



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
 $V_{CEO(sus)} = 60$ Vdc (Min) – 2N6050, 2N6057
 80 Vdc (Min) – 2N6051, 2N6058
 100 Vdc (Min) – 2N6052, 2N6059
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors

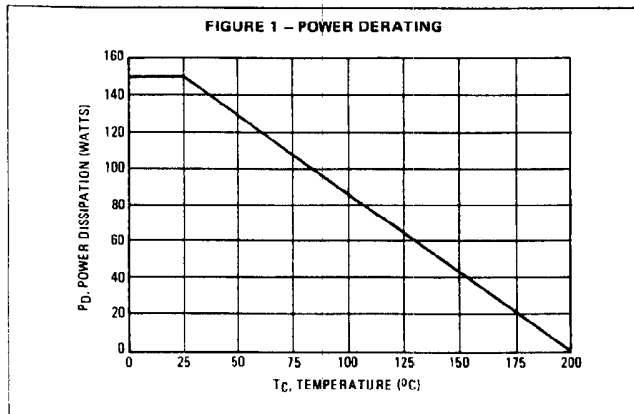
MAXIMUM RATINGS (1)

Rating	Symbol	2N6050 2N6057	2N6051 2N6058	2N6052 2N6059	Unit
Collector-Emitter Voltage	V_{CEO}	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 →			Adc
		← 20 →			
Base Current	I_B	← 0.2 →			Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	← 150 →			Watts
		← 0.857 →			W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	← -65 to +200 $^\circ\text{C}$ →			$^\circ\text{C}$

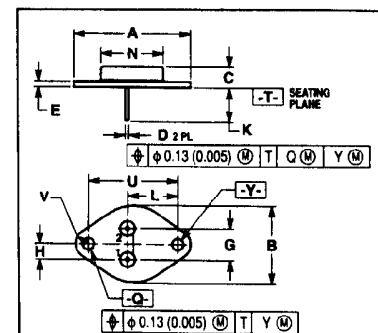
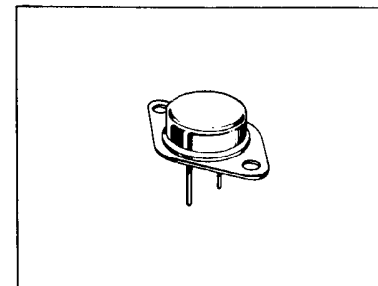
THERMAL CHARACTERISTICS

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	
	MIN	MAX	MIN	MAX
A	39.37	REF	1.550	REF
B	—	26.67	—	1.050
C	6.35	8.51	0.250	0.335
D	0.97	1.09	0.038	0.043
E	1.40	1.77	0.055	0.070
G	10.92	BSC	0.430	BSC
H	5.48	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	4.19	0.151	0.165
V	30.15	BSC	0.187	BSC
V	3.33	4.77	0.131	0.188

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

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

NEW ENGLAND SEMICONDUCTOR

6 Lake Street Lawrence, MA 01841
 1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-312 REV: --



NES

NEW ENGLAND SEMICONDUCTOR

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

*also available as
JAN, JANTX,
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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) ($I_C = 100 \text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	60 80 100	— — —	Vdc
		2N6050, 2N6057 2N6051, 2N6058 2N6052, 2N6059		
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
		2N6050, 2N6057 2N6051, 2N6058 2N6052, 2N6059		
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
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	2.0	mA
ON CHARACTERISTICS (1)				
DC Current Gain ($I_C = 6.0 \text{ A}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 12 \text{ A}$, $V_{CE} = 3.0 \text{ Vdc}$)	h_{FE}	750 100	18,000 —	—
Collector-Emitter Saturation Voltage ($I_C = 6.0 \text{ A}$, $I_B = 24 \text{ mA}$) ($I_C = 12 \text{ A}$, $I_B = 120 \text{ mA}$)	$V_{CE(sat)}$	— —	2.0 3.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 12 \text{ A}$, $I_B = 120 \text{ mA}$)	$V_{BE(sat)}$	—	4.0	Vdc
Base-Emitter On Voltage ($I_C = 6.0 \text{ A}$, $V_{CE} = 3.0 \text{ Vdc}$)	$V_{BE(on)}$	—	2.8	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio ($I_C = 5.0 \text{ A}$, $V_{CE} = 3.0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	$ 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
		2N6050/2N6052 2N6057/2N6059		
Small-Signal Current Gain ($I_C = 5.0 \text{ A}$, $V_{CE} = 3.0 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	300	—	—

*Indicates JEDEC Registered Data

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

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