20	50	mV
OSCILLATOR SECTION						
Initial Accuracy	ACCUR		-	3	6	%
Frequency Stability with Voltage	Δ f/Δ V _{CC}	V _{CC} = 8 to 35V	-	0.8	2	%
Maximum Frequency	f _(MAX)	RT = 2KΩ , CT = 470pF	400	430	-	KHz
Minimum Frequency	f _(MIN)	RT = 200KΩ , CT = 0.1uF	-	60	120	Hz
Clock Amplitude	V _(CLK)		3	4	-	V
Clock Width	tW _(CLK)		0.3	0.6	1	us
Sync Threshold	V _{TH(SYNC)}		1.2	2	2.8	V
Sync Input Current	I _{I(SYNC)}	Sync = 3.5V	-	1.3	2.5	mA
ERROR AMPLIFIER SECTION (V_{CM}=5.1V)						
Input Offset Voltage	V _{IO}		-	1.5	10	mV

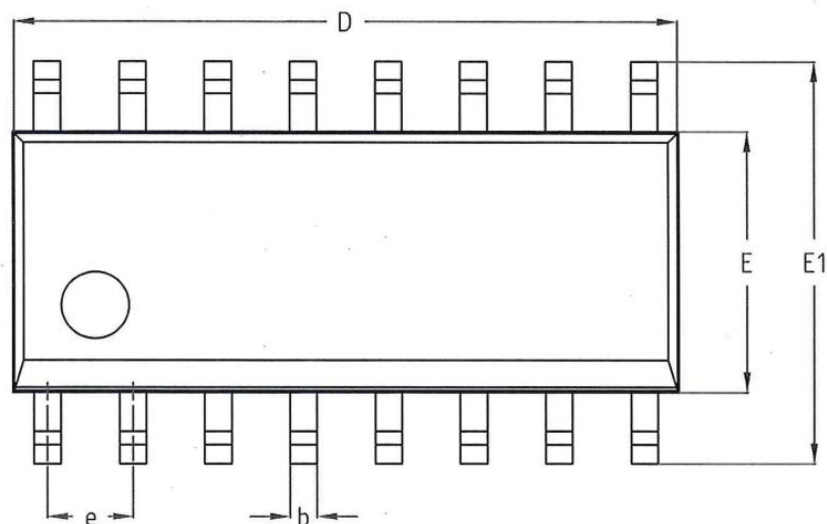
Input Bias Current	I_{BIAS}		-	1	10	μA
Input Offset Current	I_{IO}		-	0.1	1	μA
DC Open Loop Gain	G_{VO}	$RL \geq 10M\Omega$	60	80	-	dB
Common Mode Rejection Ratio	CMRR	$V_{CM} = 1.5 \text{ to } 5.2V$	60	90	-	dB
Power Supply Rejection Ratio	PSRR	$V_{CC} = 8 \text{ to } 35V$	50	60	-	dB
PWM COMPARATOR SECTION						
Minimum Duty Cycle	$D_{(MIN)}$		-	0	-	%
Maximum Duty Cycle	$D_{(MAX)}$		45	49	-	%
Input Threshold	V_{TH1}	Zero Duty Cycle	0.7	0.9	-	V
Input Threshold	V_{TH2}	Maximum Duty Cycle	-	3.2	3.6	V
SOFT-START SECTION						
Soft-Start Current	I_{SOFT}	$V_{SD} = 0V, V_{SS} = 0V$	25	51	80	μA
Soft-Start Voltage	V_{SL}	$V_{SD} = 2V$	-	0.3	0.7	V
Shutdown Threshold	$V_{TH(SD)}$		0.6	0.8	1	V
Shutdown Input Current	$I_{N(SD)}$	$V_{SD} = 2.5V$	-	0.3	1	mA
OUTPUT DRIVERS						
Output Low Level I	$V_{OL I}$	$I_{SINK} = 20mA$	-	0.1	0.4	V
Output Low Level II	$V_{OL II}$	$I_{SINK} = 100mA$	-	0.05	2	V
Output High Level I	$V_{OH I}$	$I_{SOURCE} = 20mA$	18	19	-	V
Output High Level II	$V_{OH II}$	$I_{SOURCE} = 100mA$	17	18	-	V
Under Voltage Lockout	V_{UV}	V8 and V9 = High	6	7	8	V
Collector Leakage	I_{LKG}	$V_{CC} = 35V$	-	80	200	μA
Rise Time	t_R	$C_L = 1\mu F$	-	80	600	ns
Fall Time	t_F	$C_L = 1\mu F$	-	70	300	ns
TOTAL STANDBY CURRENT						
Supply Current	I_{CC}	$V_{CC} = 35V$	-	12	20	mA

Test Circuit

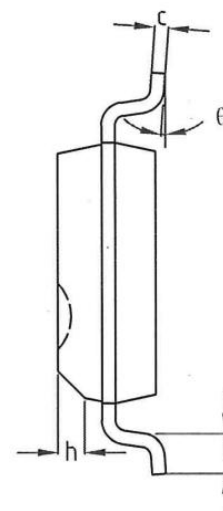


PACKAGE OUTLINE DIMENSIONS
SOP16
TOP VIEW

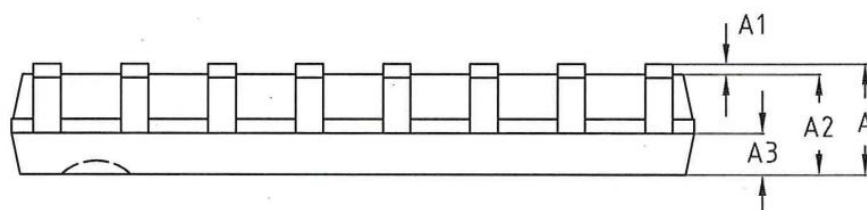
正视图


SIDE VIEW

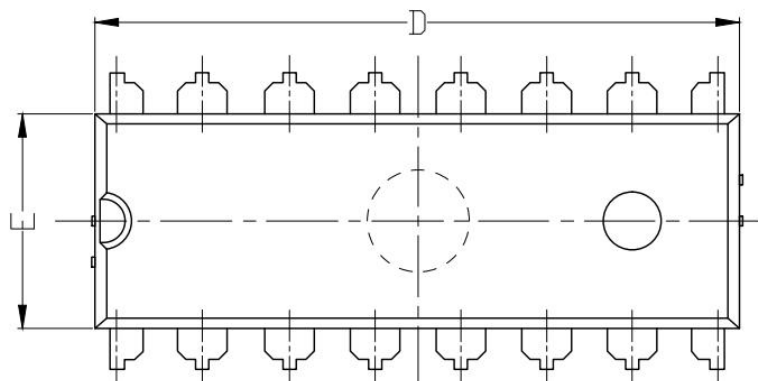
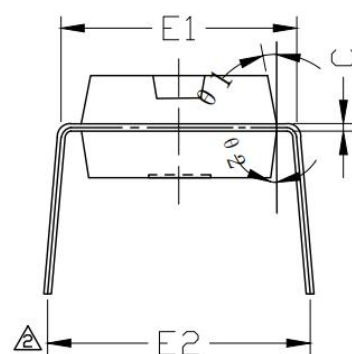
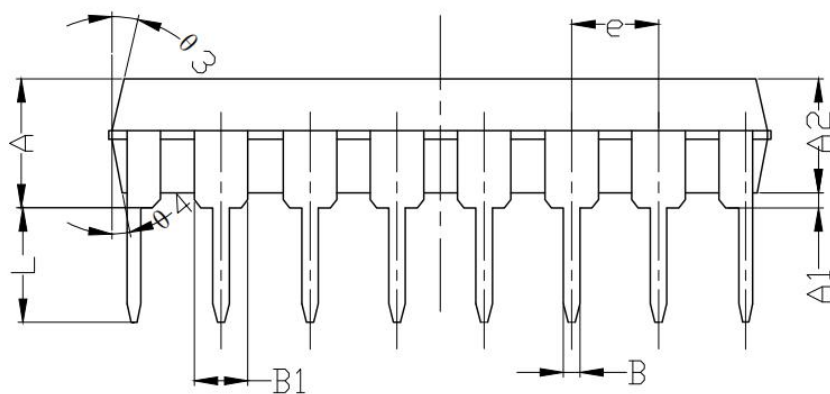
侧视图


SIDE VIEW

侧视图



SYMBOL	MILLIMETER			SYMBOL	MILLIMETER		
	MIN	NOM	MAX		MIN	NOM	MAX
A	-	-	1.75	E	3.80	3.90	4.00
A1	0.10	-	0.25	E1	5.80	6.00	6.20
A2	1.35	1.45	1.55	e	1.27 BSC		
A3	0.60	0.65	0.70	h	0.30	-	0.50
b	0.35	-	0.50	L	0.40	-	0.80
c	0.19	-	0.25	θ	0°	-	8°
D	9.80	9.90	10.00				

DIP16
TOP VIEW
正视图

SIDE VIEW
侧视图

SIDE VIEW
侧视图


SYMBOL	MILLIMETER			SYMBOL	MILLIMETER		
	MIN	NOM	MAX		MIN	NOM	MAX
A	3.75	3.90	4.05	E1	7.35	7.62	7.85
A1	0.51	-	-	e	2.54 (BSC)		
A2	3.20	3.30	3.45	L	3.00	3.30	3.60
B	0.38	0.48	0.56	E2	8.00	8.40	8.80
B1	1.52 (BSC)			θ_1	9°	-	15°
C	0.20	0.25	0.34	θ_2	7°	-	13°
D	18.80	19.05	19.30	θ_3	8°	-	14°
E	6.20	6.35	6.50	θ_4	5°	-	12°

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