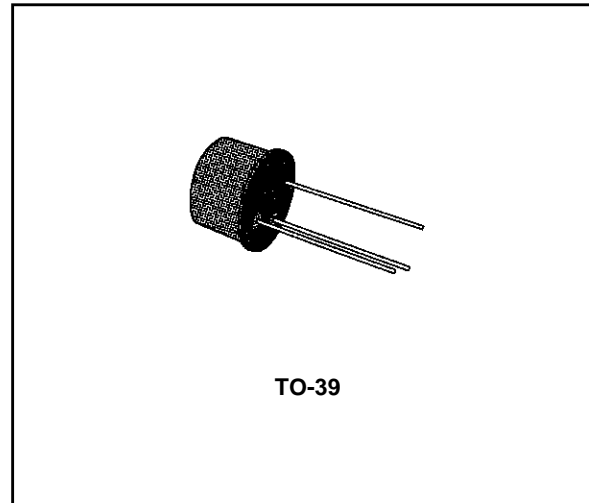


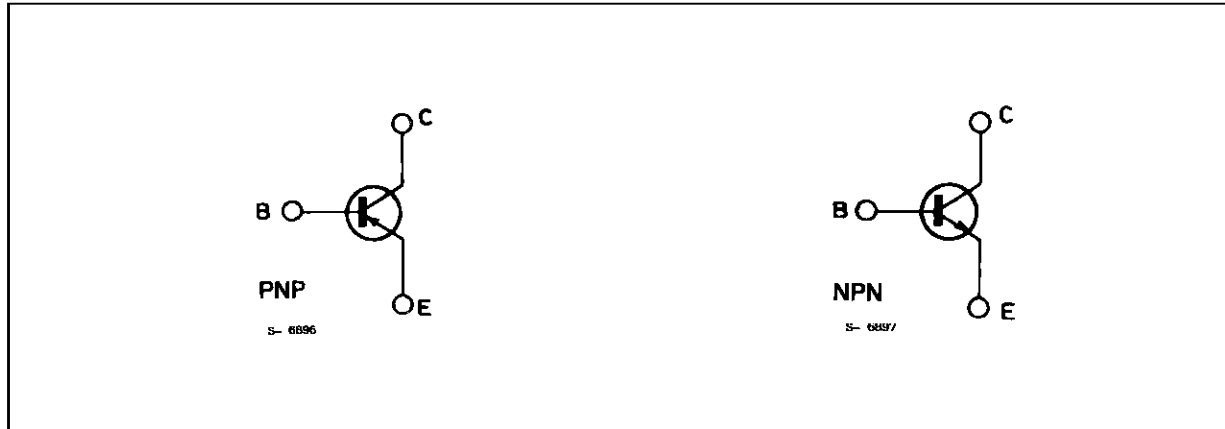
AUDIO OUTPUT AMPLIFIER

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

THERMAL DATA

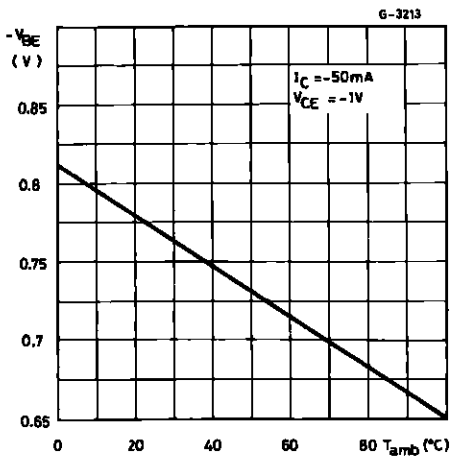
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	58	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	250	°C/W

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

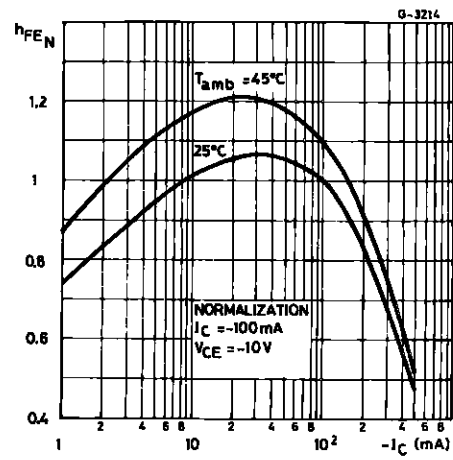
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	$V_{CB} = -30\text{ V}$ $V_{CB} = -30\text{ V}$ $T_{amb} = 75\text{ °C}$			- 100 - 50	nA μA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage ($I_E = 0$)	$I_C = -10\text{ μA}$	- 40			V
$V_{(BR)CEO}^*$	Collector-emitter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

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

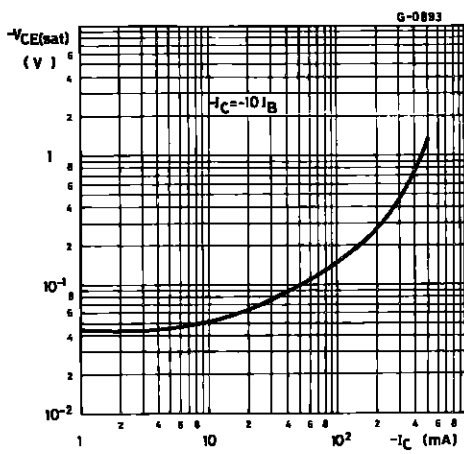
Base-emitter Voltage.



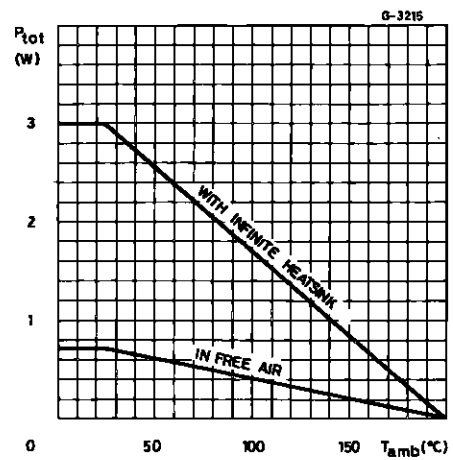
DC Normalized Current Gain.



Collector-emitter Saturation Voltage.

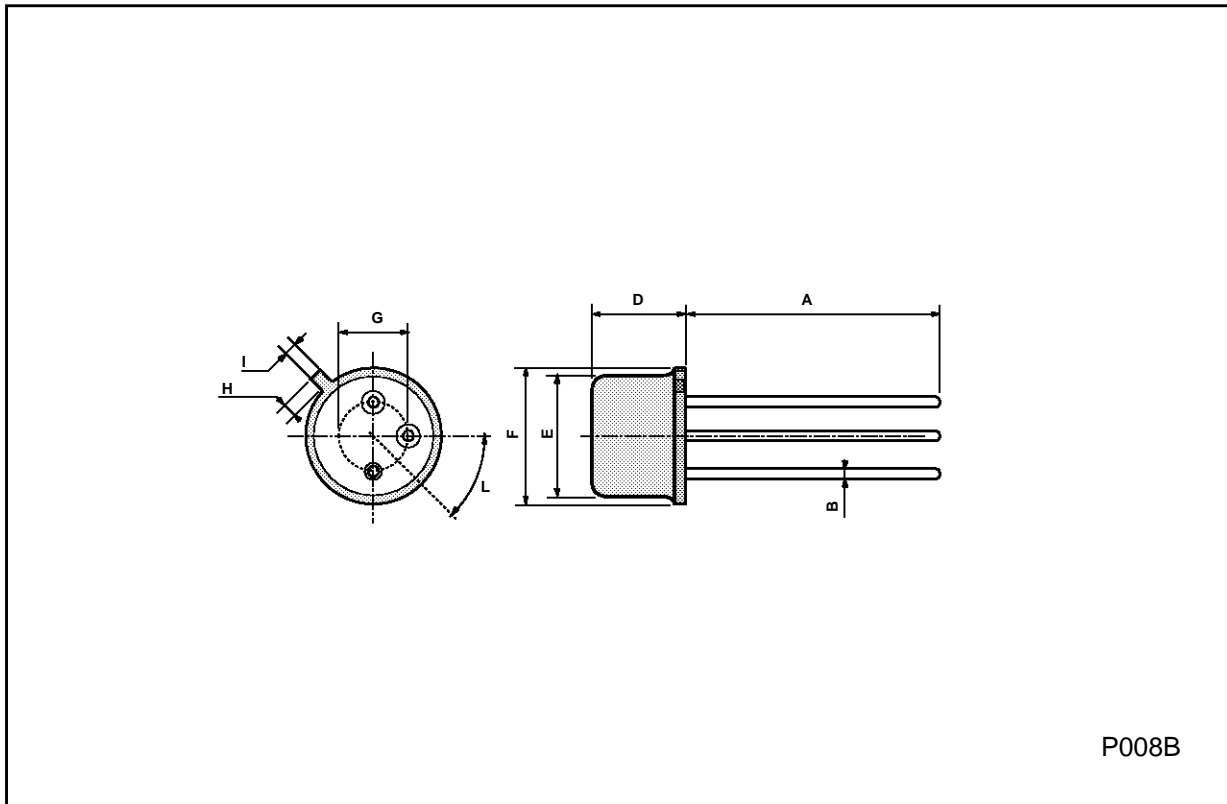


Power Rating Chart.



TO39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45° (typ.)					



P008B

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