Signetics

Linear Products

NE5568
Switched-Mode Power Supply Controller

Product Specification

DESCRIPTION

The NE5568 is a control circuit for use in switched mode power supplies. It contains an internal temperature-compensated supply, PWM, sawtooth oscillator, over-current sense latch, and output stage. The device is intended for low cost SMPS applications where extensive housekeeping functions are not required. The NE5568 is a selected version of the NE5561.

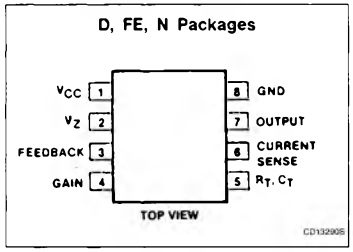
FEATURES

- **Micro-miniature (D) package**
- **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**

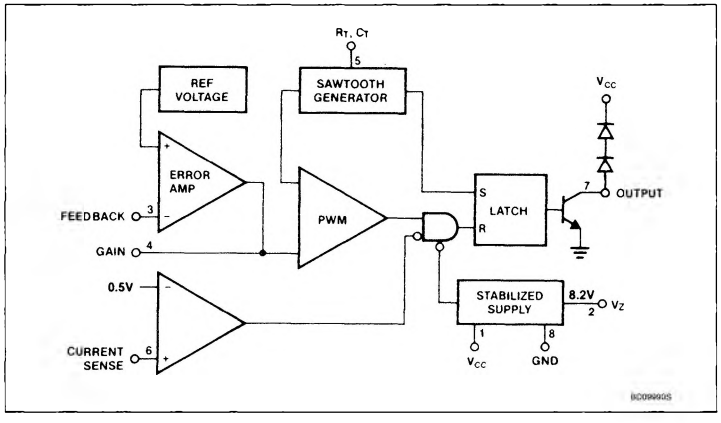
PIN CONFIGURATION



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
8-Pin Plastic DIP	0 to +70°C	NE5568N
8-Pin Cerdip	0 to +70°C	NE5568FE
8-Pin SO package	0 to +70°C	NE5568D

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	18	V
I_{OUT}	Output current	40	mA
	Output duty cycle	98	%
P_D	Max total power dissipation	0.75	W
T_A	Operating temperature range	0 to 70	°C

DC ELECTRICAL CHARACTERISTICS

V_{CC} = 12V, T_A = 25°C, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS		NE5568 Min	NE5568 Typ	NE5568 Max	UNIT
Reference section							
V_{REF}	Internal reference voltage	T_A = 25°C		3.69	3.75	3.84	V
		Over temperature		3.66		3.87	V
V_Z	Internal zener ref	I_L = 7mA		7.8	8.2	8.8	V
	Temperature coefficient of V_{REF}				± 100		ppm/°C
	Temperature coefficient of V_Z				± 200		ppm/°C
Oscillator section							
f	Frequency range	Over temperature		50		100k	Hz
	Initial accuracy	R_T and C_T Constant			5		%
	Duty cycle range	f_o = 20kHz		0		98	%
Current limiting							
I_{IN}	Input current	Pin 6 = 250mV	T_A = 25°C		-2	-10	µA
			Over temp.			-20	µA
	Single pulse inhibit delay	Inhibit delay time for 20% overdrive at	I_{OUT} = 20mA		0.88	1.10	µs
			I_{OUT} = 40mA		0.7	0.8	µs
	Current limit trip level			0.400	0.500	0.600	V
Error amplifier							
	Open-loop gain				60		dB
	Feedback resistor			10k			Ω
BW	Small-signal bandwidth				3		MHz
V_{OH}	Output voltage swing			6.2			V
V_{OL}	Output voltage swing					0.7	V
Output stage							
I_{OUT}	Output current	Over temperature		20			mA
V_{CE}	Saturation	I_C = 20mA, over temperature				0.4	V
		I_C = 40mA, over temperature				0.5	V
Supply voltage/current							
I_{CC}	Supply current	I_Z = 0, voltage-fed	T_A = 25°C			10.0	mA
			Over temp.			13.0	mA
V_{CC}	Supply voltage	I_S=10mA, current-fed		19.0	21.0	24.0	V
		I_{CC} = 30mA, current-fed		20.0		30.0	V
Low supply protection							
	Pin 1 threshold			8.0	9.0	10.5	V

NOTE:
All curves and applications of NE5561 apply exactly.