SGS-THOMSON MICROELECTRONICS

BDX53S
BDX54S

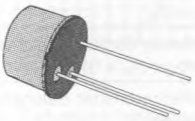
MEDIUM POWER DARLINGTONS

DESCRIPTION

The BDX53S is a silicon epitaxial-base NPN transistor in monolithic Darlington configuration and is mounted in Jedec TO-39 metal case.

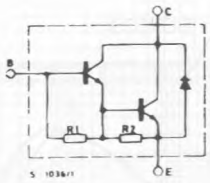
It is intended for use in medium in power linear and switching applications.

The complementary PNP type is the BDX54S.



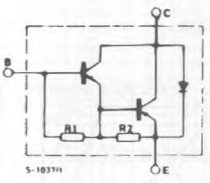
TO-39

INTERNAL SCHEMATIC DIAGRAMS



NPN

R1 Typ. 10 kΩ
R2 Typ. 150 Ω



PNP

R1 Typ. 10 kΩ
R2 Typ. 150 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	150	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	150	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	5	V
I_C	Collector Current	6	A
I_{CM}	Collector Peak Current	10	A
I_B	Base Current	0.2	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C $T_{amb} \leq 25$ °C	15 1	W W
T_{stg}	Storage Temperature	– 65 to 200	°C
T_j	Junction Temperature	200	°C

* For PNP types voltage and current values are negative.

THERMAL DATA

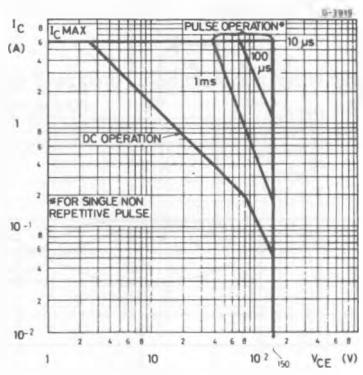
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	11.66	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

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

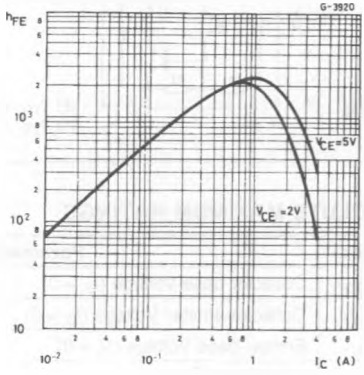
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 150 V V_{CB} = 150 V	 T_{case} = 125 °C			0.2 2	mA mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 75 V				0.2	mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V				5	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 50 mA		150			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 2 A	I_B = 8 mA			2	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 2 A	I_B = 8 mA			2.5	V
h_{FE}*	DC Current Gain	I_C = 100 mA I_C = 2 A	V_{CE} = 5 V V_{CE} = 5 V	100 500			
V_F*	Parallel Diode Forward Voltage	I_F = 2 A				2.5	V
h_{fe}	Small Signal Current Gain	I_C = 0.5 A f = 1 MHz	V_{CE} = 2 V		20		

* Pulsed : pulse duration = 300 ms, duty cycle = 1 %.
For PNP type voltage and current values are negative.

Safe Operating Area.



DC Current Gain (BDX53S).



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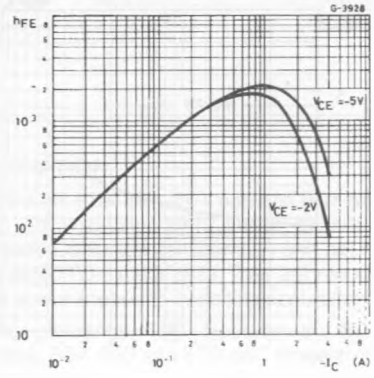
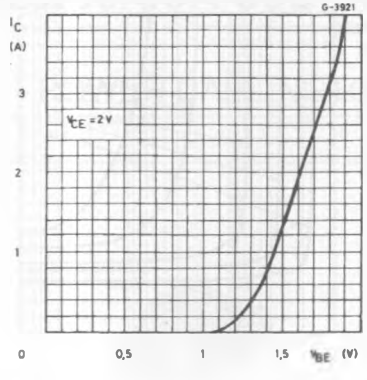


DC Transconductance (BDX53S).



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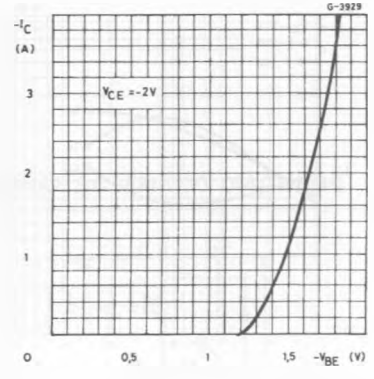
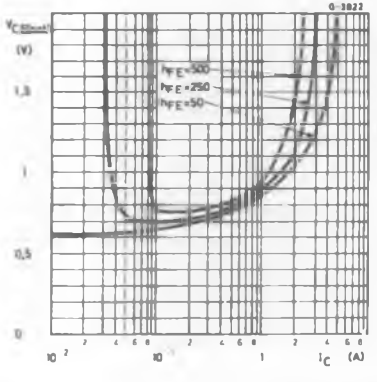


Collector-emitter Saturation Voltage (BDX53S).



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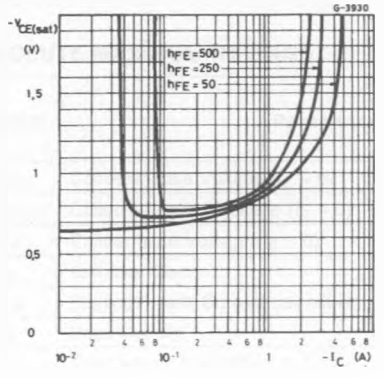

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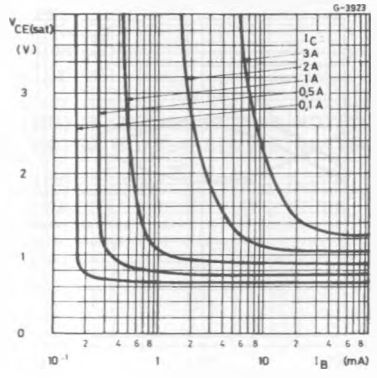

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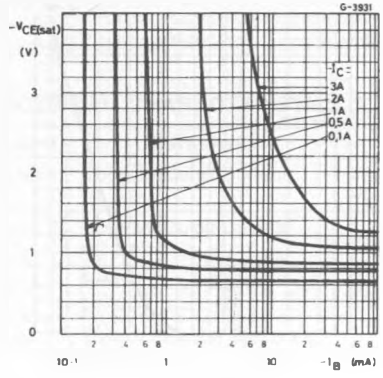
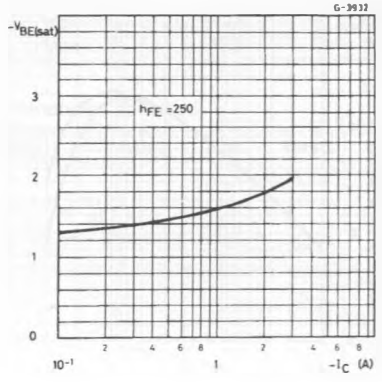
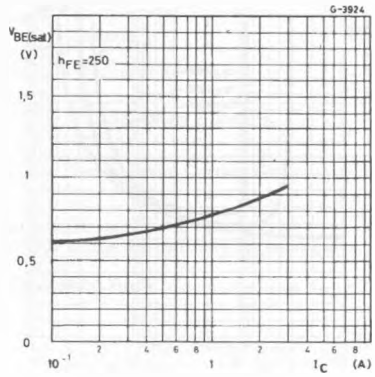


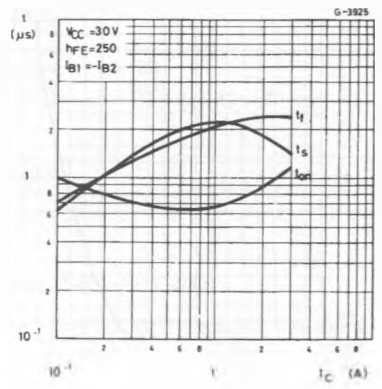
Base-emitter Saturation Voltage (BDX53S).



Base-emitter Saturation Voltage (BDX54S).



Saturated Switching Characteristics (BDX53S).



Saturated Switching Characteristics (BDX54S).