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

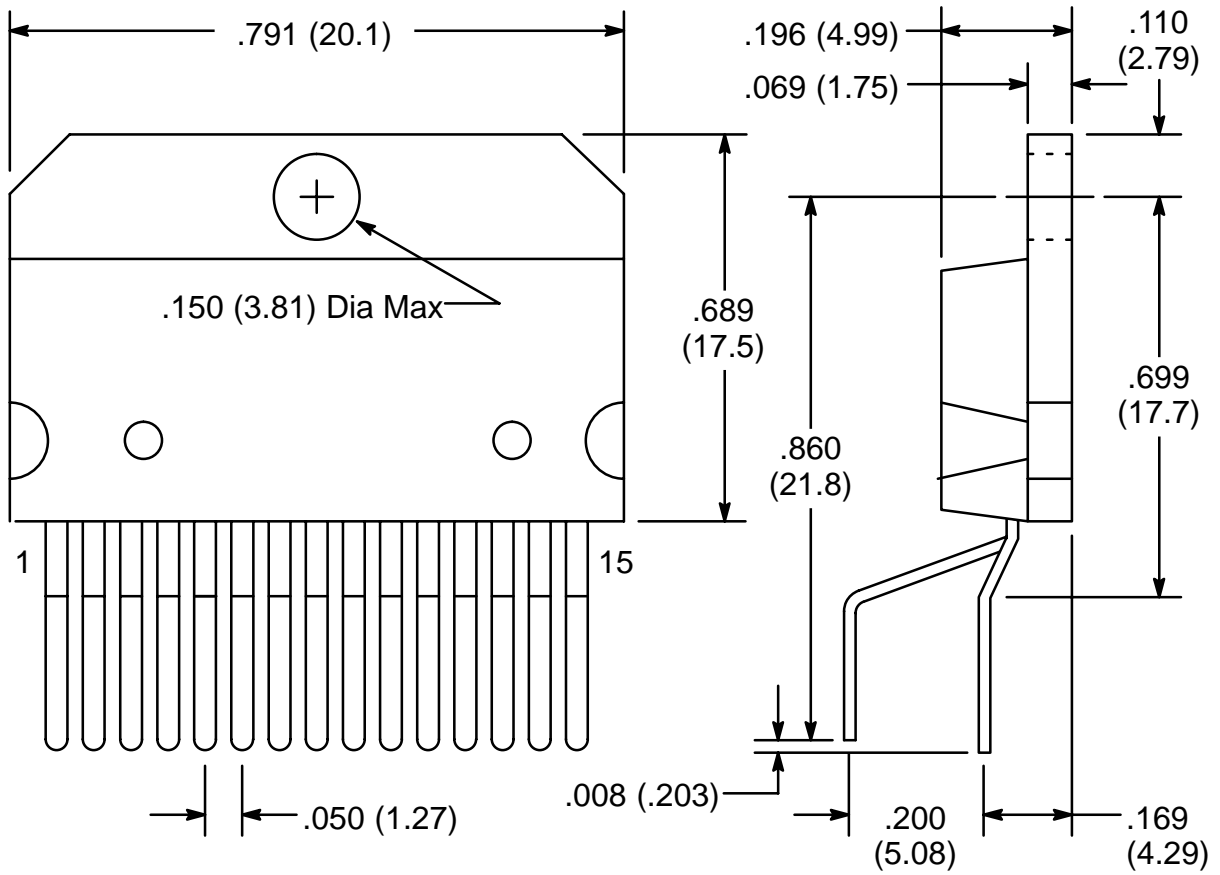
Truth Table:

V_{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_{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_{S}
2	R_{S1}
1	Motor



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