



EPITAXIAL-BASE NPN/PNP

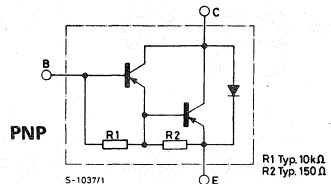
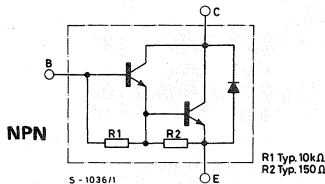
POWER DARLINGTONS

The BDX 87, BDX 87A, BDX 87B and BDX 87C 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 88, BDX 88A, BDX 88B and BDX 88C respectively.

ABSOLUTE MAXIMUM RATINGS		NPN PNP*	BDX87 BDX88	BDX87A BDX88A	BDX87B BDX88B	BDX87C BDX88C
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				12A	
I_{CM}	Collector peak current (repetitive)				18A	
I_B	Base current				0.2A	
P_{tot}	Total power dissipation at $T_{case} \leq 25^\circ C$				120W	
T_{stg}	Storage temperature				-65 to 200°C	
T_J	Junction temperature				200°C	

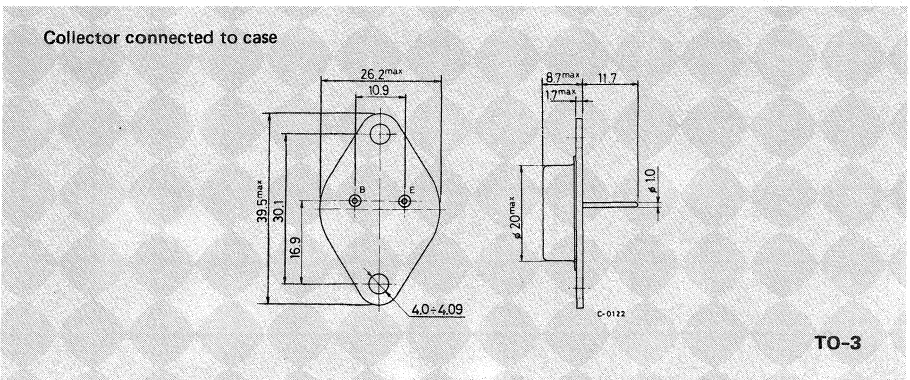
* For PNP types voltage and current values are negative

INTERNAL SCHEMATIC DIAGRAMS



MECHANICAL DATA

Dimensions in mm



TO-3



THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max 1.45 °C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current ($I_E = 0$)	for BDX87/8 for BDX87A/8A for BDX87B/8B for BDX87C/8C $T_{case} = 150^{\circ}C$ for BDX87/8 for BDX87A/8A for BDX87B/8B for BDX87C/8C	$V_{CB} = 45V$ $V_{CB} = 60V$ $V_{CB} = 80V$ $V_{CB} = 100V$ C $V_{CB} = 45V$ $V_{CB} = 60V$ $V_{CB} = 80V$ $V_{CB} = 100V$	500 500 500 500 5 5 5 5	μA μA μA μA mA mA mA mA
I_{CEO}	Collector cutoff current ($I_B = 0$)	for BDX87/8 for BDX87A/8A for BDX87B/8B for BDX87C/8C	$V_{CE} = 22V$ $V_{CE} = 30V$ $V_{CE} = 40V$ $V_{CE} = 50V$	1 1 1 1	mA mA mA mA
I_{EBO}	Emitter cutoff current ($I_C = 0$)	$V_{EB} = 5V$		2	mA
$V_{CEO(sus)}^*$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 100mA$ for BDX87/88 for BDX87A/88A for BDX87B/88B for BDX87C/88C	45 60 80 100		V V V V
$V_{CE(sat)}^*$	Collector-emitter saturation voltage	$I_C = 6A$ $I_C = 12A$	$I_B = 24mA$ $I_B = 120mA$	2 3	V V
$V_{BE(sat)}^*$	Base-emitter saturation voltage	$I_C = 12A$	$I_B = 120mA$	4	V
V_{BE}^*	Base-emitter voltage	$I_C = 6A$	$V_{CE} = 3V$	2.8	V
h_{FE}^*	DC current gain	$I_C = 5A$ $I_C = 6A$ $I_C = 12A$	$V_{CE} = 3V$ $V_{CE} = 3V$ $V_{CE} = 3V$	1000 750 100	18000 — —
V_F	Parallel-diode forward voltage	$I_F = 3A$ $I_F = 8A$		2.5	1.8 V V
h_{fe}	Small signal current gain	$I_C = 5A$ $f = 1MHz$	$V_{CE} = 3V$	25	—

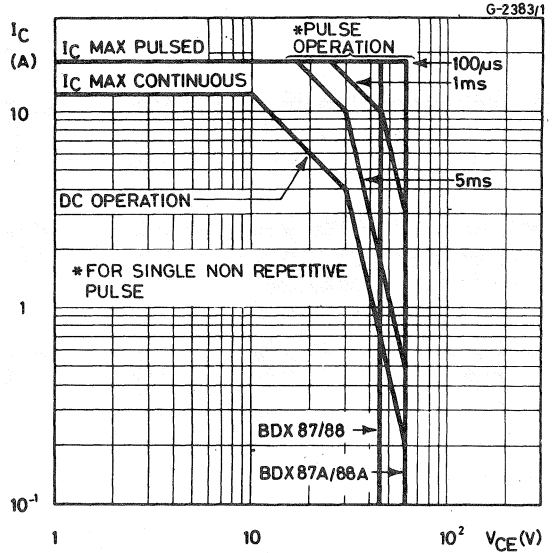
* Pulsed: pulse duration = 300 μs , duty cycle = 1.5%

For PNP types voltage and current values are negative

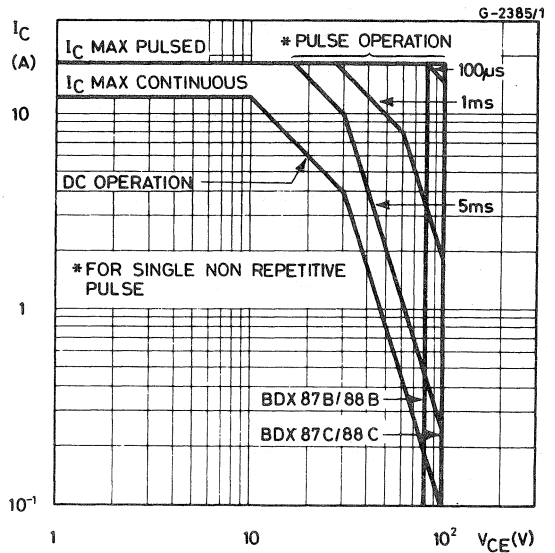


BDX87 BDX88
BDX87A BDX88A
BDX87B BDX88B
BDX87C BDX88C

Safe operating areas
(for BDX87, BDX87A
BDX88, BDX88A).

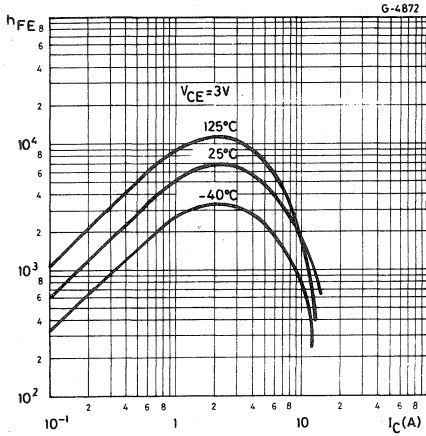


Safe operating areas
(for BDX87A, BDX87C
BDX88B, BDX88C).

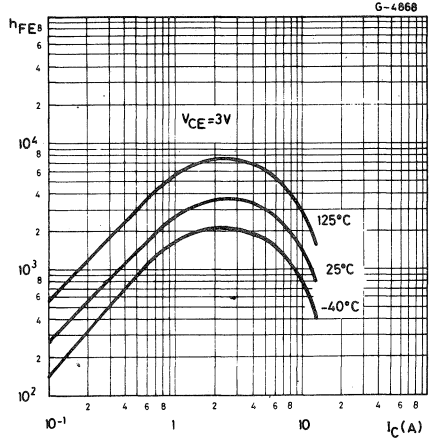




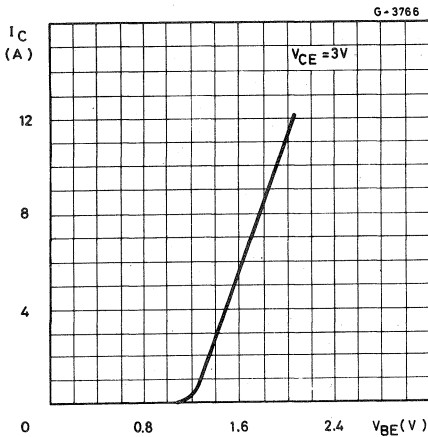
DC current gain (NPN types)



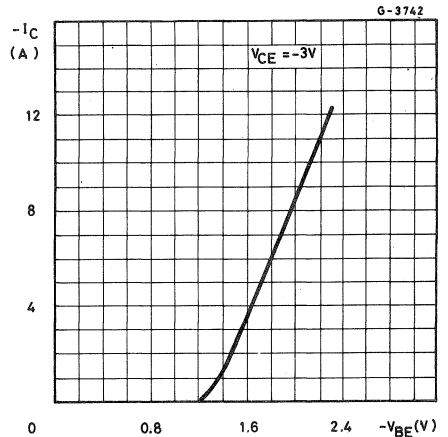
DC current gain (PNP types)



DC transconductance (NPN types)

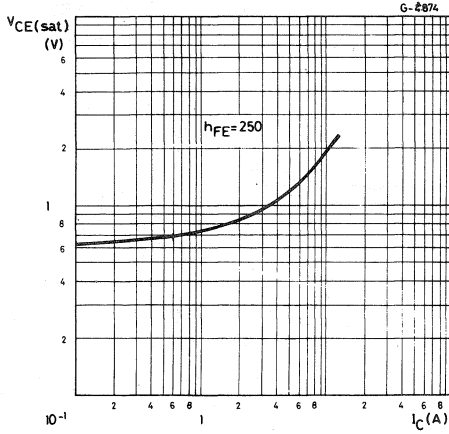


DC transconductance (PNP types)

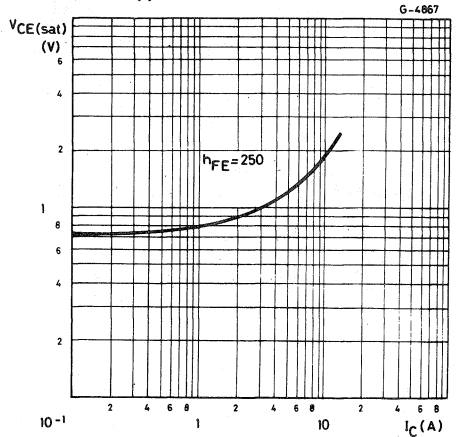




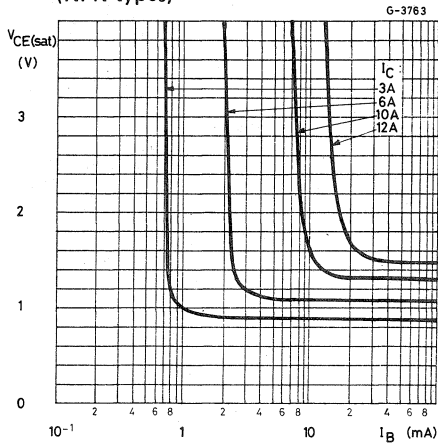
Collector-emitter saturation voltage (NPN types)



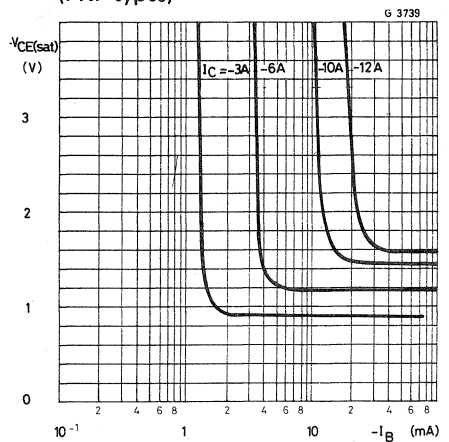
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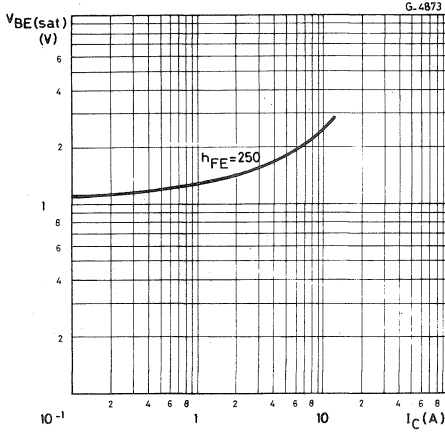


Collector-emitter saturation voltage (PNP types)

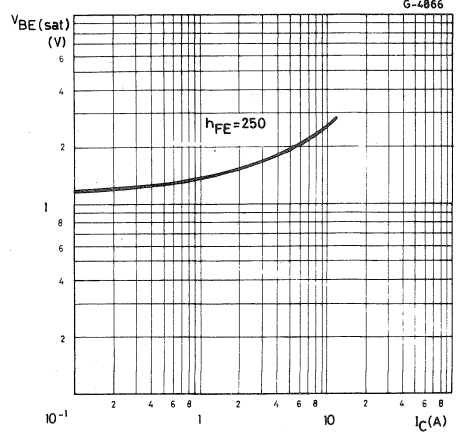




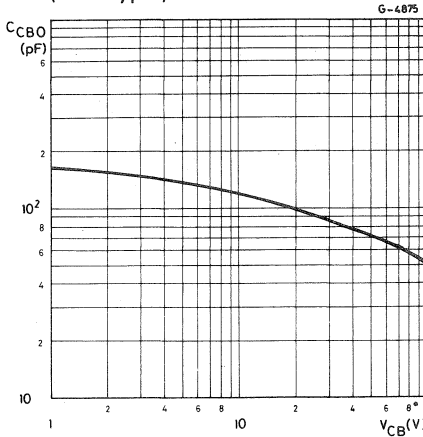
Base-emitter saturation voltage
(NPN types)



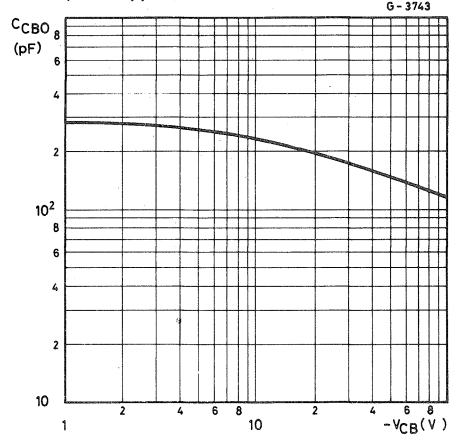
Base-emitter saturation voltage
(PNP types)



Collector-base capacitance
(NPN types)

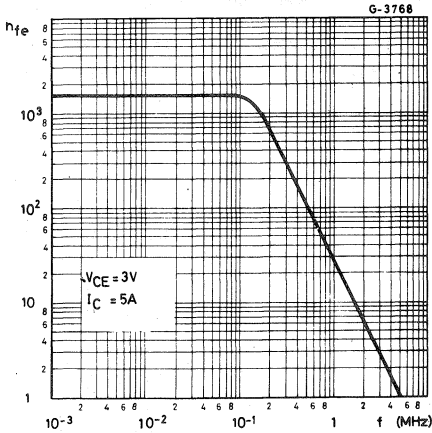


Collector-base capacitance
(PNP types)

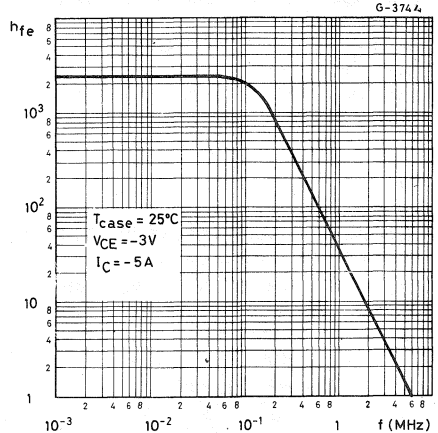




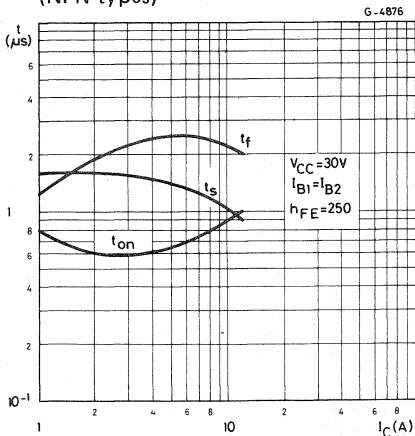
Small signal current gain (NPN types)



Small signal current gain (PNP types)



Saturated switching characteristics (NPN types)



Saturated switching characteristics (PNP types)

