

# 2SC4520

T-35-17



2038 NPN Epitaxial Planar Silicon Transistor

## High-Speed Switching Applications

©3139

**Features**

- Adoption of FBET, MBIT processes
- Large current capacity
- Low collector-to-emitter saturation voltage
- Fast switching speed
- Small-sized package

**Absolute Maximum Ratings at Ta = 25°C**

			unit
Collector to Base Voltage	V <sub>CB0</sub>	60	V
Collector to Emitter Voltage	V <sub>CEO</sub>	45	V
Emitter to Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	1.5	A
Peak Collector Current	i <sub>cp</sub>	3	A
Collector Dissipation	P <sub>C</sub>	1.3	W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

Mounted on ceramic board (250mm<sup>2</sup> × 0.8mm)

**Electrical Characteristics at Ta = 25°C**

			min	typ	max	unit
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = 45V, I <sub>E</sub> = 0			1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 3V, I <sub>C</sub> = 0			1	μA
DC Current Gain	h <sub>FE</sub> (1)	V <sub>CE</sub> = 2V, I <sub>C</sub> = 100mA	100*		400*	
		V <sub>CE</sub> = 2V, I <sub>C</sub> = 1.5A	40			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 100mA		300		MHz
Output Capacitance	c <sub>ob</sub>	V <sub>CB</sub> = 10V, f = 1MHz		13		pF
C-E Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 800mA, I <sub>B</sub> = 40mA	0.25	0.7		V
B-E Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = 800mA, I <sub>B</sub> = 40mA	0.9	1.3		V
C-B Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0	60			V
C-E Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 1mA, R <sub>BE</sub> = ∞	45			V
E-B Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 10μA, I <sub>C</sub> = 0	5			V
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		50	100	ns
Storage Time	t <sub>stg</sub>	∞		150	270	ns
Turn-OFF Time	t <sub>off</sub>	∞		180	350	ns

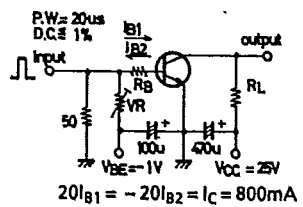


\* : The 2SC4520 is classified by 100mA h<sub>FE</sub> as follows :

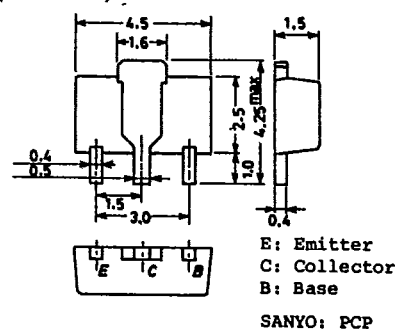
100 R	200	140 S	280	200 T	400
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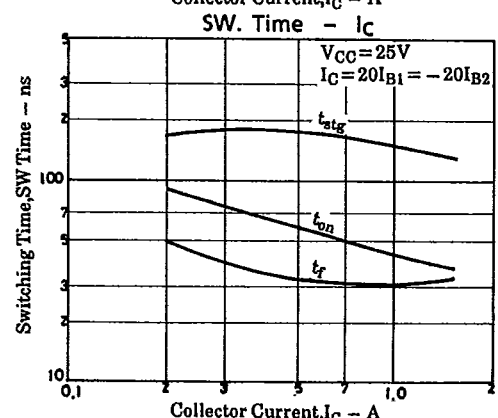
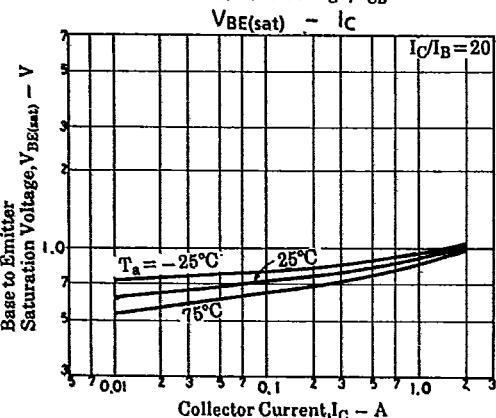
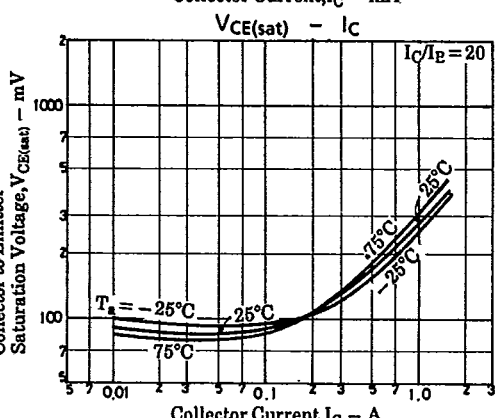
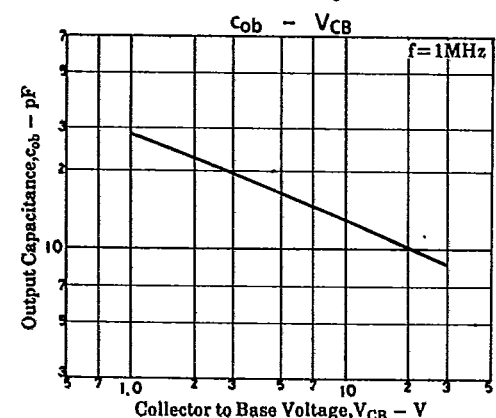
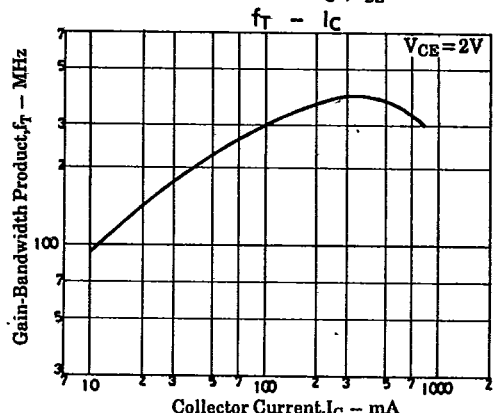
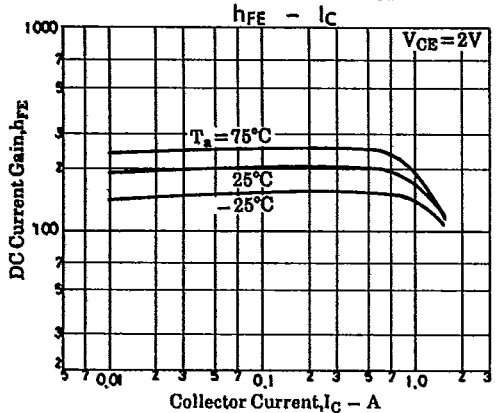
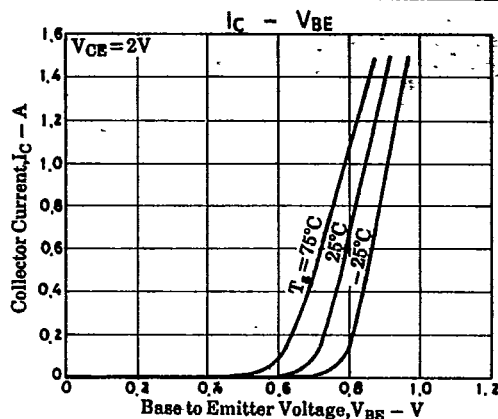
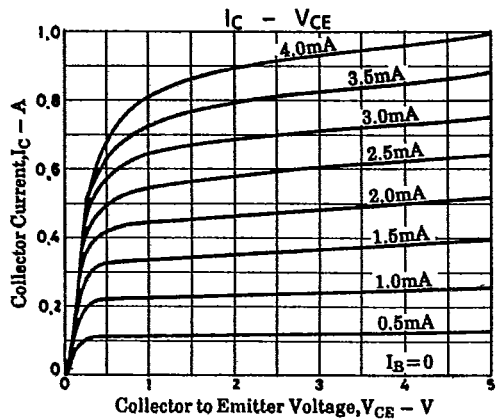
Marking : CK  
h<sub>FE</sub> rank : R,S,T

**Switching Time Test Circuit**



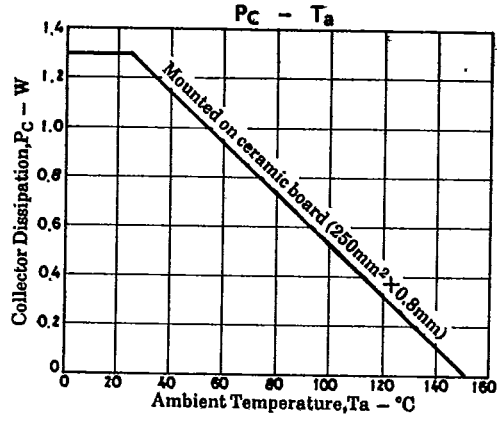
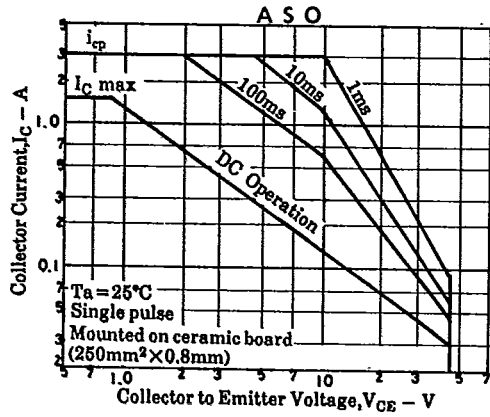
**Case Outline 2038**  
(unit : mm)





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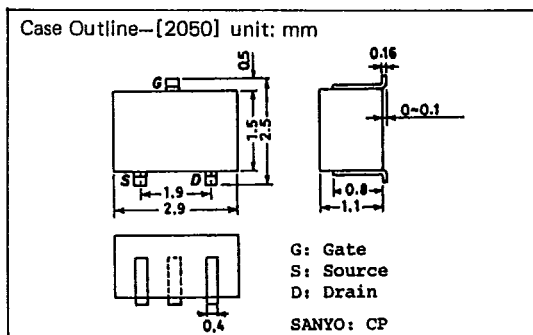
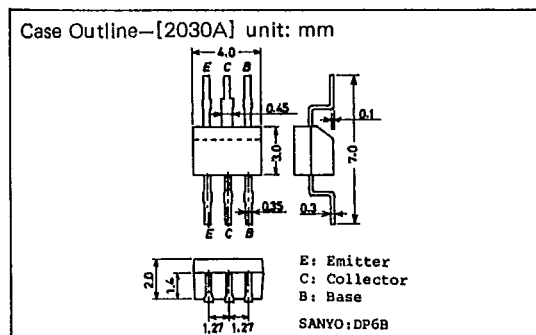
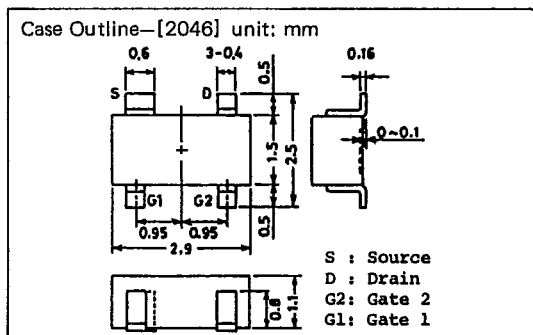
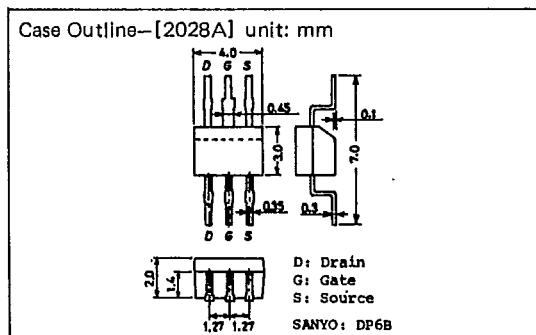
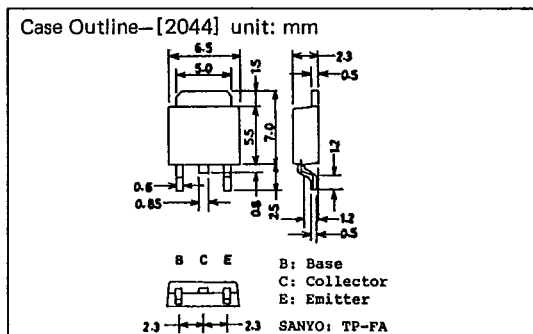
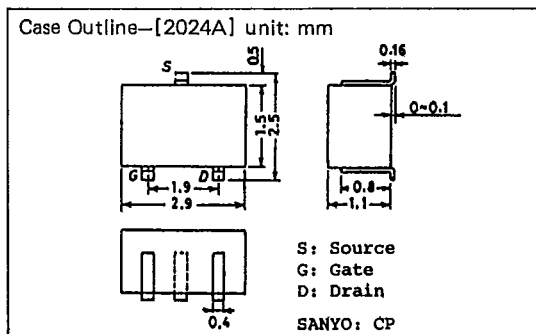
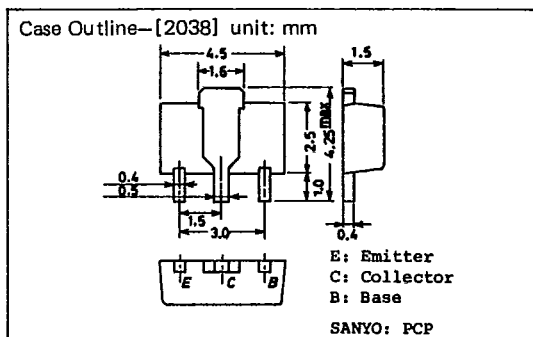
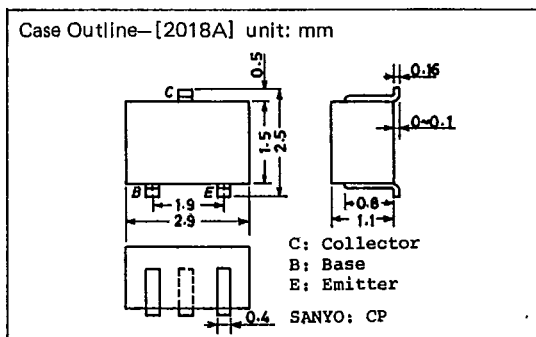
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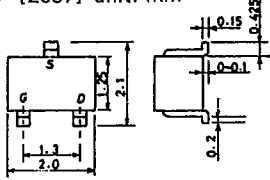
# CASE OUTLINES OF SURFACE MOUNT TRANSISTORS

- 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.



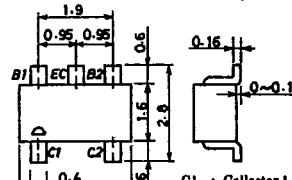
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Case Outline—[2057] unit: mm



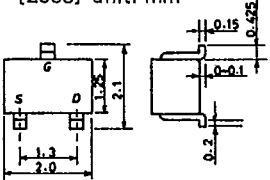
S: Source  
G: Gate  
D: Drain  
SANYO: MCP

Case Outline—[2066] unit: mm



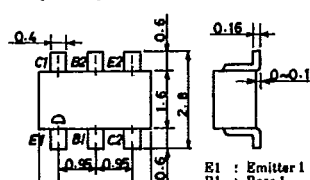
C1 : Collector 1  
C2 : Collector 2  
B2 : Base 2  
EC : Emitter Common  
B1 : Base 1  
SANYO : CP6

Case Outline—[2058] unit: mm



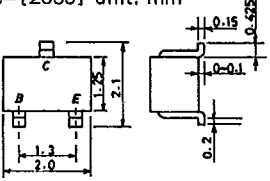
G: Gate  
S: Source  
D: Drain  
SANYO: MCP

Case Outline—[2067] unit: mm



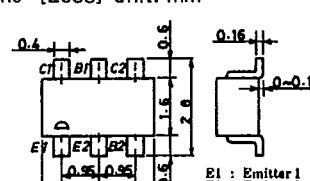
E1 : Emitter 1  
B1 : Base 1  
C2 : Collector 2  
E2 : Emitter 2  
B2 : Base 2  
C1 : Collector 1  
SANYO : CP6

Case Outline—[2059] unit: mm



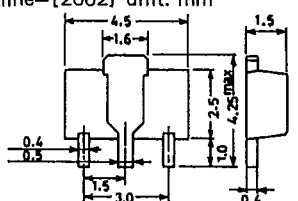
B: Base  
C: Collector  
E: Emitter  
SANYO: MCP

Case Outline—[2068] unit: mm



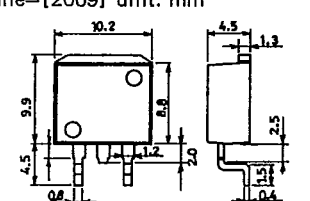
B1 : Emitter 1  
E2 : Emitter 2  
B2 : Base 2  
C2 : Collector 2  
B1 : Base 1  
C1 : Collector 1  
SANYO : CP6

Case Outline—[2062] unit: mm



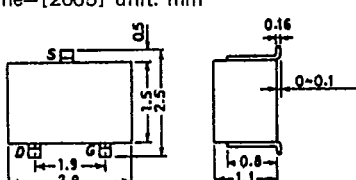
S: Source  
D: Drain  
G: Gate  
SANYO: PCP

Case Outline—[2069] unit: mm



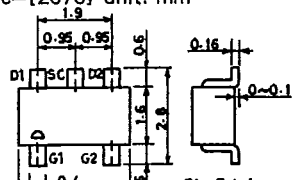
B: Base  
C: Collector  
E: Emitter  
SANYO: SMP

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

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