

**2SA2025****DC/DC Converter Applications****Applications**

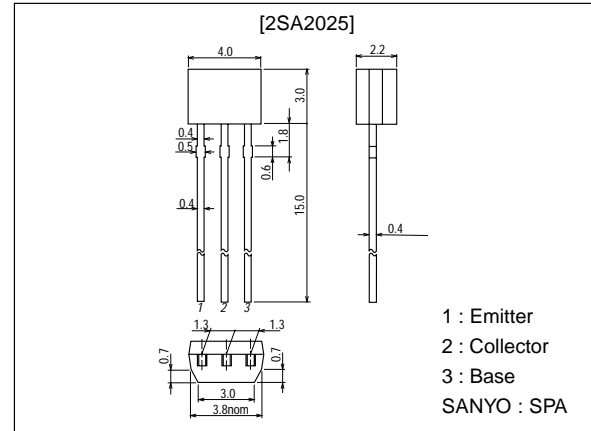
- Relay drivers, lamp drivers, motor drivers, strobos.

Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall-sized package permitting applied sets to be made small and slim.
- High allowable power dissipation.

Package Dimensions

unit:mm
2033A

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | -15 | V |
| Collector-to-Emitter Voltage | V_{CE0} | | -12 | V |
| Emitter-to-Base Voltage | V_{EB0} | | -5 | V |
| Collector Current | I_C | | -3 | A |
| Collector Current (Pulse) | I_{CP} | | -5 | A |
| Base Current | I_B | | -600 | mA |
| Collector Dissipation | P_C | | 0.55 | W |
| 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_{CB0} | $V_{CB}=-12\text{V}, I_E=0$ | | | -0.1 | μA |
| Emitter Cutoff Current | I_{EB0} | $V_{EB}=-4\text{V}, I_C=0$ | | | -0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | 200 | | 560 | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-2\text{V}, I_C=-500\text{mA}$ | | 280 | | MHz |
| Output Capacitance | Cob | $V_{CB}=-10\text{V}, f=1\text{MHz}$ | | 36 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-1.5\text{A}, I_B=-30\text{mA}$ | -110 | | -165 | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-1.5\text{A}, I_B=-30\text{mA}$ | -0.85 | | -1.2 | V |

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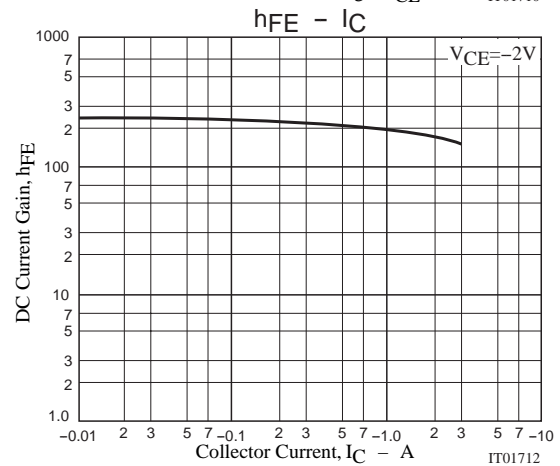
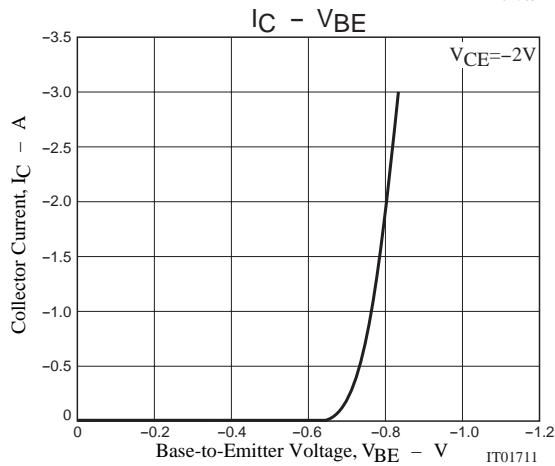
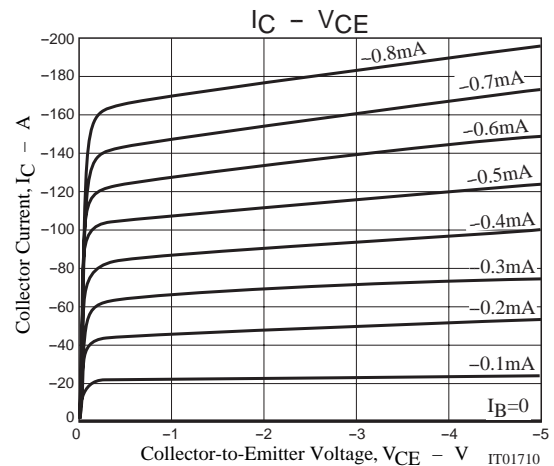
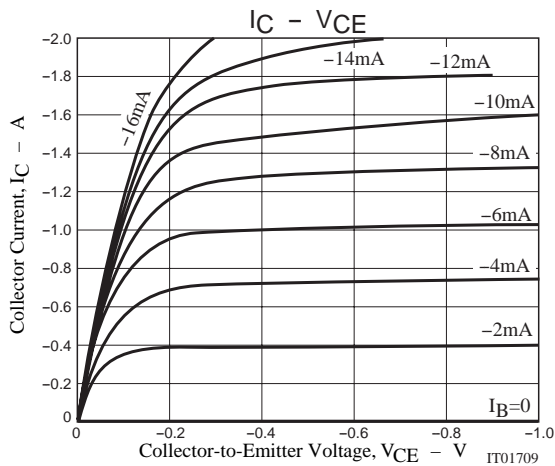
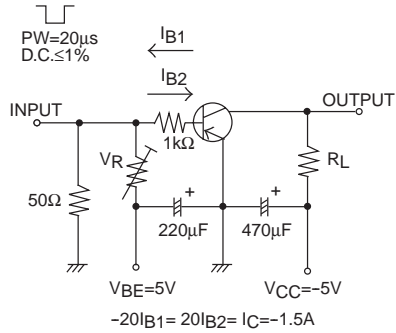
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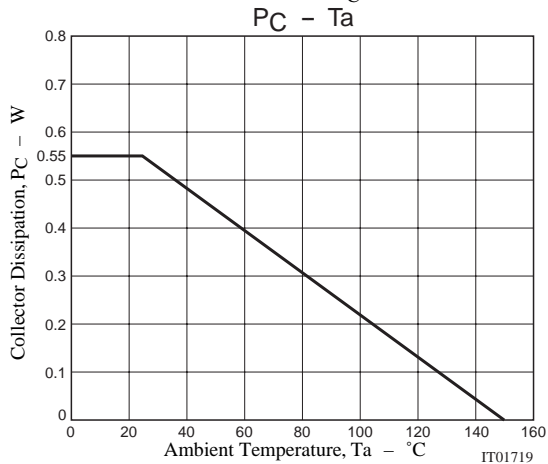
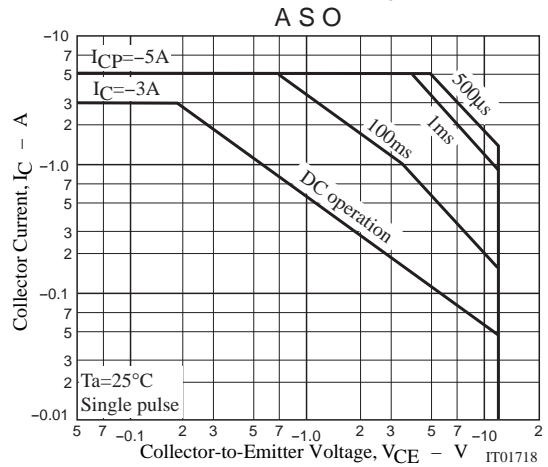
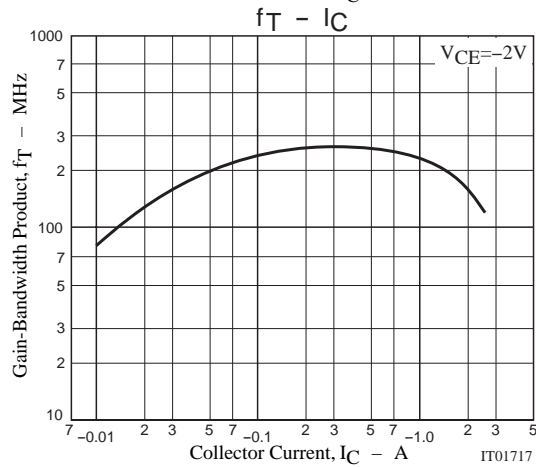
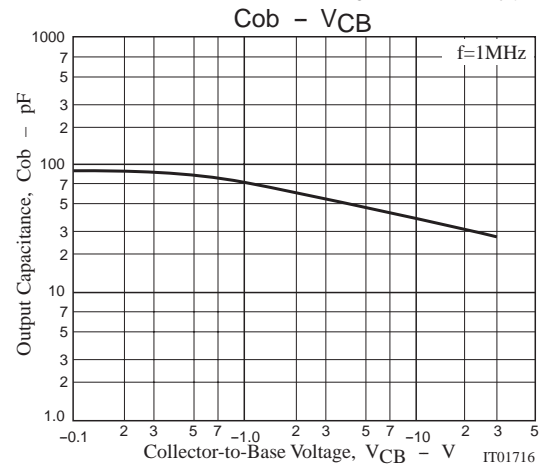
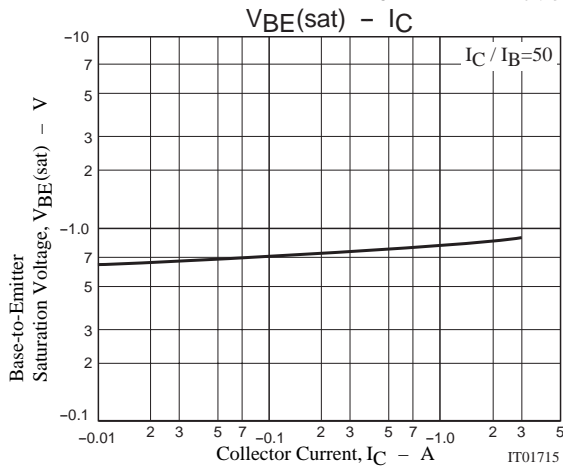
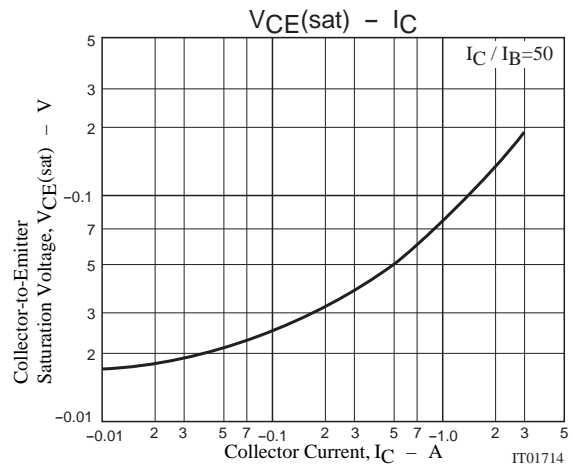
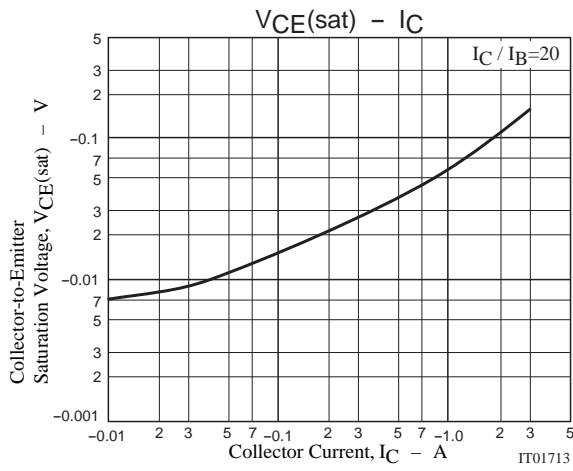
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|-------------------------------|---------|-----|-----|------|
| | | | min | typ | max | |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = -10\mu A, I_E = 0$ | -15 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = -1mA, R_{BE} = \infty$ | -12 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = -10\mu A, I_C = 0$ | -5 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit | | 30 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit | | 90 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 10 | | ns |

Switching Time Test Circuit



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