

# Transistors

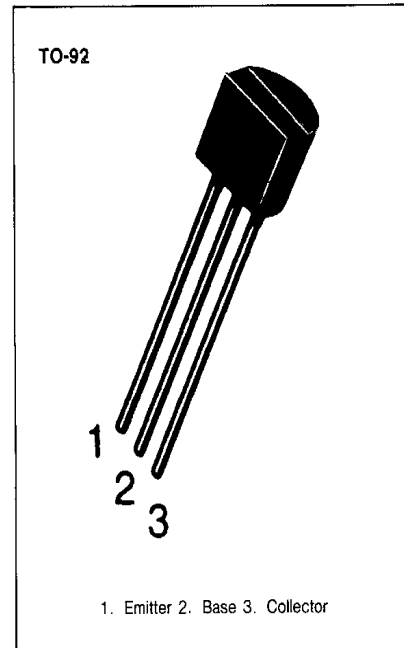
## 2SA539

### LOW FREQUENCY AMPLIFIER

- Collector-Base Voltage  $V_{CBO} = -60V$
- Collector Dissipation  $P_C = 400mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	-60	V
Collector-Emitter Voltage	$V_{CEO}$	-45	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-200	mA
Collector Dissipation	$P_C$	400	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$



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

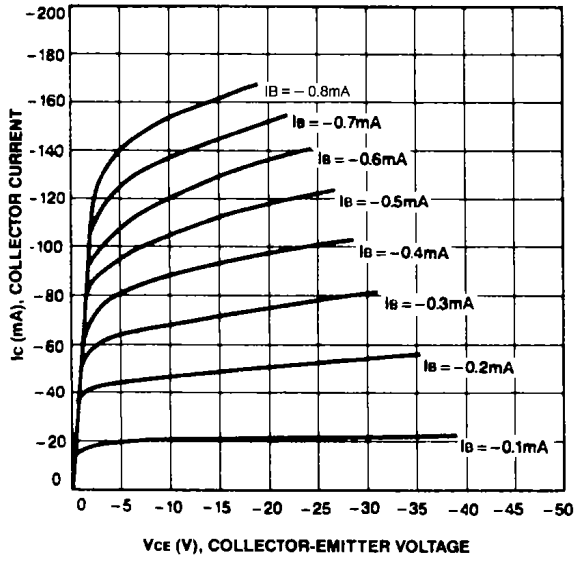
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = -100\mu A, I_E = 0$	-60			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = -10mA, I_B = 0$	-45			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = -10\mu A, I_C = 0$	-5			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = -45V, I_E = 0$			-100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -3V, I_C = 0$			-100	nA
DC Current Gain	$h_{FE}$	$V_{CE} = -1V, I_C = -50mA$	40		240	
Base-Emitter On Voltage	$V_{BE} (on)$	$V_{CE} = -1V, I_C = -10mA$	-0.60	-0.65	-0.90	V
Collector-Emitter Saturation Voltage	$V_{CE} (sat)$	$I_C = -150mA, I_B = -15mA$		-0.25	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE} (sat)$	$I_C = -150mA, I_B = -15mA$		-0.9	-1.2	V

### $h_{FE}$ CLASSIFICATION

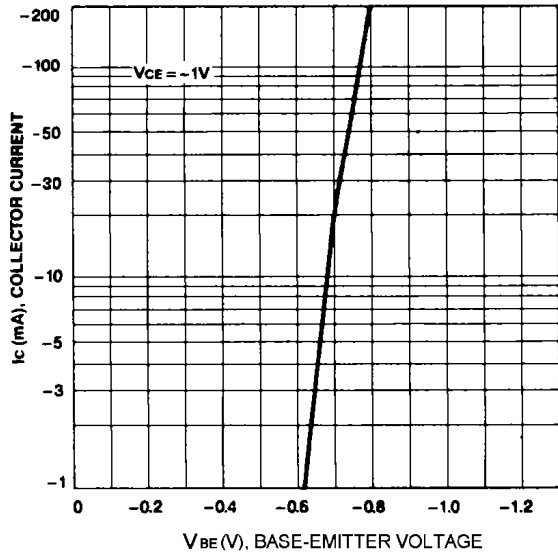
Classification	R	O	Y
$h_{FE}$	40-80	70-140	120-240



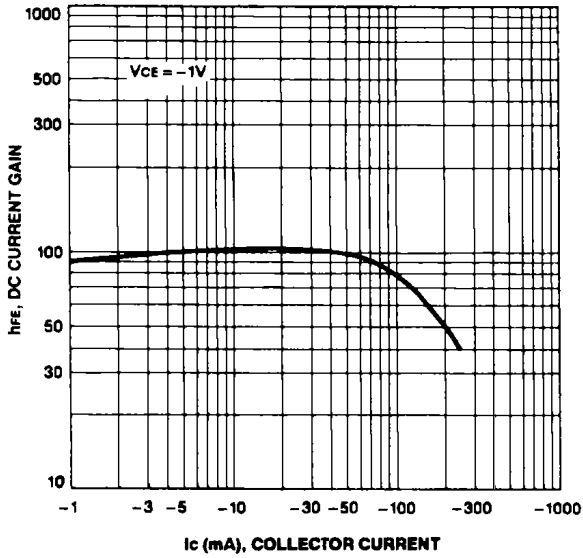
**STATIC CHARACTERISTIC**



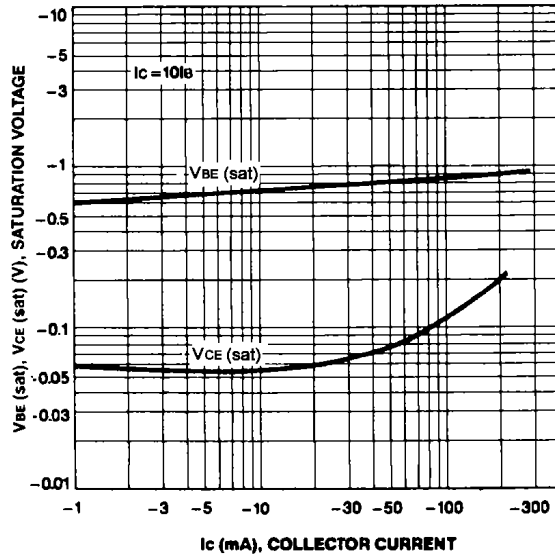
**BASE-EMITTER ON VOLTAGE**



**DC CURRENT GAIN**



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



**COLLECTOR OUTPUT CAPACITANCE**

