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2N6666, 2N6667, 2N6668
Silicon PNP Transistors
Darlington Power Amplifier
TO–220 Type Package

Description:

The 2N6666, 2N6667, and 2N6668 are silicon PNP Darlington power transistors in a TO–220 type package designed for general purpose amplifier and low–speed switching applications.

Features:

- DC Current Gain: h_{FE} = 3000 (Typ) @ I_C = 4A
- Collector–Emitter Sustaining Voltage:
  $V_{CEO(sus)}$ = 40V (Min) – 2N6666
  = 60V (Min) – 2N6667
  = 80V (Min) – 2N6668
- Low Collector–Emitter Saturation Voltage:
  $V_{CE(sat)}$ = 2V Max @ I_C = 3A – 2N6666
  = 2V Max @ I_C = 5A – 2N6667, 2N6668

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}
- 2N6666 . . . . . 40V
- 2N6667 . . . . . 60V
- 2N6668 . . . . . 80V

Collector–Base Voltage, V_{CBO}
- 2N6666 . . . . . 40V
- 2N6667 . . . . . 60V
- 2N6668 . . . . . 80V

Emitter–Base Voltage, V_{EBO} 5V

Collector Current, I_C
- Continuous
  - 2N6666 . . . . . 8A
  - 2N6667, 2N6668 . . . . . 10A
- Peak 15A

Base Current, I_B 250mA

Total Power Dissipation (T_C = +25°C), P_D 65W
- Derate Above 25°C . . . . . 0.52W/°C

Operating Junction Temperature Range, T_J . . . . . –65° to +150°C

Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.92°C/W

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage 2N6666	$V_{CEO(sus)}$	I_C = 200mA, I_B = 0, Note 1	40	–	–	V
2N6667			60	–	–	V
2N6668			80	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = Rated V_{CEO}, I_B = 0	–	–	1.0	mA
	I_{CEX}	V_{CE} = Rated V_{CEO}, $V_{EB(off)}$ = 1.5V	–	–	0.3	mA
		T_C = +125°C	–	–	3	mA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 5V, I_C = 0	–	–	5	mA
ON Characteristics (Note 1)						
DC Current Gain 2N6666	h_{FE}	I_C = 3A, V_{CE} = 3V	1000	–	20000	
2N6667, 2N6668		I_C = 5A, V_{CE} = 3V	1000	–	20000	
2N6666		I_C = 8A, V_{CE} = 3V	100	–	–	
2N6667, 2N6668		I_C = 10A, V_{CE} = 3V	100	–	–	
Collector–Emitter Saturation Voltage 2N6666	$V_{CE(sat)}$	I_C = 3A, I_B = 6mA	–	–	2	V
2N6667, 2N6668		I_C = 5A, I_B = 10mA	–	–	2	V
2N6666		I_C = 8A, I_B = 80mA	–	–	3	V
2N6667, 2N6668		I_C = 10A, I_B = 100mA	–	–	3	V
Base–Emitter ON Voltage 2N6666	$V_{BE(on)}$	I_C = 3A, V_{CE} = 3V	–	–	2.8	V
2N6667, 2N6668		I_C = 5A, V_{CE} = 3V	–	–	2.8	V
2N6666		I_C = 8A, V_{CE} = 3V	–	–	4.5	V
2N6667, 2N6668		I_C = 10A, V_{CE} = 3V	–	–	4.5	V
Switching Characteristics						
Small–Signal Current Gain	h_{fe}	I_C = 1A, V_{CE} = 5V, f_{test} = 1MHz	1000	–	–	
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	–	–	200	pF

Note 1. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.