BD175 BD176
BD177 BD178
BD179 BD180

EPITAXIAL-BASE NPN/PNP

MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

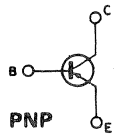
The BD175, BD177 and BD179 are silicon epitaxial-base NPN power transistors in Jedec TO-126 plastic package intended for use in medium power linear and switching applications. The complementary PNP types are the BD176, BD178 and BD180.

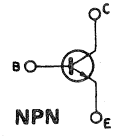
ABSOLUTE MAXIMUM RATINGS

		NPN / PNP*	BD175 / BD176	BD177 / BD178	BD179 / BD180
V_{CBO}	Collector-base voltage ($I_E = 0$)		45V	60V	80V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)		45V	60V	80V
V_{EBO}	Emitter-base voltage ($I_C = 0$)		5V		
I_C	Collector current		3A		
I_{CM}	Collector peak current		7A		
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$		30V		
T_{stg}	Storage temperature		-65 to 150°C		
T_j	Junction temperature		150°C		

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

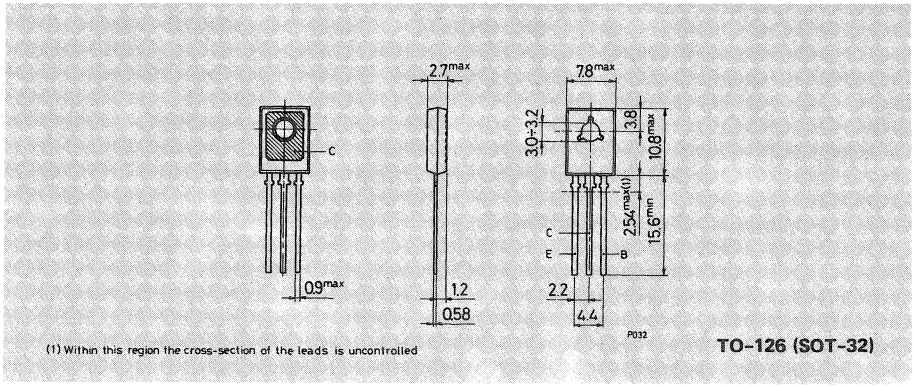
INTERNAL SCHEMATIC DIAGRAMS





MECHANICAL DATA

Dimensions in mm



THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	4.16 °C/W

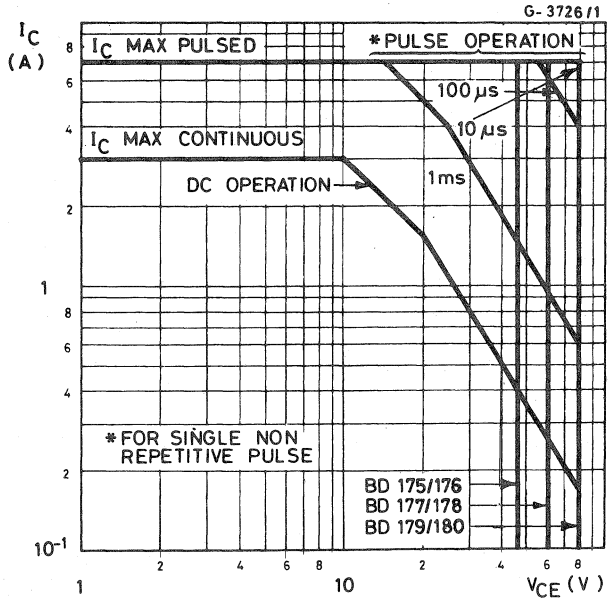
ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	for **BD175/76** V_{CB} = 45V for **BD177/78** V_{CB} = 60V for **BD179/80** V_{CB} = 80V			100 100 100	μA μA μA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EB} = 5V			1	mA
$V_{CEO\ (sus)}$*	Collector-emitter sustaining voltage	I_C = 100mA for **BD175/76** for **BD177/78** for **BD179/80**		 45 60 80		 V V V
$V_{CE\ (sat)}$*	Collector-emitter saturation voltage	I_C = 1A I_B = 0.1A			0.8	V
V_{BE}*	Base-emitter volt.	I_C = 1A V_{CE} = 2V			1.3	V
h_{FE}*	DC current gain	I_C = 150mA V_{CE} = 2V I_C = 1A V_{CE} = 2V	40 15			– –
h_{FE}	groups** 6 10 (only BD175/6) 16	I_C = 150mA V_{CE} = 2V	40 63 100		100 160 250	– – –
f_T	Transition freq.	I_C = 250mA V_{CE} = 10V	3		MHz	

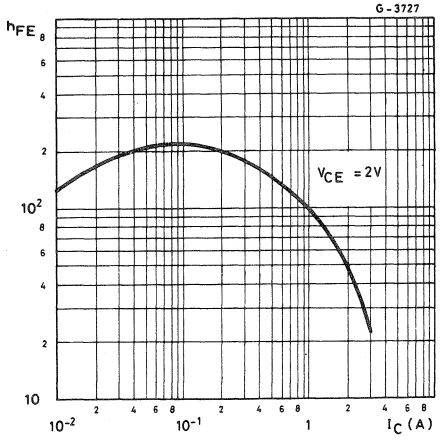
* Pulsed: pulse duration = 300μs, duty cycle ⩽ 1.5%

** Only on request

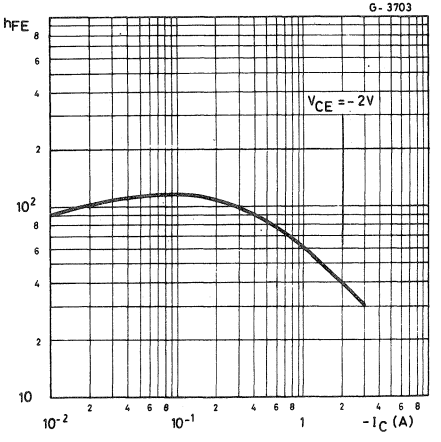
Safe operating areas



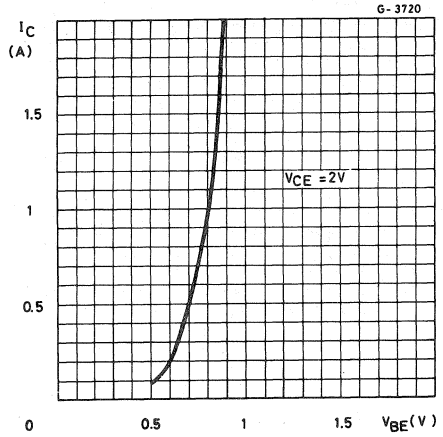
DC current gain (NPN types)



DC current gain (PNP types)



DC transconductance (NPN types)



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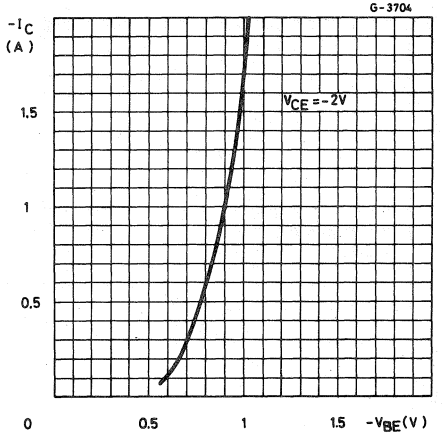
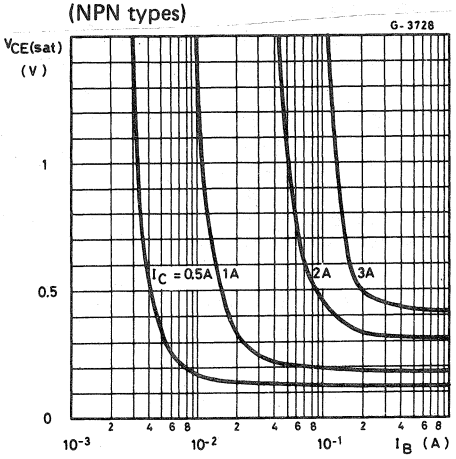


Collector-emitter saturation voltage (NPN types)



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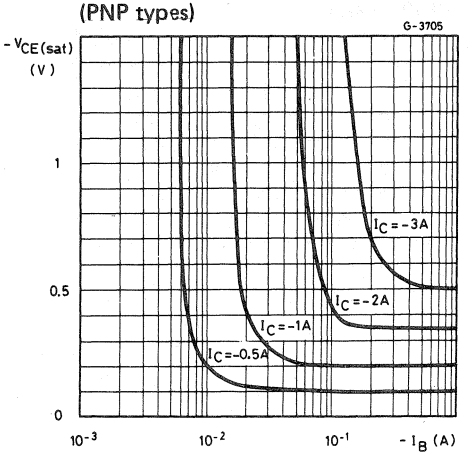

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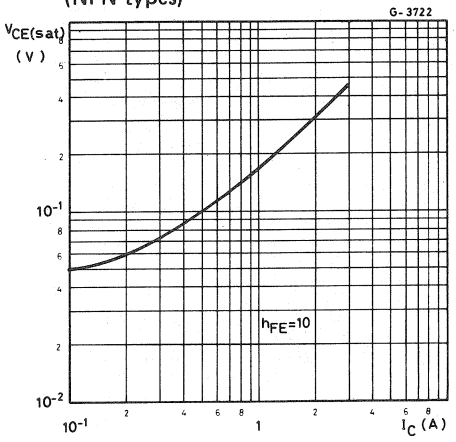

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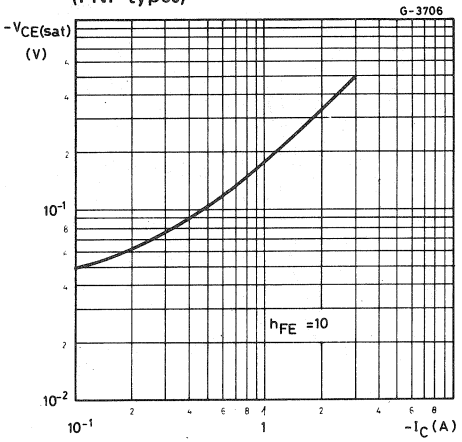
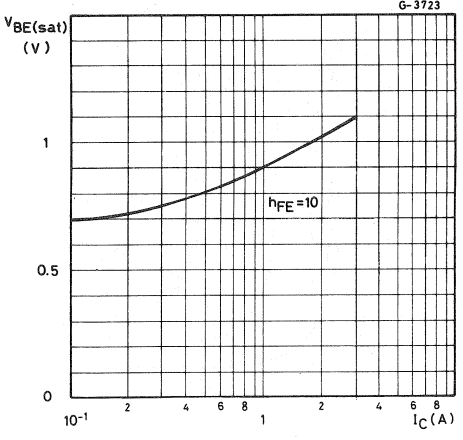
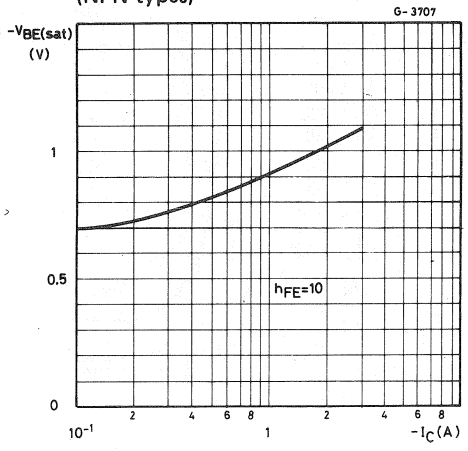


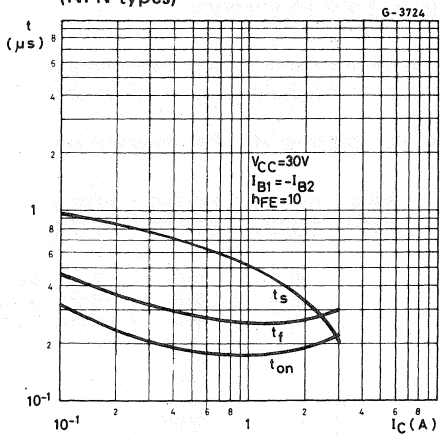
Base-emitter saturation voltage (NPN types)



Base-emitter saturation voltage (NPN types)



Saturated switching characteristics (NPN types)



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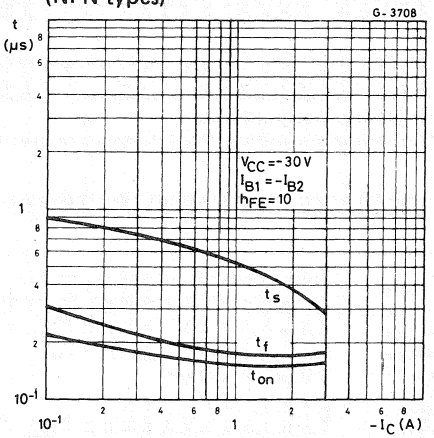

Power derating chart