# 2SA1510, 2SC3900

T-37-13
T-35-11

2018A

PNP/NPN Epitaxial Planar Silicon Transistors

## Switching Applications
## (with Bias Resistance R1=4.7kΩ)



Applications
- Switching circuits, inverter circuits, interface circuits, driver circuits

Features
- On-chip bias resistance: R1=4.7kohms
- Small-sized package: CP

( ):2SA1510

Absolute Maximum Ratings at Ta=25°C

| | | | unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | (-)50 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | (-)50 | V |
| Emitter to Base Voltage | $V_{EBO}$ | (-)5 | V |
| Collector Current | $I_C$ | (-)100 | mA |
| Peak Collector Current | $i_{cp}$ | (-)200 | mA |
| Collector Dissipation | $P_C$ | 200 | mW |
| Junction Temperature | Tj | 150 | °C |
| Storage Temperature | Tstg | -55 to +150 | °C |

Electrical Characteristics at Ta=25°C

| | | | min | typ | max | unit |
|---|---|---|---|---|---|---|
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=(-)40V, $I_E$=0 | | | (-)0.1 | uA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=(-)5V, $I_C$=0 | | | (-)0.1 | uA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=(-)5V, $I_C$=(-)10mA | 100 | | | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=(-)10V, $I_C$=(-)5mA | | 250 | | MHz |
| | | | | (200) | | MHz |
| Output Capacitance | $c_{ob}$ | $V_{CB}$=(-)10V, f=1MHz | | 3.7 | | pF |
| | | | | (5.5) | | pF |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=(-)10mA, $I_B$=(-)0.5mA | | (-)0.1 | (-)0.3 | V |
| Collector to Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=(-)10uA, $I_E$=0 | (-)50 | | | V |
| Collector to Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=(-)100uA, $R_{BE}$=∞ | (-)50 | | | V |

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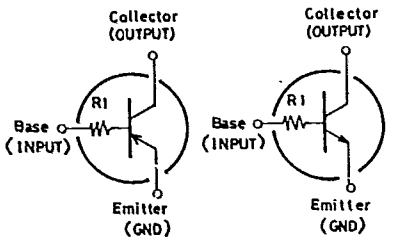
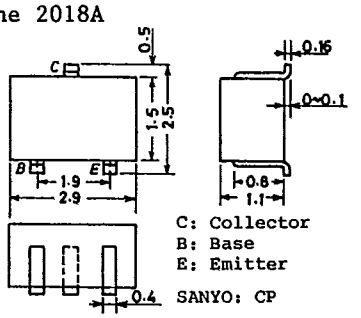
Marking: 2SA1510: KL, 2SC3900: SY

Electrical Connection




Case Outline 2018A
(unit:mm)



Continued from preceding page.

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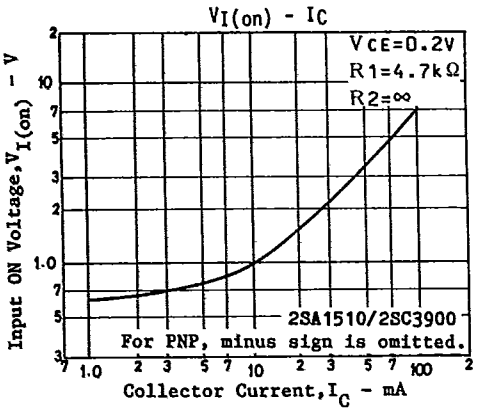
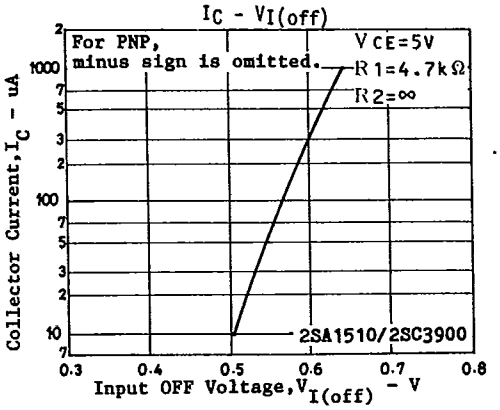
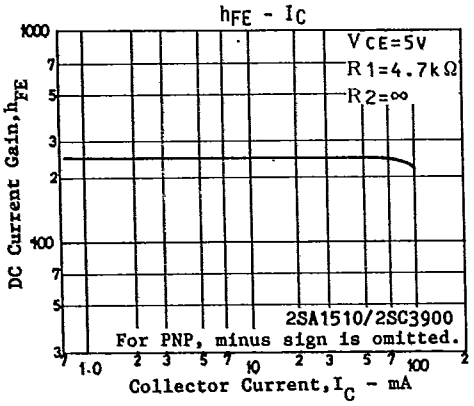
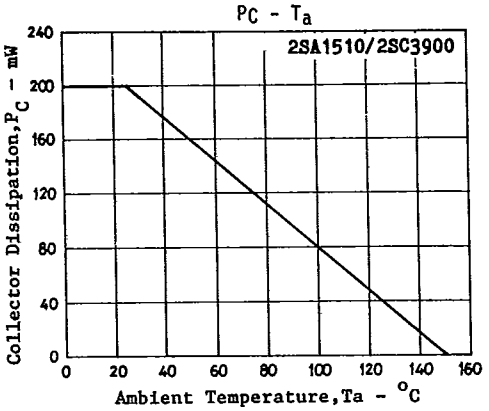
| | | | min | typ | max | unit |
|---|---|---|---|---|---|---|
| Input OFF-State Voltage | $V_{I(off)}$ | $V_{CE}$=(-)5V, $I_C$=(-)100uA | (-)0.4 | (-)0.55 | (-)0.8 | V |
| Input ON-State Voltage | $V_{I(on)}$ | $V_{CE}$=(-)0.2V, $I_C$=(-)10mA | (-)0.6 | (-)1.0 | (-)2.0 | V |
| Input Resistance | R1 | | 3.3 | 4.7 | 6.1 | kohm |



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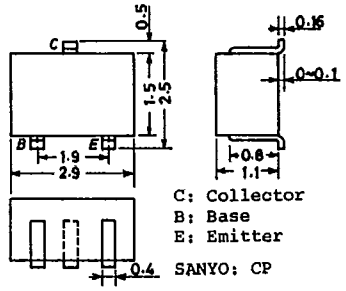
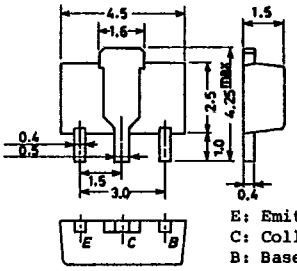
# CASE OUTLINES OF SURFACE MOUNT TRANSISTORS

- 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.

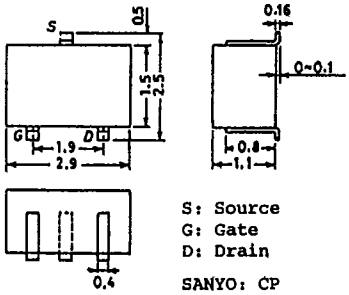
Case Outline—[2018A] unit: mm



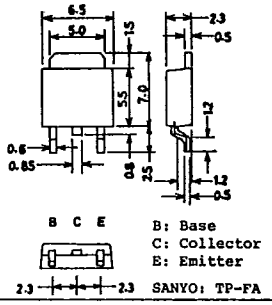

Case Outline—[2038] unit: mm



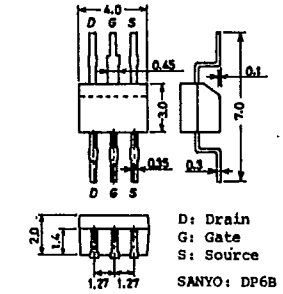

Case Outline—[2024A] unit: mm



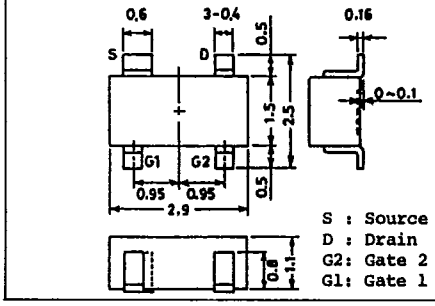

Case Outline—[2044] unit: mm



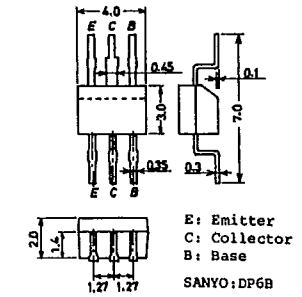

Case Outline—[2028A] unit: mm



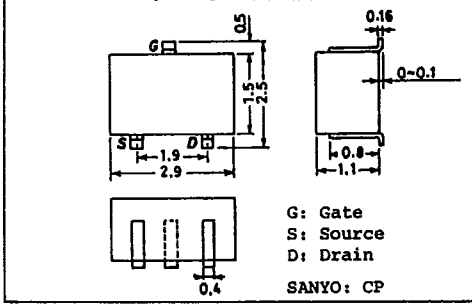

Case Outline—[2046] unit: mm



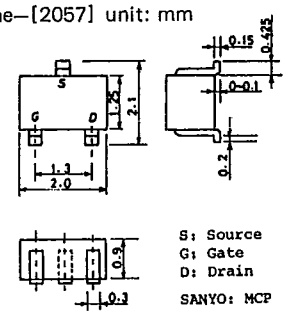

Case Outline—[2030A] unit: mm




Case Outline—[2050] unit: mm

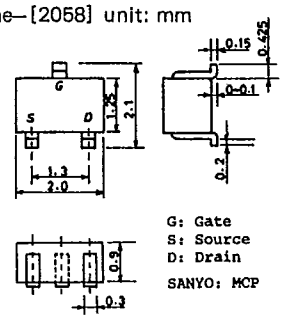


Case Outline—[2057] unit: mm



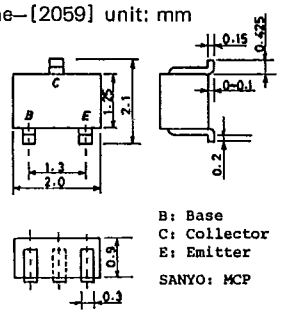

S: Source
G: Gate
D: Drain
SANYO: MCP

Case Outline—[2058] unit: mm



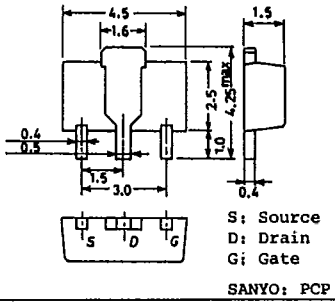

G: Gate
S: Source
D: Drain
SANYO: MCP

Case Outline—[2059] unit: mm



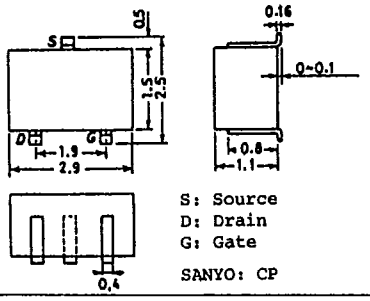

B: Base
C: Collector
E: Emitter
SANYO: MCP

Case Outline—[2062] unit: mm



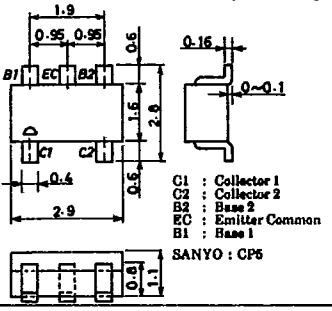

S: Source
D: Drain
G: Gate
SANYO: PCP

Case Outline—[2065] unit: mm



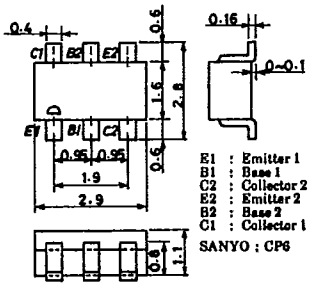

S: Source
D: Drain
G: Gate
SANYO: CP

Case Outline—[2066] unit: mm



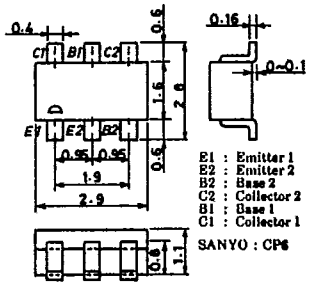

C1 : Collector 1
C2 : Collector 2
B2 : Base 2
EC : Emitter Common
B1 : Base 1
SANYO : CP6

Case Outline—[2067] unit: mm



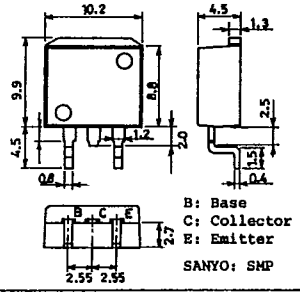

E1 : Emitter 1
B1 : Base 1
C2 : Collector 2
E2 : Emitter 2
B2 : Base 2
C1 : Collector 1
SANYO : CP6

Case Outline—[2068] unit: mm



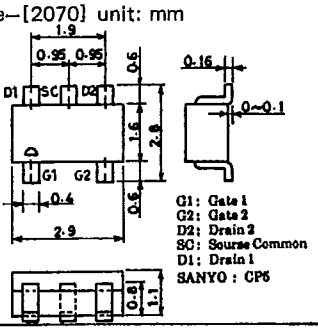

E1 : Emitter 1
E2 : Emitter 2
B2 : Base 2
C2 : Collector 2
B1 : Base 1
C1 : Collector 1
SANYO : CP6

Case Outline—[2069] unit: mm




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

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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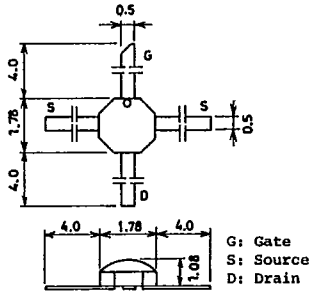
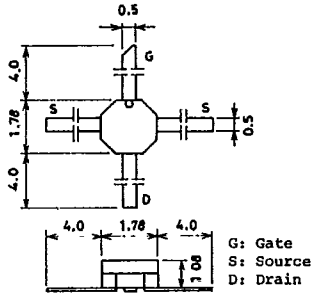
Case Outline—[2071] unit: mm




Case Outline—[2072] unit: mm




Case Outline—[2073] unit: mm