

NTE7125 & NTE7126 Integrated Circuit Switching Regulator

Description:

The NTE7125 and NTE7126 are integrated circuits in a 12-Lead SIP type package incorporating all the power switching, amplifier, error detection, and overcurrent protection circuits required in a self-excitation type semi-regulated off-line switching regulator. As a result, these devices can be used in the design of switching power supplies with a minimal number of external components. Furthermore, the adoption of MOSFET power switching elements supports a higher oscillation frequency than possible with bi-polar transistors. This allows smaller pulse transformers and capacitors to be used, making it possible to construct miniature power supply systems.

Features:

- Power MOSFET Devices
- Ideal for Semi-Regulated Control Switching Supplies
- Error Detection Circuit On-Chip (40.5V \pm 0.5V Set Reference Voltage)
- Overcurrent Protection Circuit On-Chip
- Higher Oscillation Frequency allows the use of Smaller Pulse Transformers
- IMST Substrate acts as an Electromagnetic Shield, making Low-Noise Designs Possible

Applications:

- CRT/CTV Power Supplies
- Office Automation Equipment Power Supplies

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Operating Substrate Temperature (Recommended value is $+105^\circ\text{C}$), $T_{C\max}$	$+115^\circ\text{C}$
AC Input Voltage, V_{AC}	$140V_{\text{rms}}$
Operating Temperature Range, T_{opr}	-10° to $+85^\circ\text{C}$
Storage Temperature Range, T_{stg}	-30° to $+115^\circ\text{C}$
Maximum Output Power ($V_O = 135V$), $W_{O\max}$	
NTE7125	110W
NTE7126	145W

TR1

Drain Current, I_D	
NTE7125	6A
NTE7126	8A
Pulse Drain Current, I_D (pulse)	20A
Drain Reverse Current, I_{DR}	6A
Gate-Source Voltage, V_{GSS}	$\pm 30V$

Absolute Maximum Ratings (Cont'd): ($T_A = +25^{\circ}\text{C}$ unless otherwise specified)**TR1 (Cont'd)**

Allowable Power Dissipation, P_D	78.1W
Chip Junction Temperature, $T_{J\text{max}}$	$+150^{\circ}\text{C}$
Thermal Resistance, Junction-to-Case, $R_{\text{thJ-C}}$	1.6°C/W

ZD1

Allowable Power Dissipation, P_{ZD1}	500mW
Chip Junction Temperature, $T_{J(ZD1)\text{max}}$	$+125^{\circ}\text{C}$
Thermal Resistance, Junction-to-Case, $R_{\text{thJ-C}}(ZD1)$	0.2°C/W

Allowable Operating Ranges: ($T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Pin4 Input Voltage, V_4	± 6 to $\pm 24\text{V}$
Oscillator Frequency, f_{OSC}	20 to 120kHz

Operating Characteristics: ($T_A = +25^{\circ}\text{C}$, $T_C = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage Setting		$I_{\text{IN}} = 8\text{mA}$	40.0	40.5	41.0	V
Output Voltage Temperature Coefficient		$T_C = 0^{\circ}$ to $+105^{\circ}\text{C}$, $I_{\text{IN}} = 8\text{mA}$	–	7	–	$\text{mV}/^{\circ}\text{C}$
TR1						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$I_D = 10\text{mA}$, $V_{\text{GS}} = 0\text{V}$	500	–	–	V
Gate-Source Cutoff Voltage	$V_{\text{GS}(\text{off})}$	$I_D = 1\text{mA}$, $V_{\text{DS}} = 10\text{V}$	2.0	–	3.0	V
ON Resistance NTE7125 NTE7126	$R_{\text{DS(on)}}$	$I_D = 2.5\text{A}$, $V_{\text{GS}} = 10\text{V}$	– –	1.4 0.8	1.8 1.8	Ω Ω
Input Capacitance	C_{iss}	$V_{\text{DS}} = 10\text{V}$, $V_{\text{GS}} = 0\text{V}$, $f = 1\text{MHz}$	–	800	–	pF
ZD1						
Zener Voltage	V_Z	$I_Z = 5\text{mA}$	23.7	–	26.3	V

Pin Connection Diagram
(Front View)

12	TR1 Drain
11	TR1 Drain
10	No Pin
9	TR1 Source
8	TR1 Source
7	OCF Setting Level Input
6	Amplifier Circuit Control
5	TR1 Gate
4	Drive Voltage Input
3	GND
2	Error Detection Level
1	V_{ref} (40.5V typ) Input

