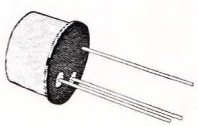
SGS-THOMSON MICROELECTRONICS

BC300
BC301-BC302

MEDIUM POWER AUDIO DRIVERS

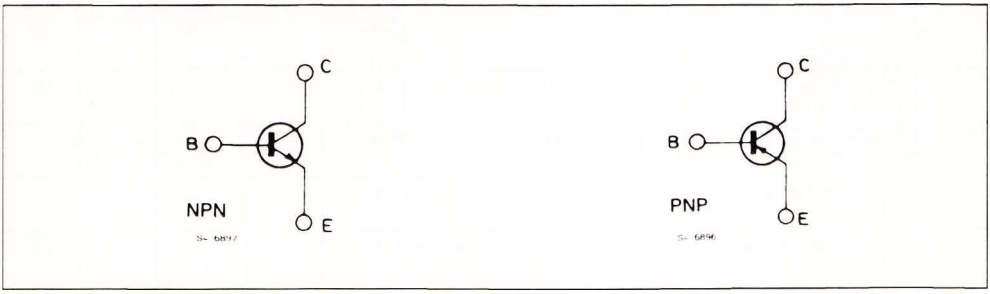
DESCRIPTION

The BC300, BC301 and BC302 are silicon planar epitaxial NPN transistors in TO-39 metal case. They are intended for audio driver stages in commercial and industrial equipments. In addition they are useful as high speed saturated switches and general purpose amplifiers. The PNP types complementary to BC301 and BC302 are respectively the BC303 and BC304.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BC300	BC301	BC302	
V_{CBO}	Collector-base Voltage (I_E = 0)	120	90	60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	80	60	45	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	7			V
I_C	Collector Current	0.5			A
I_{CM}	Collector Peak Current	1			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

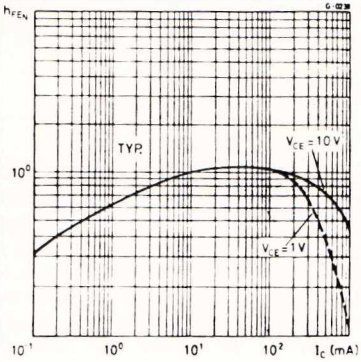
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	25	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

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

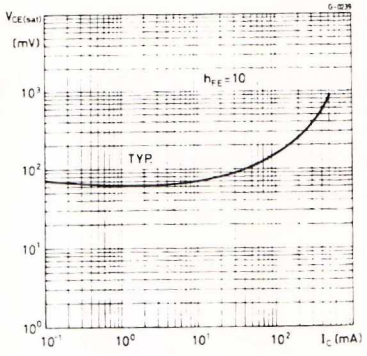
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 60 V			5	20	nA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V				10	nA
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 30 mA	for **BC300** for **BC301** for **BC302**	80 60 45			V V V
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 µA	for **BC300** for **BC301** for **BC302**	120 90 60			V V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 150 mA	I_B = 15 mA		0.2	0.5	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 I_C = 150 mA I_C = 150 mA I_C = 0.1 mA I_C = 500 mA	V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V	40 70 120 20 20		80 140 240	
f_T	Transition Frequency	I_C = 10 mA	V_{CE} = 10 V		100		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0	V_{CB} = 10 V		12		pF
h_{ie}	Input Impedance	I_C = 5 mA f = 1 kHz	V_{CE} = 10 V		1.1		kΩ
h_{re}	Reverse Voltage Ratio	I_C = 5 mA f = 1 kHz	V_{CE} = 10 V		1.7×10^{-4}		
h_{fe}	Small Signal Current Gain	I_C = 5 mA f = 1 kHz	V_{CE} = 10 V		140		
h_{oe}	Output Admittance	I_C = 5 mA f = 1 kHz	V_{CE} = 10 V		14		µS

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

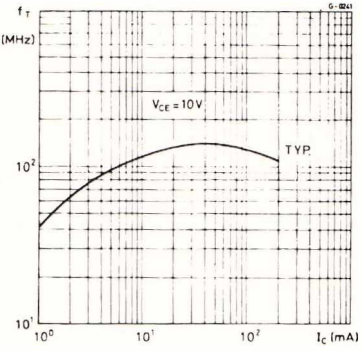
DC Normalized Current Gain.



Collector-emitter Saturation Voltage.



Transition Frequency.



Power Rating Chart.