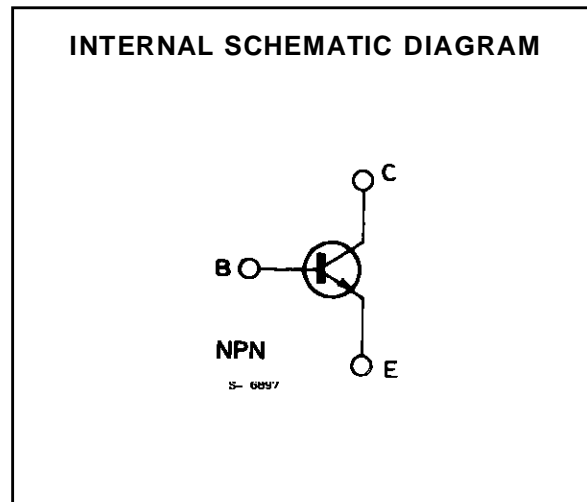
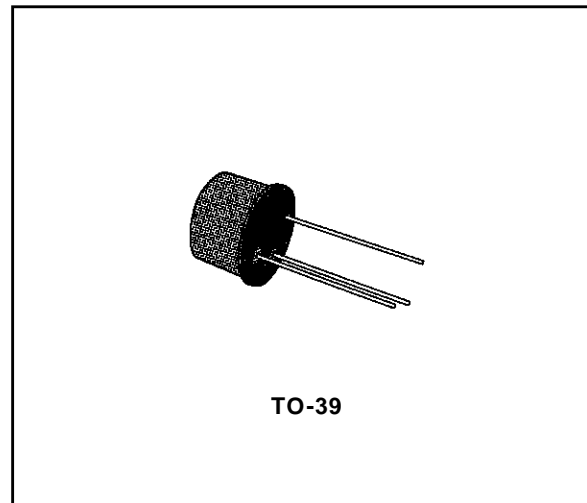


GENERAL PURPOSE AMPLIFIERS

**DESCRIPTION**

The BSY53 and BSY54 are silicon planar epitaxial NPN transistors in Jedec TO-39 metal case, intended for use in general purpose amplifiers.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	75	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	30	V
$V_{EBO}$	Emitter-base Voltage ( $I_E = 0$ )	7	V
$I_C$	Collector Current	750	mA
$P_{tot}$	Total Power Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ at $T_{case} \leq 25\text{ }^\circ\text{C}$	0.8	mW
		3	mW
$T_{stg}, T_j$	Storage and Junction Temperature	- 65 to 200	$^\circ\text{C}$

## BSY53-BSY54

### THERMAL DATA

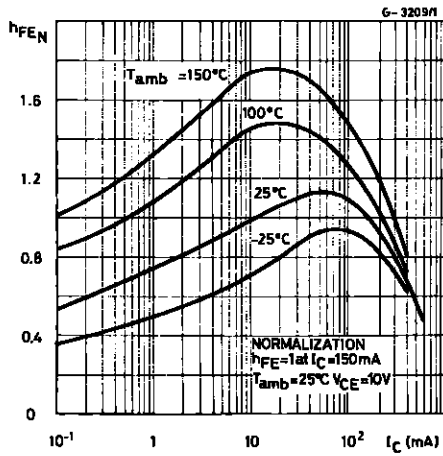
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	58	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	220	°C/W

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

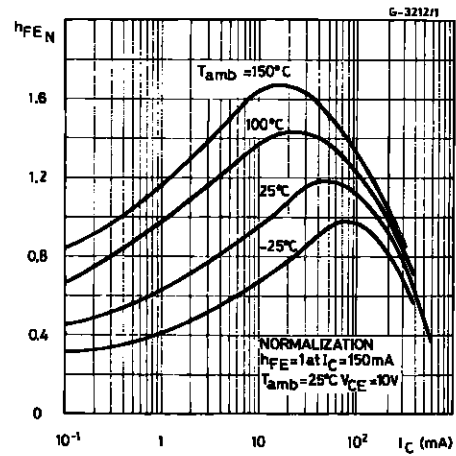
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = 60\text{ V}$ $V_{CB} = 60\text{ V}$ $T_{amb} = 150\text{ °C}$			10 10	nA $\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			10	nA
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$ $I_C = 500\text{ mA}$ $I_B = 50\text{ mA}$		0.15 0.5	0.6 1.2	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 150\text{ mA}$ $I_B = 15\text{ mA}$		0.95	1.2	V
$h_{FE}^*$	DC Current Gain	for <b>BSY53</b> $I_C = 0.1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 10\text{ V}$ for <b>BSY54</b> $I_C = 0.01\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 0.1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}$ $V_{CE} = 10\text{ V}$	20 35 40 20	40 50 65 35	120 300	
$f_T$	Transition Frequency	$I_C = 50\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 50\text{ MHz}$		100		MHz
$C_{CBO}$	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$		10		pF
$C_{EBO}$	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$		23		pF
NF	Noise Figure	$I_C = 0.3\text{ mA}$ $V_{CE} = 10\text{ V}$ $R_g = 1.5\text{ k}\Omega$ $f = 30\text{ Hz to }15\text{ kHz}$		3	8	dB
$h_{fe}$	Small Signal Current Gain	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ kHz}$ for <b>BSY53</b> for <b>BSY54</b>	30 50		150 250	
$h_{ie}$	Input Impedance	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ kHz}$ for <b>BSY53</b> for <b>BSY54</b>	0.8 1.6		4.5 9	k $\Omega$ k $\Omega$
$h_{re}$	Reverse Voltage Ratio	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ kHz}$			$3 \times 10^{-4}$	
$h_{oe}$	Output Impedance	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ kHz}$ for <b>BSY53</b> for <b>BSY54</b>	3.5 4.5		10 12.5	$\mu\text{S}$ $\mu\text{S}$

\* Pulsed : pulse duration = 300  $\mu\text{s}$ , duty cycle = 1 %.

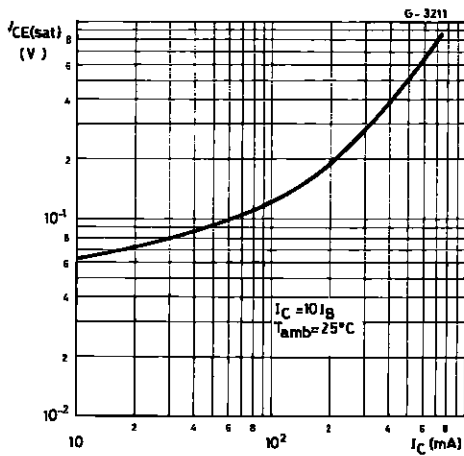
DC Normalized Current Gain (for BSY53 only).



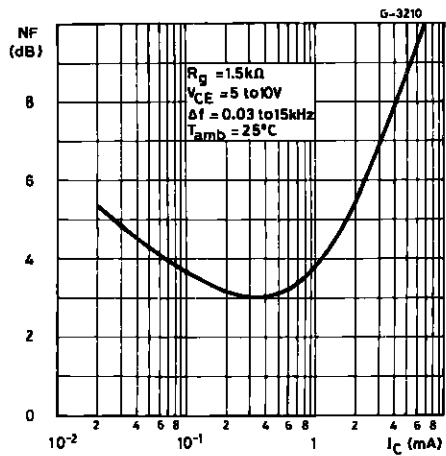
DC Normalized Current Gain (for BSY54 only).



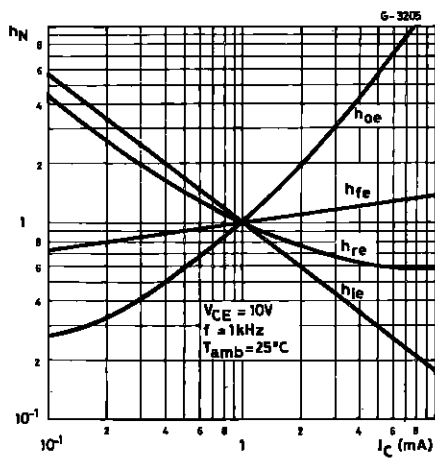
Collector-emitter Saturation Voltage.



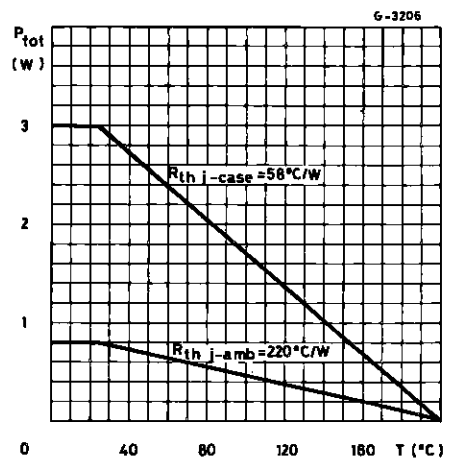
NF vs. Collector Current



Normalized h Parameters.

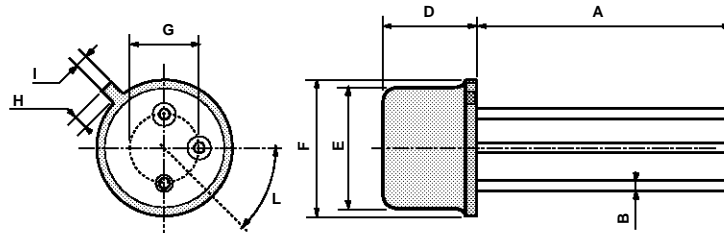


Power Rating Chart.



**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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