



NES

NEW ENGLAND SEMICONDUCTOR

PNP	NPN
2N6050	2N6057
2N6051*	2N6058*
2N6052*	2N6059*

*also available as
JAN, JANTX,
JANTXV

DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

... designed for general-purpose amplifier and low frequency switching applications.

- High DC Current Gain –
 $h_{FE} = 3500$ (Typ) @ $I_C = 5.0$ Adc
- Collector-Emitter Sustaining Voltage – @ 100 mA
 $V_{CE(sus)} = 60$ Vdc (Min) – 2N6050, 2N6057
80 Vdc (Min) – 2N6051, 2N6058
100 Vdc (Min) – 2N6052, 2N6059
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors

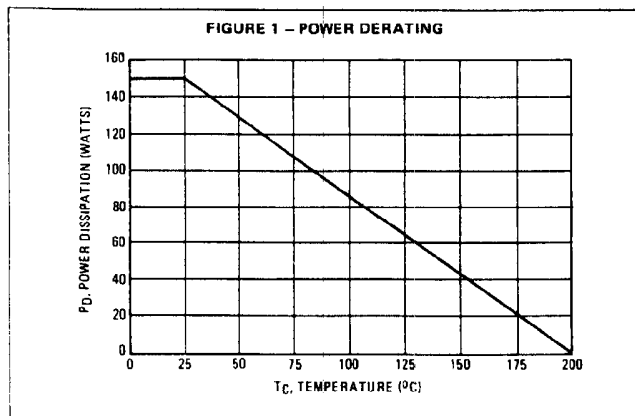
MAXIMUM RATINGS (1)

Rating	Symbol	2N6050 2N6057	2N6051 2N6058	2N6052 2N6059	Unit
Collector-Emitter Voltage	V_{CE}	60	80	100	Vdc
Collector-Base Voltage	V_{CB}	60	80	100	Vdc
Emitter-Base Voltage	V_{EB}	5.0			Vdc
Collector Current – Continuous Peak	I_C	12 20			Adc
Base Current	I_B	0.2			Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	150 0.857			Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200 $^\circ\text{C}$			$^\circ\text{C}$

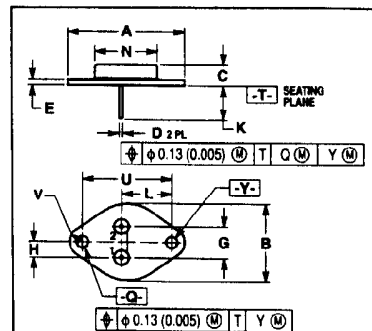
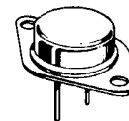
THERMAL CHARACTERISTICS

Characteristic	Symbol	Rating	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.17	$^\circ\text{C/W}$

(1) Indicates JEDEC Registered Data



**DARLINGTON
12 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
60-80-100 VOLTS
150 WATTS**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO-204AA OUTLINE SHALL APPLY.
 4. 001-05 AND -06 OBSOLETE, NEW STANDARD 001-07.

DIM	MILLIMETERS	INCHES
A	39.37 REF	1.550 REF
B	26.67	1.050
C	6.35	0.250
D	0.97	0.038
E	1.40	0.055
G	10.92 BSC	0.430 BSC
H	5.46 BSC	0.215 BSC
K	11.18 12.19	0.440 0.480
L	16.89 BSC	0.665 BSC
N	21.06	0.830
Q	3.84	0.151
V	30.15 BSC	1.187 BSC
Y	3.33	0.131

STYLE 1:
PIN 1: BASE
2: EMITTER
CASE: COLLECTOR

**CASE 1-07
TO-204AA
(TO-3)**

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1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-312 REV: --



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***ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 100\text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	60 80 100	— — —	Vdc
Collector Cutoff Current ($V_{CE} = 30\text{ Vdc}$, $I_B = 0$) ($V_{CE} = 40\text{ Vdc}$, $I_B = 0$) ($V_{CE} = 50\text{ Vdc}$, $I_B = 0$)	I_{CEO}	— — —	1.0 1.0 1.0	mA dc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE(off)} = 1.5\text{ Vdc}$) ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	—	0.5 5.0	mA dc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	2.0	mA dc

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 6.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$) ($I_C = 12\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$)	h_{FE}	750 100	18,000 —	—
Collector-Emitter Saturation Voltage ($I_C = 6.0\text{ Adc}$, $I_B = 24\text{ mA dc}$) ($I_C = 12\text{ Adc}$, $I_B = 120\text{ mA dc}$)	$V_{CE(sat)}$	— —	2.0 3.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 12\text{ Adc}$, $I_B = 120\text{ mA dc}$)	$V_{BE(sat)}$	—	4.0	Vdc
Base-Emitter On Voltage ($I_C = 6.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$)	$V_{BE(on)}$	—	2.8	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio ($I_C = 5.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$, $f = 1.0\text{ MHz}$)	$ h_{fe} $	4.0	—	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 0.1\text{ MHz}$)	C_{ob}	— —	500 300	pF
Small-Signal Current Gain ($I_C = 5.0\text{ Adc}$, $V_{CE} = 3.0\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fe}	300	—	—

*Indicates JEDEC Registered Data

(1) Pulse test: Pulse Width = 300 μs , Duty Cycle = 2.0%.

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