

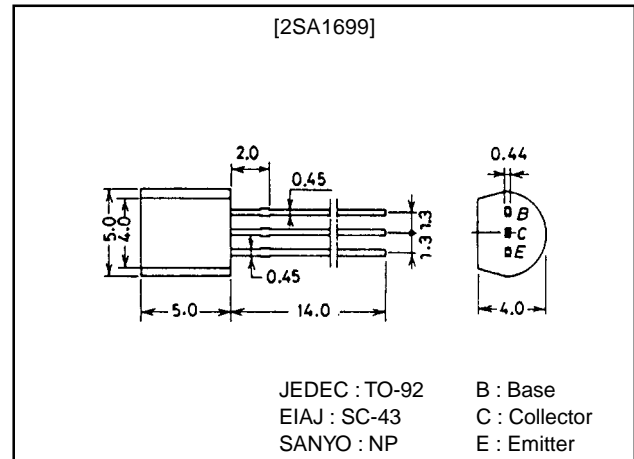
**2SA1699****High-Voltage Driver Applications****Features**

- High breakdown voltage.
- Adoption of MBIT process.
- Excellent h_{FE} linearity.

Package Dimensions

unit:mm

2003A

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | -400 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | -400 | V |
| Emitter-to-Base Voltage | V_{EBO} | | -5 | V |
| Collector Current | I_C | | -200 | mA |
| Collector Current (Pulse) | I_{CP} | | -400 | mA |
| Collector Dissipation | P_C | | 600 | mW |
| Junction Temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-----------------------------------------|---------------|----------------------------------------|---------|-----|------|---------------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-300\text{V}, I_E=0$ | | | -0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4\text{V}, I_C=0$ | | | -0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=-10\text{V}, I_C=-50\text{mA}$ | 60* | | 200* | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-30\text{V}, I_C=-10\text{mA}$ | | 70 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$ | | | -0.8 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$ | | | -1.0 | V |

Continued on next page.

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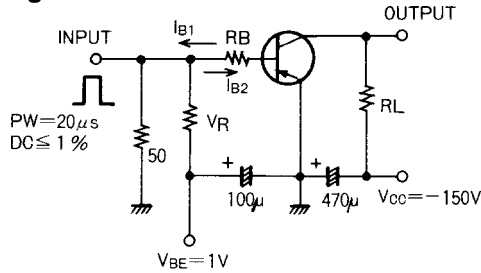
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|----------------------------------------|---------------|-------------------------------|---------|------|-----|---------|
| | | | min | typ | max | |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = -10\mu A, I_E = 0$ | -400 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = -1mA, R_{BE} = \infty$ | -400 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = -10\mu A, I_C = 0$ | -5 | | | V |
| Collector Output Capacitance | C_{ob} | $V_{CB} = -30V, f = 1MHz$ | | 5 | | pF |
| Reverse Transfer Capacitance | C_{re} | $V_{CB} = -30V, f = 1MHz$ | | 4 | | pF |
| Turn-ON Time | t_{on} | See specified Test Circuit | | 0.25 | | μs |
| Turn-OFF Time | t_{off} | See specified Test Circuit | | 5 | | μs |

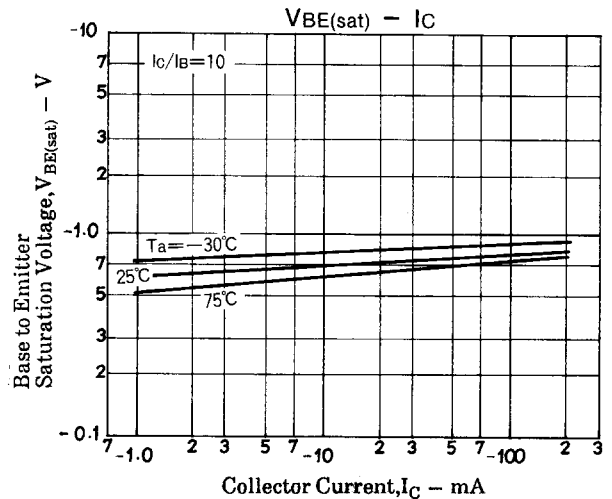
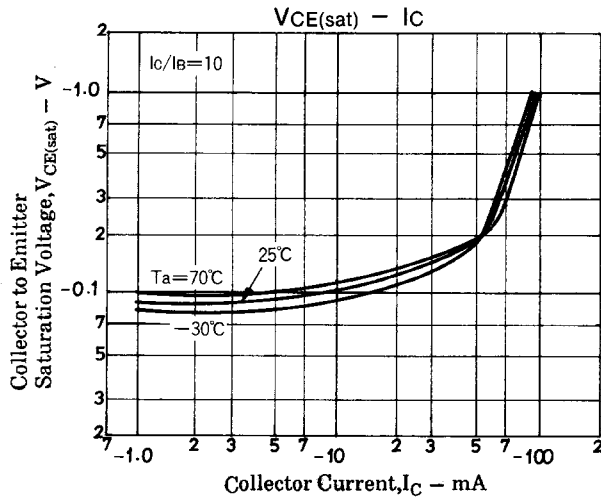
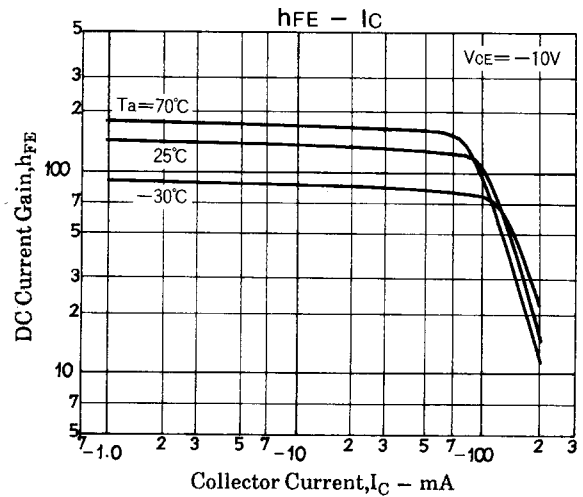
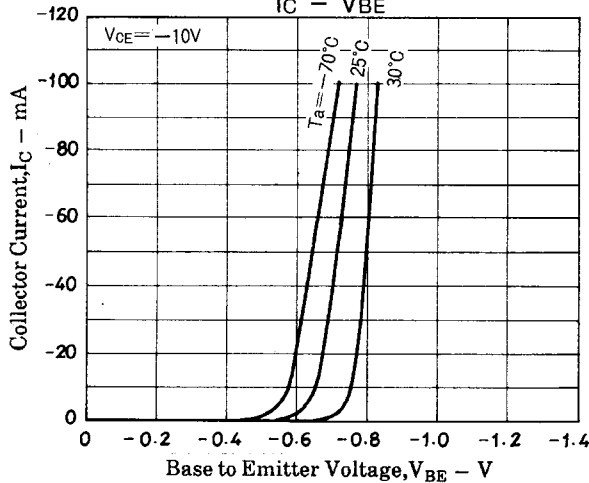
* : The 2SA1699 is classified by 50mA h_{FE} as follows :

| | | | | | |
|----|---|-----|-----|---|-----|
| 60 | D | 120 | 100 | E | 200 |
|----|---|-----|-----|---|-----|

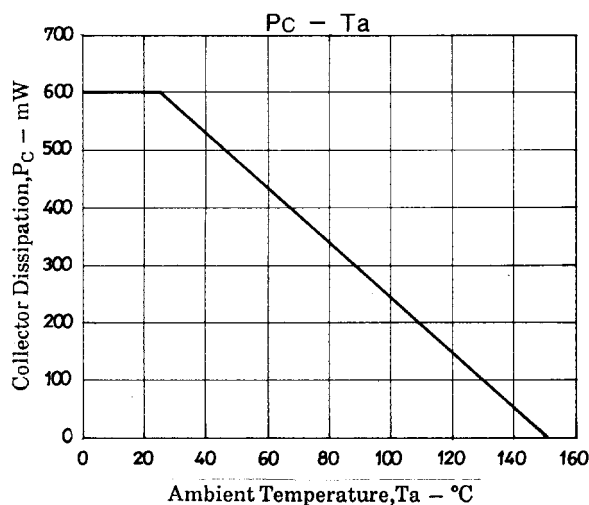
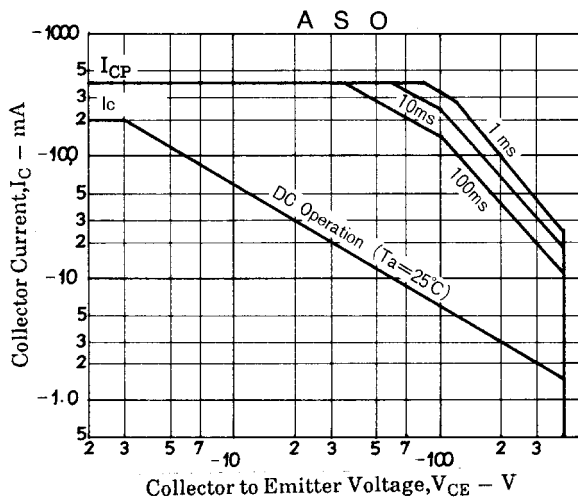
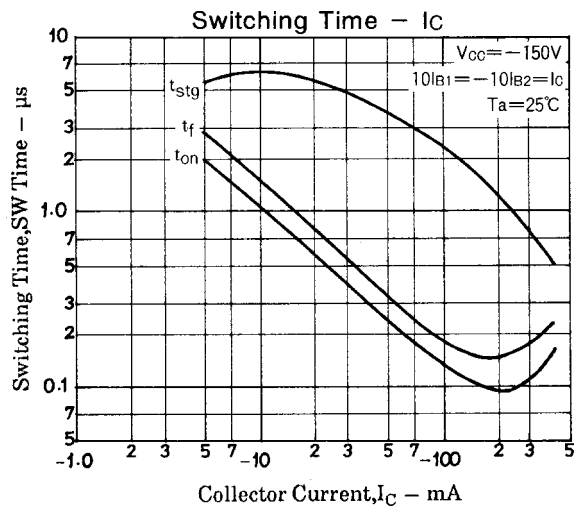
Switching Time Test Circuit



$-10I_{B1} = 10I_{B2} = I_C = -50mA$
 $R_L = 3k\Omega, R_B = 200\Omega$ at $I_C = -50mA$
 Unit (resistance : Ω , capacitance : F)
 $I_C - V_{BE}$



2SA1699



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