

Switched-mode power supply controller

NE5568

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

PIN CONFIGURATION

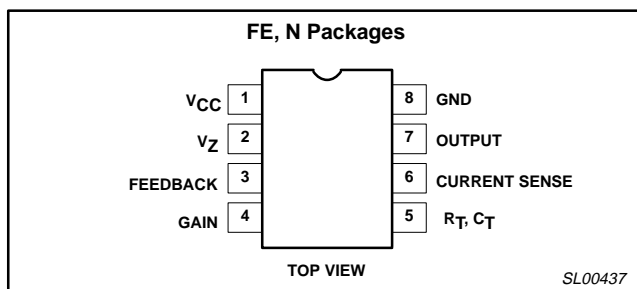


Figure 1. Pin Configuration

APPLICATIONS

- Switch mode power supplies
- DC motor controller inverter
- DC/DC converter

ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
8-Pin Plastic Dual In-Line Package (DIP)	0 to +70°C	NE5568N	SOT97-1
8-Pin Cerdip Dual In-Line Package (CERDIP)	0 to +70°C	NE5568FE	0580A

BLOCK DIAGRAM

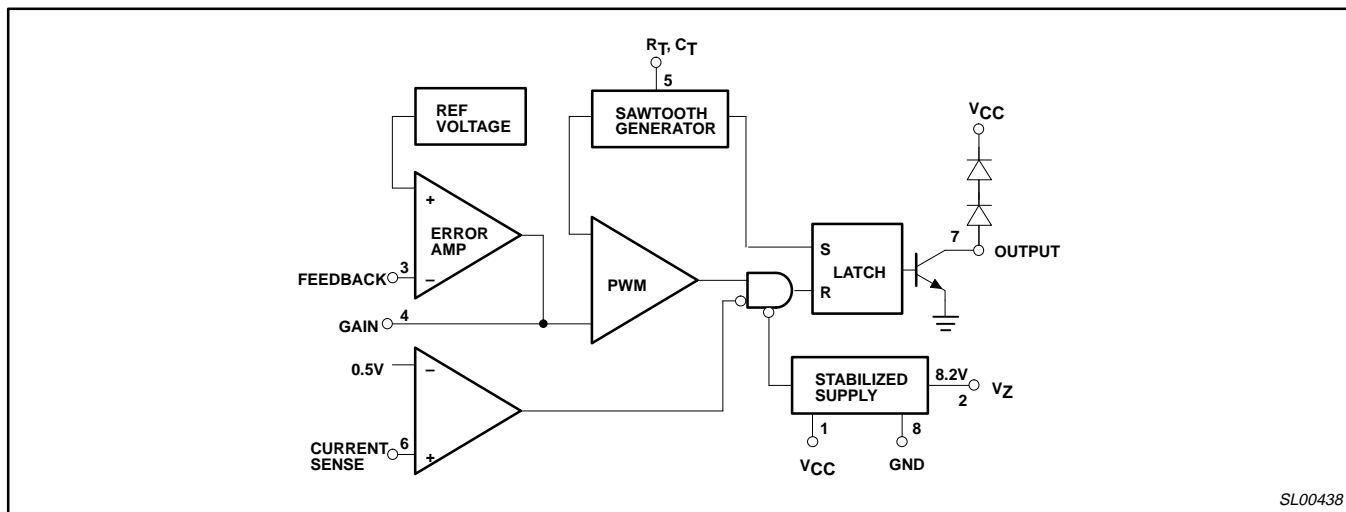


Figure 2. Block Diagram

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

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DC ELECTRICAL CHARACTERISTICS $V_{CC}=12V$, $T_A=25^\circ C$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	NE5568			UNIT	
			Min	Typ	Max		
Reference section							
V_{REF}	Internal reference voltage	$T_A=25^\circ C$	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/ $^\circ C$	
	Temperature coefficient of V_Z			± 200		ppm/ $^\circ C$	
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	$T_A=25^\circ C$		-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	$T_A=25^\circ C$			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	

NOTES:

All curves and applications of NE5561 apply exactly