



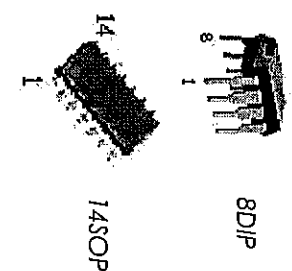
DOS Electronics Pte Ltd

HT3842/43/44/45

Current-mode PWE Controllers

General Description

The HT3842B/43B/44B/45B/; HT3842A/43A/44A/45A are five frequency current-mode PWM controller. They are specially designed for OFF-Line and DC-to-DC converter applications with minimal external components. These integrated circuits feature a trimmed oscillator for precise duty cycle control, a temperature compensated reference, high gain error amplifier, current sensing comparator, and a high current totemple output ideally suited for driving a power MOSFET.



Protection circuitry includes build under-voltage lockout and current limiting.

The HT3842B,A and HT3844B,A have UVLO thresholds of 1.6V (on) and 10V (off). The HT3843B,A/45B,A are 8.4V (on) and 7.5V (off). The HT3842B,A and HT3844B,A can operate with 100% duty cycle. The HT3842B,A and HT3844B,A can operate within 50% duty cycle.

The HT384XB have Start-Up Current 0.45mA
 The HT384XB have Start-Up Current 0.17 mA

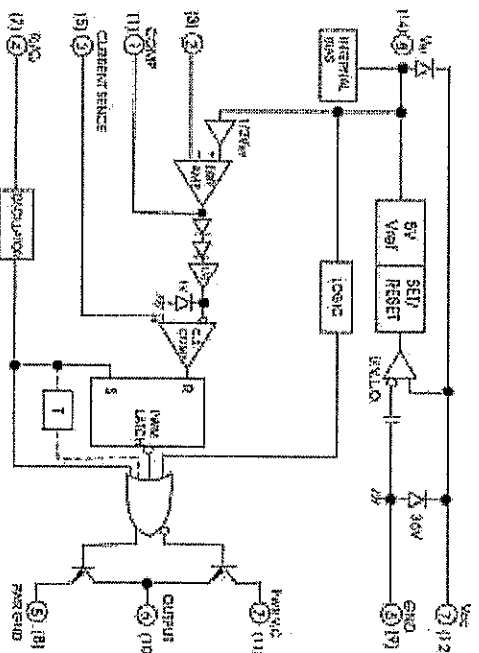
Features

- Low Start-Up Current
- Maximum Duty Cycle
- U/V Lockout With Hysteresis
- Operating Frequency Up To 500KHz

Ordering information

Device	Package	Operating temperature
HT384X	8 DIP	0 to +70°C
HT384X	14 SOP	0 to +70°C

Block Diagram



Absolute Maximum Ratings

Characteristic	Symbol	Value	Unit
Supply Voltage	VCC	30	V
Output Current	Io	±1	A
Analogy Inputs	V1	-0.3 to 5.5V	V
Error Amp Output Sink Current	ISINK(FAI)	10	mA
Power Dissipation [Ta=25°C]	Pd	1	W



Electrical characteristics

(*V_{CC}=15V, R_F=10KΩ, C_F=3.3μF, T_A=0°C to +70°C.....)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Reference Section						
Reference Output Voltage	V _{REF}	T=25°C•• I _{REF} =1mA	4.9	5.0	5.1	V
Line Regulation	ΔV _{REF}	12V ≤ V _{CC} ≤ 25V		6.0	20	mV
Load Regulation	ΔV _{REF}	1mA ≤ I _{REF} ≤ 20mA		6.0	25	mV
Short Circle Output Current	I _{SC}	I _A =25°C		-100	-180	mA
Oscillator Section						
Oscillator Frequency	F	T=25°C	47	52	57	KHz
Frequency change with Voltage	Δ•• ΔV _{REF}	12V ≤ V _{CC} ≤ 25V		0.05	1.0	%
Oscillator amplitude	V _(osc)			1.6		V _{p-p}
Error Amplifier Section						
Input Bias Current	I _{BIAS}			-0.1	-2	μA
Input Voltage	V _{R(CA)}	V ₁ =-2.6V	2.42	2.5	2.58	V
Open Loop Voltage Gain	G _{VO}	2V ≤ V _O ≤ 4V	65	90		
Power Supply Rejection Ratio	P _{PSRR}	12V ≤ V _{CC} ≤ 25V	60	70		dB
Output Sink Current	I _{SNK}	V ₂ =-2.7V, V ₁ =-1.1V	2	7		mA
Output Source Current	I _{SOURCE}	V ₂ =-2.3V, V ₁ =-5V	-0.5	-1.0		mA
High Output Voltage	V _{OH}	V ₂ =-2.3V, R _F =15KΩ to GND	5.0	6.0		V
Low Output Voltage	V _{OL}	V ₂ =-2.7V, R _F =15KΩ to PIN8	5.0	6.0	1.1	V
Current Sense Section						
Gain	G _V	(Note 1&2)	2.85	3.0	3.15	V/V
Maximum Input Signal	V _{I(MAX)}	V _I =5V(No1)	0.9	1.0	1.1	V
Power Supply Rejection Ratio	P _{RRSS}	12V ≤ V _{CC} ≤ 25V(No1)		70		dB
Input Bias Current	I _{BIAS}			-3.0	-10	μA
Output Section						
Low Output Voltage	V _{OL}	I _{SNK} =20 mA I _{SNK} =200mA		0.08	0.4	
High Output Voltage	V _{OH}	I _{SNK} =20 mA I _{SNK} =200 mA	13	13.5		V
Rise Time	t _r	T _J =25°C•• I _L	12	13.0	150	
Fall Time	t _f	T _J =25°C•• I _L		45	150	ns
Load-Regulation lockout Section						
Start Threshold	V _{TH(ST)}	HT3842A,B/44A,B HT3842A,B/45A,B	14.5	16.0	17.5	V
Min. Operating Voltage (After Turn On)	V _{OPR(MIN)}	HT3842A,B/44A,B HT3842A,B/45A,B	7.8	8.4	9.0	V
			8.5	10	11.5	V
			7.0	7.6	8.2	V
PWM Section						
Max. Duty Cycle	D _(MAX)	HT3842A,B/43A,B HT3842A,B/45A,B	95	97	100	%
Min. Duty Cycle	D _(MIN)		47	48	50	%
					0	%
Total Standby Current						
Start-up Current	I _{ST}	HT3842A/43A/44A/45A HT3842B/43B/44B/45B		0.17	0.3	mA
Operating Supply Current	I _{CC(OPER)}	V ₃ =V ₂ =0V		0.45	1	mA
Zener Voltage	V _Z			14	17	V
			30	38		V

*Adjust V_{CC} above the start threshold before setting at 15V
 Note 1: Parameter measured at trip point of I_{th} with V₂=0
 Note 2: Gain defined as A=ΔV₁/ΔV₃ 0≤V₃≤0.8V
 Note 3: These parameters, although guaranteed, are not 100% tested in production.