

# Transistors

## 2SA643

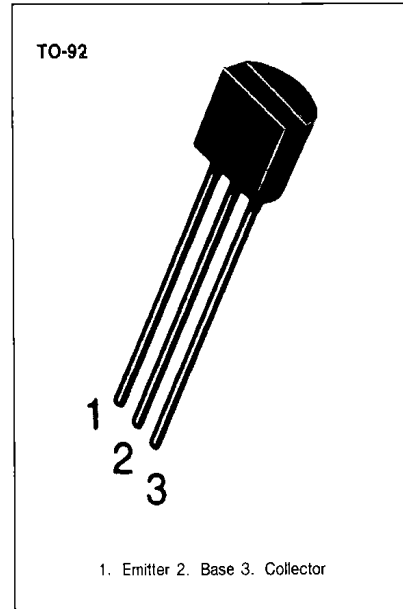
### LOW FREQUENCY POWER AMPLIFIER

• Collector Dissipation  $P_C=500\text{mW}$

### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-20	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current (DC)	$I_C$ (DC)	-500	mA
Collector Current (pulse)*	$I_C$ (pulse)*	-700	mA
Collector Dissipation	$P_C$	500	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ\text{C}$

\*  $PW \leq 10\text{mS}$ , duty Cycle  $\leq 50\%$ .



### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = -100\mu\text{A}, I_E = 0$	-40			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = -10\text{mA}, I_B = 0$	-20			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = -100\mu\text{A}, I_C = 0$	-5			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = -25\text{V}, I_E = 0$			-200	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -3\text{V}, I_C = 0$			-200	nA
DC Current Gain	$h_{FE}$	$V_{CE} = -1\text{V}, I_C = -100\text{mA}^*$	40		400	
Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = -500\text{mA}, I_B = -50\text{mA}^*$		-0.3	-0.4	V
Base-Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C = -500\text{mA}, I_B = -50\text{mA}^*$		-1.0	-1.3	V

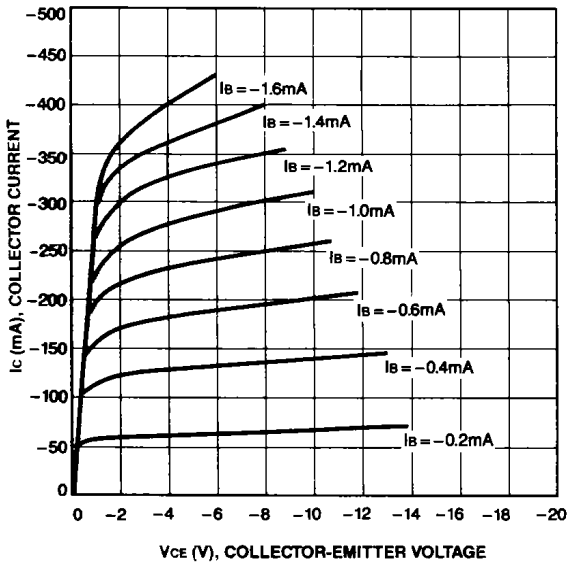
\* Pulse Test:  $PW = 350\mu\text{s}$ , duty cycle = 2%

### $h_{FE}$ CLASSIFICATION

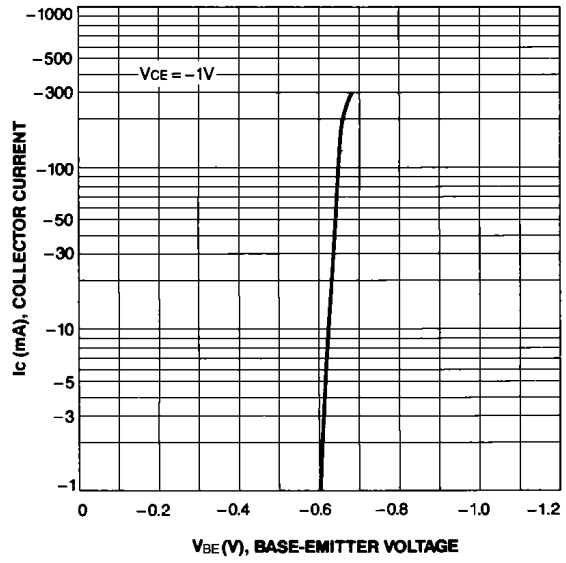
Classification	R	O	Y	G
$h_{FE}$	40-80	70-140	120-240	200-400



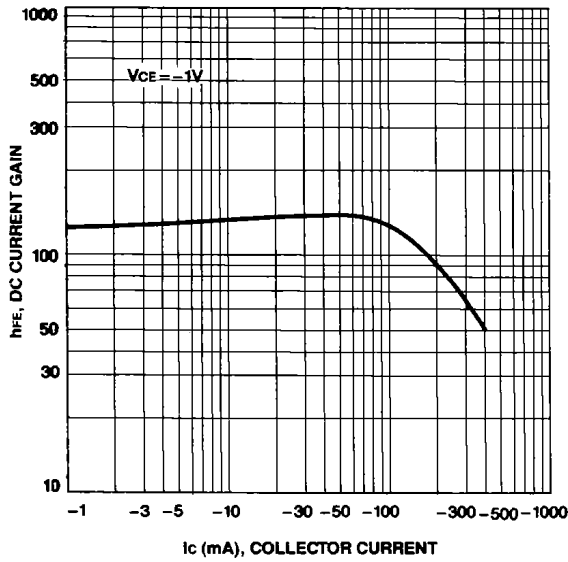
**STATIC CHARACTERISTIC**



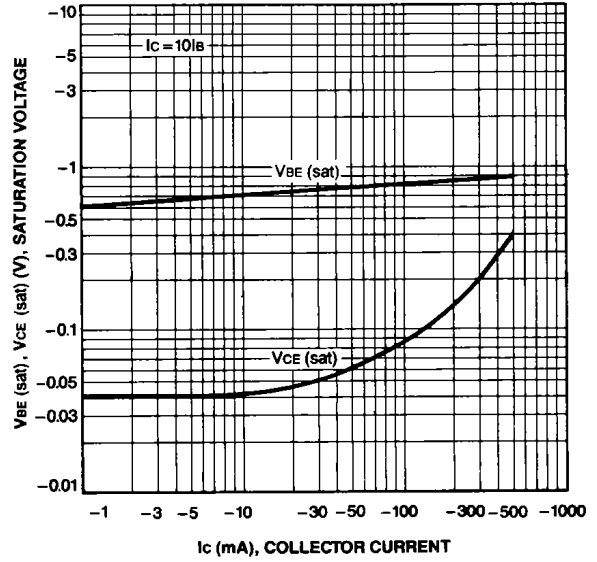
**BASE-EMITTER ON VOLTAGE**



**DC CURRENT GAIN**



**BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE**



**COLLECTOR OUTPUT CAPACITANCE**

