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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
<b>Reference Section</b>						
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
<b>Oscillator Section</b>						
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	
<b>Current Limiting</b>							
Input Current	$I_{IN}$	Pin6 = 250mV	$T_A = +25^{\circ}C$	-	-2	-10	$\mu A$
			$T_A = 0^{\circ}$ to $+70^{\circ}C$	-	-	-20	$\mu A$
Single Pulse Inhibit Delay		Inhibit Delay Time for 20% Overdrive	$I_{OUT} = 20mA$	-	0.88	1.10	$\mu s$
			$I_{OUT} = 40mA$	-	0.7	0.8	$\mu s$
Current Limit Trip Level			0.4	0.5	0.6	V	
<b>Error Amplifier</b>							
Open-Loop Gain			-	60	-	dB	
Feedback Resistor			10k	-	-	$\Omega$	
Small-Signal Bandwidth	BW		-	3	-	MHz	
Output Voltage Swing, High	$V_{OH}$		6.2	-	-	V	
Output Voltage Swing, Low	$V_{OL}$		-	-	0.7	V	
<b>Output Stage</b>							
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
<b>Supply Voltage/Current</b>							
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	
<b>Low Supply Protection</b>							
Pin1 Threshold			8.0	9.0	10.5	V	

