NEW ENGLAND SEMICONDUCTOR

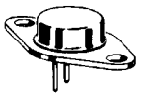
NPN	PNP
2N6294	2N6296
2N6295	2N6297

DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS

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

- **High DC Current Gain -**
  h_{FE} = 3000 (Typ) @ I_c = 2.0 Adc
- **Low Collector-Emitter Saturation Voltage -**
  $V_{CE(sat)}$ = 2.0 Vdc (Max) @ I_C = 2.0 Adc
- **Collector-Emitter Sustaining Voltage**
  $V_{CEO(sus)}$ = 60 Vdc (Min) - 2N6294, 2N6296
  = 80 Vdc (Min) - 2N6295, 2N6297
- **Monolithic Construction with Built-In Base-Emitter Shunt Resistors**

4 AMPERE DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS 60, 80 VOLTS 50 WATTS

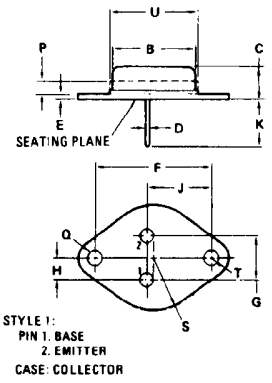


MAXIMUM RATINGS

Rating	Symbol	2N6294 2N6296	2N6295 2N6297	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 - Peak	I_C	4.0 8.0		Adc
Base Current	I_B	80		mAdc
Total Power Dissipation @T_C = 25°C Derate above 25°C	P_D	50 0.286		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.5	°C/W

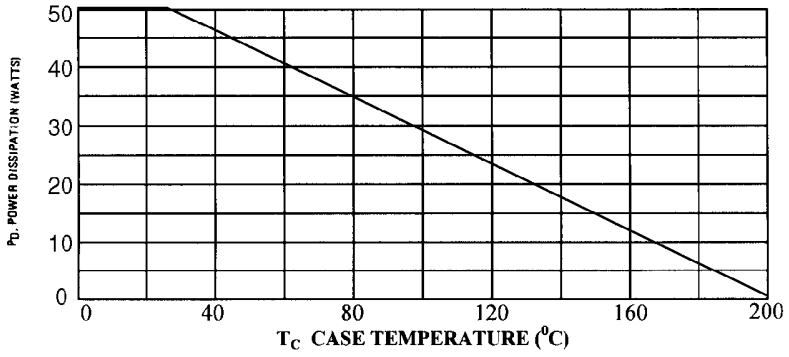


	MILLIMETER		INCHES	
DIM	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.86	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	-	0.360	-
P	-	1.27	-	0.050
Q	3.61	3.86	0.142	0.152
S	-	8.89	-	0.350
T	-	3.68	-	0.145
U	-	15.75	-	0.620

All JEDEC Dimensions and Notes Apply

TO-66

FIGURE 1 -- POWER DERATING



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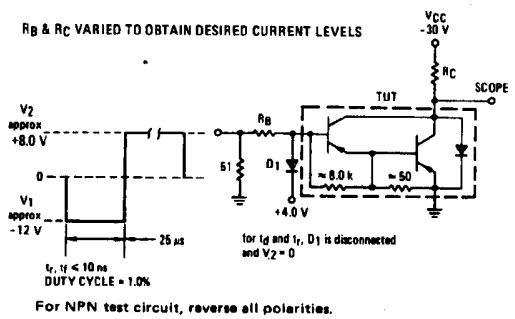
*ELECTRICAL CHARACTERISTICS ($T_C = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$			
$I_C = 50$ mAdc, $I_B = 0$	2N6294, 2N6296		60		Vdc
	2N6295, 2N6297		80		
Collector Cutoff Current		I_{CEO}			mAdc
$V_{CE} = 30$ Vdc, $I_B = 0$	2N6294, 2N6296			0.5	
$V_{CE} = 40$ Vdc, $I_B = 0$	2N6295, 2N6297			0.5	
Collector Cutoff Current		I_{CEX}			mAdc
V_{CE} = Rated V_{CB}, $V_{EB\ (off)} = 1.5$ Vdc	2N6294, 2N6295			0.5	
V_{CE} = Rated V_{CB}, $V_{BE\ (off)} = 1.5$ Vdc	2N6296, 2N6297			0.5	
V_{CE} = Rated V_{CB}, $V_{EB\ (off)} = 1.5$ Vdc	2N6294, 2N6295			5.0	
$T_C = 150^0C$					
V_{CE} = Rated V_{CB}, $V_{BE\ (off)} = 1.5$ Vdc	2N6296, 2N6297			5.0	
$T_C = 150^0C$					
Emitter Cutoff Current		I_{EBO}			mAdc
$V_{BE} = 5.0$ Vdc, $I_C = 0$				2.0	
ON CHARACTERISTICS (1)					
DC Current Gain		h_{FE}			
$I_C = 2.0$ Adc, $V_{CE} = 3.0$ Vdc			750	18000	
$I_C = 4.0$ Adc, $V_{CE} = 3.0$ Vdc			100		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
$I_C = 2.0$ Adc, $I_B = 8.0$ mAdc				2.0	
$I_C = 4.0$ Adc, $I_B = 40$ mAdc				3.0	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
$I_C = 4.0$ Adc, $I_B = 40$ mAdc				4.0	
Base-Emitter On Voltage		$V_{BE(on)}$			Vdc
$I_C = 2.0$ Adc, $V_{CE} = 3.0$ Vdc				2.8	
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio		$\lvert h_{fe} \rvert$			
$I_C = 1.5$ Adc, $V_{CE} = 3.0$ Vdc, $f = 1.0$ Mhz			4.0		
Output Capacitance					pF
$V_{CB} = 10$ Vdc, $I_E = 0$, $f = 0.1$ Mhz	2N6294, 2N6295	C_{ob}		120	
	2N6296, 2N6297			200	
Small-Signal Current Gain		h_{fe}			
$I_C = 1.5$ Adc, $V_{CE} = 3.0$ Vdc, $f = 1.0$ kHz			300		

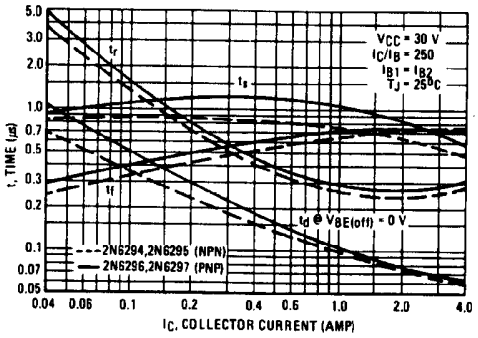
*Indicates JEDEC registered data

FIGURE 2 – SWITCHING TIMES TEST CIRCUIT



For NPN test circuit, reverse all polarities.

FIGURE 3 – SWITCHING TIMES



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