

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

			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
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage ambient temperature	$T_{stg}$	-55~+150	$^\circ\text{C}$

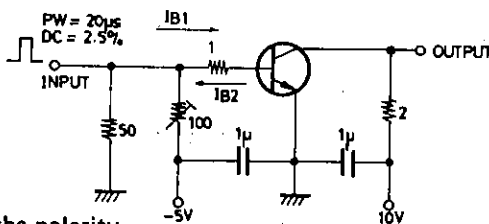
**ELECTRICAL CHARACTERISTICS/ $T_a=25^\circ\text{C}$**

			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		$\mu\text{s}$
Storage time	$t_{stg}$	See specified test circuit.		(0.3)0.5		$\mu\text{s}$
Fall time	$t_f$	See specified test circuit.		0.03		$\mu\text{s}$

\* 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.

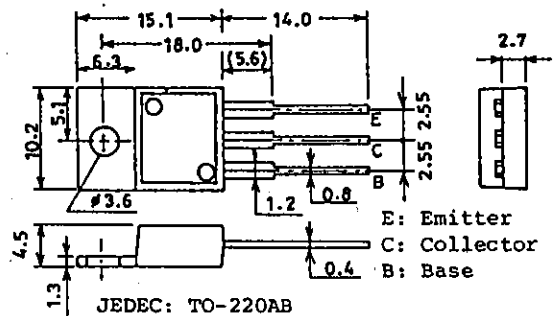


(For PNP, the polarity is reversed)

$10I_{B1} = -10I_{B2} = I_C = 5A$   
Unit (Resistance:  $\Omega$ , Capacitance: F)

**Package Dimensions 2010B**

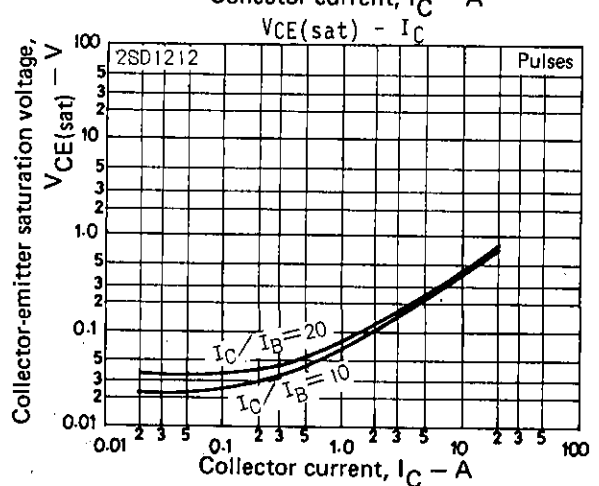
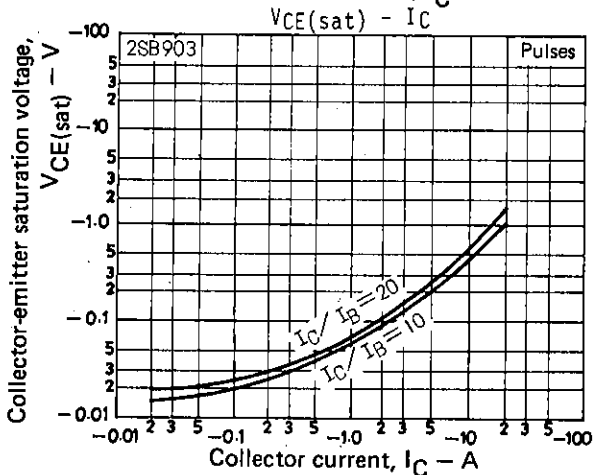
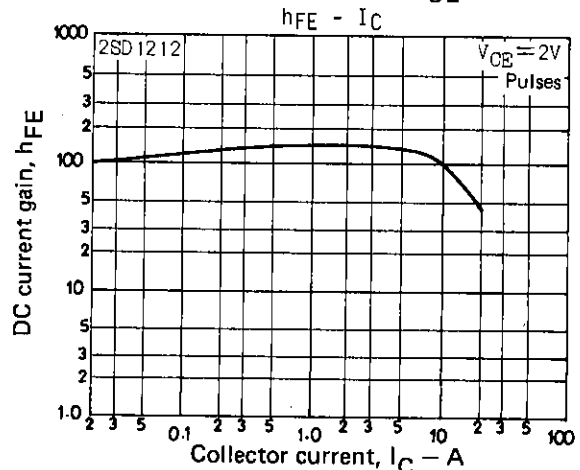
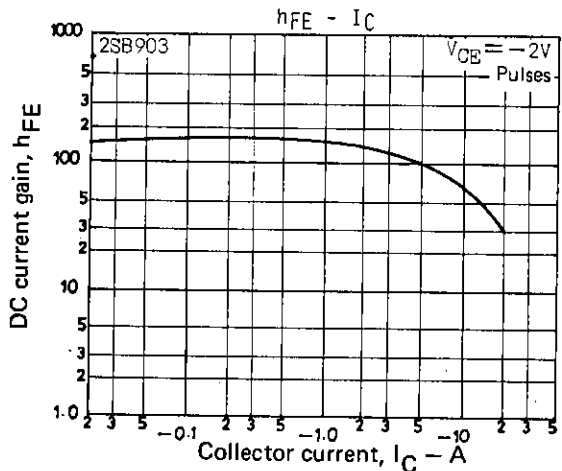
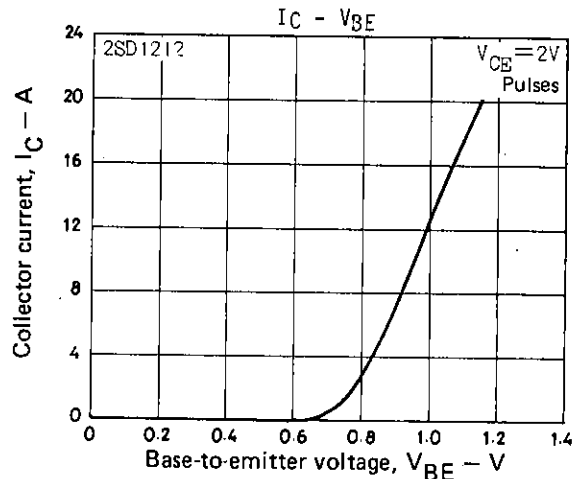
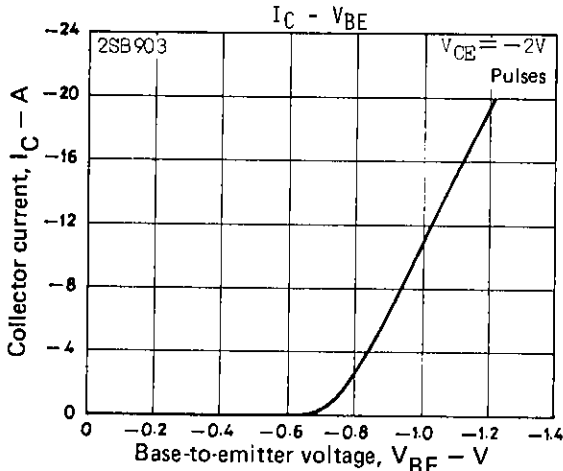
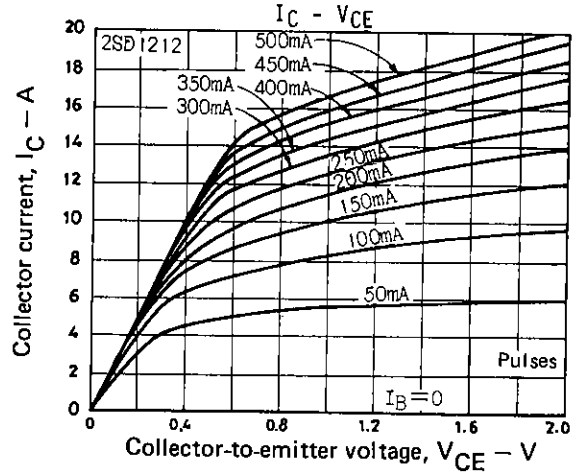
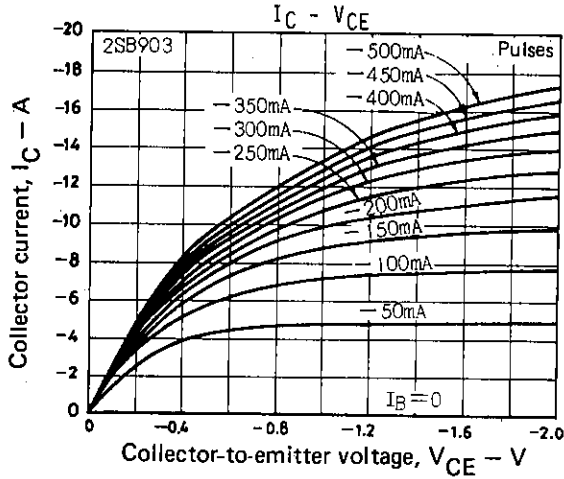
(unit: mm)

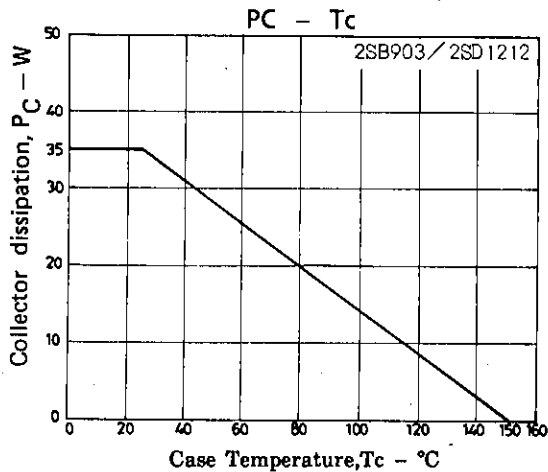
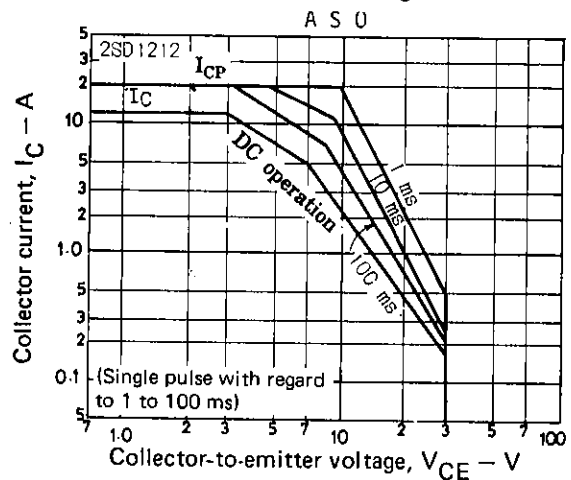
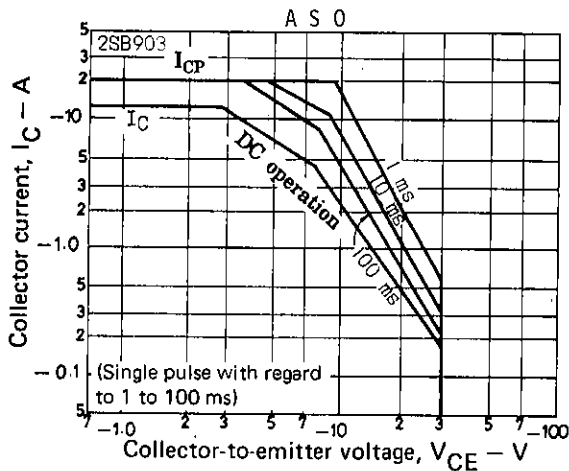
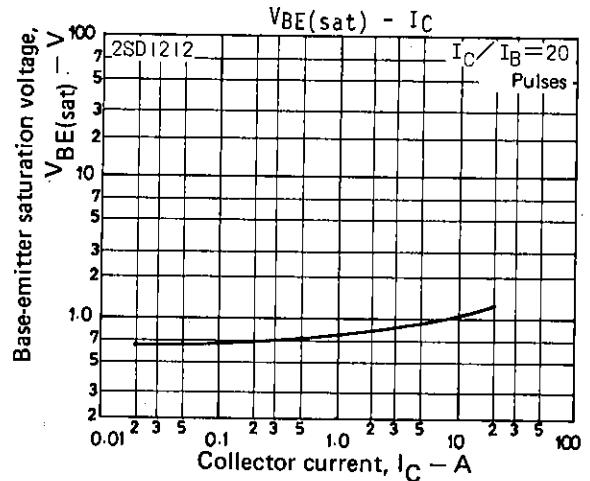
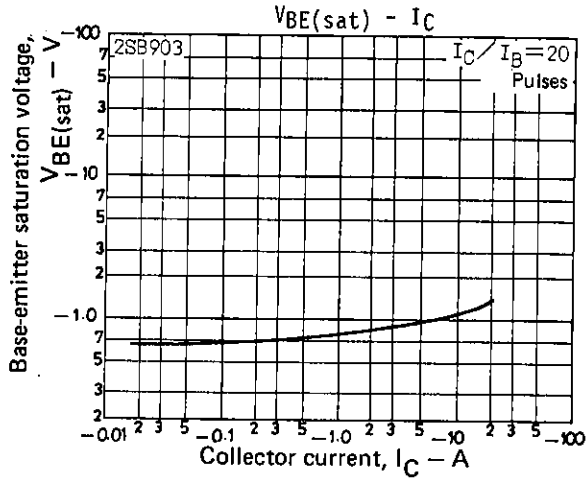


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