SGS-THOMSON MICROELECTRONICS

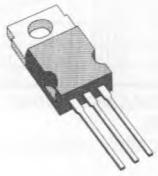
BD905/906/907/908
BD909/910/911/912

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_{CBO}	Collector-emitter Voltage ($I_E = 0$)		45	60	80	100	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)		45	60	80	100	V
V_{EBO}	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 $T_{case} \leq 25$ °C		90				W
T_{stg}	Storage Temperature		– 65 to 150				°C
T_j	Junction Temperature		150				°C

* For PNP types voltage and current values are negative.

THERMAL DATA

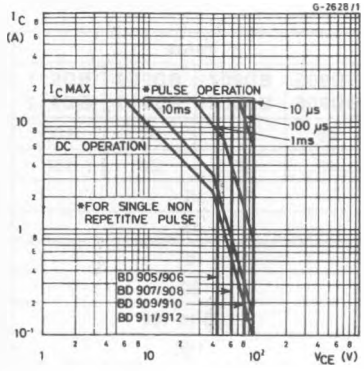
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	1.4	°C/W

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

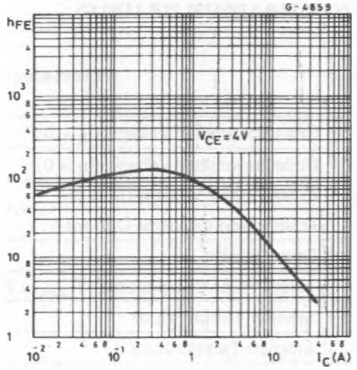
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	for **BD905/906**	V_{CB} = 45 V			500	µA
		for **BD907/908**	V_{CB} = 60 V			500	µA
		for **BD909/910**	V_{CB} = 80 V			500	µA
		for **BD911/912**	V_{CB} = 100 V			500	µA
		T_{case} = 150 °C					
		for **BD905/906**	V_{CB} = 45 V			5	mA
		for **BD907/908**	V_{CB} = 60 V			5	mA
		for **BD909/910**	V_{CB} = 80 V			5	mA
		for **BD911/912**	V_{CB} = 100 V			5	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **BD905/906**	V_{CE} = 30 V			1	mA
		for **BD907/908**	V_{CE} = 30 V			1	mA
		for **BD909/910**	V_{CE} = 40 V			1	mA
		for **BD911/912**	V_{CE} = 50 V			1	mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V				1	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	for **BD905/906**	45			V
			for **BD907/908**	60			V
			for **BD909/910**	80			V
			for **BD911/912**	100			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 5 A	I_B = 0.5 A			1	V
		I_C = 10 A	I_B = 2.5 A			3	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 10 A	I_B = 2.5 A			2.5	V
V_{BE}*	Base-emitter Voltage	I_C = 5 A	V_{CE} = 4 V			1.5	V
h_{FE}*	DC Current Gain	I_C = 0.5 A	V_{CE} = 4 V	40		250	
		I_C = 5 A	V_{CE} = 4 V	15		150	
		I_C = 10 A	V_{CE} = 4 V	5			
f_T	Transition Frequency	I_C = 0.5 A	V_{CE} = 4 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).



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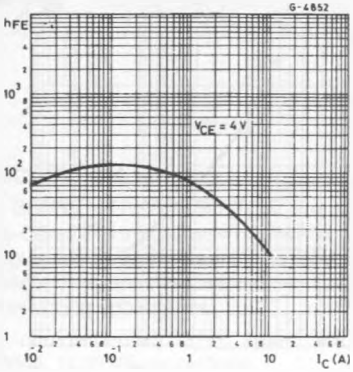
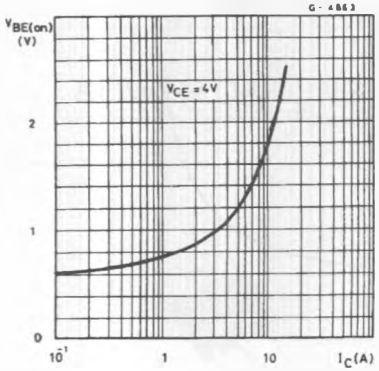


DC Transconductance (NPN types).



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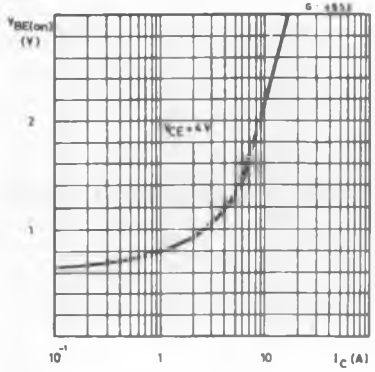
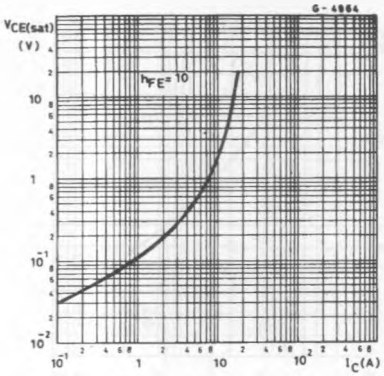


Collector-emitter Saturation Voltage (NPN types).



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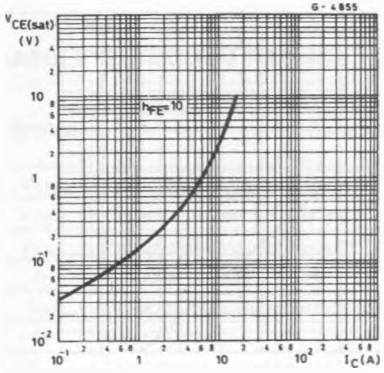
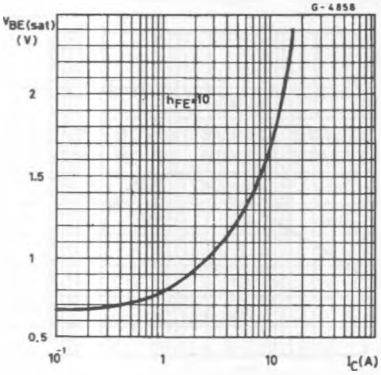


Base-emitter Saturation Voltage (NPN types).



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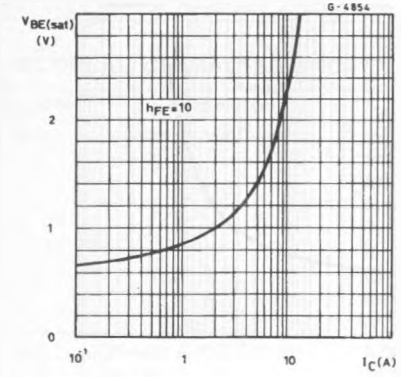
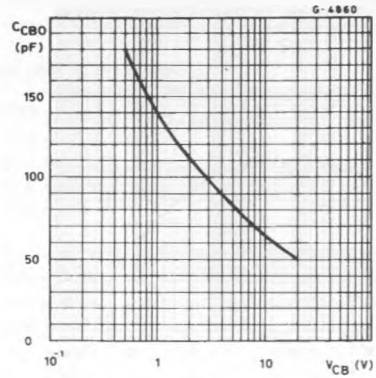


Collector-base Capacitance (NPN types).



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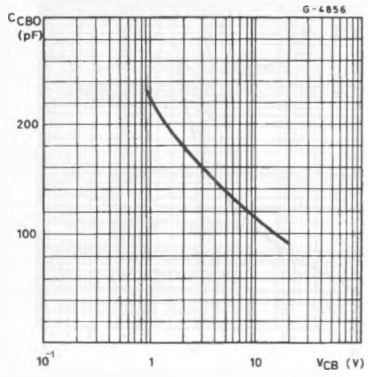
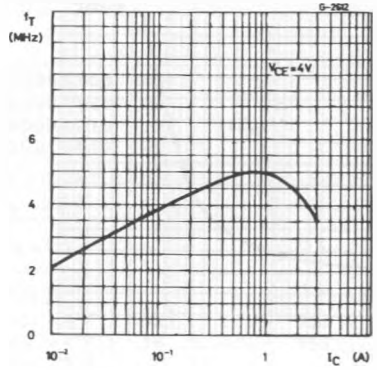


Transition Frequency (NPN types).



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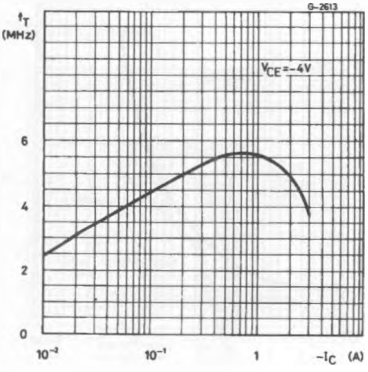

Power Rating Chart.