New Jersey Semi-Conductor Products, Inc.

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TELEPHONE: (201) 376-2922
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2N6274
2N6275
2N6277

50 AMPERE
POWER TRANSISTORS
NPN SILICON
100, 120, 140, 150 VOLTS
250 WATTS

High-Power NPN Silicon Transistors

. . . designed for use in industrial–military power amplifer and switching circuit applications.

- High Collector Emitter Sustaining —
  $V_{CEO(sus)}$ = 100 Vdc (Min) — 2N6274
  = 120 Vdc (Min) — 2N6275
  = 150 Vdc (Min) — 2N6277
- High DC Current Gain —
  h_{FE} = 30–120 @ I_C = 20 Adc
  = 10 (Min) @ I_C = 50 Adc
- Low Collector–Emitter Saturation Voltage —
  $V_{CE(sat)}$ = 1.0 Vdc (Max) @ I_C = 20 Adc
- Fast Switching Times @ I_C 20 Adc
  t_r = 0.35 µs (Max)
  t_s = 0.8 µs (Max)
  t_f = 0.25 µs (Max)
- Complement to 2N6377–79

MAXIMUM RATINGS(1)

Rating	Symbol	2N6274	2N6275	2N6277	Unit
Collector–Base Voltage	V_{CB}	120	140	180	Vdc
Collector–Emitter Voltage	V_{CEO}	100	120	150	Vdc
Emitter–Base Voltage	V_{EB}	6.0			Vdc
Collector Current — Continuous Peak	I_C	50 100			Adc
Base Current	I_B	20			Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	250 1.43			Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200			°C

THERMAL CHARACTERISTIC

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	0.7	°C/W

(1) Indicates JEDEC Registered Data.

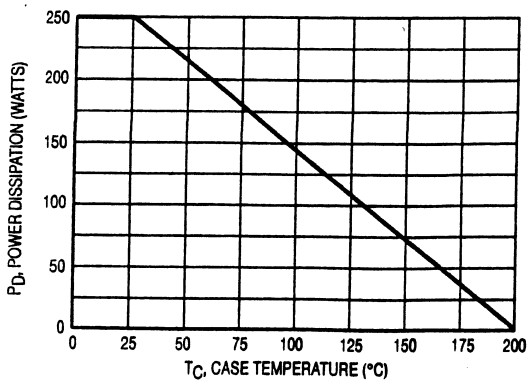

Figure 1. Power Derating

Quality Semi-Conductors

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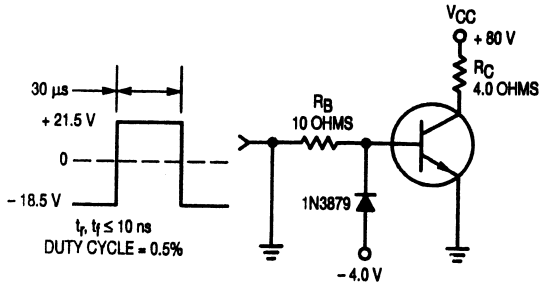
***ELECTRICAL CHARACTERISTICS** (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage (1)		$V_{CEO(sus)}$			Vdc
I_C = 50 mAdc, I_B = 0)	2N6274		100	—	
	2N6275		120	—	
	2N6277		150	—	
Collector Cutoff Current		I_{CEO}			μAdc
(V_{CE} = 50 Vdc, I_B = 0)	2N6274		—	50	
(V_{CE} = 60 Vdc, I_B = 0)	2N6275		—	50	
(V_{CE} = 75 Vdc, I_B = 0)	2N6277		—	50	
Collector Cutoff Current		I_{CEX}			
(V_{CE} = Rated V_{CB}, $V_{EB(off)}$ = 1.5 Vdc)			—	10	μAdc
(V_{CE} = Rated V_{CB}, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)			—	1.0	mAdc
Emitter Cutoff Current (V_{BE} = 6.0 Vdc, I_C = 0)		I_{EBO}	—	100	μAdc
ON CHARACTERISTICS (1)					
DC Current Gain		h_{FE}			—
I_C = 1.0 Adc, V_{CE} = 4.0 Vdc)			50	—	
I_C = 20 Adc, V_{CE} = 4.0 Vdc)			30	120	
I_C = 50 Adc, V_{CE} = 4.0 Vdc)			10	—	
Collector–Emitter Saturation Voltage		$V_{CE\ (sat)}$			Vdc
I_C = 20 Adc, I_B = 2.0 Adc)			—	1.0	
I_C = 50 Adc, I_B = 10 Adc)			—	3.0	
Base–Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
I_C = 20 Adc, I_B = 2.0 Adc)			—	1.8	
I_C = 50 Adc, I_B = 10 Adc)			—	3.5	
Base–Emitter On Voltage (I_C = 20 Adc, V_{CE} = 4.0 Vdc)		$V_{BE(on)}$	—	1.8	Vdc
DYNAMIC CHARACTERISTICS					
Current–Gain Bandwidth Product (2) (I_C = 1.0 Adc, V_{CE} = 10 Vdc, f_{test} = 10 MHz)		f_T	30	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz)		C_{ob}	—	600	pF
SWITCHING CHARACTERISTICS					
Rise Time		t_r	—	0.35	μs
(V_{CC} = 80 Vdc, I_C = 20 Adc, I_{B1} = 2.0 Adc, $V_{BE(off)}$ = 5.0 Vdc)					
Storage Time		t_s	—	0.80	μs
(V_{CC} = 80 Vdc, I_C = 20 Adc, I_{B1} = I_{B2} = 2.0 Adc)					
Fall Time		t_f	—	0.25	μs
(V_{CC} = 80 Vdc, I_C = 20 Adc, I_{B1} = I_{B2} = 2.0 Adc)					

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



NOTE: For information of Figures 3 and 6, R_B and R_C were varied to obtain desired test conditions.

Figure 2. Switching Time Test Circuit

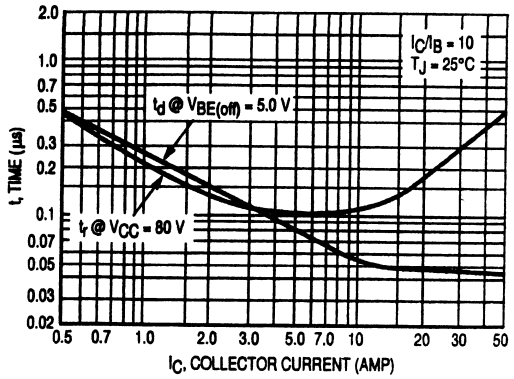


Figure 3. Turn–On Time