New Jersey Semi-Conductor Products, Inc.

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

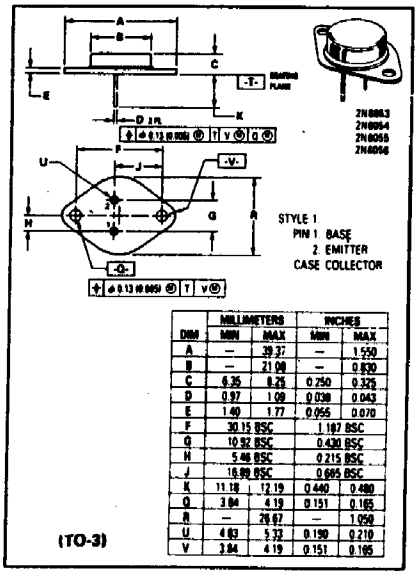
DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

. . . 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
  $V_{CEO(sus)}$ = 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

DARLINGTON 8 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS

60-80 VOLTS
75,100 WATTS



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	—	39.37	—	1.550
B	—	21.08	—	0.830
C	6.35	8.25	0.250	0.325
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	10.92 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

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*MAXIMUM RATINGS

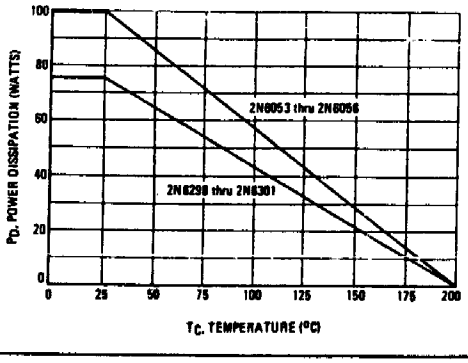
Rating	Symbol	2N6053 2N6055 2N6298 2N6300	2N6054 2N6056 2N6299 2N6301	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CB}	60	80	Vdc
Emitter-Base Voltage	V_{EB}	5.0		Vdc
Collector Current – Continuous	I_C	8.0		Adc
Peak		16		
Base Current	I_B	120		mAdc
		2N6053 2N6054 2N6055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

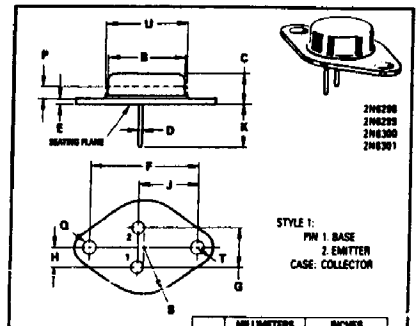
THERMAL CHARACTERISTICS

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

*Indicates JEDEC Registered Data.

FIGURE 1 – POWER DERATING





DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.86	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.32	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	14.99	0.570	0.590
K	8.14	—	0.320	—
P	—	1.27	—	0.050
Q	3.81	3.99	0.142	0.152
S	—	8.89	—	0.350
T	—	3.68	—	0.145
U	—	15.75	—	0.620

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All JEDEC Dimensions and Notes Apply.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1) (I_C = 100 mAdc, I_B = 0)	2N6053, 2N6055, 2N6298, 2N6300	$V_{CEO(sus)}$	60	–	Vdc
	2N6054, 2N6056, 2N6299, 2N6301		80	–	
Collector Cutoff Current (V_{CE} = 30 Vdc, I_B = 0)	2N6053, 2N6055, 2N6298, 2N6300	I_{CEO}	–	0.5	mAdc
(V_{CE} = 40 Vdc, I_B = 0)	2N6054, 2N6056, 2N6299, 2N6301		–	0.5	
Collector Cutoff Current (V_{CE} = Rated V_{CB}, $V_{BE(off)}$ = 1.5 Vdc)		I_{CEX}	–	0.5	mAdc
(V_{CE} = Rated V_{CB}, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)			–	5.0	
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	2.0	mAdc
ON CHARACTERISTICS (1)					
DC Current Gain (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)		h_{FE}	750	18000	–
(I_C = 8.0 Adc, V_{CE} = 3.0 Vdc)			100	–	
Collector-Emitter Saturation Voltage (I_C = 4.0 Adc, I_B = 16 mAdc)		$V_{CE(sat)}$	–	2.0	Vdc
(I_C = 8.0 Adc, I_B = 80 mAdc)			–	3.0	
Base-Emitter Saturation Voltage (I_C = 8.0 Adc, I_B = 80 mAdc)		$V_{BE(sat)}$	–	4.0	Vdc
Base-Emitter On Voltage (I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)		$V_{BE(on)}$	–	2.8	Vdc
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short Circuit Current Transfer Ratio (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz)		$\lvert h_{fe} \rvert$	4.0	–	–
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz)	2N6053, 2N6054, 2N6298, 2N6299	C_{ob}	–	300	pF
	2N6055, 2N6056, 2N6300, 2N6301		–	200	
Small-Signal Current Gain (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 kHz)		h_{fe}	300	–	–