SGS-THOMSON MICROELECTRONICS

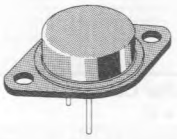
2N3713/14/15/16
2N3789/90/91/92

EPITAXIAL-BASE NPN/PNP

DESCRIPTION

The 2N3713, 2N3714, 2N3715 and 2N3716 are silicon epitaxial-base NPN power transistors in Jedec TO-3 metal case. They are intended for use in power linear and switching applications.

The complementary PNP types are the 2N3789, 2N3790, 2N3791 and 2N3792 respectively.



TO-3

INTERNAL SCHEMATIC DIAGRAMS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	PNP* PNP* NPN NPN	2N3789 2N3791 2N3713 2N3715	2N3790 2N3792 2N3714 2N3716	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)		80	100	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)		60	80	V
V_{EBO}	Emitter-base Voltage (I_C = 0)		7		V
I_C	Collector Current		10		A
I_B	Base Current		4		A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C		150		W
T_{stg}	Storage Temperature		– 65 to 200		°C
T_j	Junction Temperature		200		°C

* For PNP types voltage and current values are negative.

THERMAL DATA

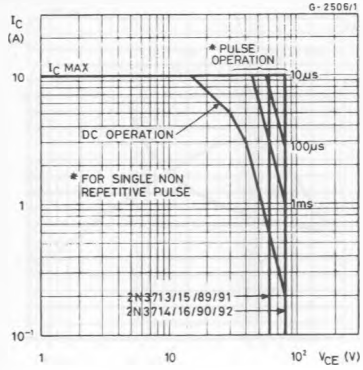
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	1.17	°C/W

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

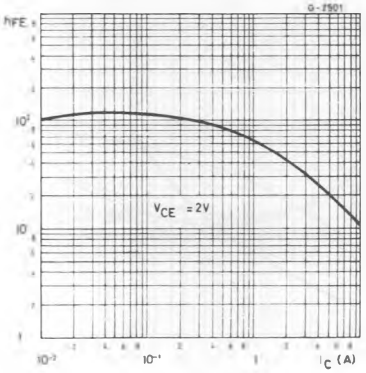
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cutoff Current (V_{BE} = – 1.5 V)	V_{CE} = 80 V for **2N3713/15/89/91** V_{CE} = 100 V for **2N3714/16/90/92** T_{case} = 150 °C V_{CE} = 60 V for **2N3713/15/89/91** V_{CE} = 80 V for **2N3713/14/90/92**			1 1 10 10	mA mA mA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 7 V			5	mA
$V_{CEO\ (sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 200 mA for **2N3713/15/89/91** for **2N3714/16/90/92**	 60 80			 V V
$V_{CE\ (sat)}$*	Collector-emitter Saturation Voltage	I_C = 5 A I_B = 0.5 A for **2N3713/14/91/92** for **2N3715/16** I_C = 4 A I_B = 0.5 A for **2N3789/90**			 1 0.8 1	 V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 5 A I_B = 0.5 A for **2N3713/14/89/90** for **2N3715/16/91/92**			 2 1.5	 V V
V_{BE}*	Base-emitter Voltage	I_C = 3 A V_{CE} = 2 V			1.5	V
h_{FE}*	DC Current Gain	I_C = 1 A V_{CE} = 2 V for **2N3713/14/89/90** for **2N3715/16** for **2N3791/92** I_C = 3 A V_{CE} = 2 V for **2N3713/14/89/90** for **2N3715/16/91/92** I_C = 10 A V_{CE} = 4 V	 25 50 50 15 30 5		 90 150 180	
f_T	Transition Frequency	I_C = 0.5 A V_{CE} = 10 V	4			MHz

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

Safe Operating Areas.



DC Current Gain (NPN types).



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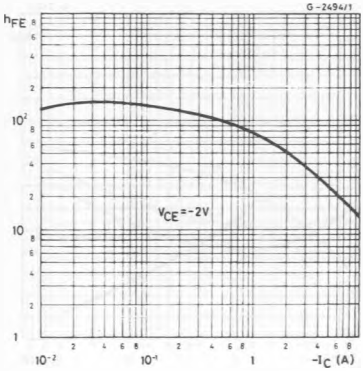
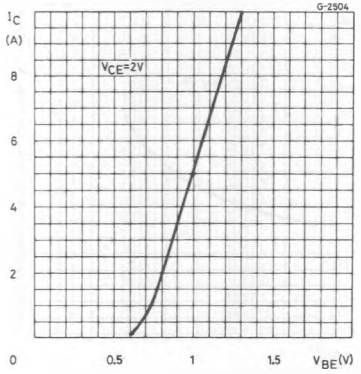


DC Transconductance (NPN types).



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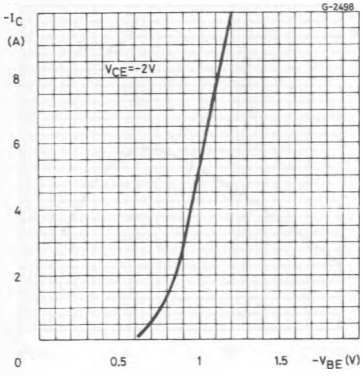
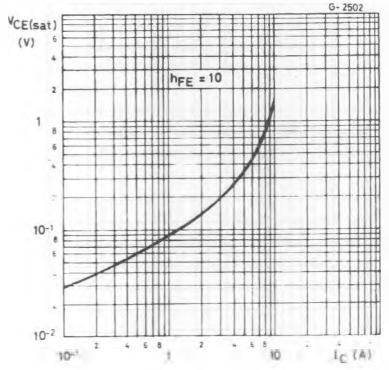


Collector-emitter Saturation Voltage (NPN types).



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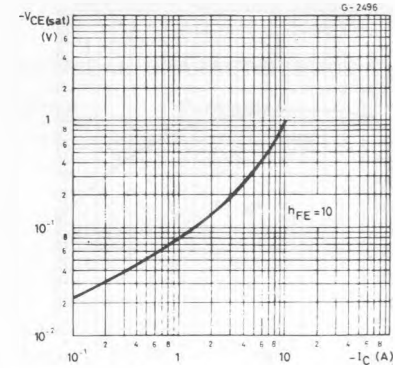
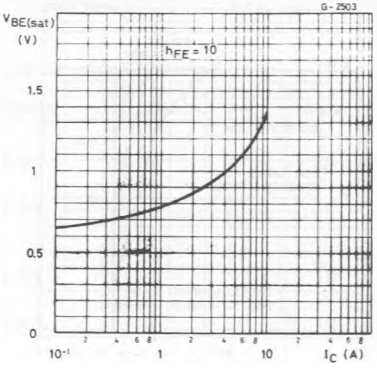


Base-emitter Saturation Voltage (NPN types).



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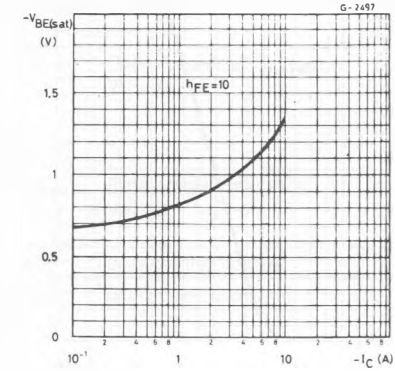
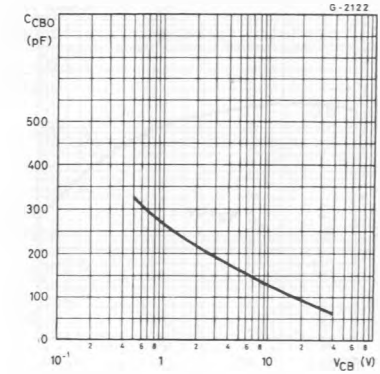


Collector-base Capacitance (NPN types).



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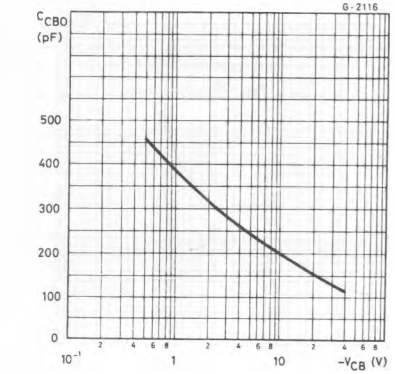
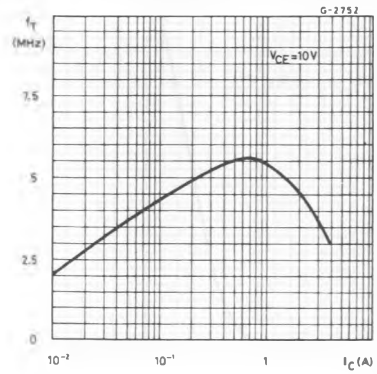


Transition Frequency (NPN types).



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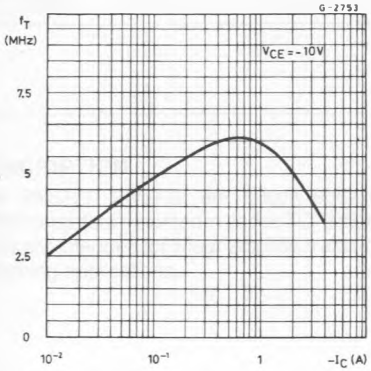
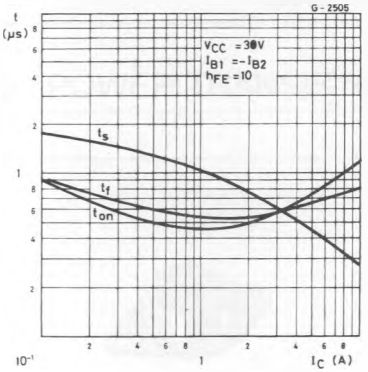


Saturated Switching Characteristics (NPN types).



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