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2N6123
Silicon NPN Transistor
Power Amp Driver, Output, Switch
TO–220 Type Package

Description:

The 2N6123 is a silicon NPN transistor in a TO–220 type package designed for use in power amplifier and switching circuit applications.

Features:

- Collector–Emitter Sustaining Voltage: $V_{CEO(sus)}$ = 80V Min
- Collector–Emitter Saturation Voltage: $V_{CE(sat)}$ = 600mV Max @ I_C = 1.5A, I_B = 150mA

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 80V
Collector–Base Voltage, V_{CBO} 80V
Emitter–Base Voltage, V_{EBO} 5V
Collector Current, I_C
  Continuous 4A
  Peak 8A
Total Power Dissipation (T_C = +25°C), P_D 40W
  Derate Above 25°C . . . . . 320mW°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} . . . . . 3.125°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	$V_{CEO(sus)}$	I_C = 100mA, I_B = 0, Note 1	80	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 80V, I_B = 0	–	–	1.0	mA
	I_{CEX}	V_{CE} = 80V, $V_{BE(off)}$ = 1.5V	–	–	0.1	mA
		V_{CE} = 80V, $V_{BE(off)}$ = 1.5V, T_J = +125°C	–	–	2.0	mA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 5V, I_C = 0	–	–	1.0	mA

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	V_{CE} = 2V, I_C = 1.5A	20	–	80	
		V_{CE} = 2V, I_C = 4A	7	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1.5A, I_B = 150mA	–	–	0.6	V
		I_C = 4A, I_B = 1A	–	–	1.4	V
Base–Emitter ON Voltage	$V_{BE(on)}$	I_C = 1.5A, V_{CE} = 2V	–	–	1.2	V
Dynamic Characteristics						
Current–Gain–Bandwidth Product	f_T	I_C = 1A, V_{CE} = 4V, f = 1MHz, Note 2	2.5	–	–	MHz
Small–Signal Current Gain	h_{fe}	I_C = 100mA, V_{CE} = 2V, f = 1kHz	25	–	–	

Note 1. Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.
Note 2. $f_T = |h_{fe}| \bullet f_{test}$