

**2SB1203,
2SD1803**

2044

PNP/NPN Epitaxial Planar
Silicon TransistorsT-33-19
T-33-09**High-Current Switching Applications**

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Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications

Features

- Low collector-to-emitter saturation voltage
- High current and high f_T
- Excellent linearity of h_{FE}
- Fast switching time
- Small and slim package making it easy to make 2SB1203/2SD1803-applied sets smaller

(): 2SB1203

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Collector to Base Voltage	V_{CBO}	(-)	60	V
Collector to Emitter Voltage	V_{CEO}	(-)	50	V
Emitter to Base Voltage	V_{EBO}	(-)	6	V
Collector Current	I_C	(-)	5	A
Peak Collector Current	i_{cp}	(-)	8	A
Collector Dissipation	P_C		1	W
Junction Temperature	T_j		20	W
Storage Temperature	T_{stg}		150	$^\circ\text{C}$
			-55 to +150	$^\circ\text{C}$

 $T_c = 25^\circ\text{C}$ **Electrical Characteristics at $T_a = 25^\circ\text{C}$**

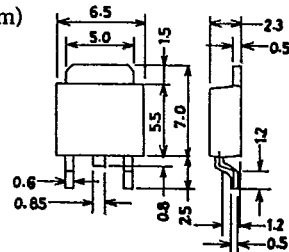
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = (-)40\text{V}, I_E = 0$			(-)	1 μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)	1 μA
DC Current Gain	$h_{FE}(1)$	$V_{CE} = (-)2\text{V}, I_C = (-)0.5\text{A}$	70*		400*	
	$h_{FE}(2)$	$V_{CE} = (-)2\text{V}, I_C = (-)4\text{A}$	35			
Gain-Bandwidth Product	f_T	$V_{CE} = (-)5\text{V}, I_C = (-)1\text{A}$		(130)		MHz
				180		MHz
Output Capacitance	c_{ob}	$V_{CE} = (-)10\text{V}, f = 1\text{MHz}$		(60)		pF
				40		pF



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*: The 2SB1203/2SD1803 are classified by 0.5A h_{FE} as follows:

70	Q	140	100	R	200	140	S	280	200	T	400
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Case Outline 2044
(unit: mm)

B: Base
C: Collector
E: Emitter

2.3 2.3 SANYO: TP-FA

2SB1203/2SD1803

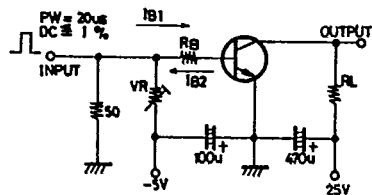
T-33-19

T-33-09

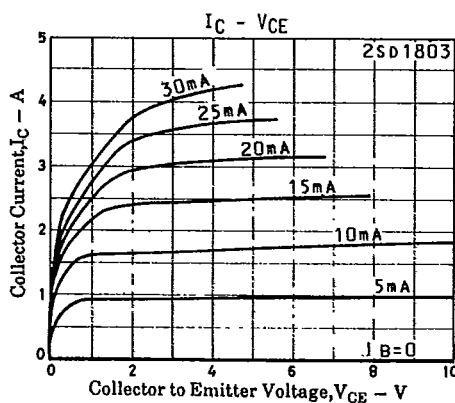
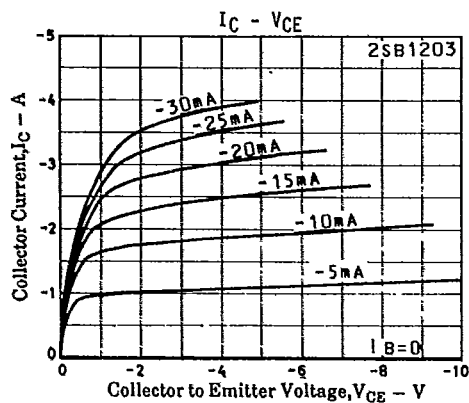
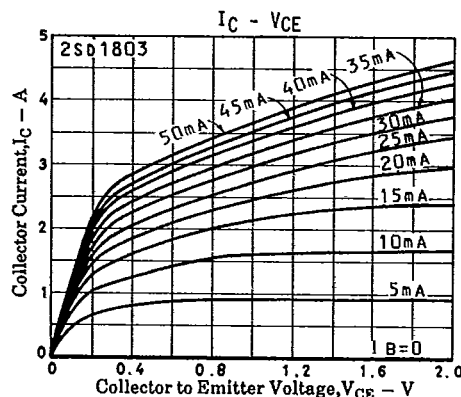
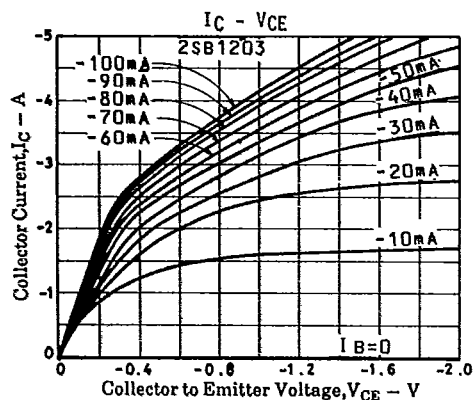
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			min	typ	max	unit
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)3A, I_B = (-)0.15A$		(-280)	(-550)	mV
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)3A, I_B = (-)0.15A$		220	400	mV
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)60		(-)0.95	(-)1.3
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$	(-)6			V
Turn-on Time	t_{on}	See specified Test Circuit.		(50)		ns
Storage Time	t_{stg}			50		ns
				(450)		ns
Fall Time	t_f			500		ns
				(20)		ns
				20		ns

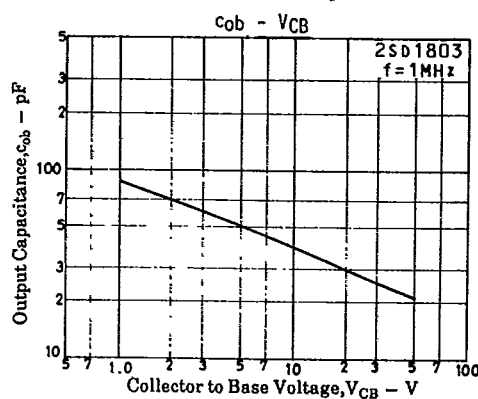
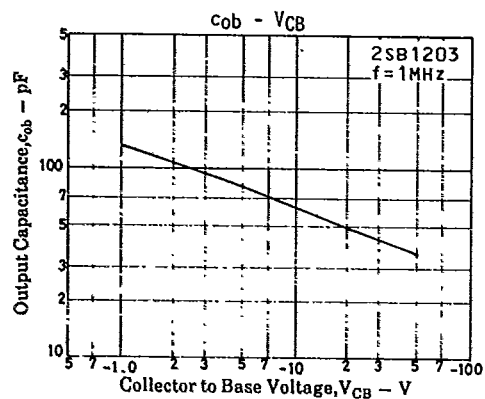
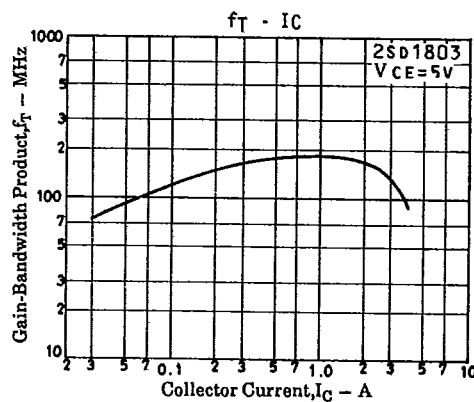
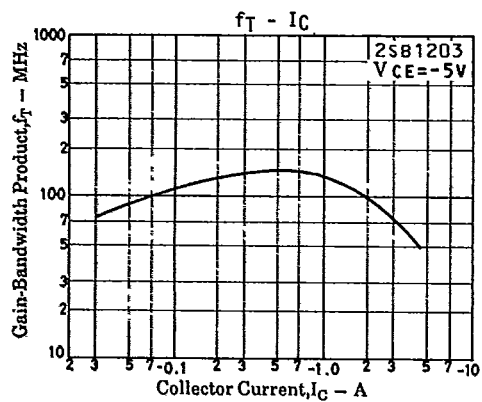
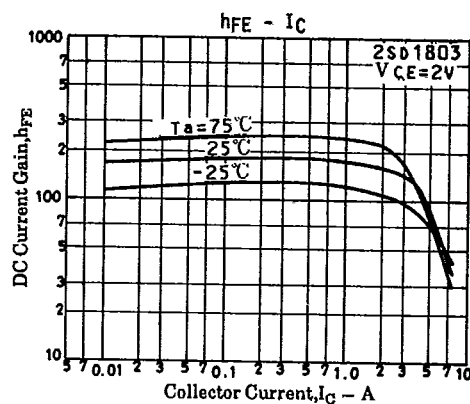
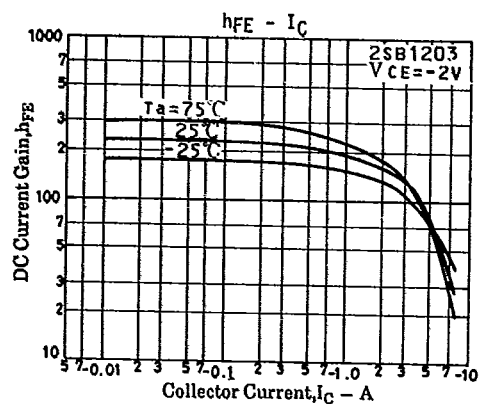
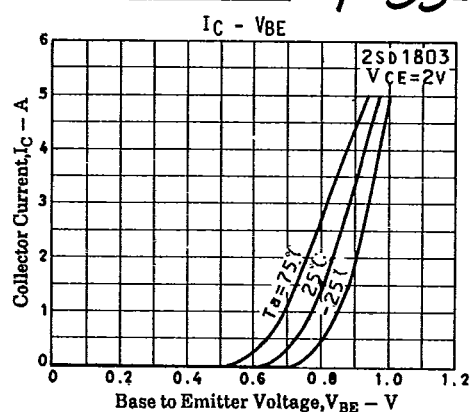
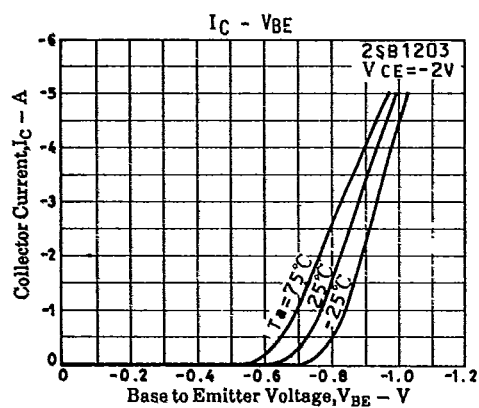
Switching Time Test Circuit



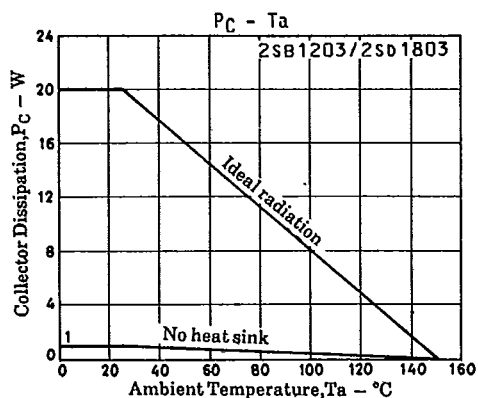
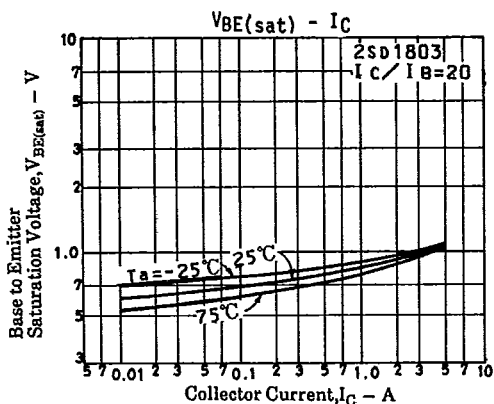
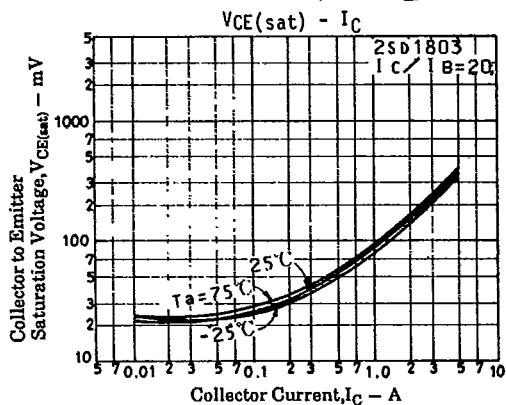
$I_C = 10$ $I_{B1} = -10$ $I_{B2} = 2A$
 (For PNP, the polarity is reversed.)



2SB1203/2SD1803

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T-33-09

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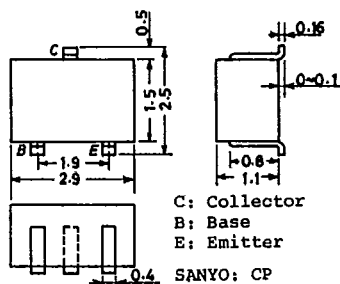


T-91-20

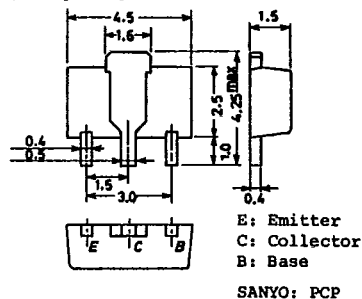
CASE OUTLINES OF SURFACE MOUNT TRANSISTORS

- All of Sanyo surface mount transistor case outlines are illustrated below.
- All dimensions are in mm, and dimensions which are not followed by min. or max. are represented by typical values.
- No marking is indicated.

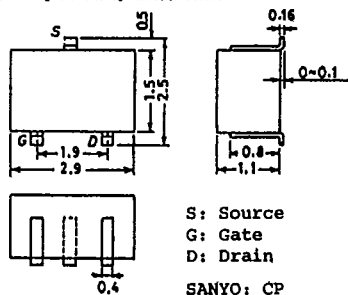
Case Outline—[2018A] unit: mm



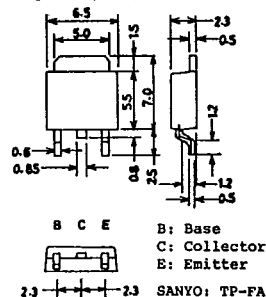
Case Outline—[2038] unit: mm



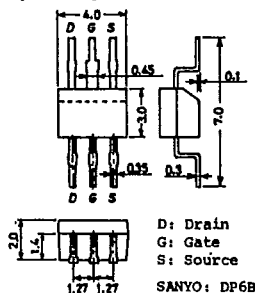
Case Outline—[2024A] unit: mm



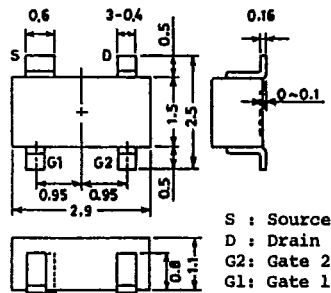
Case Outline—[2044] unit: mm



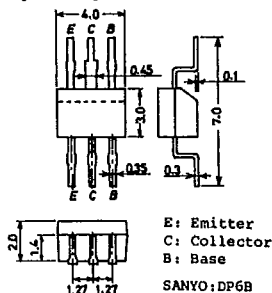
Case Outline—[2028A] unit: mm



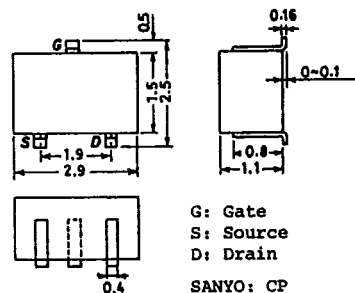
Case Outline—[2046] unit: mm



Case Outline—[2030A] unit: mm

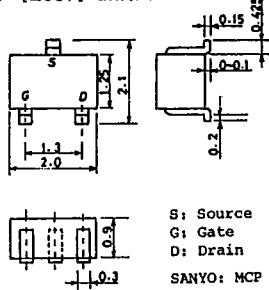


Case Outline—[2050] unit: mm

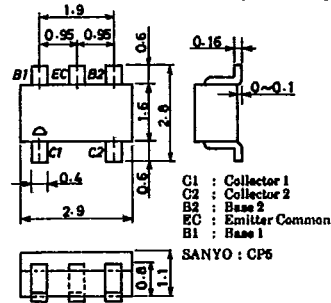


T-91-20

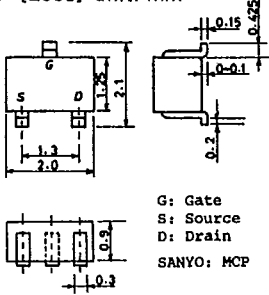
Case Outline—[2057] unit: mm



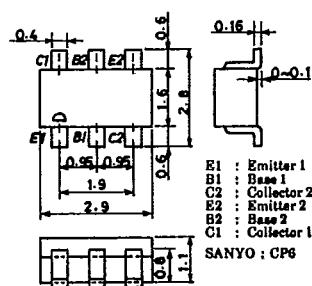
Case Outline—[2066] unit: mm



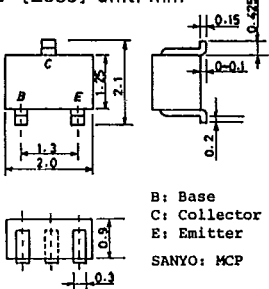
Case Outline—[2058] unit: mm



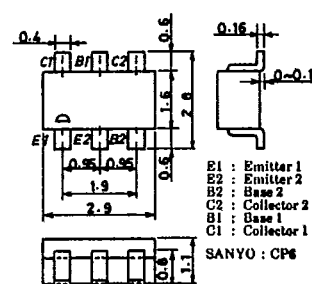
Case Outline—[2067] unit: mm



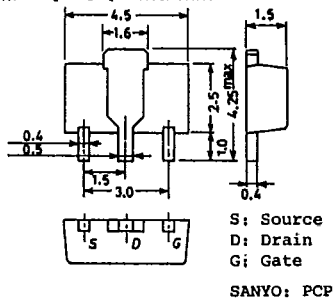
Case Outline—[2059] unit: mm



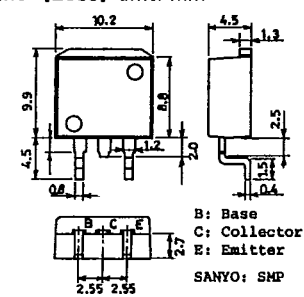
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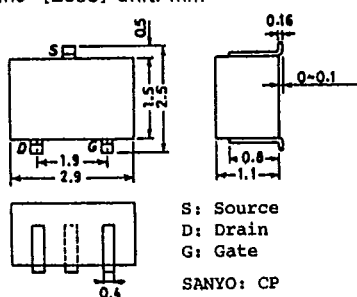
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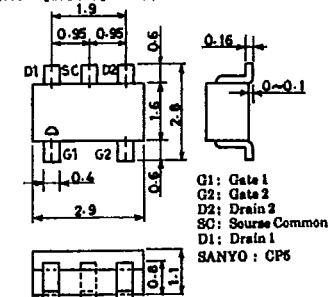
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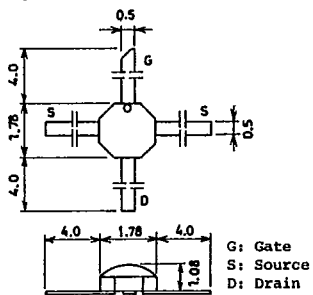
Case Outline—[2065] unit: mm



Case Outline—[2070] unit: mm

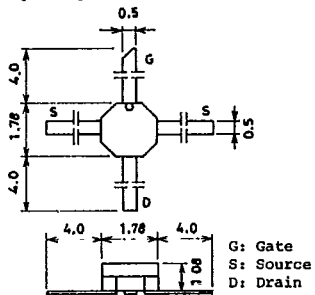


Case Outline-[2071] unit: mm



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Case Outline-[2072] unit: mm



Case Outline-[2073] unit: mm

