

**2SB1216,  
2SD1816**



2044

T-33-19  
T-33-09

PNP/NPN Epitaxial Planar  
Silicon Transistors

## High-Current Switching Applications

©2540A

### Applications

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

### Features

- Low collector to emitter saturation voltage
- Good linearity of  $h_{FE}$
- Small and slim package facilitating compactness of sets
- High  $f_T$
- Fast switching time

( ): 2SB1216

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

			unit
Collector to Base Voltage	$V_{CB0}$	(-)120	V
Collector to Emitter Voltage	$V_{CE0}$	(-)100	V
Emitter to Base Voltage	$V_{EB0}$	(-)6	V
Collector Current	$I_C$	(-)4	A
Peak Collector Current	$i_{cp}$	(-)8	A
Collector Dissipation	$P_C$	1	W
		$T_c=25^\circ\text{C}$	20
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

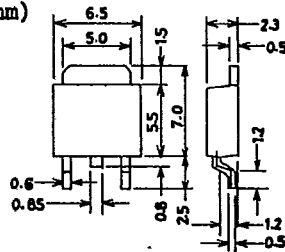
			min	typ	max	unit
Collector Cutoff Current	$I_{CB0}$	$V_{CB}=(-)100\text{V}, I_E=0$			(-)1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EB0}$	$V_{EB}=(-)4\text{V}, I_C=0$			(-)1	$\mu\text{A}$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=(-)5\text{V}, I_C=(-)0.5\text{A}$	70*		400*	
	$h_{FE(2)}$	$V_{CE}=(-)5\text{V}, I_C=(-)3\text{A}$	40			

Continued on next page.

\*: The 2SB1216/2SD1816 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 C E



B: Base  
C: Collector  
E: Emitter

2.3 SANYO: TP-FA

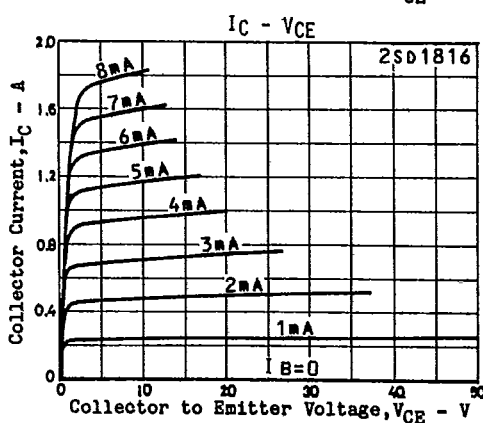
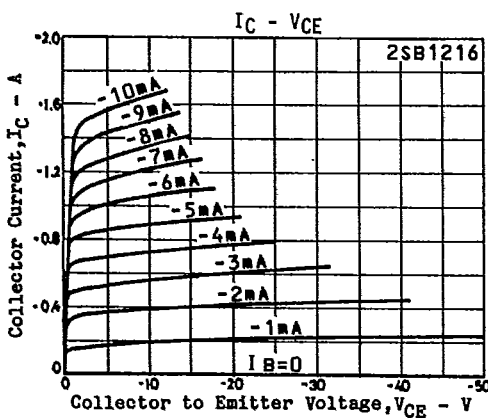
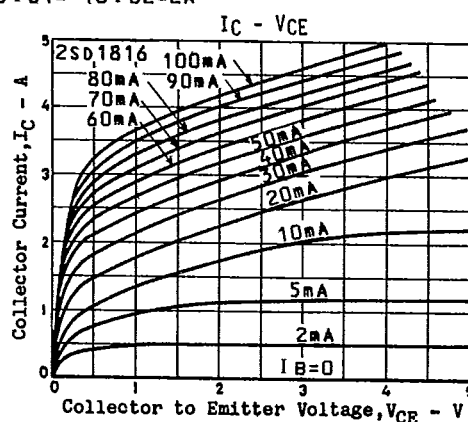
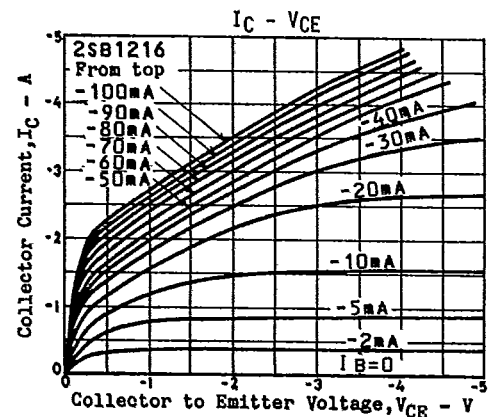
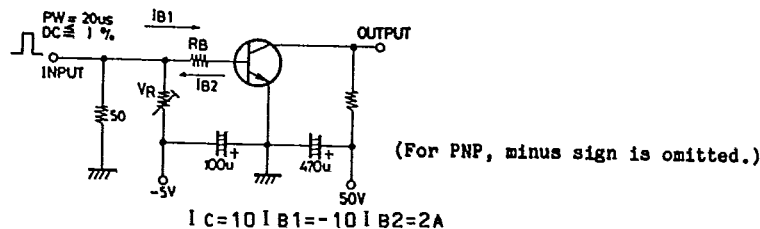
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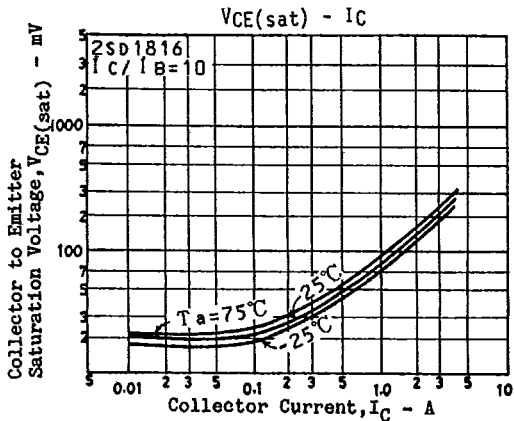
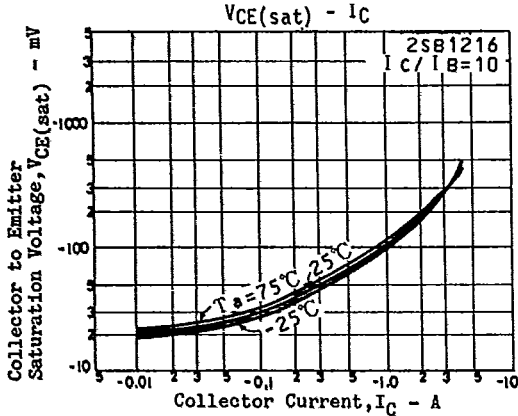
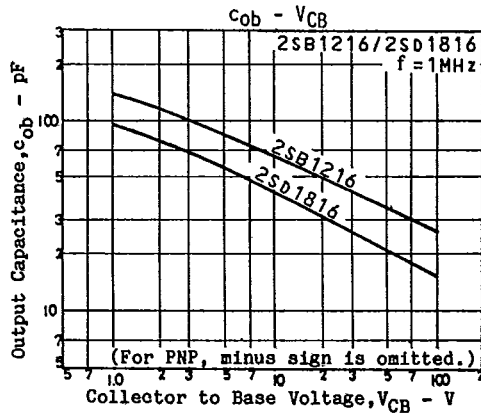
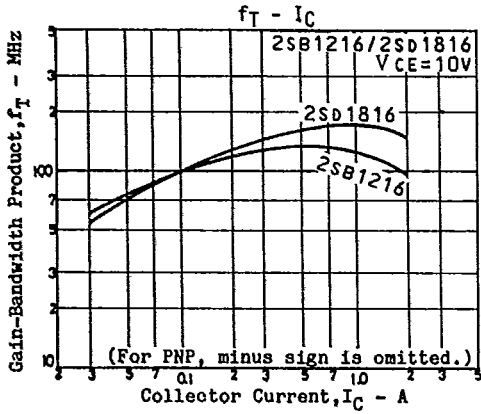
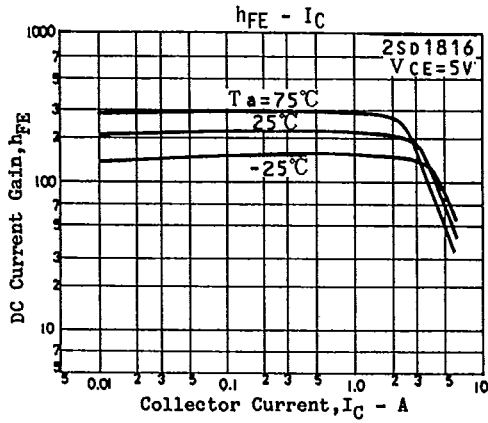
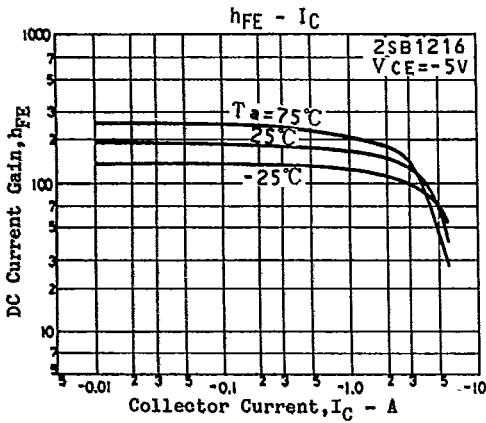
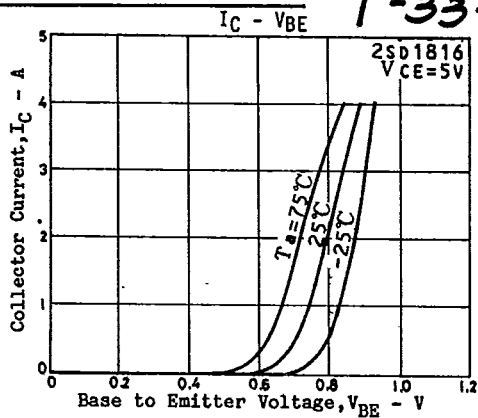
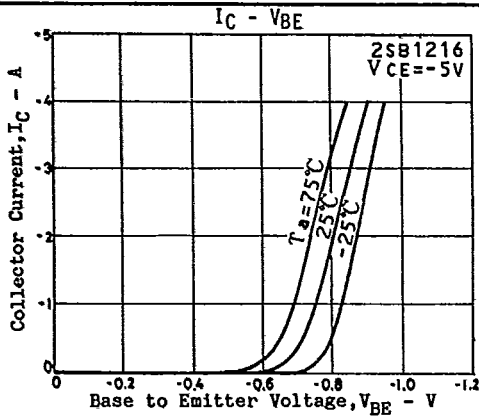
			min	typ	max	unit
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)0.5A$		180		MHz
				(130)		
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(65)40		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)2A, I_B=(-)0.2A$		150	400	mV
				(-200)	(-500)	
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)2A, I_B=(-)0.2A$		(-)0.9	(-)1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10uA, I_E=0$	(-)120			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)100			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10uA, I_C=0$	(-)6			V
Turn-on Time	$t_{on}$	See specified Test Circuit.		100		ns
Storage Time	$t_{stg}$	"		(800)900		ns
Fall Time	$t_f$	"		50		ns

Switching Time Test Circuit



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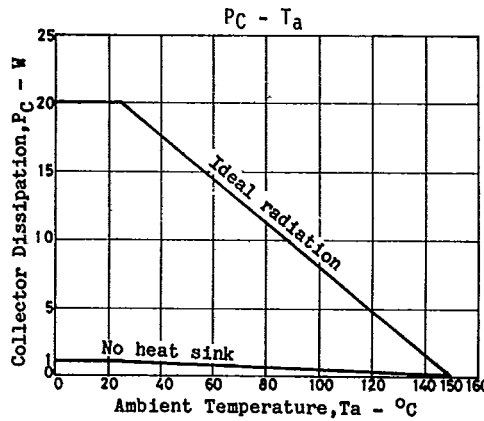
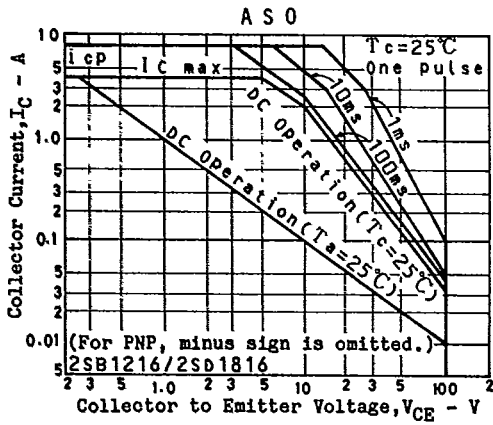
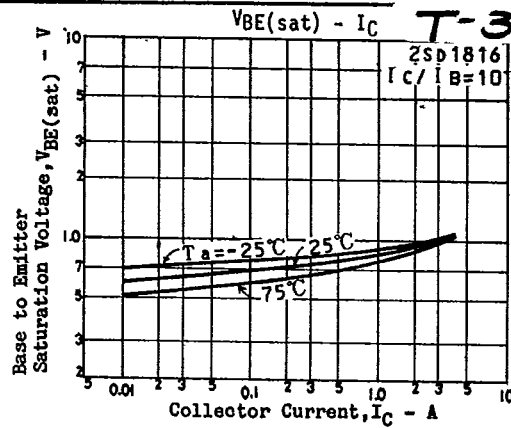
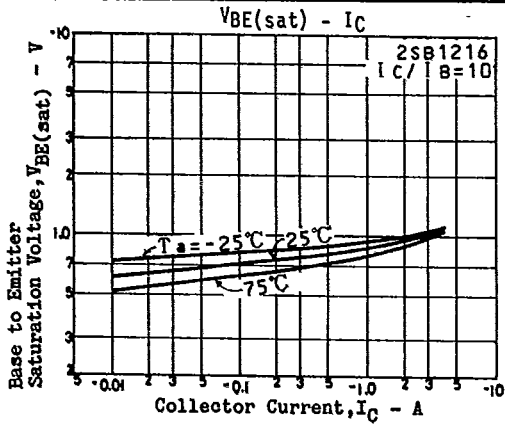
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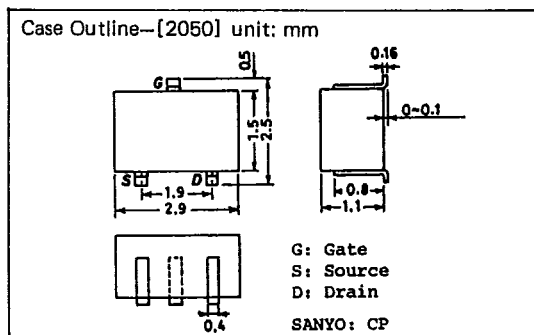
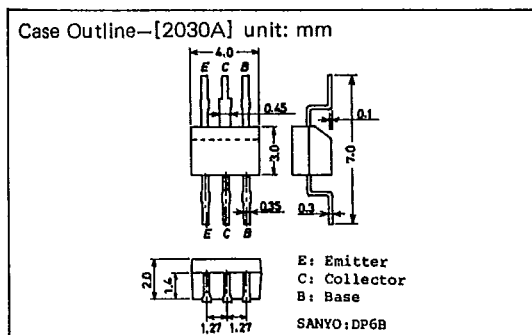
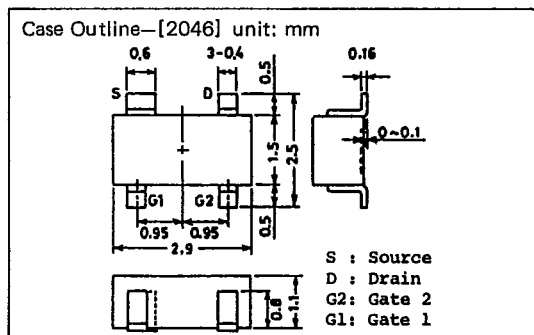
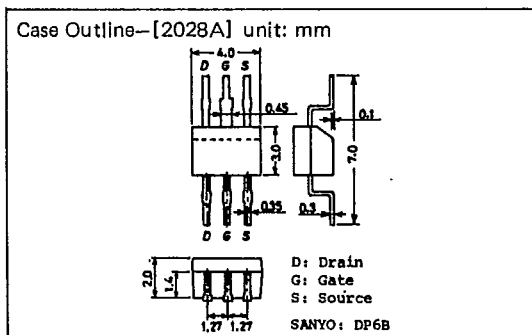
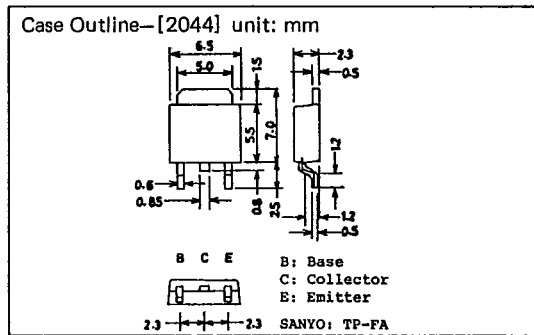
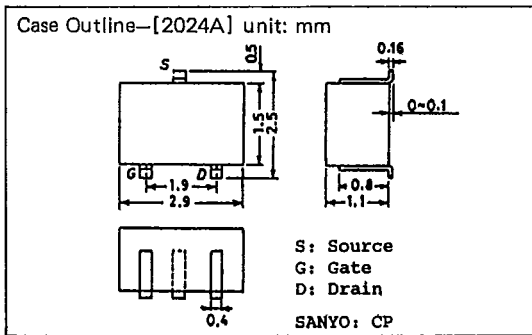
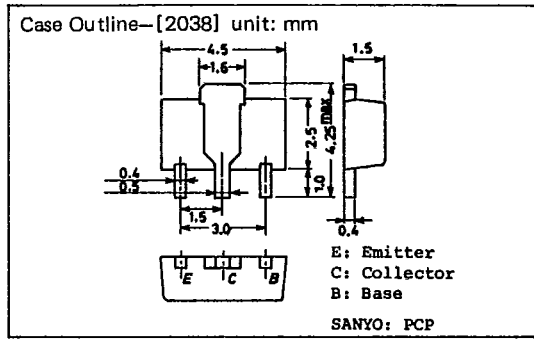
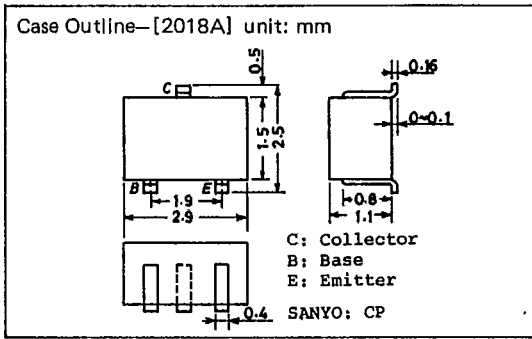
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T-91-20

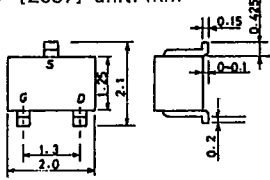
# CASE OUTLINES OF SURFACE MOUNT TRANSISTORS

- 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.



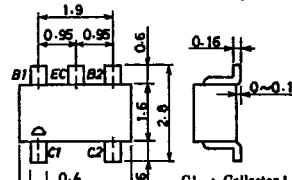
T-91-20

Case Outline—[2057] unit: mm



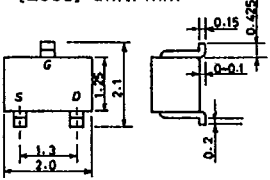
S: Source  
G: Gate  
D: Drain  
SANYO: MCP

Case Outline—[2066] unit: mm



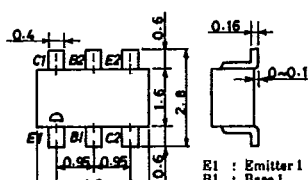
C1 : Collector 1  
C2 : Collector 2  
B2 : Base 2  
EC : Emitter Common  
B1 : Base 1  
SANYO : CP6

Case Outline—[2058] unit: mm



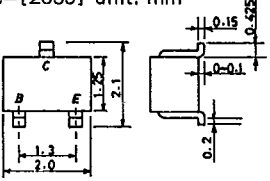
G: Gate  
S: Source  
D: Drain  
SANYO: MCP

Case Outline—[2067] unit: mm



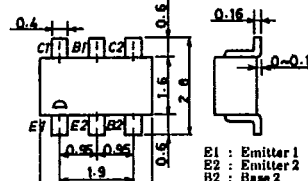
E1 : Emitter 1  
B1 : Base 1  
C2 : Collector 2  
E2 : Emitter 2  
B2 : Base 2  
C1 : Collector 1  
SANYO : CP6

Case Outline—[2059] unit: mm



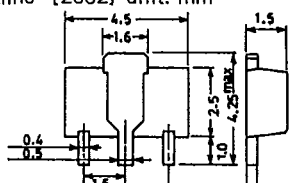
B: Base  
C: Collector  
E: Emitter  
SANYO: MCP

Case Outline—[2068] unit: mm



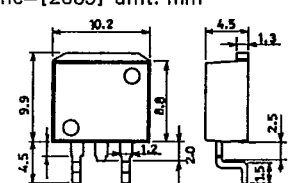
B1 : Emitter 1  
E2 : Emitter 2  
B2 : Base 2  
C2 : Collector 2  
B1 : Base 1  
C1 : Collector 1  
SANYO : CP6

Case Outline—[2062] unit: mm



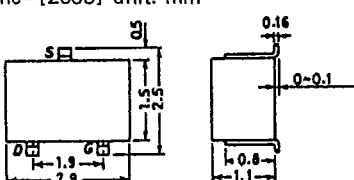
S: Source  
D: Drain  
G: Gate  
SANYO: PCP

Case Outline—[2069] unit: mm



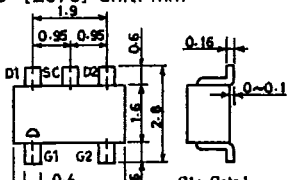
B: Base  
C: Collector  
E: Emitter  
SANYO: SMP

Case Outline—[2065] unit: mm



S: Source  
D: Drain  
G: Gate  
SANYO: CP

Case Outline—[2070] unit: mm



G1 : Gate 1  
G2 : Gate 2  
D2 : Drain 2  
SC : Source Common  
D1 : Drain 1  
SANYO : CP6

T-9120

