



High-reliability discrete products
and engineering services since 1977

2N5630-2N5631 – NPN 2N6030-2N6031 – PNP

COMPLEMENTARY SILICON POWER TRANSISTORS

FEATURES:

- Available as “HR” (high reliability) screened per MIL-PRF-19500, JANTX level. Add “HR” suffix to base part number
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)

MAXIMUM RATINGS

Ratings	Symbol	2N5630 2N6030	2N5631 2N6031	Unit
Collector-Emitter Voltage	V_{CE0}	120	140	V
Collector-Base Voltage	V_{CBO}	120	140	V
Emitter-Base Voltage	V_{EBO}	7		V
Collector Current -Continuous Peak	I_C	16 20		A
Base Current	I_B	5.0		A
Total Power Dissipation Derate above 25°C	P_T	200 1.14		W W/°C
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +200		°C
Thermal Resistance Junction to case	$R_{\theta JC}$	0.875		°C/W

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted

Characteristics	Symbol	Min	Max	Unit
Collector-Emitter Sustaining Voltage ⁽¹⁾ $I_C = 200\text{mA}, I_B = 0$	$V_{CE0(sus)}$	120 140	-	V
Collector Emitter Cutoff Current $V_{CE} = 60\text{V}, I_B = 0$ $V_{CE} = 70\text{V}, I_B = 0$	I_{CEO}	- -	2.0 2.0	mA
Collector Emitter Cutoff Current $V_{CE} = \text{Rated } V_{CB}, V_{EB(off)} = 1.5\text{V}$ $V_{CE} = \text{Rated } V_{CB}, V_{EB(off)} = 1.5\text{V}, T_C = 150^\circ\text{C}$	I_{CEX}	- -	2.0 7.0	mA
Collector Base Cutoff Current $V_{CB} = \text{Rated } V_{CB}, I_E = 0$	I_{CBO}	-	2.0	mA
Emitter Base Cutoff Current $V_{BE} = 7\text{V}, I_C = 0$	I_{EBO}	-	5.0	mA
Collector Cutoff Current $I_E = 0, V_{CB} = 100\text{V}$	I_{CBO}	-	1	mA
DC Current Gain ⁽¹⁾ $I_C = 8\text{A}, V_{CE} = 2\text{V}$ $I_C = 16\text{A}, V_{CE} = 2\text{V}$	h_{FE}	20 15 4.0	80 60 -	-
Collector-Emitter Saturation Voltage $I_C = 10\text{A}, I_B = 1\text{A}$ $I_C = 16\text{A}, I_B = 4\text{A}$	$V_{CE(sat)}$	- -	1 2	V
Base-Emitter Saturation Voltage ⁽¹⁾ $I_C = 10\text{A}, I_B = 1\text{A}$	$V_{BE(sat)}$	-	1.8	V

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted

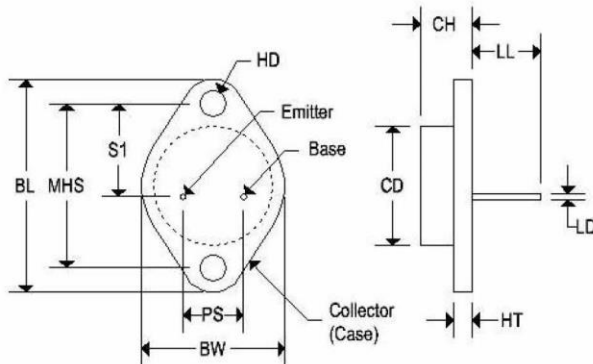
Characteristics	Symbol	Min	Max	Unit
Base-Emitter Voltage $I_C = 8A, I_B = 1A$	V_{BE}	-	1.5	V
Current Gain – Bandwidth Product⁽²⁾ $I_C = 1.0A, V_{CE} = 20V, f_{test} = 0.5MHz$	f_T	1	-	MHz
Output Capacitance $V_{CB} = 10V, I_E = 0, f = 0.1MHz$	C_{CBO}	-	500 1000	pF
Small Signal Current Gain $I_C = 4A, V_{CE} = 10V, f = 1KHz$	h_{fe}	15	-	-

Note 1: Pulse width = 350µs, duty cycle ≤ 0.02

Note 2: $f_T = |h_{fe}| \cdot f_{test}$

MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Pin out	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.380	6.860	9.650
HT	0.060	0.135	1.520	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150

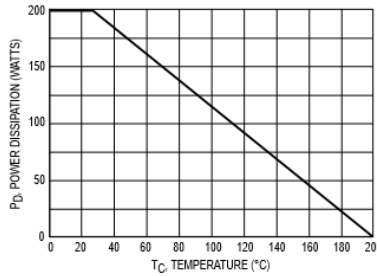


Figure 1. Power Derating

Safe Area Curves are indicated by Figure 5. All Limits are applicable and must be observed.

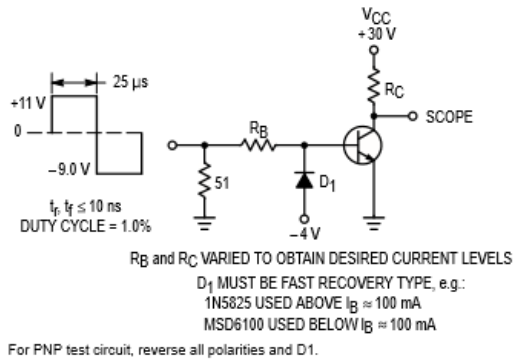


Figure 2. Switching Times Test Circuit

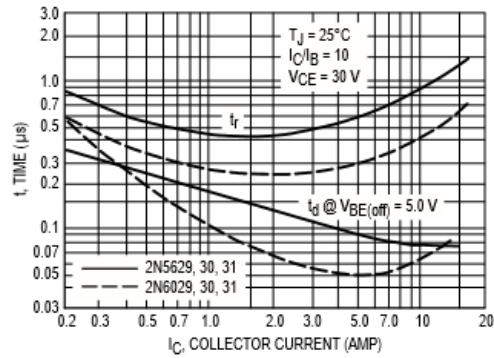


Figure 3. Turn-On Time

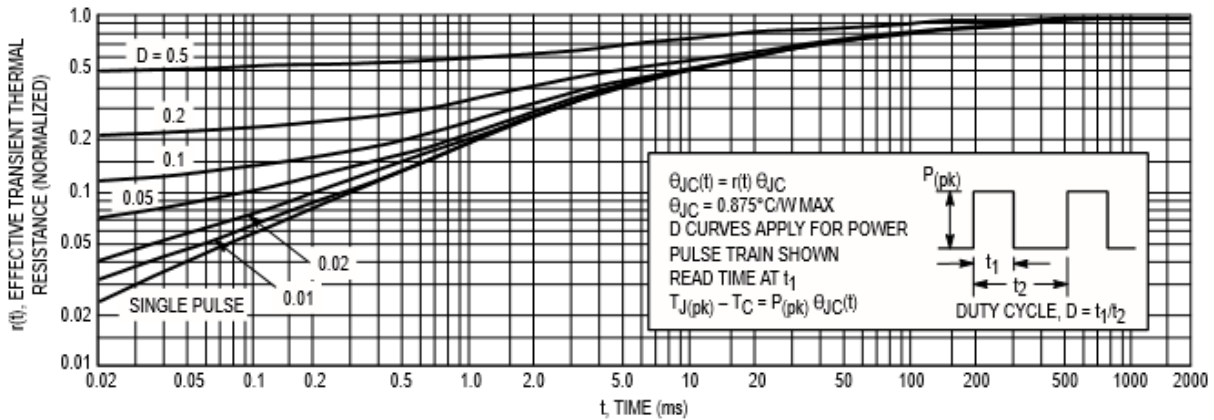


Figure 4. Thermal Response

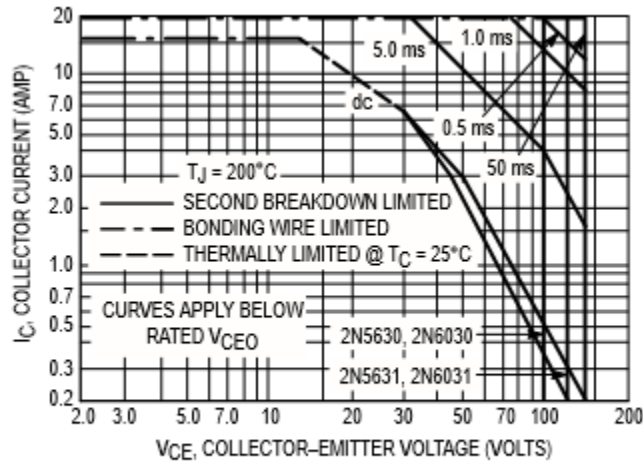


Figure 5. Active-Region Safe Operating Area

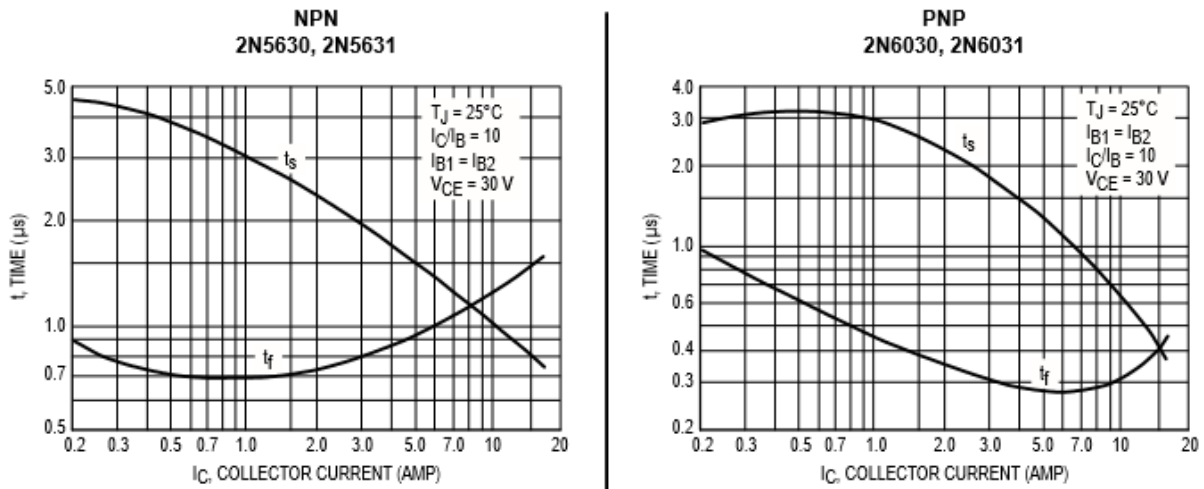


Figure 6. Turn-Off Time

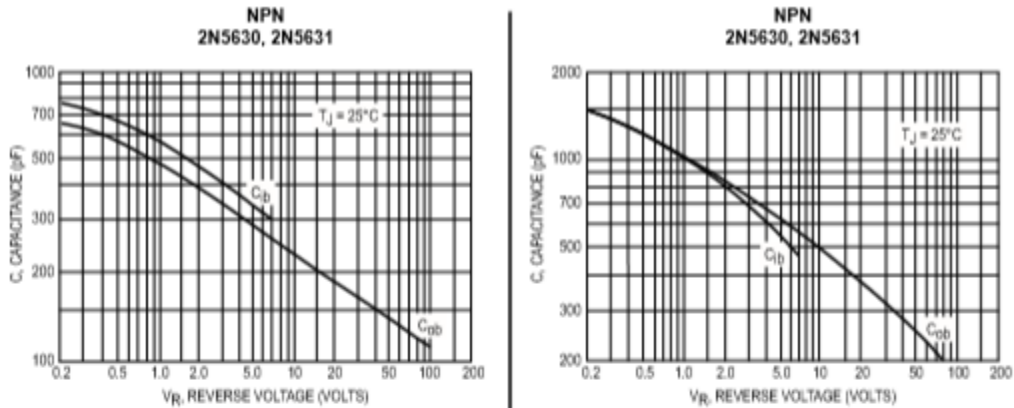


Figure 7. Capacitance

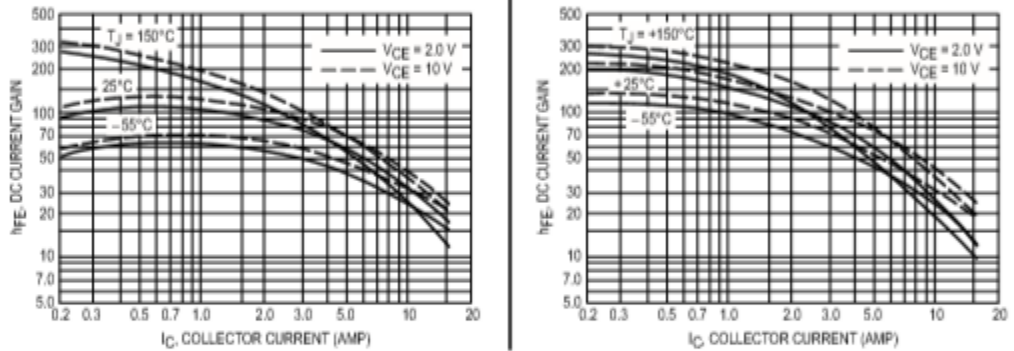


Figure 8. DC Current Gain

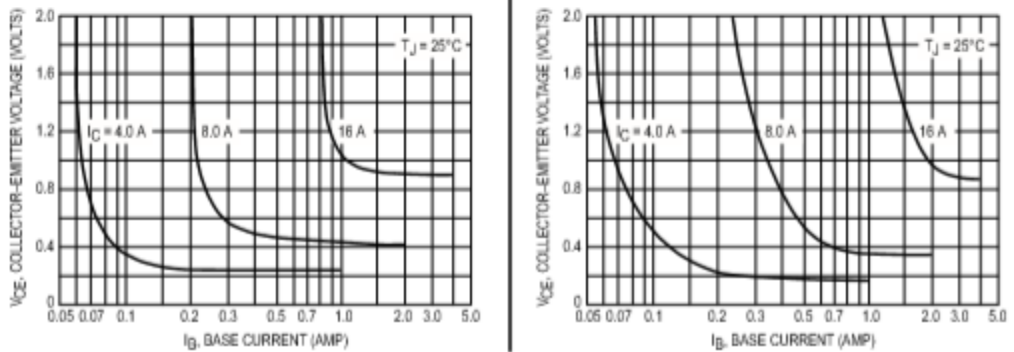


Figure 9. Collector Saturation Region