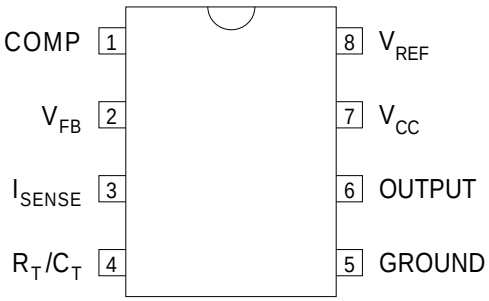
IP3842N-200.01

CURRENT MODE REGULATING PULSE WIDTH MODULATORS

TOP VIEW



N Package – 8 Pin Plastic DIP

FEATURES

- **Guaranteed ±10% frequency tolerance**
- **Low start–up current (<200 µA)**
- **Under voltage lockout with hysteresis**
- **Output state completely defined for all supply and input conditions**
- **500kHz operation**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{CC}	Supply Voltage	(low impedance source) (I_{CC} < 30mA)	+30V Self limiting
I_O	Output Current		±1A
	Output Energy	(capacitive load)	5µJ
	Analog Inputs	(pins 2 and 3)	–0.3V to +V_{CC}
	Error Amp Output Sink Current		10mA
P_D	Power Dissipation Derate @ T_{amb} > 50°C	T_{amb} = 25°C	1W 10mW/°C
P_D	Power Dissipation Derate @ T_{case} > 25°C	T_{case} = 25°C	2W 24mW/°C
T_{STG}	Storage Temperature Range		–65 to 150°C
T_L	Lead Temperature	(soldering, 10 seconds)	+300°C

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ELECTRICAL CHARACTERISTICS (Over Full Operating Temperature Range unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Units
	REFERENCE SECTION				
Output Voltage	I_O = 1mA T_J = 25°C	4.90	5.00	5.10	V
Input Regulation	V_{CC} = 12V to 25V		6	20	mV
Output Regulation	I_O = 1mA to 20mA		6	25	
Temperature Stability			0.2	0.4	mV/°C
Total Output Variation	Line, Load, Temp	4.82		5.18	V
Output Noise Voltage	f = 10Hz to 10kHz T_J = 25°C		50		µV
Long Term Stability	T_J = 125°C @ 1000Hrs		5	25	mV
Output Short Circuit Current	V_{REF} = 0	30	80	160	mA
	OSCILLATOR SECTION				
Frequency	T_J = 25°C	47	52	57	kHz
Voltage stability	V_{CC} = 12V to 25V		0.2	1	%
Temperature Stability	ΔT_A = Min to Max		5		%
Amplitude	V_{PIN4} Peak to Peak		1.7		V
Discharge Current	T_J = 25°C	6.7		10.8	mA
	ΔT_A = Min to Max		8		%
	ERROR AMP SECTION				
Input Voltage	V_{PIN1} = 2.5V	2.42	2.50	2.58	V
Input Bias Current			–0.3	–2	µA
Open Loop Voltage Gain	V_O = 2V to 4V	65	90		dB
Unity Gain Bandwidth		0.7	1		MHz
Supply Voltage Rejection	V_{CC} = 12V to 25V	60	70		dB
Output Sink Current	V_{PIN2} = 2.7V V_{PIN1} = 1.1V	2	6		mA
Output Source Current	V_{PIN2} = 2.3V V_{PIN1} = 4.6V	–0.5	–0.8		
V_{OUT} High	V_{PIN2} = 2.3V R_L = 15kΩ	4.6	4.8		V
V_{OUT} Low	V_{PIN2} = 2.7V R_L = 15kΩ		0.7	1.1	

NOTES

1. Test Conditions unless otherwise stated:
   V_{CC} = 15V* , R_T = 10kΩ , C_T = 3.3nF , f = 52kHz.
   *Adjust V_{CC} above start threshold before setting at required level.

   All specifications apply over the full operating temperature range unless otherwise stated. (See Ordering Information for further details).

ELECTRICAL CHARACTERISTICS (Over Full Operating Temperature Range unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Units
CURRENT SENSE SECTION					
Gain	See Notes 2,3	2.85	3	3.15	V/V
Maximum Input Signal	V_{PIN1} = 4.6V (Note 2)	0.9	1	1.1	V
Supply Voltage Rejection	V_C = 12V to 25V	60	70		dB
Input Bias Current			–2	–10	µA
Delay to Output			200	400	ns
OUTPUT SECTION					
Output Low Level	I_{SINK} = 20mA		0.1	0.4	V
	I_{SINK} = 200mA		1.5	2.2	
Output High Level	I_{SOURCE} = 20mA	13	13.5		V
	I_{SOURCE} = 200mA	12	13.5		
Rise Time	C_L = 1nF T_J = 25°C		50	150	ns
Fall Time	C_L = 1nF T_J = 25°C		50	150	
UVLO Saturation	V_{CC} = 6V I_L = 1mA		0.7	1.1	V
UNDER–VOLTAGE LOCKOUT SECTION					
Upper Threshold (V_{CC})	1842 Series	14.5	16	17.5	V
Lower Threshold (V_{CC})	1842 Series	8.5	10	11.5	
TOTAL STANDBY CURRENT					
Start–up Current			0.16	0.2	mA
Operating Supply Current	V_{PIN2} = 0V V_{PIN3} = 0V 1842 Series		11	15	
V_{CC} Zener Voltage	I_{CC} = 25mA	30	34	40	V

NOTES

1. Test Conditions unless otherwise stated:
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   *Adjust V_{CC} above start threshold before setting at required level.

   All specifications apply over the full operating temperature range unless otherwise stated.
   (See Ordering Information for further details).

2. Parameter measured at trip point of latch with V_{PIN2} = 0V

3. Gain defined as:
   $$A = \frac{\Delta V_{PIN1}}{\Delta V_{PIN3}}$$
   $0 \le V_{PIN3} \le 0.8$