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NTE7117 Integrated Circuit Switched-Mode Power Supply Controller

Description:

The NTE7117 is a control circuit in an 8-Lead DIP type package designed for use in switched-mode power supplies. It contains an internal temperature-compensated supply, PWM, sawtooth oscillator, over-current sense latch, and output stage. This device is intended for low cost SMPS applications where extensive housekeeping functions are not required.

Features:

- Pulse Width Modulator
- Current Limiting (Cycle-by-Cycle)
- Sawtooth Generator
- Stabilized Power Supply
- Double-Pulse Protection
- Internal Temperature-Compensated Reference

Applications:

- Switch-Mode Power Supplies
- DC Motor Controller Inverter
- DC/DC Converter

Absolute Maximum Ratings:

Supply Voltage, V_{CC} 18V
 Output Current, I_{OUT} 40mA
 Output Duty Cycle 98%
 Maximum Total Power Dissipation, P_D 750mW
 Operating Temperature Range, T_A 0° to +70°C

DC Electrical Characteristics: ($V_{CC} = 12V$, $T_A = +25°C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Section						
Internal Reference Voltage	V_{REF}	$T_A = +25°C$	3.69	3.75	3.84	V
		$T_A = 0° \text{ to } +70°C$	3.66	–	3.87	V
Internal Zener Reference	V_Z	$I_L = 7mA$	7.8	8.2	8.8	V
Temperature Coefficient of V_{REF}			–	±100	–	ppm/°C
Temperature Coefficient of V_Z			–	±100	–	ppm/°C
Oscillator Section						
Frequency Range	f	$T_A = 0° \text{ to } +70°C$	50	–	100k	Hz
Initial Accuracy		R_T and C_T Constant	–	5	–	%
Duty Cycle Range		$f_o = 20kHz$	0	–	98	%

DC Electrical Characteristics (Cont'd): ($V_{CC} = 12V$, $T_A = +25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Current Limiting							
Input Current	I_{IN}	Pin6 = 250mV	$T_A = +25^{\circ}C$	-	-2	-10	μA
			$T_A = 0^{\circ}$ to $+70^{\circ}C$	-	-	-20	μA
Single Pulse Inhibit Delay		Inhibit Delay Time for 20% Overdrive	$I_{OUT} = 20mA$	-	0.88	1.10	μs
			$I_{OUT} = 40mA$	-	0.7	0.8	μs
Current Limit Trip Level			0.4	0.5	0.6	V	
Error Amplifier							
Open-Loop Gain			-	60	-	dB	
Feedback Resistor			10k	-	-	Ω	
Small-Signal Bandwidth	BW		-	3	-	MHz	
Output Voltage Swing, High	V_{OH}		6.2	-	-	V	
Output Voltage Swing, Low	V_{OL}		-	-	0.7	V	
Output Stage							
Output Current	I_{OUT}	$T_A = 0^{\circ}$ to $+70^{\circ}C$	20	-	-	mA	
Saturation Voltage	V_{CE}	$T_A = 0^{\circ}$ to $+70^{\circ}C$	$I_C = 20mA$	-	-	0.4	V
			$I_C = 40mA$	-	-	0.5	V
Supply Voltage/Current							
Supply Current	I_{CC}	$I_Z = 0$, Voltage-Fed	$T_A = +25^{\circ}C$	-	-	10	mA
			$T_A = 0^{\circ}$ to $+70^{\circ}C$	-	-	13	mA
Supply Voltage	V_{CC}	$I_S = 10mA$, Current-Fed	19	21	24	V	
		$I_{CC} = 30mA$, Current-Fed	20	-	30	V	
Low Supply Protection							
Pin1 Threshold			8.0	9.0	10.5	V	

