



2SC3987

Driver Applications

Applications

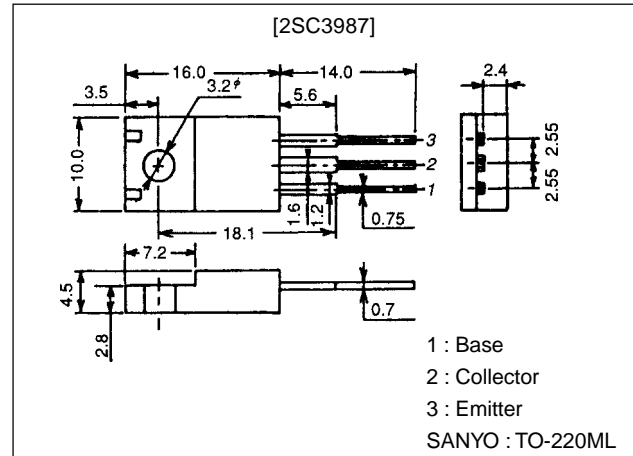
- Suitable for use in switching of L load (motor drivers, printer hammer drivers, relay drivers).

Features

- High DC current gain.
- Large current capacity and wide ASO.
- On-chip Zener diode of $60\pm 10V$ between collector and base.
- Uniformity in collector-to-base breakdown voltage due to the adoption of an accurate impurity diffusion process.
- High inductive load handling capability.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm
2041A



Specifications

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------------|-------------|------------|
| Collector-to-Base Voltage | V_{CBO} | | 50* | V |
| Collector-to-Emitter Voltage | V_{CEO} | | 50* | V |
| Emitter-to-Base Voltage | V_{EBO} | | 6 | V |
| Collector Current | I_C | | 3 | A |
| Collector Current (Pulse) | I_{CP} | | 6 | A |
| Base Current | I_B | | 0.6 | A |
| Collector Dissipation | P_C | | 2.0 | W |
| | | $T_c=25^\circ C$ | 20 | W |
| Junction Temperature | T_j | | 150 | $^\circ C$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ C$ |

* : With Zener diode ($60\pm 10V$)

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

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------|---------|------|-----|---------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=40V, I_E=0$ | | | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | 2 | mA |
| DC Current Gain | h_{FE} | $V_{CE}=5V, I_C=1.5A$ | 1000 | 4000 | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=5V, I_C=1.5A$ | | 180 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1.5A, I_B=6mA$ | | 1.0 | 1.5 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=1.5A, I_B=6mA$ | | | 2.0 | V |

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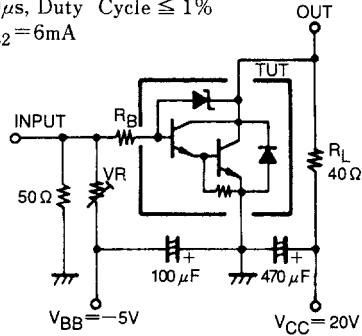
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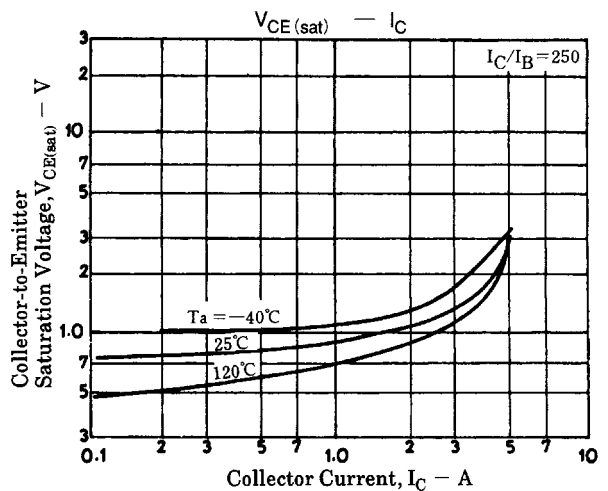
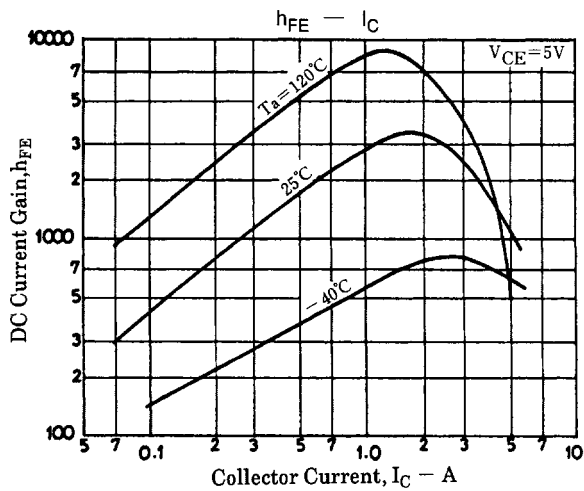
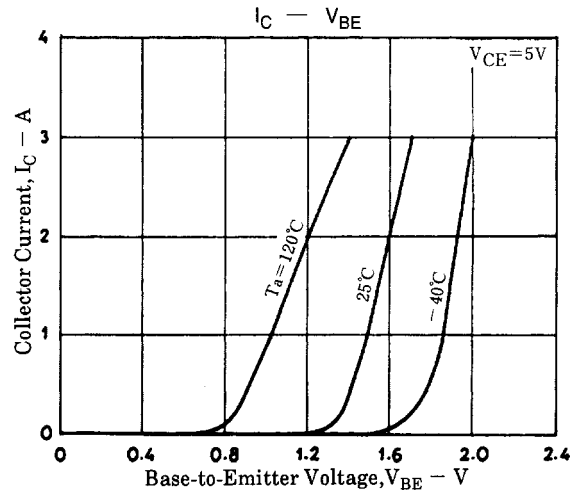
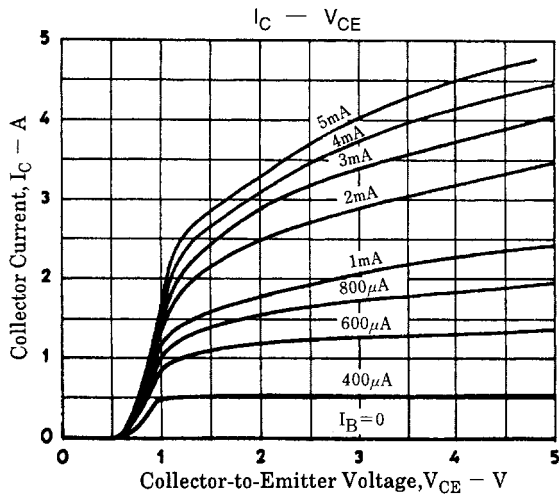
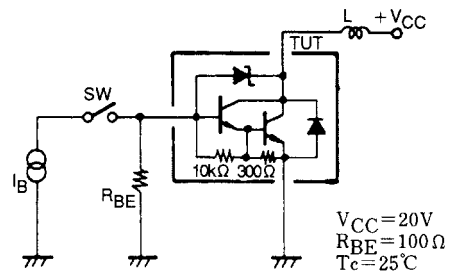
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|---|---------|-----|-----|---------|
| | | | min | typ | max | |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=0.1mA, I_E=0$ | 50 | 60 | 70 | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=1mA, R_{BE}=\infty$ | 50 | 60 | 70 | V |
| Inductive Load Handling Capability | Es/b | $L=100mH, R_{BE}=100\Omega$ | 30 | | | mJ |
| Turn-ON Time | t_{on} | See specified Test Circuit. $V_{CC}=20V, I_C=1.5A, I_{B1}=-I_{B2}=6mA$ | | 0.2 | | μs |
| Storage Time | t_{stg} | See specified Test Circuit. $V_{CC}=20V, I_C=1.5A, I_{B1}=-I_{B2}=6mA$ | | 3.0 | | μs |
| Fall Time | t_f | See specified Test Circuit. $V_{CC}=20V, I_C=1.5A, I_{B1}=-I_{B2}=6mA$ | | 0.7 | | μs |

Switching Time Test Circuit

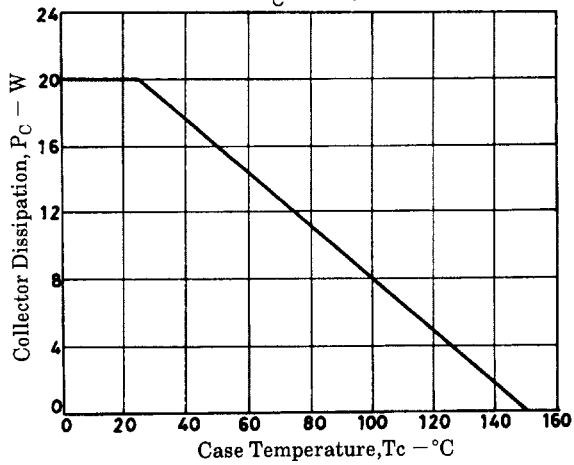
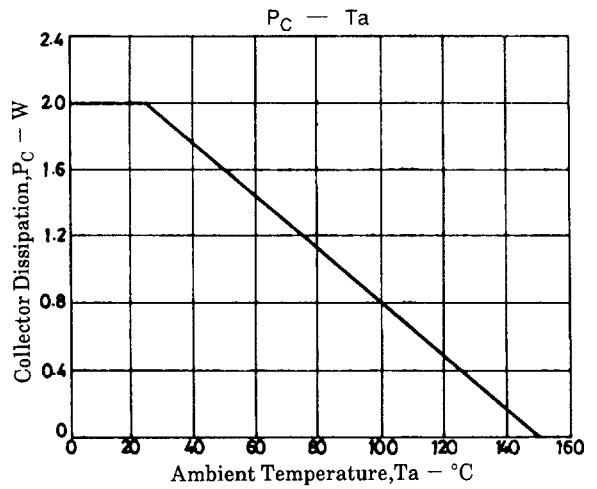
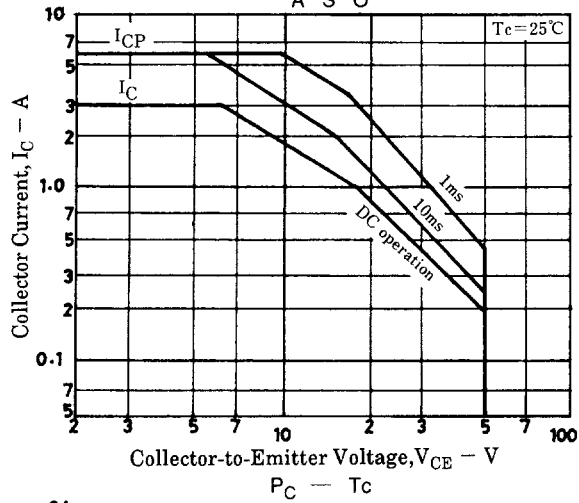
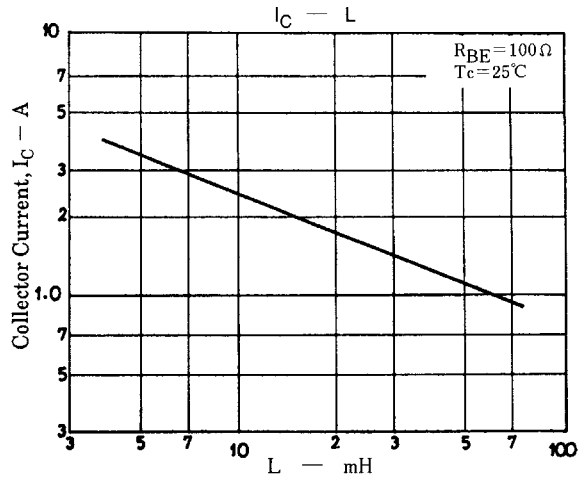
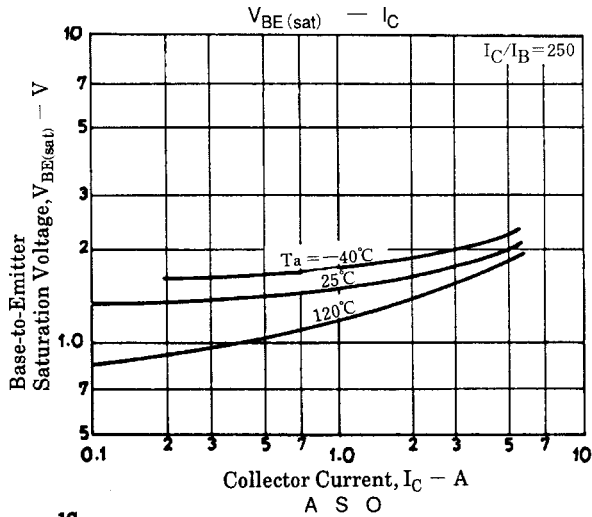
PW = 50 μs , Duty Cycle $\leq 1\%$
 $I_{B1} = -I_{B2} = 6mA$



Es/b Test Circuit



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