



SGS-THOMSON
MICROELECTRONICS

BD905/906/907/908
BD909/910/911/912

SGS-THOMSON

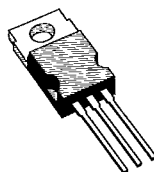
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POWER LINEAR AND SWITCHING APPLICATIONS

DESCRIPTION

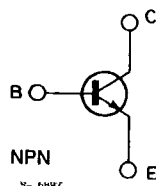
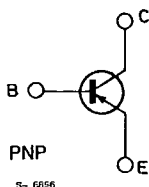
The BD905, BD907, BD909, BD911 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are the BD906, BD908, BD910 and BD912 respectively.



TO-220

INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value				Unit
			BD905 BD906	BD907 BD908	BD909 BD910	BD911 BD912	
V_{CE0}	Collector-emitter Voltage ($I_E = 0$)		45	60	80	100	V
V_{CE0}	Collector-emitter Voltage ($I_B = 0$)		45	60	80	100	V
V_{EB0}	Emitter-base Voltage ($I_C = 0$)		5				V
I_E, I_C	Emitter and Collector Current		15				A
I_B	Base Current		5				A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25^\circ C$		90				W
T_{stg}	Storage Temperature		- 65 to 150				$^\circ C$
T_J	Junction Temperature		150				$^\circ C$

* For PNP types voltage and current values are negative.

THERMAL DATA

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$R_{th \text{ J-case}}$	Thermal Resistance Junction-case	Max	1.4	$^{\circ}\text{C/W}$
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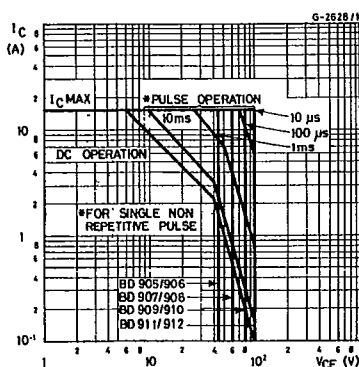
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ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified)

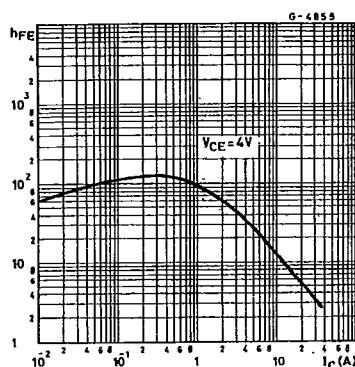
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	for BD905/906 $V_{CB} = 45\text{ V}$ for BD907/908 $V_{CB} = 60\text{ V}$ for BD909/910 $V_{CB} = 80\text{ V}$ for BD911/912 $V_{CB} = 100\text{ V}$ $T_{\text{case}} = 150^{\circ}\text{C}$ for BD905/906 $V_{CB} = 45\text{ V}$ for BD907/908 $V_{CB} = 60\text{ V}$ for BD909/910 $V_{CB} = 80\text{ V}$ for BD911/912 $V_{CB} = 100\text{ V}$			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 BD905/906 $V_{CE} = 30\text{ V}$ for BD907/908 $V_{CE} = 30\text{ V}$ for BD909/910 $V_{CE} = 40\text{ V}$ for BD911/912 $V_{CE} = 50\text{ V}$			1 1 1 1	mA mA mA mA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			1	mA
$V_{CE(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100\text{ mA}$ for BD905/906 for BD907/908 for BD909/910 for BD911/912	45 60 80 100			V V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 0.5\text{ A}$ $I_C = 10\text{ A}$ $I_B = 2.5\text{ A}$			1 3	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 10\text{ A}$ $I_B = 2.5\text{ A}$			2.5	V
V_{BE}^*	Base-emitter Voltage	$I_C = 5\text{ A}$ $V_{CE} = 4\text{ V}$			1.5	V
h_{FE}^*	DC Current Gain	$I_C = 0.5\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 5\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 10\text{ A}$ $V_{CE} = 4\text{ V}$	40 15 5		250 150	
f_T	Transition Frequency	$I_C = 0.5\text{ A}$ $V_{CE} = 4\text{ V}$	3			MHz

* Pulsed : pulse duration = 300 μs , duty cycle = 1.5 %.
For PNP types voltage and current values are negative.

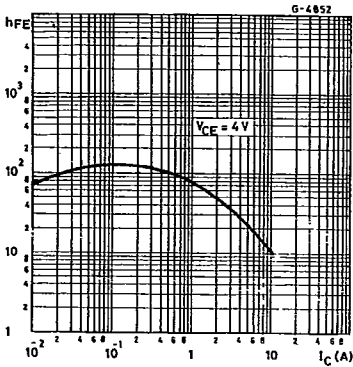
Safe Operating Areas.



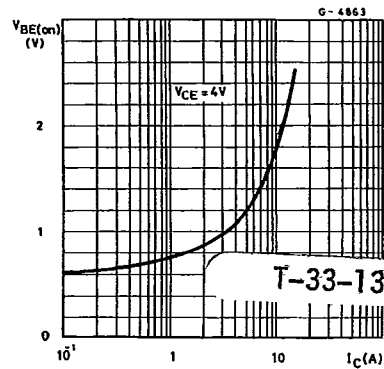
DC Current Gain (NPN types).



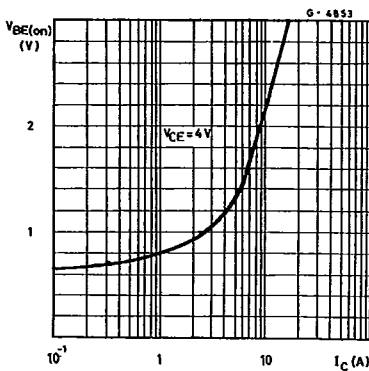
DC Current Gain (PNP types).



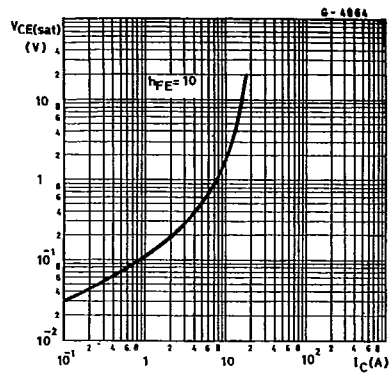
DC Transconductance (NPN types).



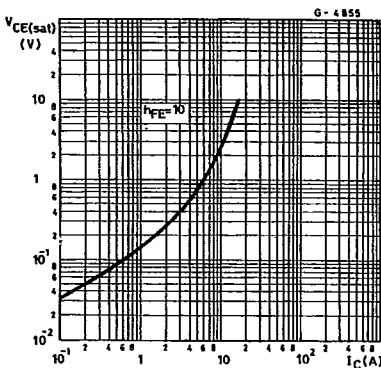
DC Transconductance (PNP types).



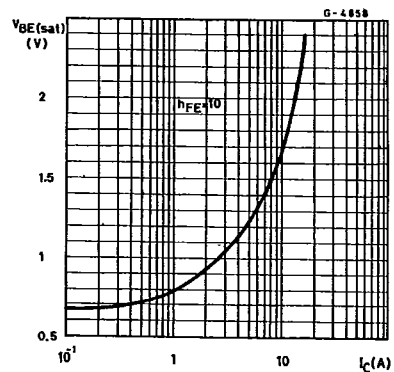
Collector-emitter Saturation Voltage (NPN types).



Collector-emitter Saturation Voltage (PNP types).



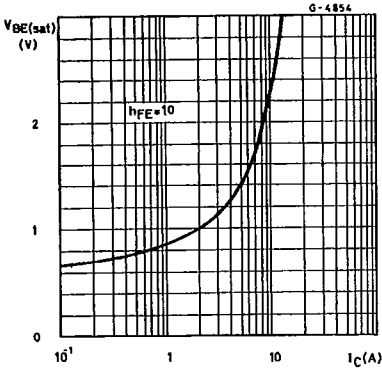
Base-emitter Saturation Voltage (NPN types).



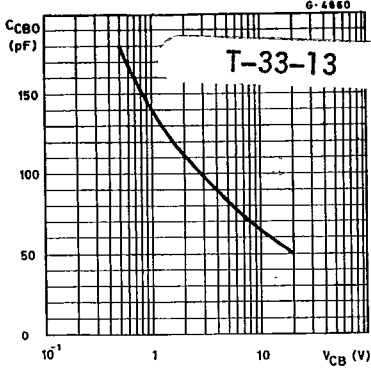
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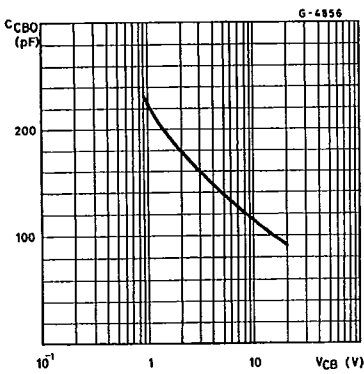
Base-emitter Saturation Voltage (PNP types).



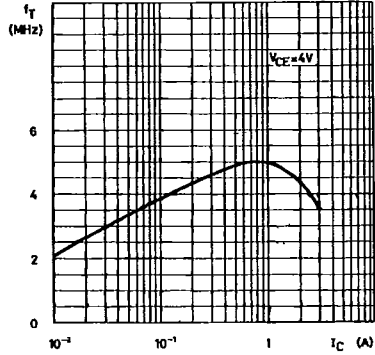
Collector-base Capacitance (NPN types).



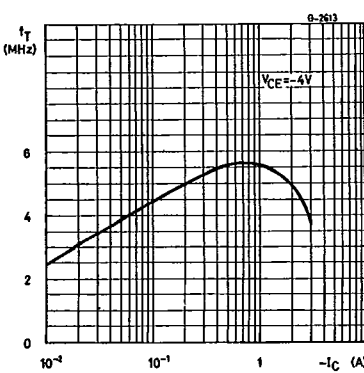
Collector-base Capacitance (PNP types).



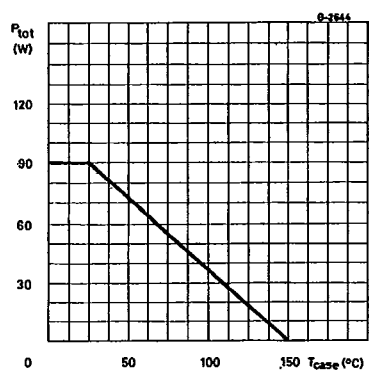
Transition Frequency (NPN types).



Transition Frequency (PNP types).



Power Rating Chart.



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