BDX85 BDX86
BDX85A BDX86A
BDX85B BDX86B
BDX85C BDX86C

EPITAXIAL-BASE NPN/PNP

POWER DARLINGTONS

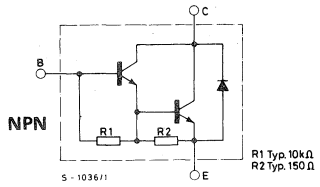
The BDX 85, BDX 85A, BDX 85B and BDX 85C are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-3 metal case. They are intended for use in power linear and switching applications.
The complementary PNP types are the BDX 86, BDX 86A, BDX 86B and BDX 86C respectively.

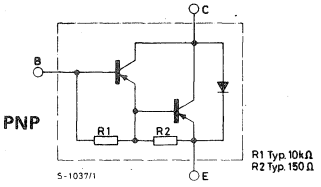
ABSOLUTE MAXIMUM RATINGS

		NPN / PNP*	BDX85 / BDX86	BDX85A / BDX86A	BDX85B / BDX86B	BDX85C / BDX86C
V_{CBO}	Collector-base voltage ($I_E = 0$)		45V	60V	80V	100V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)		45V	60V	80V	100V
V_{EBO}	Emitter-base voltage ($I_C = 0$)		5V			
I_C	Collector current		10A			
I_{CM}	Collector peak current (repetitive)		15A			
I_B	Base current		0.1A			
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$		100W			
T_{stg}	Storage temperature		-65 to 200°C			
T_j	Junction temperature		200°C			

*** For PNP types voltage and current values are negative**

INTERNAL SCHEMATIC DIAGRAMS

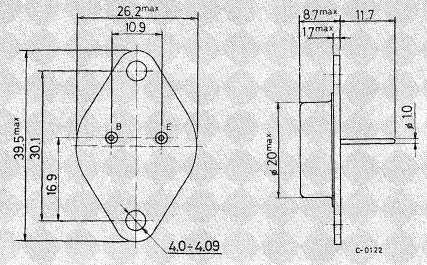




MECHANICAL DATA

Dimensions in mm

Collector connected to case



TO-3

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	1.75	°C/W

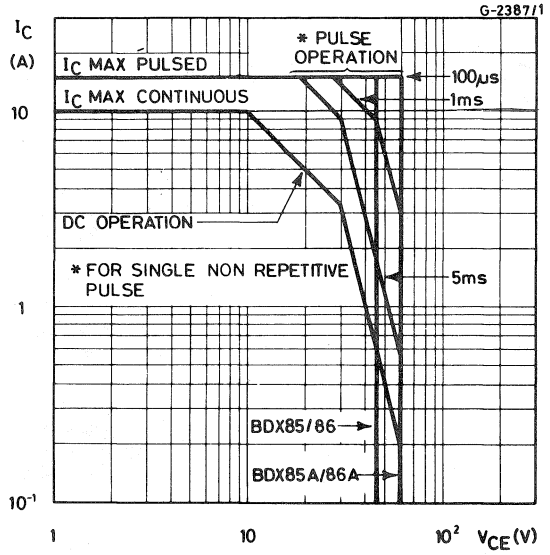
ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	for **BDX85/86** V_{CB} = 45 V			500	μA
		for **BDX85A/86A** V_{CB} = 60 V			500	μA
		for **BDX85B/86B** V_{CB} = 80 V			500	μA
		for **BDX85C/86C** V_{CB} = 100 V			500	μA
		T_{case} = 150°C				
		for **BDX85/86** V_{CB} = 45 V			5	mA
		for **BDX85A/86A** V_{CB} = 60 V			5	mA
		for **BDX85B/86B** V_{CB} = 80 V			5	mA
		for **BDX85C/86C** V_{CB} = 100 V			5	mA
I_{CEO}	Collector cutoff current (I_B = 0)	for **BDX85/86** V_{CE} = 22 V			1	mA
		for **BDX85A/86A** V_{CE} = 30 V			1	mA
		for **BDX85B/86B** V_{CE} = 40 V			1	mA
		for **BDX85C/86C** V_{CE} = 50 V			1	mA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EB} = 5 V			2	mA
$V_{CEO(sus)}$*	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100 mA				
		for **BDX85/86**	45			V
		for **BDX85A/86A**	60			V
		for **BDX85B/86B**	80			V
		for **BDX85C/86C**	100			V
$V_{CE(sat)}$*	Collector-emitter saturation voltage	I_C = 4A I_B = 16 mA			2	V
		I_C = 8A I_B = 40 mA			4	V
$V_{BE(sat)}$*	Base-emitter saturation voltage	I_C = 8A I_B = 80 mA			4	V
V_{BE}*	Base-emitter voltage	I_C = 4A V_{CE} = 3V			2.8	V
h_{FE}*	DC current gain	I_C = 3A V_{CE} = 3V	1000			—
		I_C = 4A V_{CE} = 3V	750		18000	—
		I_C = 8A V_{CE} = 4V	200			—
V_F	Parallel-diode forward voltage	I_F = 3A			1.8	V
		I_F = 8A		2.5		V
h_{fe}	Small signal current gain	I_C = 3A V_{CE} = 3V f = 1 MHz		10		—

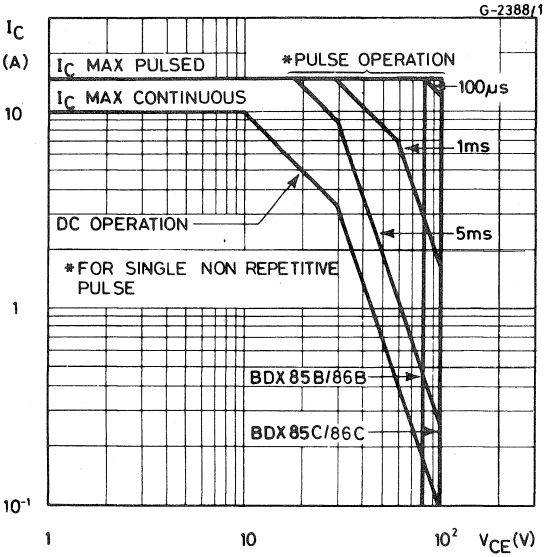
* Pulsed: pulse duration = 300 μs, duty cycle = 1.5%

For PNP types voltage and current values are negative

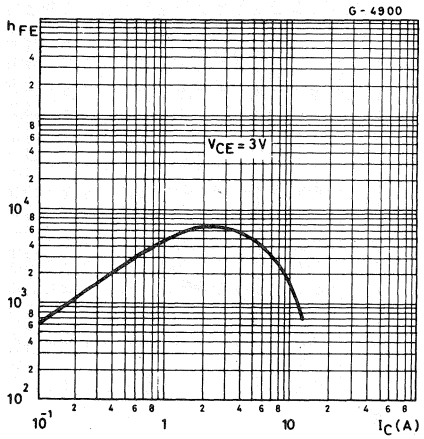
Safe operating areas
(for **BDX85, BDX85A BDX86, BDX86A**).



Safe operating areas
(for **BDX85B, BDX85C, BDX86B, BDX86C**).



DC current gain (NPN types)



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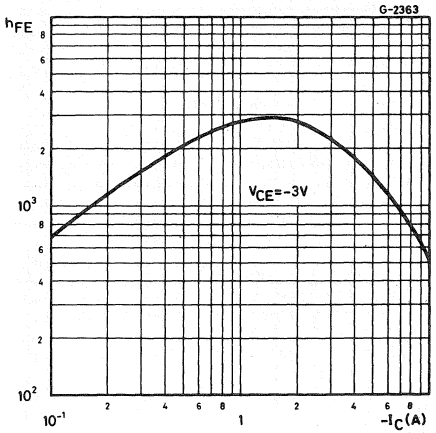
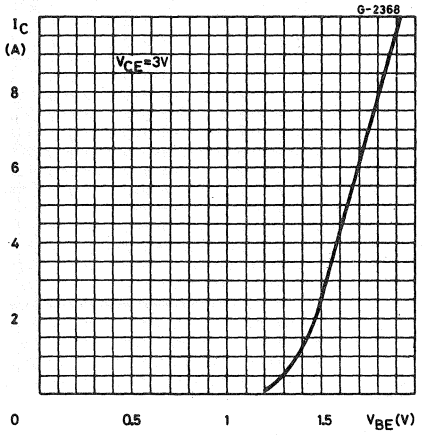


DC transconductance (NPN types)



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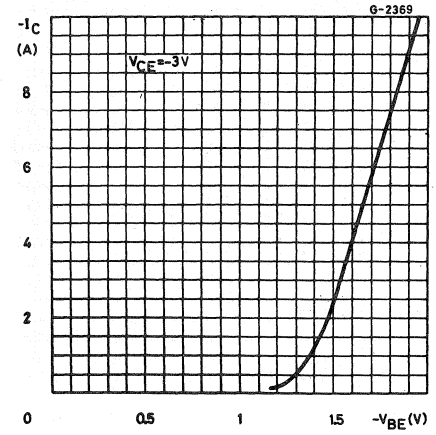
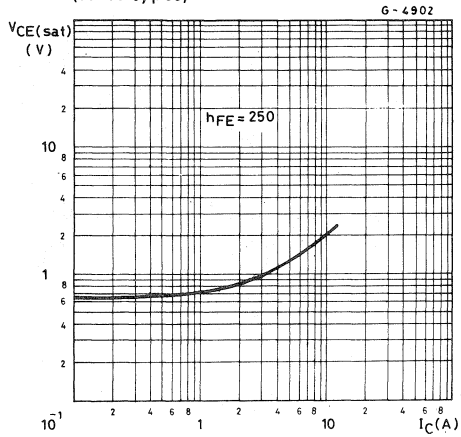


Collector-emitter saturation voltage (NPN types)



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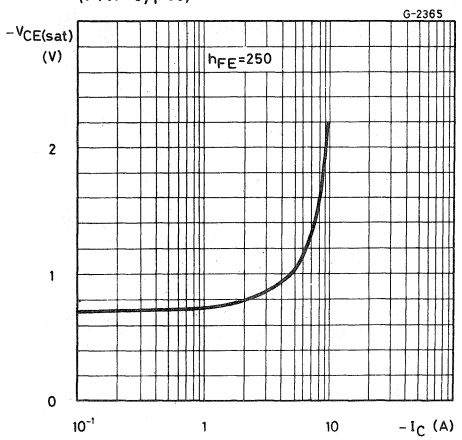

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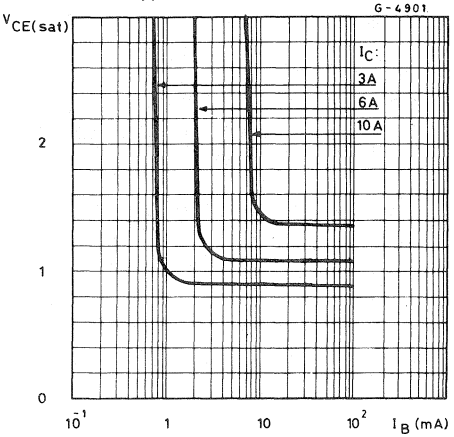

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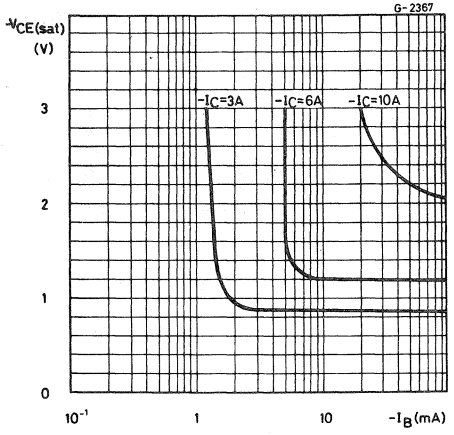
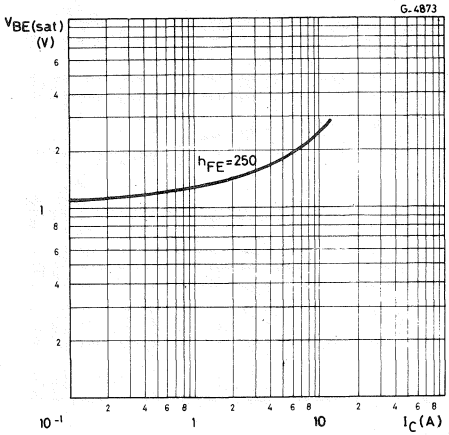
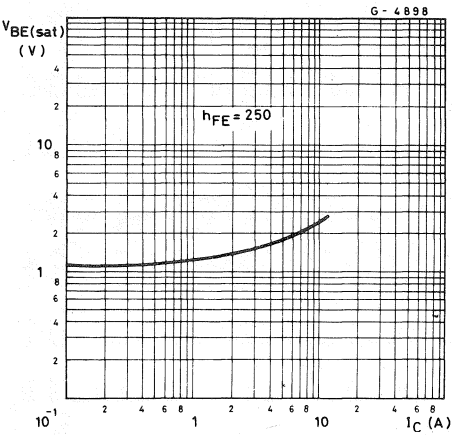


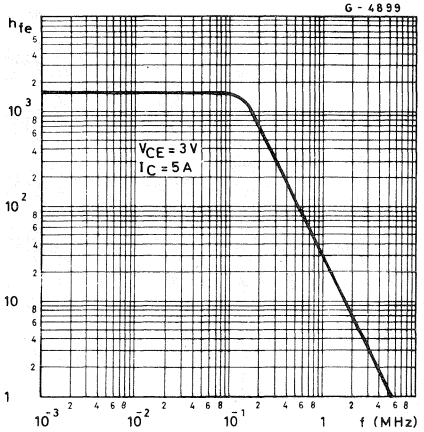
Base-emitter saturation voltage (NPN types)



Base-emitter saturation voltage (PNP types)



Small signal current gain (NPN types)



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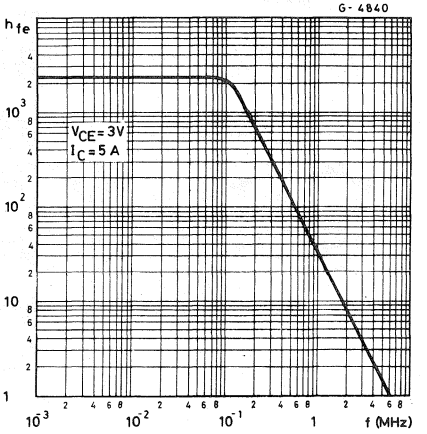
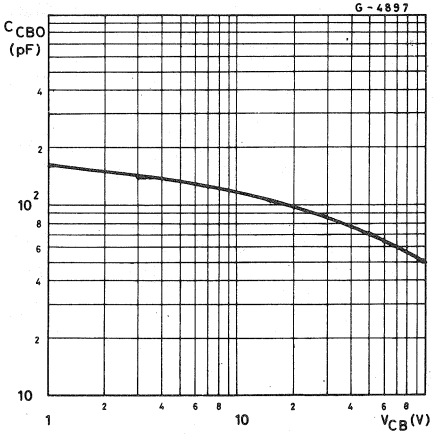
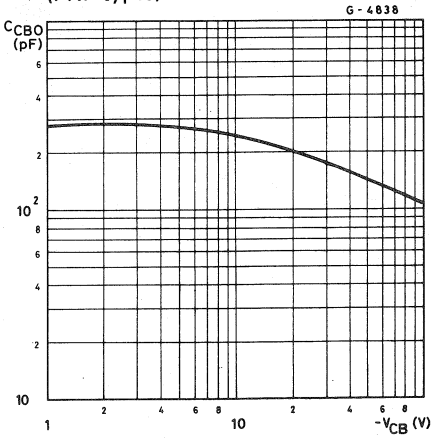


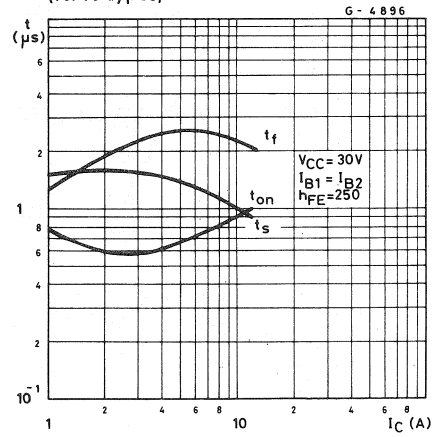
Collector-base capacitance
(NPN types)



Collector-base capacitance
(PNP types)



Saturated switching characteristics
(NPN types)



Saturated switching characteristics
(PNP types)