



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089  
<http://www.nteinc.com>

## 2N6385 Silicon NPN Transistor Darlington Power Amplifier TO-3 Type Package

**Description:**

The 2N6385 is a silicon NPN Darlington transistor in a TO-3 type case designed for use in low and medium frequency power applications such as power switching, audio amplifier, hammer driver, and shunt and series regulator.

**Features:**

- High Gain Darlington Performance
- DC Current Gain:  $h_{FE} = 3000$  (Typ) @  $I_C = 5A$

**Absolute Maximum Ratings:**

Collector-Emitter Voltage, $V_{CEO}$ .....	80V
Collector-Base Voltage, $V_{CBO}$ .....	80V
Emitter-Base Voltage, $V_{EBO}$ .....	5V
Collector Current, $I_C$	
Continuous .....	10A
Peak .....	15A
Base Current, $I_B$ .....	250mA
Total Power Dissipation ( $T_C = +25^\circ C$ ), $P_D$ .....	100W
Derate Above $25^\circ C$ .....	0.571W/ $^\circ C$
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+200^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+200^\circ C$
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	1.75 $^\circ C/W$

**Electrical Characteristics:** ( $T_C = +25^\circ C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200mA, I_B = 0$ , Note 1	80	-	-	V
Collector-Emitter Leakage Current	$I_{CEO}$	$V_{CE} = 80V, I_B = 0$	-	-	1.0	mA
		$V_{CE} = 80V, V_{BE(off)} = 1.5V$	-	-	0.3	mA
		$V_{CE} = 80V, V_{BE(off)} = 1.5V, T_C = +125^\circ C$	-	-	3.0	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	-	10	mA

Note 1. Pulse Test: Pulse Width = 300 $\mu s$ , Duty Cycle = 2%

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics</b> (Note 1)						
DC Current Gain	$h_{FE}$	$V_{CE} = 3\text{V}, I_C = 5\text{A}$	1000	-	20000	
		$V_{CE} = 3\text{V}, I_C = 10\text{A}$	100	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5\text{A}, I_B = 10\text{mA}$	-	-	2.0	V
		$I_C = 10\text{A}, I_B = 100\text{mA}$	-	-	3.0	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 5\text{A}, V_{CE} = 3\text{V}$	-	-	2.8	V
		$I_C = 10\text{A}, V_{CE} = 3\text{V}$	-	-	4.5	V
<b>Dynamic Characteristics</b>						
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 5\text{V}, I_C = 1\text{A}, f = 1\text{KHz}$	1000	-	-	
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	200	pF

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

