

MICRO ELECTRONICS

BC142

GENERAL DESCRIPTION :

The BC142 is a NPN silicon planar epitaxial transistor. It features low saturation voltage, low collector cut-off current and high breakdown voltage. It is intended for use in driver stages of high power audio amplifiers. It can be supplied together with BC143 as a match pair.

MECHANICAL OUTLINE



ABSOLUTE MAXIMUM RATINGS :

Continuous Power Dissipation @ $T_A=25^\circ\text{C}$, P_{max}
 Continuous Power Dissipation @ $T_A=45^\circ\text{C}$, P_{max}
 Continuous Power Dissipation @ $T_C=25^\circ\text{C}$, P_{max}
 Continuous Power Dissipation @ $T_C=75^\circ\text{C}$, P_{max}
 Maximum Collector Junction Temperature, T_j
 Storage Temperature Range, T_{stg}
 Soldering Temperature (10 sec. time limit)
 Continuous Collector Current, I_C max
 Collector-Base Voltage, V_{CBO}
 Collector-Emitter Voltage, V_{CEO}
 Emitter-Base Voltage, V_{EBO}

0.8W
 0.7W
 5W
 3.6W
 200°C
 -55°C to +200°C
 260°C
 1A
 80V
 60V
 5V

ELECTRICAL CHARACTERISTICS @ $T_A=25^\circ\text{C}$ (unless otherwise stated) :

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage	V_{CBO}	80			V	$I_C=100\mu\text{A}$ $I_E=0$
Collector-Emitter Breakdown Voltage	V_{CEO}	60			V	$I_C=30\text{mA}$ $I_B=0$
Emitter-Base Breakdown Voltage	V_{EBO}	5			V	$I_E=100\mu\text{A}$ $I_C=0$
Collector Cutoff Current	I_{CBO}			50	nA	$V_{\text{CB}}=40\text{V}$ $I_E=0$
Collector Cutoff Current	I_{CBO}			50	μA	$V_{\text{CB}}=40\text{V}$ $I_E=0$ $T_A=150^\circ\text{C}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}}(\text{sat})$	0.15	0.4		V	$I_C=200\text{mA}$ $I_B=20\text{mA}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}}(\text{sat})$	0.3			V	$I_C=500\text{mA}$ $I_B=50\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}}(\text{sat})$		1.5		V	$I_C=200\text{mA}$ $I_B=20\text{mA}$
Base-Emitter Voltage	V_{BE}	0.83			V	$V_{\text{CE}}=2\text{V}$ $I_C=200\text{mA}$
D.C. Current Gain	h_{FE}		100			$V_{\text{CE}}=10\text{V}$ $I_C=10\text{mA}$
D.C. Current Gain	h_{FE}		100			$V_{\text{CE}}=10\text{V}$ $I_C=100\text{mA}$
D.C. Current Gain	h_{FE}	20	80			$V_{\text{CE}}=2\text{V}$ $I_C=200\text{mA}$
D.C. Current Gain	h_{FE}		50			$V_{\text{CE}}=2\text{V}$ $I_C=500\text{mA}$
High Frequency Current Gain	h_{fe}		5			$V_{\text{CE}}=10\text{V}$ $I_C=50\text{mA}$ $f=20\text{MHz}$
Output Capacitance	C_{ob}		12		pF	$V_{\text{CE}}=10\text{V}$ $I_E=0$
BC142-BC143 match-pair	h_{FE} ratio	0.8	1.25			$V_{\text{CE}}=10\text{V}$ $I_C=50\text{mA}$

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