



NTE48
Silicon NPN Transistor
Darlington, General Purpose Amplifier,
High Current

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CES}	50V
Collector-Base Voltage, V_{CBO}	60V
Emitter-Base Voltage, V_{EBO}	12V
Continuous Collector Current, I_C	1000mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	1.0W
Derate Above 25°C	8.0mW/ $^\circ\text{C}$
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	2.5W
Derate Above 25°C	20mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-55° to +150°C
Storage Temperature Range, T_{stg}	-55° to +150°C
Thermal Resistance, Junction-to-Case, R_{thJC}	50°C/W
Thermal Resistance, Junction-to-Ambient, R_{thJA}	125°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C = 1\text{mA}$, $I_B = 0$, Note 1	50	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1.0\mu\text{A}$, $I_E = 0$	600	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$, $I_C = 0$	12	-	-	V
Collector Cutoff Voltage	I_{CBO}	$V_{CB} = 40\text{V}$, $I_E = 0$	-	-	100	nA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 10\text{V}$, $I_C = 0$	-	-	100	nA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 200\text{mA}, V_{CE} = 5\text{V}$	25,000	—	—	
		$I_C = 1000\text{mA}, V_{CE} = 5\text{V}$	4,000	—	40,000	
Collector-Emitter Saturation Voltage	$V_{CE(\text{sat})}$	$I_C = 1000\text{mA}, I_B = 2\text{mA}$	—	—	1.5	V
Base-Emitter ON Voltage	$V_{BE(\text{on})}$	$I_C = 1000\text{mA}, V_{CE} = 5\text{V}$	—	—	2.0	V
Small-Signal Characteristics						
Current Gain-Bandwidth Product	f_T	$I_C = 200\text{mA}, V_{CE} = 5\text{V}, f = 100\text{MHz}$	100	—	1000	MHz
Collector-Base Capacitance	C_{cb}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	—	—	10	pF

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

