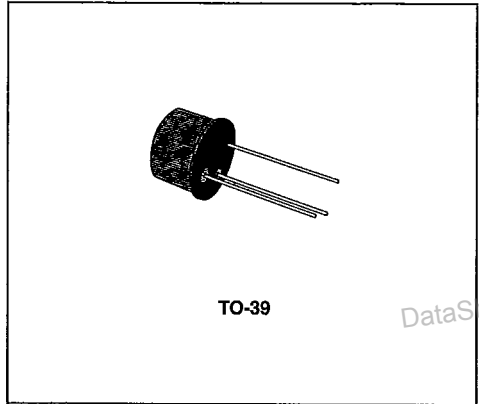


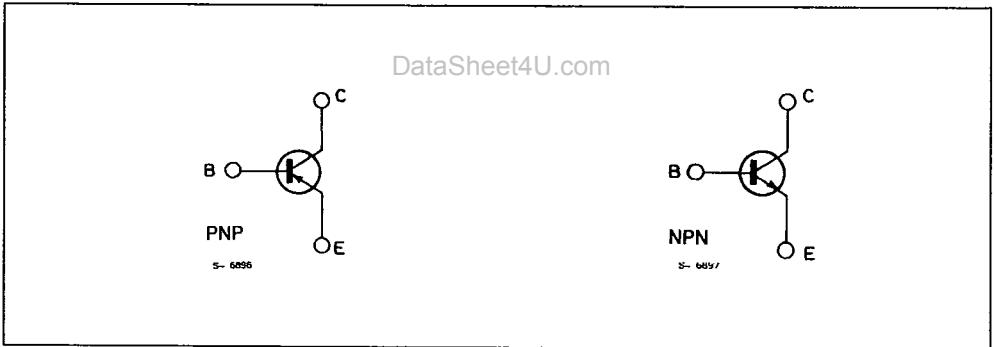
**AUDIO OUTPUT AMPLIFIER**

**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.



**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 $T_{amb} \leq 25^\circ C$ at $T_{case} \leq 25^\circ C$	0.7 3	W W
$T_{stg}$	Storage Temperature	-55 to 200	$^\circ C$
$T_j$	Junction Temperature	200	$^\circ C$

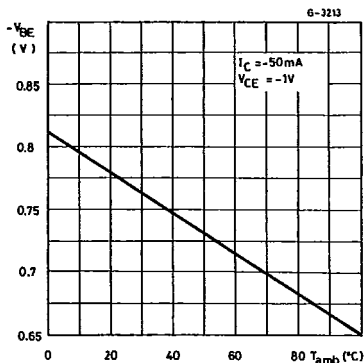
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	58	$^{\circ}C/W$
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	250	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\ ^{\circ}C$  unless otherwise specified)

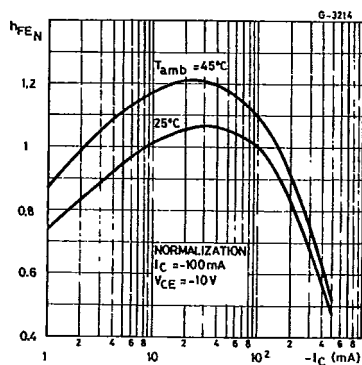
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = -30\ V$ $V_{CB} = -30\ V$ $T_{amb} = 75\ ^{\circ}C$			- 100 - 50	nA $\mu A$
$V_{(BR)CBO}$	Collector-base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\ \mu A$	- 40			V
$V_{(BR)CEO}^*$	Collector-emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10\ mA$	- 40			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage ( $I_C = 0$ )	$I_E = -10\ \mu A$	- 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  $\mu s$ , duty cycle = 1 %.

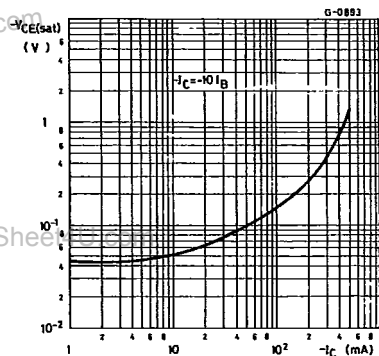
## Base-emitter Voltage



## DC Normalized Current Gain



## Collector-emitter Saturation Voltage



## Power Rating Chart.

