

NTE2090 Integrated Circuit 7-Channel Transistor Array

Description:

The NTE2090 is an integrated circuit in a 16-Lead DIP type package comprised of six NPN low saturation drivers. All units feature integral clamp diodes for switching inductive loads and protective diodes for protection against a negative input voltage.

Features:

- Low Saturation Outputs:
 $V_{CE(sat)} = 0.6V \text{ Max @ } I_{OUT} = 120mA$
- Output Rating:
20V/150mA
- Output Clamp Diodes
- CMOS and PMOS Compatible Inputs
- Input Protection Diodes

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

Supply Voltage, V_{CC}	.....	-0.5V to +20V
Output Sustaining Voltage, $V_{CE(sus)}$	.....	-0.5V to $V_{CC} + 0.5V$
Output Current, I_{OUT}	.....	150mA
Input Voltage, V_{IN}	.....	-37V to +20V
Input Current, I_{IN}	.....	1.5mA
Clamp Diode Reverse Voltage, V_R	.....	20V
Clamp Diode Forward Current, I_F	.....	120mA
GND Pin Current, I_{GND}	.....	800mA
Power Dissipation, P_D	.....	1W
Operating Temperature Range, T_{opr}	.....	-40° to +85°C
Storage Temperature Range, T_{stg}	.....	-55° to +150°C

Recommended Operating Conditions: ($T_A = -40^\circ$ to +85°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4.75	—	18	V
Output Current	I_{OUT}		0	—	120	mA
		$T_{PW} = 25ms, D_F = 10\% \text{ 7 Circuits}$	0	—	100	mA
Input Voltage	V_{IN}		-35	—	V_{CC}	V
Clamp Diode Reverse Voltage	V_R		—	—	18	V
Clamp Diode Forward Voltage	I_F		—	—	120	mA
Power Dissipation	P_D		—	—	0.36	W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Leakage Current	I_{CEX}	$V_{CC} = 18\text{V}$, $V_{OUT} = 18\text{V}$, $T_A = +75^{\circ}\text{C}$	–	–	100	μA
Output Saturation Voltage	$V_{CE(sat)}$	$V_{CC} = 5\text{V}$, $I_{IN} = 0.2\text{mA}$, $I_{OUT} = 120\text{mA}$	–	0.45	0.6	V
DC Forward Current Transfer Ratio	h_{FE}	$V_{CC} = 5\text{V}$, $V_{OUT} = 2\text{V}$, $I_{OUT} = 120\text{mA}$	1000	–	–	
Input Current Output ON	$I_{IN(ON)}$	$V_{IN} = 5\text{V}$, $I_{OUT} = 120\text{mA}$	–	0.16	0.23	mA
		$V_{IN} = 15\text{V}$, $I_{OUT} = 120\text{mA}$	–	0.66	0.94	mA
	$I_{IN(OFF)}$	$V_{IN} = -35\text{V}$	–	–	-10	μA
Clamp Diode Forward Voltage	V_F	$I_F = 120\text{mA}$	–	1.25	1.6	V
Supply Current Output ON	$I_{CC(ON)}$	$V_{CC} = V_{IN} = 5\text{V}$	–	4	6	mA/ Gate
		$V_{CC} = V_{IN} = 15\text{V}$	–	14	22	
	$I_{CC(OFF)}$	$V_{CC} = 18\text{V}$, $V_{IN} = 0\text{V}$	–	–	10	μA
Turn-On Delay	t_{ON}	$V_{CC} = 18\text{V}$, $R_L = 150\Omega$, $C_L = 15\text{pF}$	–	0.1	–	μs
Turn-Off Delay	t_{OFF}		–	0.8	–	μs

Pin Connection Diagram

