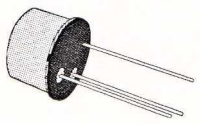
SGS-THOMSON
MICROELECTRONICS

BC139

AUDIO OUTPUT AMPLIFIER

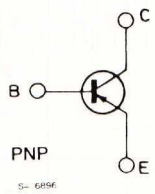
DESCRIPTION

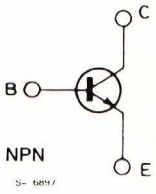
The BC139 is a silicon planar epitaxial PNP transistor in a TO-39 metal case. It is particularly designed for use in audio output and driver stages. The complementary NPN type is the BC119.



TO-39

INTERNAL SCHEMATIC DIAGRAM





ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	– 40	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 40	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 5	V
I_C	Collector Current	– 0.5	A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.7 3	W W
T_{stg}	Storage Temperature	– 55 to 200	°C
T_j	Junction Temperature	200	°C

THERMAL DATA

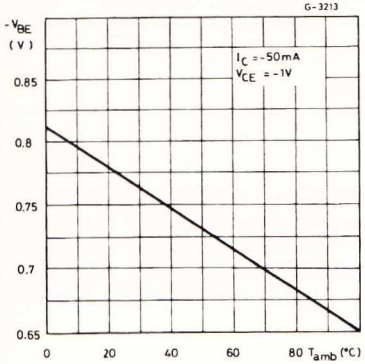
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	58	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	250	°C/W

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

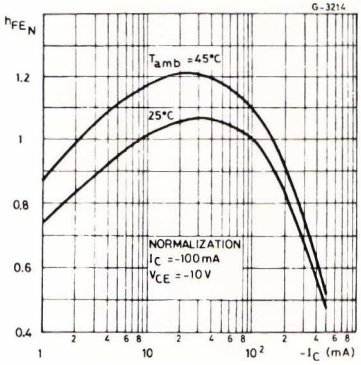
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = – 30 V V_{CB} = – 30 V T_{amb} = 75 °C			– 100 – 50	nA µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = – 10 µA	– 40			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = – 10 mA	– 40			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = – 10 µA	– 5			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = – 300 mA I_B = – 30 mA I_C = – 500 mA I_B = – 50 mA		– 0.45 – 1	– 0.8	V V
V_{BE}*	Base-emitter Voltage	I_C = – 10 mA V_{CE} = – 10 V I_C = – 100 mA V_{CE} = – 10 V I_C = – 300 mA V_{CE} = – 1 V		– 0.7 – 0.77 – 0.97		V V V
h_{FE}*	DC Current Gain	I_C = – 10 mA V_{CE} = – 10 V I_C = – 100 mA V_{CE} = – 10 V I_C = – 150 mA V_{CE} = – 1 V I_C = – 300 mA V_{CE} = – 1 V	 40 20	 90 90 45 35		
f_T	Transition Frequency	I_C = – 50 mA V_{CE} = – 10 V		200		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = – 10 V f = 1 MHz		6		pF

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

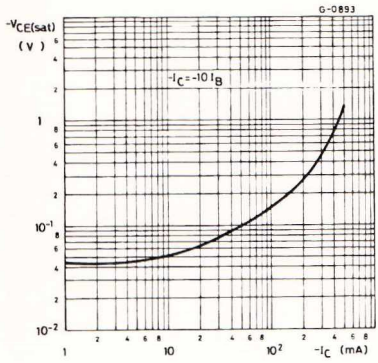
Base-emitter Voltage.



DC Normalized Current Gain.



Collector-emitter Saruration Voltage.



Power Rating Chart.