

Ordering number:ENN1392B

PNP/NPN Epitaxial Planar Silicon Transistors



2SA1339/2SC3393

High-Speed Switching Applications

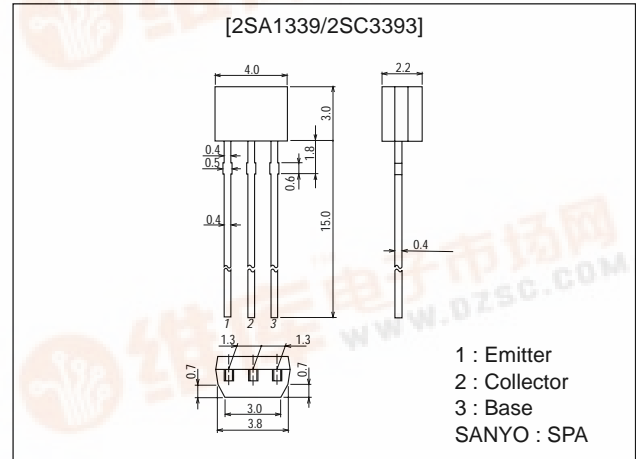
Features

- Very small-sized package permitting sets to be small-sized, slim.
- High breakdown voltage : $V_{CEO}=(-)50V$.
- Complementary pair transistor having large current capacity and high f_T .
- Adoption of FBET process.

Package Dimensions

unit:mm

2033A



() : 2SA1339

Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-----------------|------------|
| Collector-to-Base Voltage | V_{CBO} | | (-) 60 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | (-) 50 | V |
| Emitter-to-Base Voltage | V_{EBO} | | (-) 5 | V |
| Collector Current | I_C | | (-) 500 | mA |
| Collector Current (Pulse) | I_{CP} | | (-) 800 | mA |
| Collector Dissipation | P_C | | 300 | mW |
| Junction Temperature | T_J | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to $+150$ | $^\circ C$ |

Electrical Characteristics at $T_a = 25^\circ C$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------------|-----------|------------------------------|---------|--------------------|-----------|---------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=(-)40V, I_E=0$ | | | (-) 0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=(-)4V, I_C=0$ | | | (-) 0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=(-)5V, I_C=(-)10mA$ | 100^* | | 560^* | |
| Gain-Bandwidth Product | f_T | $V_{CE}=(-)10V, I_C=(-)50mA$ | | 300 (200) | | MHz |
| Common Base Output Capacitance | C_{ob} | $V_{CB}=(-)10V, f=1MHz$ | | 3.7 (5.6) | | pF |

* : The 2SA1339/2SC3393 are classified by $10mA h_{FE}$ as follows :

Continued on next page.

| Rank | R | S | T | U |
|----------|------------|------------|------------|------------|
| h_{FE} | 100 to 200 | 140 to 280 | 200 to 400 | 280 to 560 |

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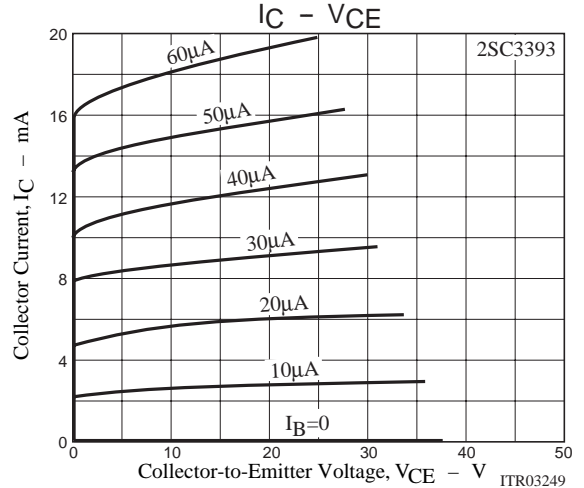
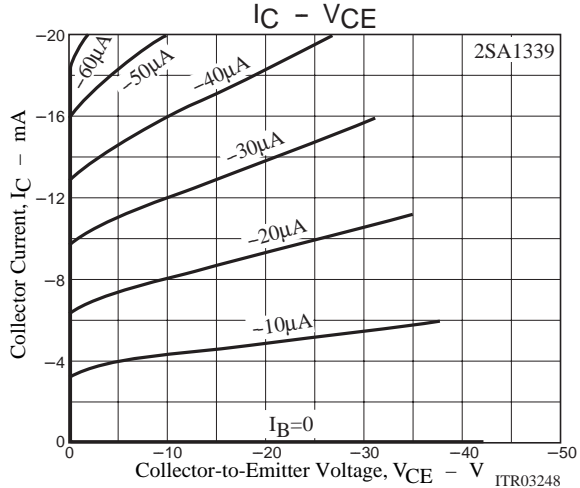
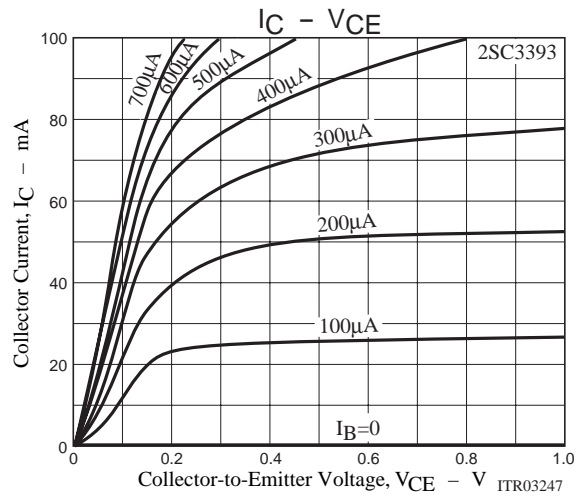
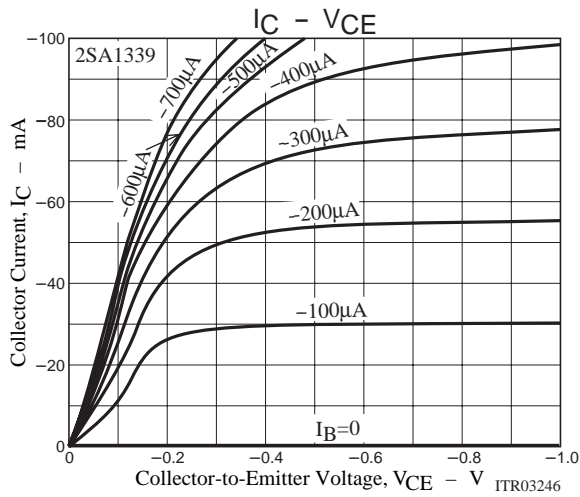
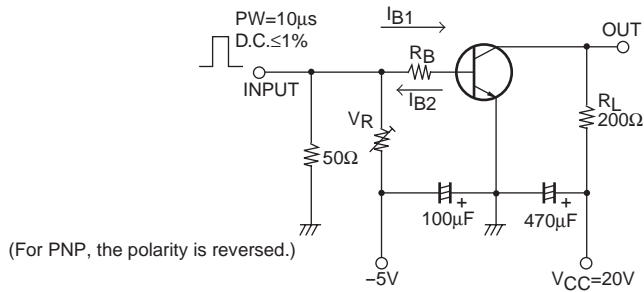


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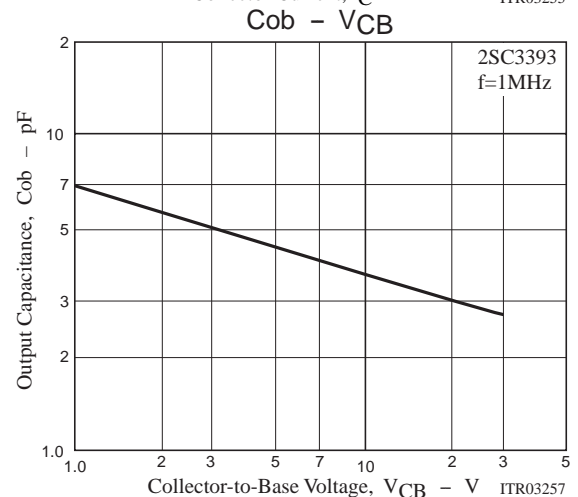
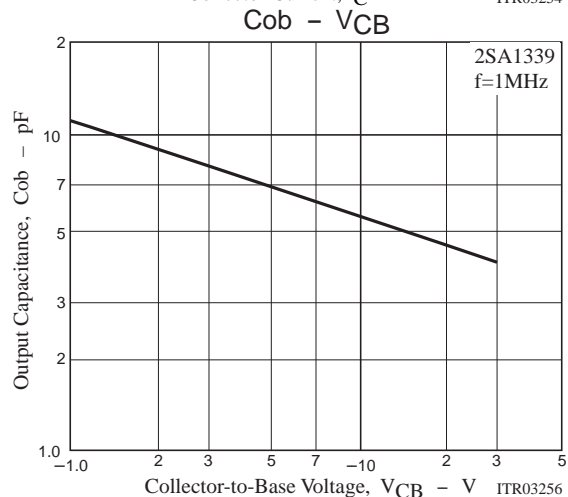
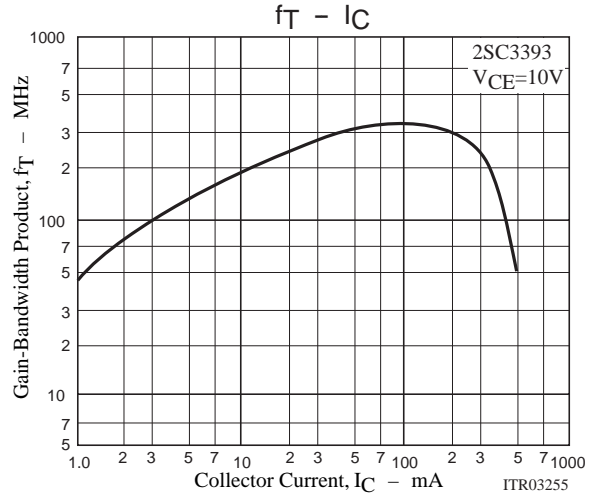
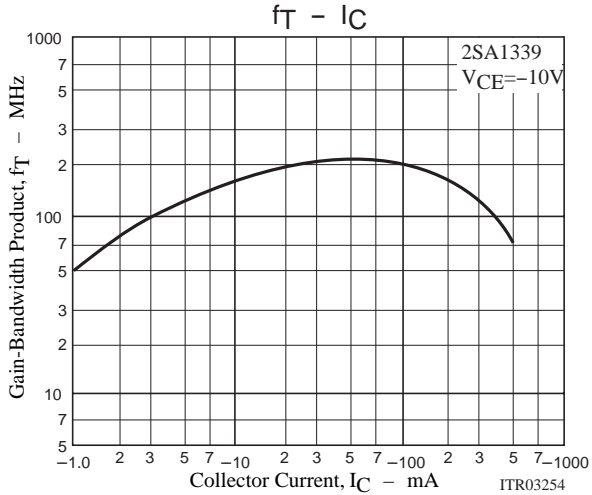
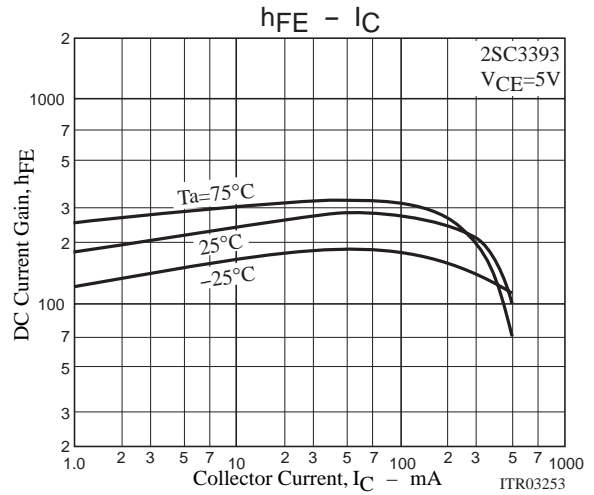
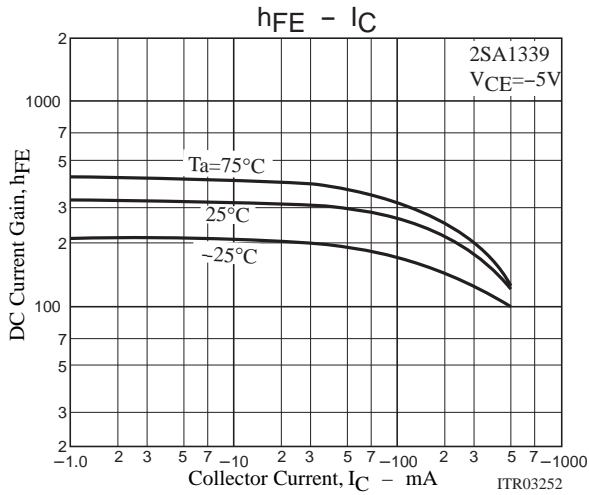
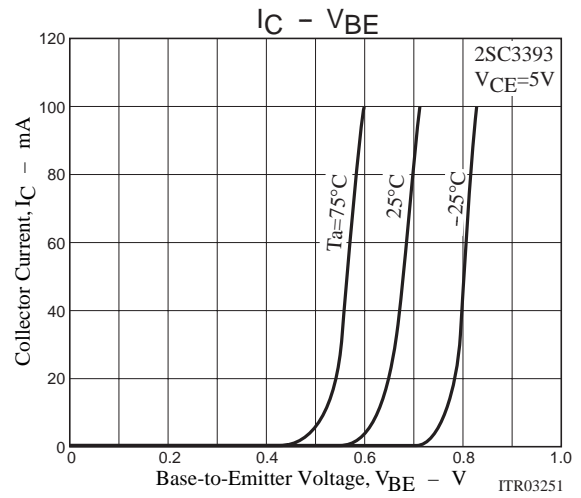
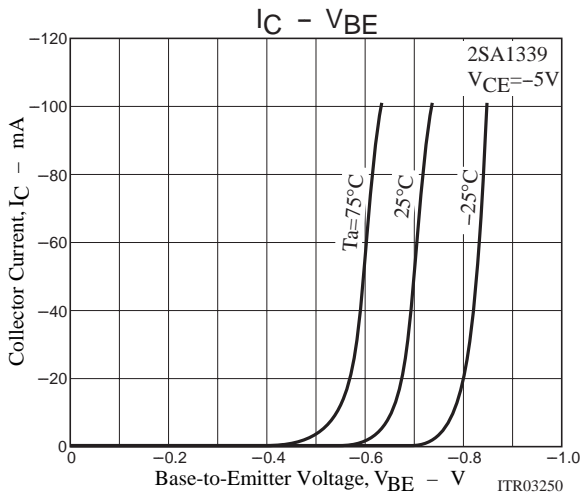
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--|---------|---------------|--------------|------|
| | | | min | typ | max | |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)100\text{mA}$, $I_B=(-)10\text{mA}$ | | 0.1 (0.15) | 0.3 (0.4) | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=(-)100\text{mA}$, $I_B=(-)10\text{mA}$ | | 0.8 | 1.2 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=(-)10\mu\text{A}$, $I_E=0$ | (-)60 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=(-)100\mu\text{A}$, $R_{BE}=\infty$ | (-)50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=(-)10\mu\text{A}$, $I_C=\infty$ | (-)5 | | | V |
| Turn-ON Time | t_{on} | | | 70(70) | | ns |
| Storage Time | t_{stg} | $V_{CC}=20\text{V}$ $I_C=10\text{I}_{B1}=-10\text{I}_{B2}=100\text{mA}$ | | 400 (400) | | ns |
| Fall Time | t_f | | | 70(50) | | ns |

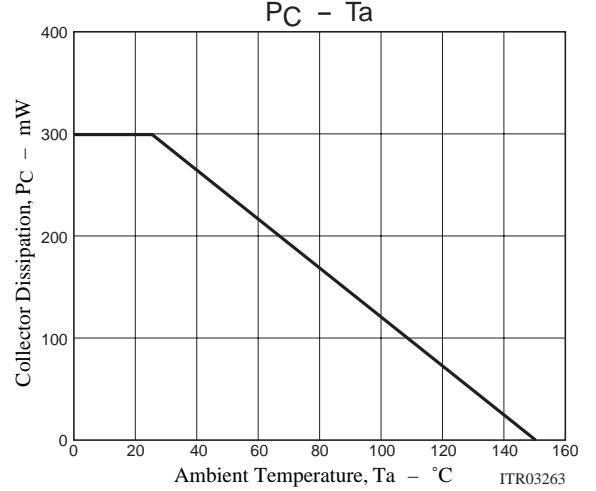
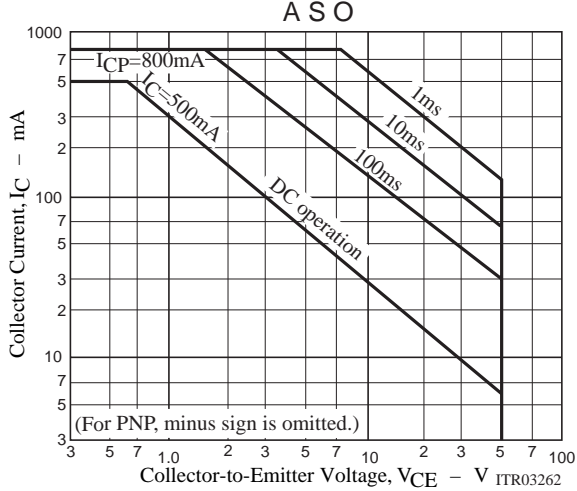
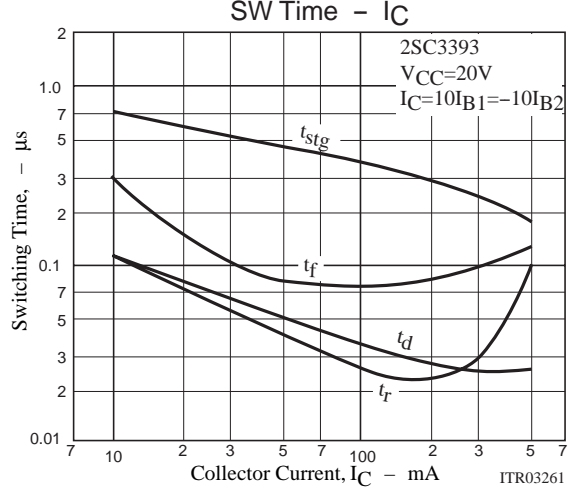
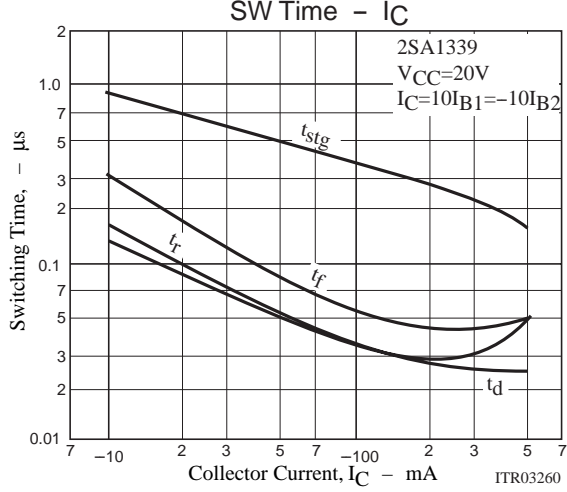
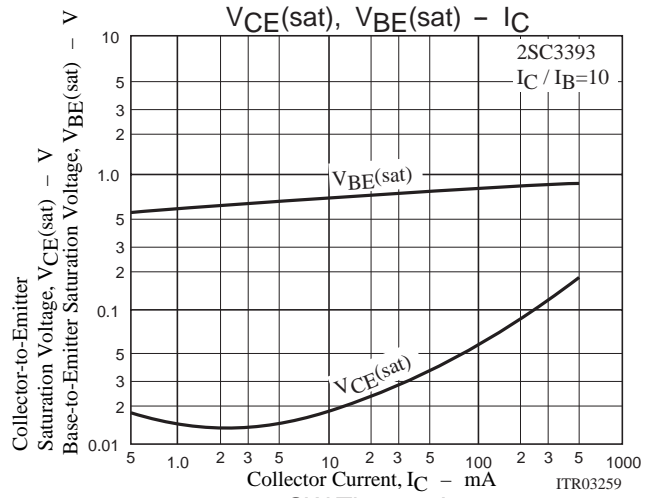
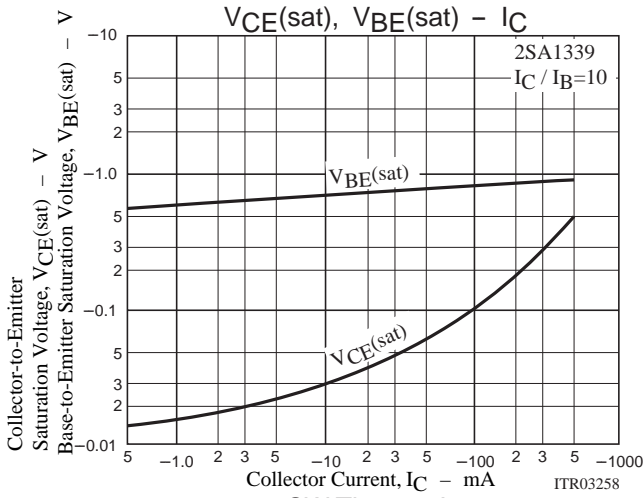
Switching Time Test Circuit



2SA1339/2SC3393



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