

New Jersey Semi-Conductor Products, Inc.

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**2N6053, 2N6054
 2N6298, 2N6299 PNP
 2N6055, 2N6056
 2N6300, 2N6301 NPN**

DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

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

- High DC Current Gain –
 $h_{FE} = 3000$ (Typ) @ $I_C = 4.0$ Adc
- Collector-Emitter Sustaining Voltage – @ 100 mA
 $V_{CE(sus)} = 60$ Vdc (Min) – 2N6053, 2N6055, 2N6298, 2N6300
 $= 80$ Vdc (Min) – 2N6054, 2N6056, 2N6299, 2N6301
- Low Collector-Emitter Saturation Voltage –
 $V_{CE(sat)} = 2.0$ Vdc (Max) @ $I_C = 4.0$ Adc
 $= 3.0$ Vdc (Max) @ $I_C = 8.0$ Adc
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors

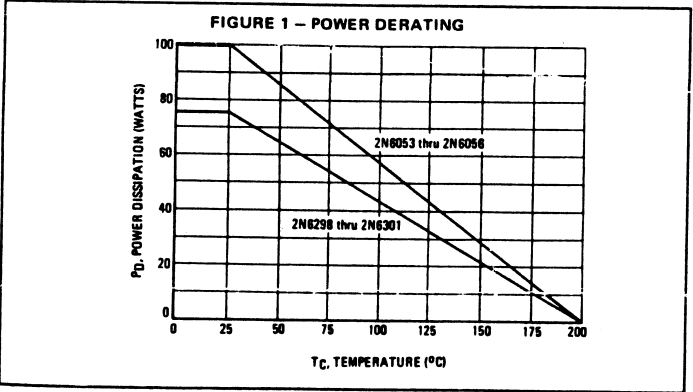
***MAXIMUM RATINGS**

Rating	Symbol	2N6053 2N6055 2N6298 2N6300	2N6054 2N6056 2N6299 2N6301	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CB}	60	80	Vdc
Emitter-Base Voltage	V_{EB}	5.0		Vdc
Collector Current – Continuous	I_C	8.0		Adc
Peak		16		
Base Current	I_B	120		mAdc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	2N6053 2N6054 2N6055 2N6056	2N6298 2N6299 2N6300 2N6301	Watts $W/^\circ C$
		100 0.571	75 0.428	
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ C$

THERMAL CHARACTERISTICS

Characteristic	Symbol	2N6053 2N6054 2N6055 2N6056	2N6298 2N6299 2N6300 2N6301	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.75	2.33	$^\circ C/W$

*Indicates JEDEC Registered Data.



**DARLINGTON
 8 AMPERE
 COMPLEMENTARY SILICON
 POWER TRANSISTORS
 60-80 VOLTS
 75,100 WATTS**

2N6053
2N6054
2N6055
2N6056

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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	—	29.27	—	1.150
B	—	21.08	—	0.830
C	6.35	8.75	0.250	0.345
D	0.97	1.09	0.038	0.043
E	1.40	1.77	0.055	0.070
F	30.15	BSC	1.187	BSC
G	10.82	BSC	0.430	BSC
H	5.46	BSC	0.215	BSC
J	16.89	BSC	0.665	BSC
K	11.18	12.19	0.440	0.480
Q	3.84	4.19	0.151	0.165
R	—	26.67	—	1.050
U	4.83	5.33	0.190	0.210
V	3.84	4.19	0.151	0.165

**CASE
 (TO-3)**

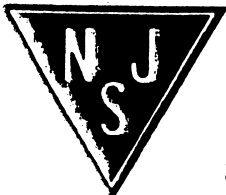
2N6298
2N6299
2N6300
2N6301

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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.88	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.98	0.570	0.590
K	9.14	—	0.360	—
P	—	1.27	—	0.050
Q	3.81	3.86	0.142	0.152
R	—	8.88	—	0.350
T	—	3.08	—	0.148
U	—	15.75	—	0.620

**CASE 80-02
 TO-213AA
 (TO-86)**

All JEDEC Dimensions and Notes Apply.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

***ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)**

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) (I _C = 100 mA _{dc} , I _B = 0) 2N6053, 2N6055, 2N6298, 2N6300 2N6054, 2N6056, 2N6299, 2N6301	V _{CEO(sus)}	60 80	—	V _{dc}
Collector Cutoff Current (V _{CE} = 30 V _{dc} , I _B = 0) (V _{CE} = 40 V _{dc} , I _B = 0) 2N6053, 2N6055, 2N6298, 2N6300 2N6054, 2N6056, 2N6299, 2N6301	I _{CEO}	— —	0.5 0.5	mA _{dc}
Collector Cutoff Current (V _{CE} = Rated V _{CB} , V _{BE(off)} = 1.5 V _{dd}) (V _{CE} = Rated V _{CB} , V _{BE(off)} = 1.5 V _{dc} , T _C = 150°C)	I _{CEX}	— —	0.5 5.0	mA _{dc}
Emitter Cutoff Current (V _{BE} = 5.0 V _{dc} , I _C = 0)	I _{EBO}	—	2.0	mA _{dc}
ON CHARACTERISTICS (1)				
DC Current Gain (I _C = 4.0 A _{dc} , V _{CE} = 3.0 V _{dc}) (I _C = 8.0 A _{dc} , V _{CE} = 3.0 V _{dc})	h _{FE}	750 100	18000 —	—
Collector-Emitter Saturation Voltage (I _C = 4.0 A _{dc} , I _B = 16 mA _{dc}) (I _C = 8.0 A _{dc} , I _B = 80 mA _{dc})	V _{CE(sat)}	— —	2.0 3.0	V _{dc}
Base-Emitter Saturation Voltage (I _C = 8.0 A _{dc} , I _B = 80 mA _{dc})	V _{BE(sat)}	—	4.0	V _{dc}
Base-Emitter On Voltage (I _C = 4.0 A _{dc} , V _{CE} = 3.0 V _{dc})	V _{BE(on)}	—	2.8	V _{dc}
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short Circuit Current Transfer Ratio (I _C = 3.0 A _{dc} , V _{CE} = 3.0 V _{dc} , f = 1.0 MHz)	h _{fe}	4.0	—	—
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 0.1 MHz) 2N6053, 2N6054, 2N6298, 2N6299 2N6055, 2N6056, 2N6300, 2N6301	C _{ob}	— —	300 200	pF
Small-Signal Current Gain (I _C = 3.0 A _{dc} , V _{CE} = 3.0 V _{dc} , f = 1.0 kHz)	h _{fe}	300	—	—