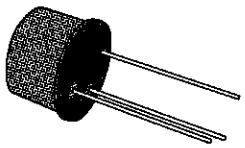
SGS-THOMSON MICROELECTRONICS

BSY53
BSY54

GENERAL PURPOSE AMPLIFIERS

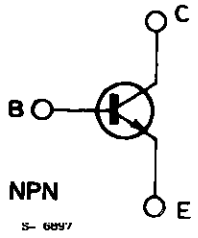
DESCRIPTION

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



TO-39

INTERNAL SCHEMATIC DIAGRAM



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 $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.8 3	mW mW
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

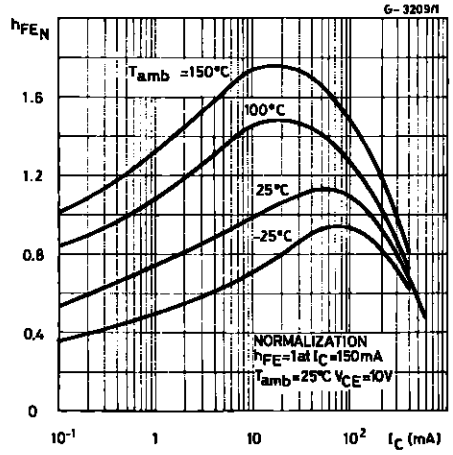
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	58	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	220	°C/W

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

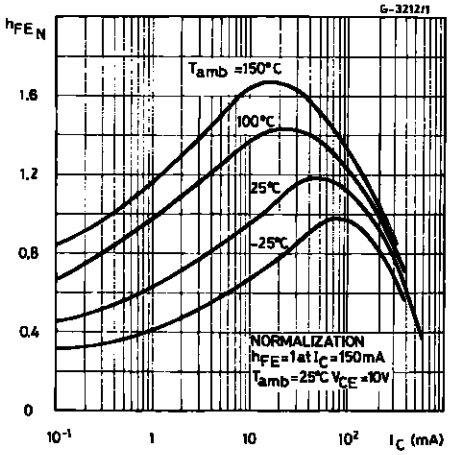
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 60 V V_{CB} = 60 V	 T_{amb} = 150 °C			10 10	nA µA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V				10	nA
$V_{CE\ (sat)}$*	Collector-emitter Saturation Voltage	I_C = 150 mA I_C = 500 mA	I_B = 15 mA I_B = 50 mA		0.15 0.5	0.6 1.2	V V
$V_{BE\ (sat)}$ *	Base-emitter Saturation Voltage	I_C = 150 mA	I_B = 15 mA		0.95	1.2	V
h_{FE}*	DC Current Gain	for **BSY53** I_C = 0.1 mA I_C = 1 mA I_C = 10 mA I_C = 150 mA I_C = 500 mA for **BSY54** I_C = 0.01 mA I_C = 0.1 mA I_C = 1 mA I_C = 10 mA I_C = 150 mA I_C = 500 mA	 V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V V_{CE} = 10 V	 20 35 40 20 20 35 75 100 40	 40 50 65 35 55 80 100 135 60	 120 300 	
f_T	Transition Frequency	I_C = 50 mA f = 50 MHz	V_{CE} = 10 V		100		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 f = 1 MHz	V_{CB} = 10 V		10		pF
C_{EBO}	Emitter-base Capacitance	I_C = 0 f = 1 MHz	V_{EB} = 0.5 V		23		pF
NF	Noise Figure	I_C = 0.3 mA R_9 = 1.5 kΩ f = 30 Hz to 15 kHz	V_{CE} = 10 V		3	8	dB
h_{fe}	Small Signal Current Gain	I_C = 1 mA f = 1 kHz	V_{CE} = 10 V for **BSY53** for **BSY54**	 30 50		 150 250	
h_{ie}	Input Impedance	I_C = 1 mA f = 1 kHz	V_{CE} = 10 V for **BSY53** for **BSY54**	 0.8 1.6		 4.5 9	 kΩ kΩ
h_{re}	Reverse Voltage Ratio	I_C = 1 mA f = 1 kHz	V_{CE} = 10 V			3×10^{-4}	
h_{oe}	Output Impedance	I_C = 1 mA f = 1 kHz	V_{CE} = 10 V for **BSY53** for **BSY54**	 3.5 4.5		 10 12.5	 µS µS

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

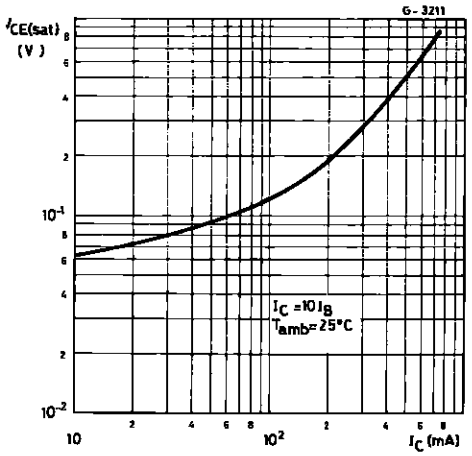
DC Normalized Current Gain (for BSY53 only).



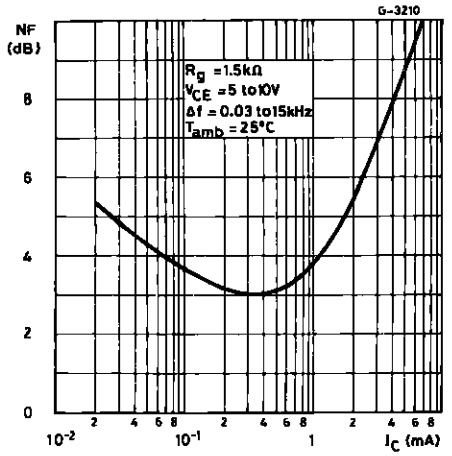
DC Normalized Current Gain (for BSY54 only).



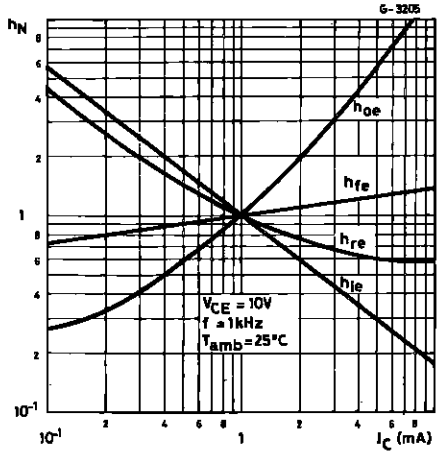
Collector-emitter Saturation Voltage.



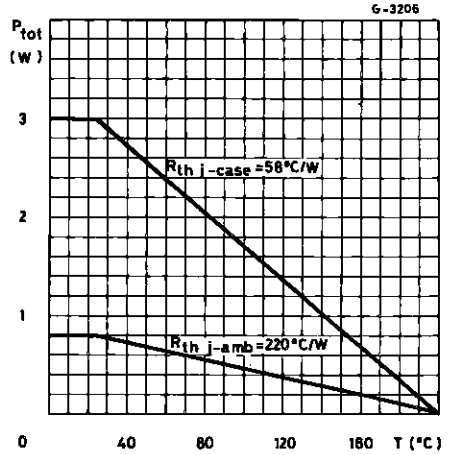
NF vs. Collector Current



Normalized h Parameters.

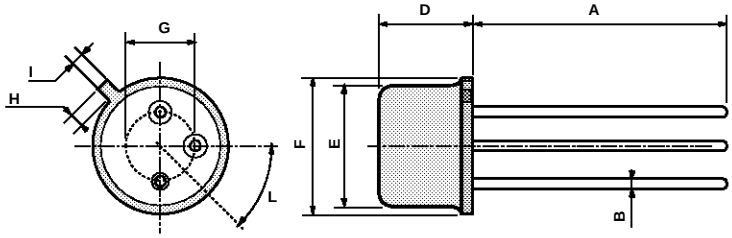


Power Rating Chart.



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^{o} (typ.)					



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