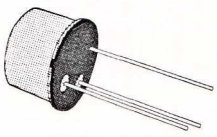
SGS-THOMSON
MICROELECTRONICS

BC303
BC304

MEDIUM POWER AUDIO DRIVERS

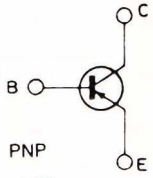
DESCRIPTION

The BC303 and BC304 are silicon planar epitaxial PNP transistors in TO-39 metal case. They are intended particularly as audio driver stages in commercial and professionnel equipments. In addition they are useful as high speed saturated switches and general purpose amplifiers. The complementary NPN types are respectively the BC301 and BC302.



TO-39

INTERNAL SCHEMATIC DIAGRAM



S- 6856

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BC303	BC304	
V_{CBO}	Collector-base Voltage (I_E = 0)	– 85	– 60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 60	– 45	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 6		V
I_C	Collector Current	– 0.5		A
I_{CM}	Collector Peak Current	– 1		A
I_{BM}	Base Peak Current	– 0.5		A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.85 6		W W
T_{stg}	Storage Temperature	– 65 to 175		°C
T_j	Junction Temperature	175		°C

THERMAL DATA

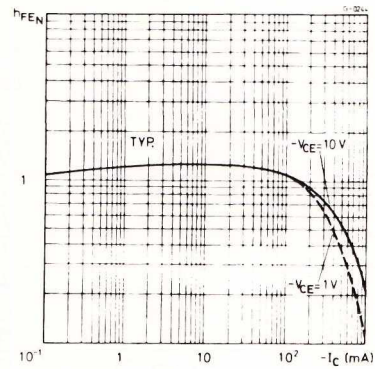
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	25	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

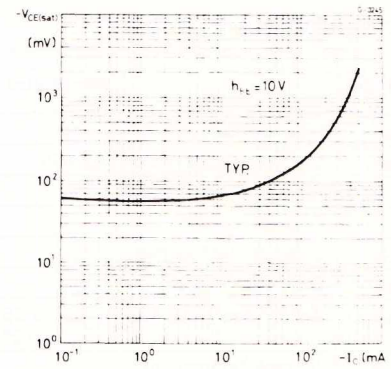
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = – 60 V		– 5	– 20	nA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = – 5 V			– 20	nA
$V_{(BR)\ CEO}$ *	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = – 10 mA For **BC303** For **BC304**	 – 60 – 45			 V V
$V_{CE\ (sat)}$ *	Collector-emitter Saturation Voltage	I_C = – 150 mA I_B = – 15 mA		–0.25	– 0.65	V
V_{BE} *	Base-emitter Voltage	I_C = – 150 mA V_{CE} = – 10 V		– 0.78		V
h_{FE} *	DC Current Gain Gr.4 Gr.5 Gr.6 	I_C = – 150 mA V_{CE} = – 10 V I_C = – 150 mA V_{CE} = – 10 V I_C = – 150 mA V_{CE} = – 10 V I_C = – 0.1 mA V_{CE} = – 10 V I_C = – 500 mA V_{CE} = – 10 V	40 70 120 20 20		80 140 240	
f_T	Transition frequency	I_C = – 50 mA V_{CE} = – 10 V f = 100 MHz		100		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = – 10 V		15		pF
h_{ie}	Input Impedance	I_C = – 5 mA V_{CE} = – 10 V f = 1 kHz		0.9		kΩ
h_{re}	Reverse Voltage Ratio	I_C = – 5 mA V_{CE} = – 10 V f = 1 kHz		1.7×10^{-4}		
h_{fe}	Small Signal Current Gain	I_C = – 5 mA V_{CE} = – 10 V f = 1 kHz		140		
h_{oe}	Output Admittance	I_C = – 5 mA V_{CE} = – 10 V f = 1 kHz		45		µs

* Pulsed : pulse duration = 300µs, duty cycle = 1%.

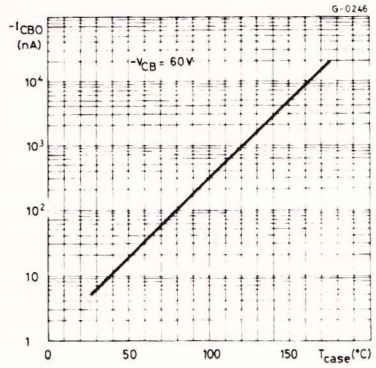
DC Normalized Current Gain.



Collector-emitter saturation voltage.



Collector Cutoff Current.



Transition Frequency.