New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

2N5871, 2N5872, 2N6317, 2N6318 PNP (SILICON)
2N5873, 2N5874, 2N6315, 2N6316 NPN

COMPLEMENTARY SILICON MEDIUM-POWER TRANSISTORS

. . . designed for general-purpose power amplifier and switching applications.

- Low Collector-Emitter Saturation Voltage – $V_{CE(sat)}$ = 1.0 Vdc (Max) @ I_C = 4.0 Adc
- Low Leakage Current – I_{CEX} = 0.25 mAdc (Max)
- Excellent DC Current Gain – h_{FE} = 20 (Min) @ I_C = 2.5 Adc
- High Current Gain – Bandwidth Product – f_T = 4.0 MHz @ I_C = 0.25 Adc
- Choice of Packages – TO-3 – 2N5871/2N5874
  TO-66 – 2N6315/2N6318

7.0 AMPERE

COMPLEMENTARY SILICON POWER TRANSISTORS

60–80 VOLTS

115 WATTS – TO-3
90 WATTS – TO-66

*MAXIMUM RATINGS

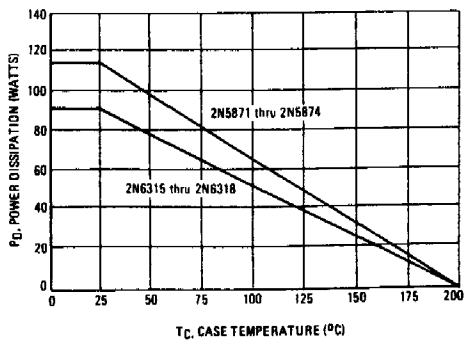
Rating	Symbol	2N5871 2N5873 2N6315 2N6317	2N5872 2N5874 2N6316 2N6318	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CB}	60	80	Vdc
Emitter-Base Voltage	V_{EB}	5.0		Vdc
Collector Current – Continuous Peak	I_C	7.0 15		Adc
Base Current	I_B	2.0		Adc
		2N5871 Series	2N6315 Series	
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	115 0.658	90 0.515	Watts W/°C
Operating and Storage Junction Temperature Range	T_J,T_{stg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	2N5871 2N5872 2N5873 2N5874	2N6315 2N6316 2N6317 2N6318	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.52	1.94	°C/W

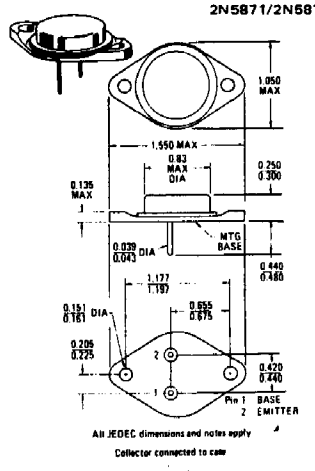
*Indicates JEDEC registered data. Limits and conditions differ on some parameters and re-registration reflecting these changes has been requested. All above values meet or exceed present JEDEC registered data.

FIGURE 1 – POWER DERATING



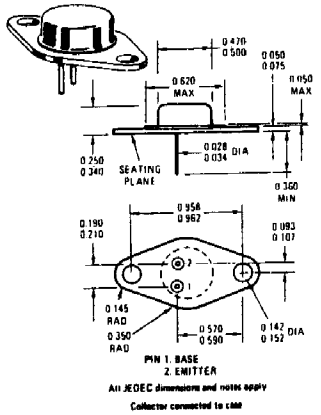
Safe Area Limits are indicated by Figures 5 and 6. Both limits are applicable and must be observed.

2N5871/2N5874



TO-3

2N6315/2N6318



TO-66

Quality Semi-Conductors

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

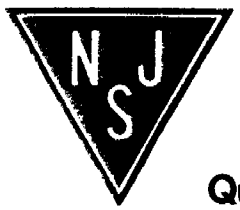
TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

2N5871, 2N5872, 2N6317, 2N6318 PNP (continued)
2N5873, 2N5874, 2N6315, 2N6316 NPN

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1)		$V_{CEO(sus)}$			Vdc
(I_C = 100 mAdc, I_B = 0)	2N5871,2N5873,2N6315,2N6317		60	–	
	2N6872,2N5874,2N6316,2N6318		80	–	
Collector Cutoff Current		I_{CEO}			mAdc
(V_{CE} = 30 Vdc, I_B = 0)	2N5871,2N5873,2N6315,2N6317		–	0.5	
(V_{CE} = 40 Vdc, I_B = 0)	2N5872,2N5874,2N6316,2N6318		–	0.5	
Collector Cutoff Current		I_{CEX}			mAdc
(V_{CE} = 60 Vdc, $V_{BE(off)}$ = 1.5 Vdc)	2N5871,2N5873,2N6315,2N6317		–	0.25	
(V_{CE} = 80 Vdc, $V_{BE(off)}$ = 1.5 Vdc)	2N5872,2N5874,2N6316,2N6318		–	0.25	
(V_{CE} = 60 Vdc $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)	2N5871,2N5873,2N6315,2N6317		–	2.0	
(V_{CE} = 80 Vdc, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)	2N5872,2N5874,2N6316,2N6318		–	2.0	
Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = 60 Vdc, I_E = 0)	2N5871,2N5873,2N6315,2N6317		–	0.25	
(V_{CB} = 80 Vdc, I_E = 0)	2N5872,2N5874,2N6316,2N6318		–	0.25	
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (1)		h_{FE}			–
(I_C = 0.5 Adc, V_{CE} = 4.0 Vdc)			35	–	
(I_C = 2.5 Adc, V_{CE} = 4.0 Vdc)			20	100	
(I_C = 7.0 Adc, V_{CE} = 4.0 Vdc)			4.0	–	
Collector-Emitter Saturation Voltage (1)		$V_{CE(sat)}$			Vdc
(I_C = 4.0 Adc, I_B = 0.4 Adc)			–	1.0	
(I_C = 7.0 Adc, I_B = 1.75 Adc)			–	2.0	
Base-Emitter Saturation Voltage (1) (I_C = 7.0 Adc, I_B = 1.75 Adc)		$V_{BE(sat)}$	–	2.5	Vdc
Base-Emitter On Voltage (1) (I_C = 2.5 Adc, V_{CE} = 4.0 Vdc)		$V_{BE(on)}$	–	1.5	Vdc
DYNAMIC CHARACTERISTICS					
Current-Gain – Bandwidth Product (2) (I_C = 0.25 Adc, V_{CE} = 10 Vdc, f_{test} = 1.0 MHz)		f_T	4.0	–	MHz
Output Capacitance		C_{ob}			pF
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	2N5871,2N5872,2N6317,2N6318		–	300	
	2N5873,2N5874,2N6315,2N6316		–	200	
Small-Signal Current Gain (I_C = 0.5 Adc, V_{CE} = 4.0 Vdc, f = 1.0 kHz)		h_{fe}	20	–	–
SWITCHING CHARACTERISTICS					
Rise Time	(V_{CC} = 30 Vdc, I_C = 2.5 Adc, I_{B1} = I_{B2} = 0.25 Adc)	t_r	–	0.7	μs
Storage Time		t_s	–	1.0	μs
Fall Time		t_f	–	0.8	μs

*Indicates JEDEC Registered Data.
(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
(2) $f_T = |h_{fe}| \cdot f_{test}$



Quality Semi-Conductors