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2N6057
Silicon NPN Transistor
Darlington Power Amplifier
TO–3 Type Package

Description:

The 2N6057 is a silicon NPN Darlington transistor in a TO–3 type case designed for general–purpose amplifier and low–frequency switching applications.

Features:

- High DC Current Gain: h_{FE} = 3500 Typ @ I_C = 5A

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 60V
Collector–Base Voltage, V_{CBO} 60V
Emitter–Base Voltage, V_{EBO} 5V
Collector Current, I_C
  Continuous 12A
  Peak 20A
Base Current, I_B 200mA
Total Power Dissipation (T_C = +25°C), P_D 150W
  Derate Above 25°C . . . . . 0.857W/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +200°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 1.17°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	60	–	–	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 30V, I_B = 0	–	–	1.0	mA
	I_{CEX}	V_{CE} = 60V, $V_{BE(off)}$ = 1.5V	–	–	0.5	mA
		V_{CE} = 60V, $V_{BE(off)}$ = 1.5V, T_A = +150°C	–	–	5.0	mA
Emitter Cutoff Current	I_{EBO}	V_{BE} = 5V, I_C = 0	–	–	2.0	mA

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	V_{CE} = 3V, I_C = 6A	750	–	18000	
		V_{CE} = 3V, I_C = 12A	100	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 6A, I_B = 24mA	–	–	2.0	V
		I_C = 12A, I_B = 120mA	–	–	3.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 12A, I_B = 120mA	–	–	4.0	V
Base–Emitter ON Voltage	$V_{BE(on)}$	V_{CE} = 3V, I_C = 6A	–	–	2.8	V
Dynamic Characteristics						
Small–Signal Current Gain	h_{fe}	V_{CE} = 3V, I_C = 5A, f = 1kHz	300	–	–	
Current–Gain–Bandwidth Product	f_T	V_{CE} = 3V, I_C = 5A, f = 1MHz	4.0	–	–	MHz

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

Note 2. $f_T = |h_{fe}| \bullet f_{test}$