



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## NTE7006 Integrated Circuit Switch Mode Driver for DC Motors

### Description

The NTE7006 is a monolithic LSI circuit in 15-Lead SIP type package with staggered leads. This device is intended for use in a 3-chip DC motor positioning system for applications such as carriage/daisy-wheel position control in typewriters.

### Features

- Driving Capability: 2A, 36V, 30kHz
- 2 Logic Chip Enable
- External Loop Gain Adjustment
- Single Power Supply: 18V to 36V
- Input Signal Symmetric to GND
- Thermal Protection

### Absolute Maximum Ratings:

Power Supply, $V_S$ .....	36V
Input Voltage, $V_I$ .....	-15V to $+V_S$ V
Inhibit voltage, $V_{inhibit}$ .....	0 to $V_S$ V
Total Power Dissipation ( $T_C = +75^\circ\text{C}$ ), $P_{tot}$ .....	25W
Operating Junction Temperature Range, $T_{opr}$ .....	-40° to +150°C
Storage Temperature Range, $T_{stg}$ .....	-40° to +150°C
Thermal Resistance, Junction-to-Case, $R_{\theta JC}$ .....	3°C/W

### Electrical Characteristics: ( $T_A = +25^\circ\text{C}$ , $f_{OSC} = 20\text{kHz}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_S$		18	–	36	V
Quiescent Drain Current	$I_d$	$V_S = 20\text{V}$ (Offset Null)	–	30	50	mA
Input Offset Voltage (Pin6)	$V_{OS}$	$V_S = 36\text{V}$ , $I_O = 0$	–	–	±350	mV
Inhibit Low Level (Pin12, Pin13)	$V_{inh}$		–	–	2	V
Inhibit High Level (Pin12, Pin13)	$V_{inh}$		3.2	–	–	V

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$ ,  $f_{\text{OSC}} = 20\text{kHz}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Low Voltage Condition	$I_{\text{inh}}$	$V_{\text{inh}}(\text{L}) = 0.4\text{V}$	–	–	–100	$\mu\text{A}$	
High Voltage Conditions	$I_{\text{inh}}$	$V_{\text{inh}}(\text{H}) = 3.2\text{V}$	–	–	10	$\mu\text{A}$	
Input Current (Pin6)	$I_{\text{I}}$	$V_{\text{I}} = -8.8\text{V}$	–	–	–1.8	$\text{mA}$	
		$V_{\text{I}} = +8.8\text{V}$	–	–	0.5	$\text{mA}$	
Input Voltage (Pin6)	$V_{\text{I}}$	$R_{\text{S1}} = R_{\text{S2}} = 0.2\Omega$	$I_{\text{O}} = 2\text{A}$	–	8.3	–	$\text{V}$
			$I_{\text{O}} = -2\text{A}$	–	–8.3	–	$\text{V}$
Output Current	$I_{\text{O}}$	$V_{\text{I}} = \pm 8.8\text{V}$ , $R_{\text{S1}} = R_{\text{S2}} = 0.2\Omega$	$\pm 2$	–	–	$\text{A}$	
Total Dropout Voltage	$V_{\text{D}}$	(Including Sensing Resistors)	$I_{\text{O}} = 2\text{A}$	–	–	5	$\text{V}$
			$I_{\text{O}} = 1\text{A}$	–	–	3.5	$\text{V}$
Sensing Resistor Voltage Drop	$V_{\text{RS}}$	$T_{\text{J}} = +150^\circ\text{C}$ , $I_{\text{O}} = 2\text{A}$	–	–	0.44	$\text{V}$	
Transconductance	$\frac{I_{\text{O}}}{V_{\text{I}}}$	$R_{\text{S1}} = R_{\text{S2}} = 0.2\Omega$	228	240	260	$\text{mA/V}$	
		$R_{\text{S1}} = R_{\text{S2}} = 0.4\Omega$	–	120	–	$\text{mA/V}$	
Frequency Range (Pin10)	$f_{\text{OSC}}$		1	–	30	$\text{kHz}$	

**Truth Table:**

$V_{\text{inhibit}}$		Output Stage Condition
Pin12	Pin13	
L	L	Disabled
L	H	Normal Operation
H	L	Disabled
H	H	Disabled

Note 1. The output stage is also disabled if the supply voltage falls below 18V.

**Pin Connection Diagram**  
(Front View)

15	Motor
14	$R_{\text{S2}}$
13	Inhibit (CE1)
12	Inhibit (CE2)
11	OSC (R)
10	OSC (C)
9	Output (Error Amp)
8	GND
7	Input (Error Amp)
6	Input
5	Output C.S.A.
4	Comp Input
3	(+) $V_{\text{S}}$
2	$R_{\text{S1}}$
1	Motor

