

SANYO

No.990C

2SB903/2SD1212

PNP/NPN Epitaxial Planar Silicon Transistors

30V/12A High-Speed Switching Applications**APPLICATIONS**

- Suitable for relay drivers, high-speed inverters, converters, and other general large-current switching applications

FEATURES

- Low collector-emitter saturation voltage: $V_{CE(sat)} = (-)0.5V(\text{PNP}), 0.4V(\text{NPN})$ max.
- Large current capacity

Values for 2SB903 shown in ()

ABSOLUTE MAXIMUM RATINGS/ $T_a=25^\circ\text{C}$

ABSOLUTE MAXIMUM RATINGS/ $T_a=25^{\circ}\text{C}$			unit	
Collector-to-base voltage	V_{CBO}	(-)-60	V	
Collector-to-emitter voltage	V_{CEO}	(-)-30	V	
Emitter-to-base voltage	V_{EBO}	(-)-6	V	
Collector current	I_C	(-)-12	A	
Collector Current(Pulse)	I_{CP}	(-)-20	A	
Allowable collector dissipation	P_C	1.75	W	
		$T_c=25^{\circ}\text{C}$	35	W
Junction temperature	T_j	150	$^{\circ}\text{C}$	
Storage ambient temperature	T_{stn}	-55~+150	$^{\circ}\text{C}$	

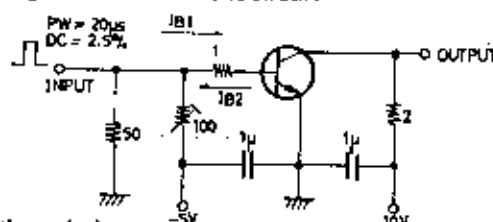
ELECTRICAL CHARACTERISTICS/ $T_a=25^\circ\text{C}$

			min	typ	max	unit
Collector cut-off current	I_{CBO}	$V_{CB}=(-)40V, I_E=0$			(-)0.1	mA
Emitter cut-off current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$			(-)0.1	mA
DC current gain	$h_{FE}(1)$	$V_{CE}=(-)2V, I_C=(-)1A$	70*		280*	
	$h_{FE}(2)$	$V_{CE}=(-)2V, I_C=(-)6A$	30			
Gain bandwidth product	f_T	$V_{CE}=(-)5V, I_C=(-)1A$		120		MHz
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=(-)5A, I_B=(-)0.25A$			(-0.5)	V
					0.4	V
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=(-)1mA, I_E=0$	(-)60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)30			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=(-)1mA, I_C=0$	(-)6			V
Turn-on time	t_{on}	See specified test circuit.		(0.1)0.2		μs
Storage time	t_{stg}	See specified test circuit.		(0.3)0.5		μs
Fall time	t_f	See specified test circuit.		0.03		μs

* 2SB903 and 2SD1212 are graded as follows by h_{FE} at 1A:

70	Q	140	100	R	200	140	S	280
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Switching time measurement circuit

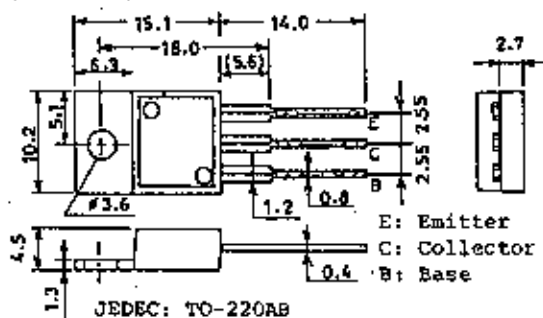


(For PNP, the polarity is reversed)

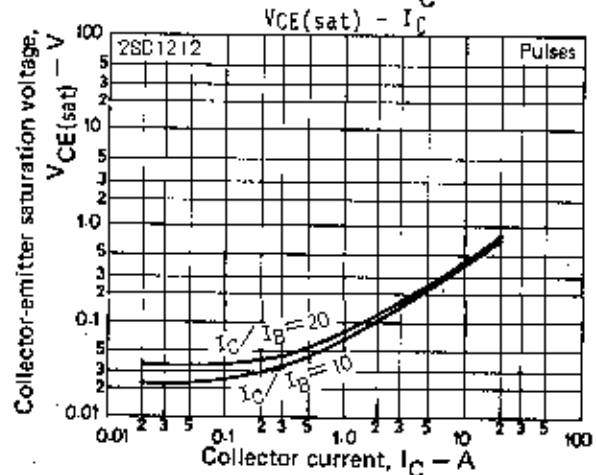
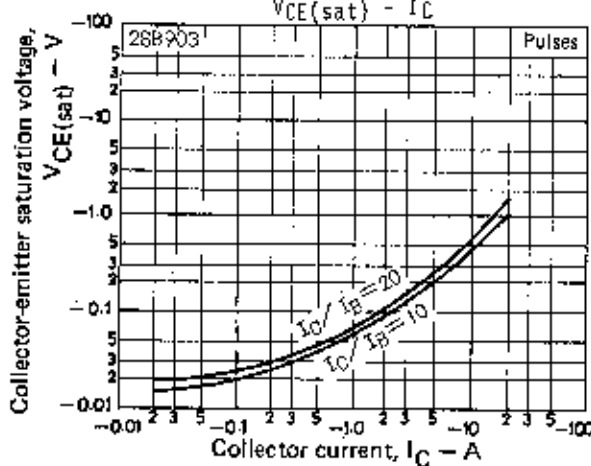
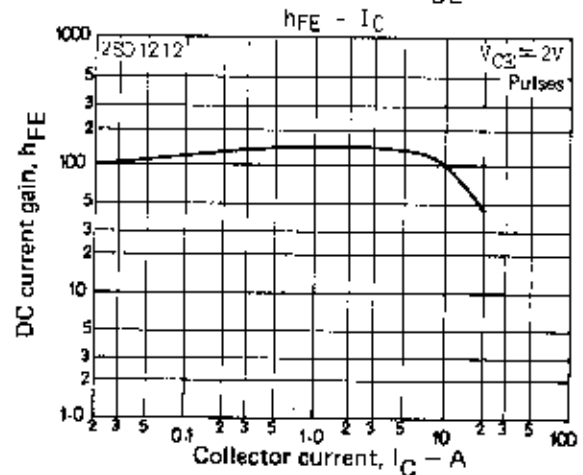
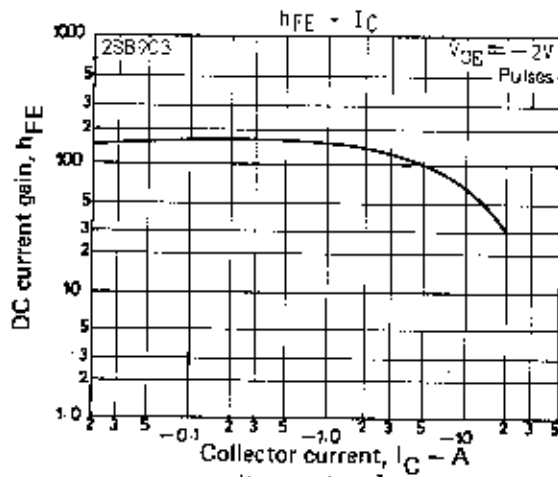
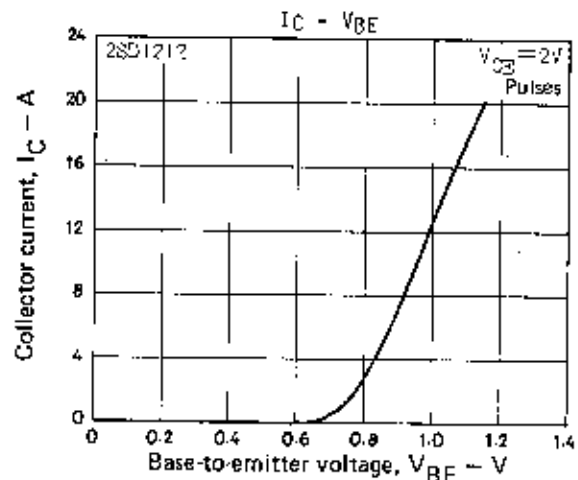
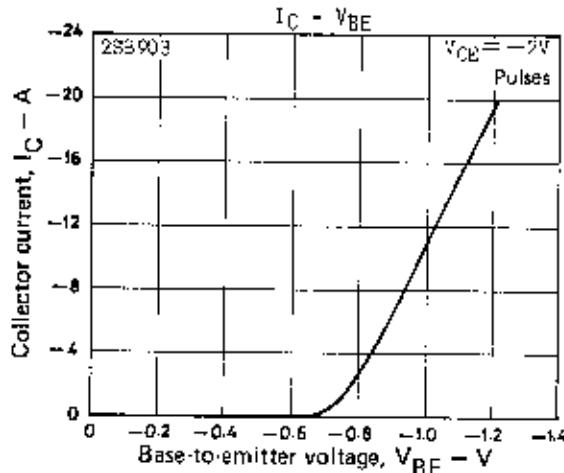
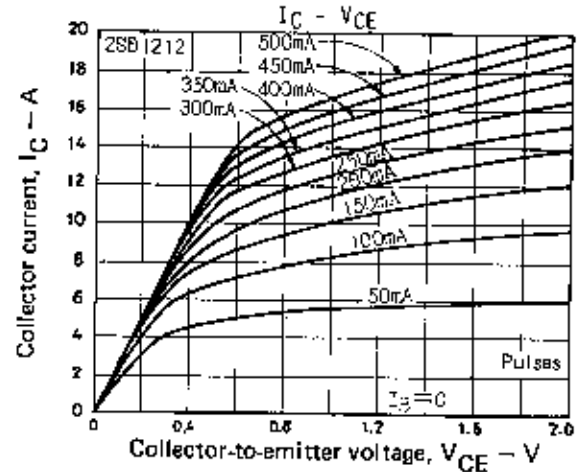
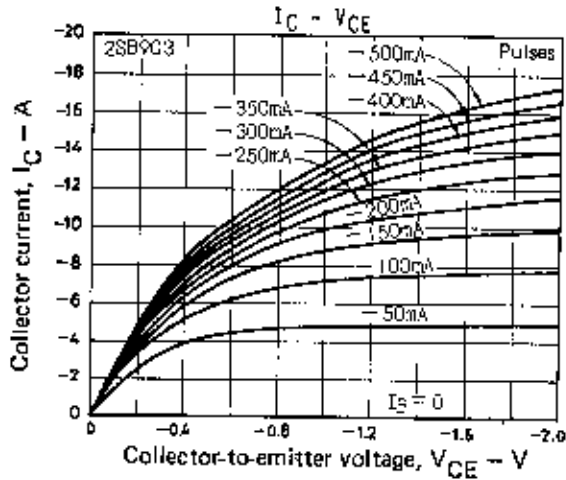
$$10I_{B1} = -10I_{B2} = I_C = 5A$$

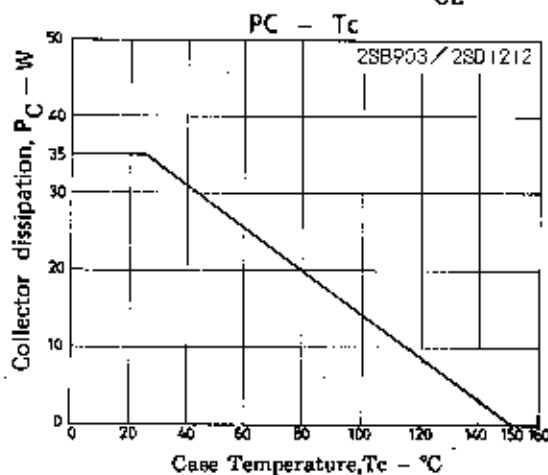
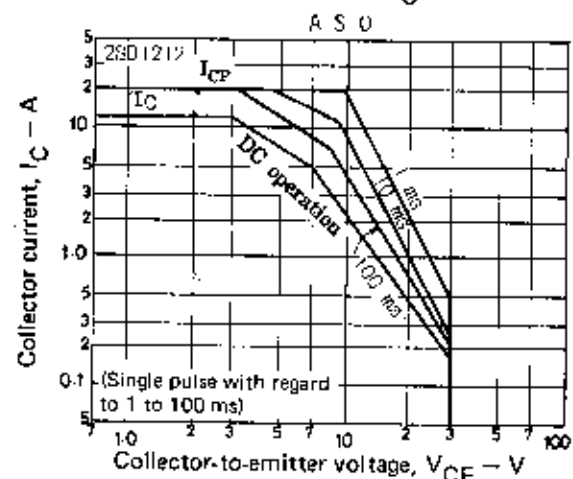
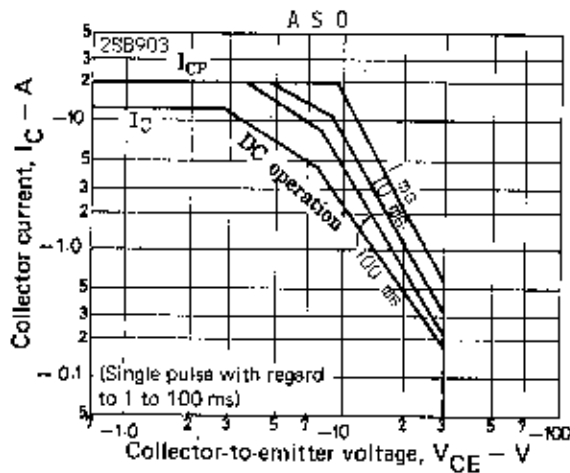
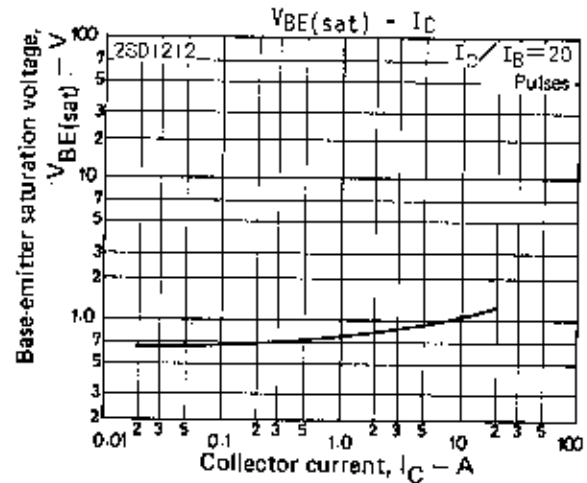
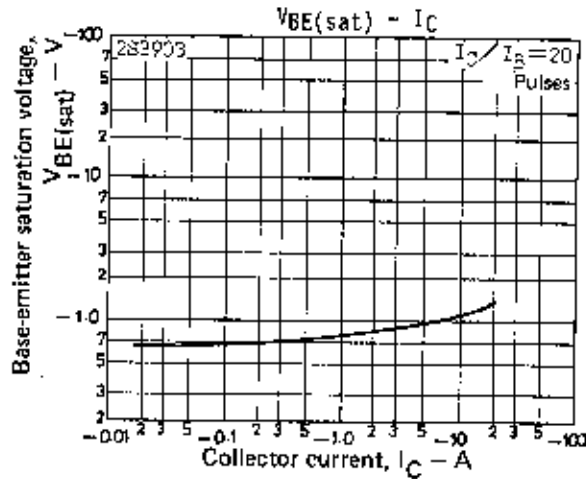
Unit (Resistance: Ω , Capacitance: F)**Package Dimensions 2010B**

(unit: mm)

JEDEC: TO-220AB
EIAJ: SC-46

SANYO Electric Co., Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN





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