Silicon PNP Transistor

BD712

Power Linear and Switching

100V / 12A

DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

BD 706
BD 708
BD 710
BD 712

EPITAXIAL-BASE PNP

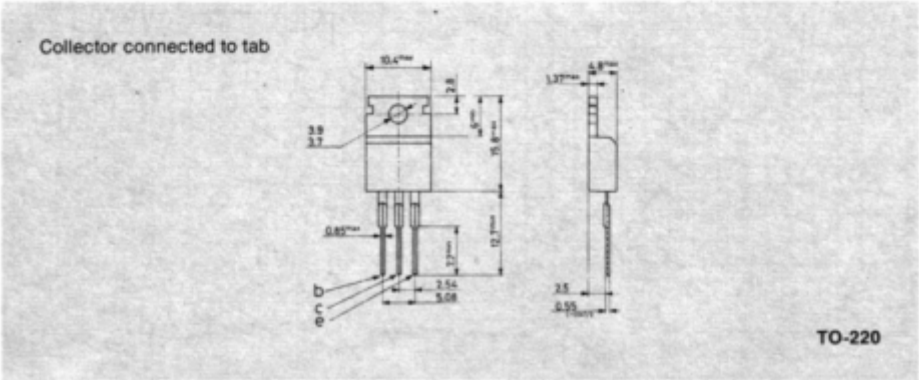
POWER LINEAR AND SWITCHING APPLICATIONS

The BD706, BD708, BD710 and BD712 are silicon epitaxial-base PNP power transistors in Jedec TO-220 plastic package, intended for use in power linear and switching applications.
The complementary NPN types are the BD705, BD707, BD709 and BD711 respectively.

ABSOLUTE MAXIMUM RATINGS		BD706	BD708	BD710	BD712
V_{CBO}	Collector-base voltage ($I_E = 0$)	-45V	-60V	-80V	-100V
V_{CES}	Collector-emitter voltage ($V_{BE} = 0$)	-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_B	Base current	-5A			
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$	75W			
T_{stg}	Storage temperature	-65 to 150°C			
T_j	Junction temperature	150°C			

MECHANICAL DATA

Dimensions in mm



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THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	1.67	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	70	°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 **BD706**	V_{CB} = -45 V			-100	μA
		for **BD708**	V_{CB} = -60 V			-100	μA
		for **BD710**	V_{CB} = -80 V			-100	μA
		for **BD712**	V_{CB} = -100 V			-100	μA
		T_{case} = 150°C					
		for **BD706**	V_{CB} = -45 V			-1	mA
		for **BD708**	V_{CB} = -60 V			-1	mA
		for **BD710**	V_{CB} = -80 V			-1	mA
		for **BD712**	V_{CB} = -100 V			-1	mA
I_{CEO}	Collector cutoff current (I_B = 0)	for **BD706**	V_{CE} = -22 V			-1	mA
		for **BD708**	V_{CE} = -30 V			-1	mA
		for **BD710**	V_{CE} = -40 V			-1	mA
		for **BD712**	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 = -100mA	for **BD706**	-45			V
			for **BD708**	-60			V
			for **BD710**	-80			V
			for **BD712**	-100			V
$V_{CE(sat)}$*	Collector-emitter saturation voltage	I_C = -4 A	I_B = -0.4 A			-1	V
V_{CEK}*	Knee voltage	I_C = -3A	I_B = **	-0.4			V
V_{BE}*	Base-emitter voltage	I_C = -4A	V_{CE} = -4V			-1.5	V

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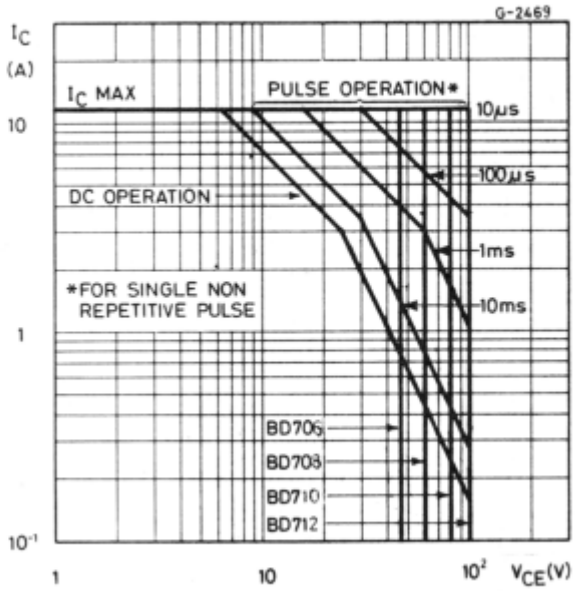
ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions		Min.	Typ.	Max.	Unit
h_{FE}*	DC current gain	I_C = -0.5A	V_{CE} = -2V	40	120	400	—
		I_C = -2A	V_{CE} = -2V				
			for **BD706**	30			—
			for **BD708**	30			—
			for **BD710**	30			—
		I_C = -4A	V_{CE} = -4V				
			for **BD706**	20	30	150	—
			for **BD708**	15		150	—
			for **BD710**	15		150	—
			for **BD712**	15		150	—
		I_C = -10A	V_{CE} = -4V				
			for **BD706**	5	12		—
			for **BD708**	5	12		—
			for **BD710**		8		—
			for **BD712**		8		—
f_T	Transition frequency	I_C = -300mA	V_{CE} = -3V	3			MHz

* Pulsed: pulse duration = 300 μs, duty cycle = 1.5%
** Value for which I_C = -3.3 A at V_{CE} = -2 V

Safe operating areas



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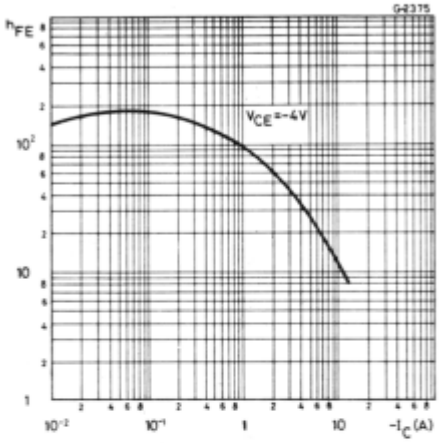
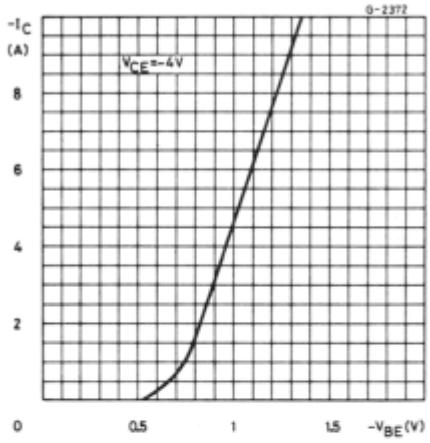
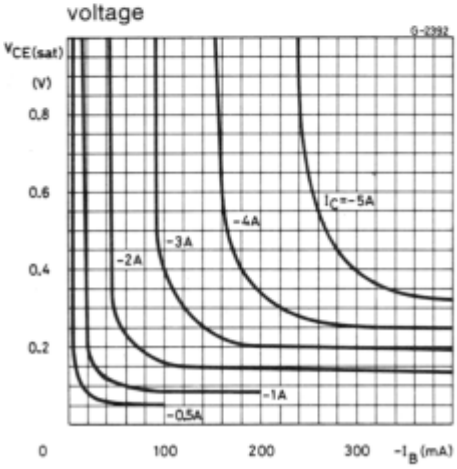
DC current gain



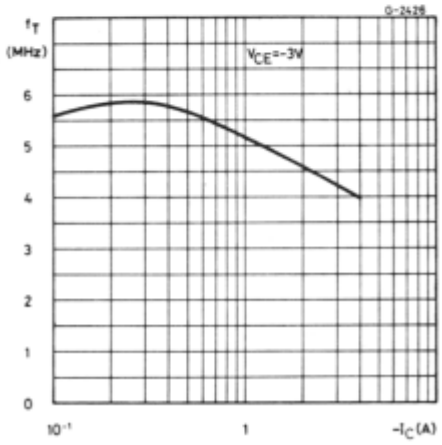
DC transconductance



Collector-emitter saturation voltage



Transition frequency



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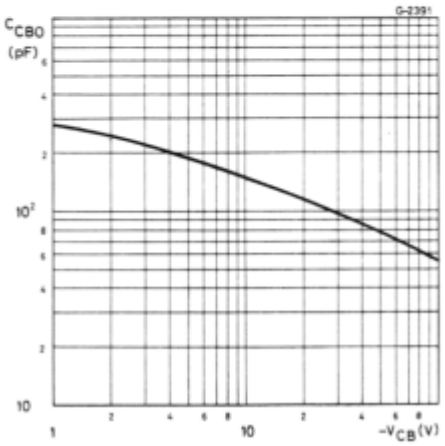
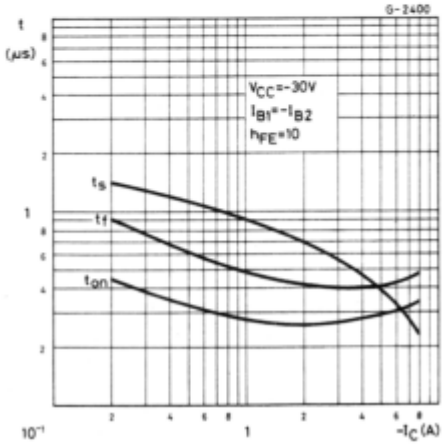
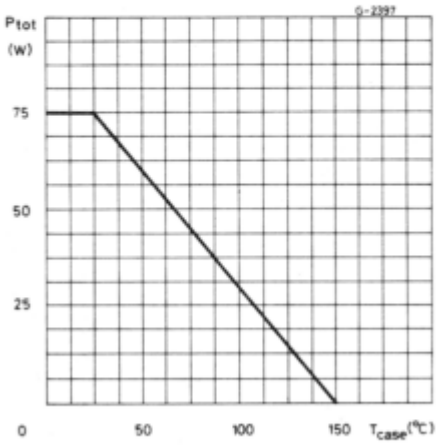
Collector-base capacitance



Saturated switching characteristics



Power rating chart