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NTE2077
Integrated Circuit
6–Stage Darlington Transistor Array w/Clamp Diode

Description:

The NTE2077is a six–circuit Darlington transistor array with clamping diodes. The circuits are made of NPN transistors. Both the semiconductor integrated circuits perform high–current driving with extremely low input–current supply.

Features:

- High breakdown voltage ($BV_{CEO} \geq 40V$)
- High–current driving ($I_{C(max)}$ = 150mA)
- With clamping diodes
- Driving available with PMOS IC output of 8V to 18V
- Wide input voltage range (V_I = –40V to +40V)
- Wide operating temperature range (T_A = –20° to +75°C)

Absolute Maximum Ratings: (T_A = –20° to +75°C unless otherwise specified)

Collector–Emitter Voltage (Output, H), V_{CEO} . . . . . –0.5V to +40V
Collector Current, I_C (Current per Circuit Output, $L_)$ 150mA
Input Voltage, V_I . . . . . –40V to 40V
Clamp Diode Forward Current, I_F 150mA
Clamp Diode Reverse Voltage, V_R 40V
Power Dissipation (T_A = +25°C, when mounted on board), P_D 1.47W
Operating Ambient Temperature Range, T_{opr} . . . . . –20° to +75°C
Storage Temperature Range, T_{stg} . . . . . –55° to +125°C

Recommended Operational Conditions: (T_A = –20° to +75°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O		0	–	40	V
Collector Current per Channel	I_C	Percent Duty Cycle Less than 50%	0	–	150	mA
“H” Input Voltage	V_{IH}		7	–	35	V
“L” Input Voltage	V_{IL}		0	–	1	V

Electrical Characteristics: (T_A = −20° to +75°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector−Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_{CER} = 100μA	40	–	–	V
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	V_I = 7V, I_C = 150mA	–	1.1	1.7	V
		V_I = 7V, I_C = 100mA	–	1.0	1.4	V
Input Current	I_I	V_I = 18V	–	0.9	1.8	mA
		V_I = 35V	–	1.9	5.0	mA
Input Reverse Current	I_{IR}	V_I = −35V	–	–	−20	μA
Clamping Diode Forward Voltage	V_F	I_F = −150mA	–	1.15	1.6	V
Clamping Diode Reverse Current	I_R	V_R = 40V	–	–	100	μA
DC Amplification Factor	h_{FE}	V_{CE} = 4V, I_C = 150mA, T_A = +25°C	800	2500	–	

Switching Characteristics: (T_A = +25° unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn−On Time	t_{on}	C_L = 15pF (Note 1)	–	35	–	ns
Turn−Off Time	t_{off}		–	300	–	ns

Note 1. Pulse generator (PG) characteristics: PRR = 1kHz, tw = 10μs, tr = 6ns, Z_O = 50Ω, V_P = $7V_{p-p}$

Pin Connection Diagram