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2N5884 (PNP) & 2N5886 (NPN) Silicon Power Transistor High Power Audio Amplifier TO-3 Type Package

Description:

The 2N5884 (PNP) and 2N5886 (NPN) are silicon complementary transistors designed for use in general purpose power amplifier and switching applications.

Features:

- Low Collector–Emitter Saturation Voltage: $V_{CE(sat)} = 1V$ (Max) at $I_C = 15A$
- Excellent DC Current Gain: $h_{FE} = 20 - 100$ @ $I_C = 10A$

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	25A
Peak	50A
Base Current, I_B	7.5A
Total Device Dissipation ($T_C = +25^\circ C$), P_D	200W
Derate Above $25^\circ C$	1.15W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$
Thermal Resistance, Junction–to–Case, R_{thJC}	0.875 $^\circ C/W$

Electrical Characteristics: ($T_C = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200mA, I_B = 0$, Note 1	80	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 40V, I_B = 0$	–	–	2.0	mA
	I_{CBO}	$V_{CB} = 80V, I_E = 0$	–	–	1.0	mA
	I_{CBX}	$V_{CE} = 100V, V_{BE(off)} = 1.5V$		–	–	1.0
$V_{CE} = 100V, V_{BE(off)} = 1.5V, T_C = +150^\circ C$		–	–	10	mA	
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$	–	–	1.0	mA

Note 1. Pulse Test: Pulse Width $\leq 300\mu s$. Duty Cycle $\leq 2\%$.

Electrical Characteristics (Cont'd): ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 3\text{A}, V_{CE} = 4\text{V}$	35	-	-	
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$	20	-	100	
		$I_C = 25\text{A}, V_{CE} = 4\text{V}$	4.0	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 15\text{A}, I_B = 1.5\text{A}$	-	-	1.0	V
		$I_C = 25\text{A}, I_B = 6.25\text{A}$	-	-	4.0	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 10\text{A}, V_{CE} = 4\text{V}$	-	-	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 25\text{A}, I_B = 6.25\text{A}$	-	-	2.5	V
Dynamic Characteristics						
Current Gain-Bandwidth Product	f_T	$I_C = 1\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}, \text{Note 2}$	4.0	-	-	MHz
Small-Signal Current Gain	h_{fe}	$I_C = 3\text{A}, V_{CE} = 4\text{V}, f = 1\text{kHz}$	20	-	-	

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$. Duty Cycle $\leq 2\%$.

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

