

**2SC3986****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.

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 | | 2 | A |
| Collector Current (Pulse) | I_{CP} | | 4 | A |
| Base Current | I_B | | 0.4 | A |
| Collector Dissipation | P_C | | 2.0 | W |
| | | $T_c=25^\circ C$ | 15 | 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} | $V_{CE}=5V, I_C=1A$ | 1000 | 4000 | | |
| Gain-Bandwidth Product | f_T | $V_{CE}=5V, I_C=1A$ | | 180 | | MHz |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=1A, I_B=4mA$ | | 1.0 | 1.5 | V |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=1A, I_B=4mA$ | | | 2.0 | V |

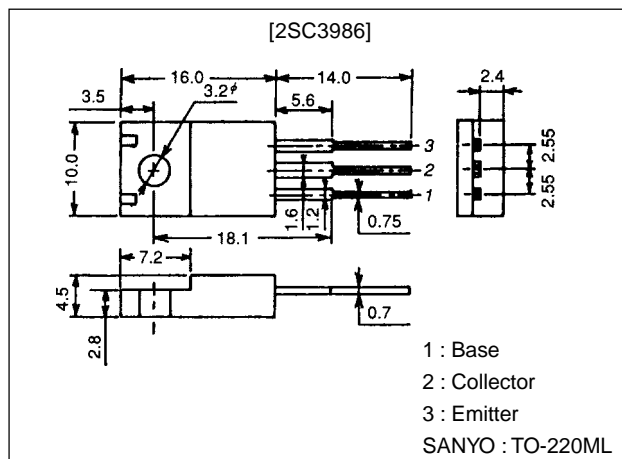
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Package Dimensions

unit:mm

2041A

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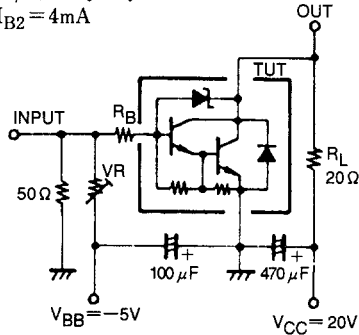
N3098HA (KT)/O2196TS (KOTO) 8-0259/4237KI/N056AT, TS No.2220-1/4

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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 | $L=100mH, R_{BE}=100\Omega$ | 25 | | | mJ |
| Turn-ON Time | t_{on} | See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$ | | 0.2 | | μs |
| Storage Time | t_{stg} | See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$ | | 3.5 | | μs |
| Fall Time | t_f | See specified Test Circuit. $V_{CC}=20V, I_C=1A, I_{B1}=-I_{B2}=4mA$ | | 0.5 | | μs |

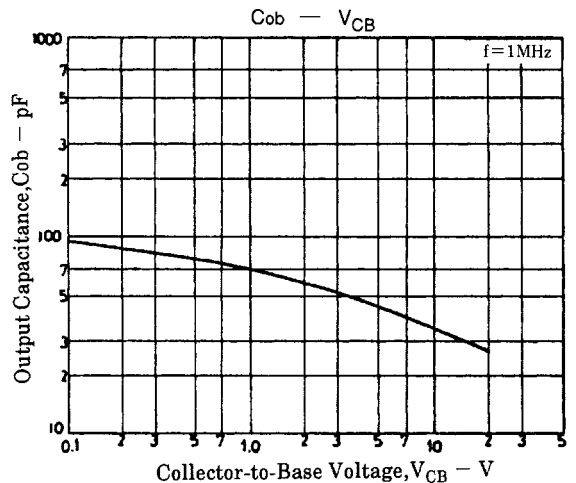
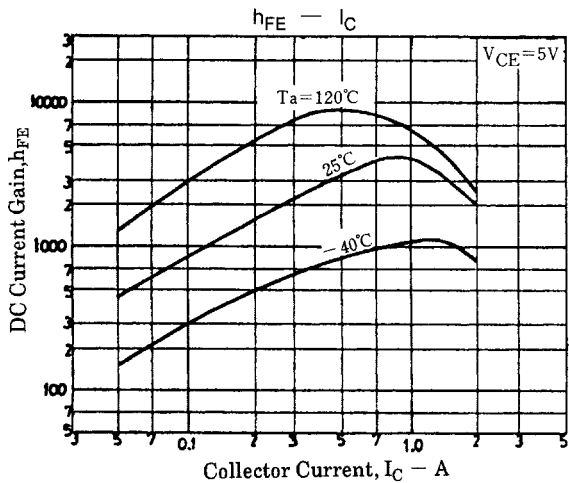
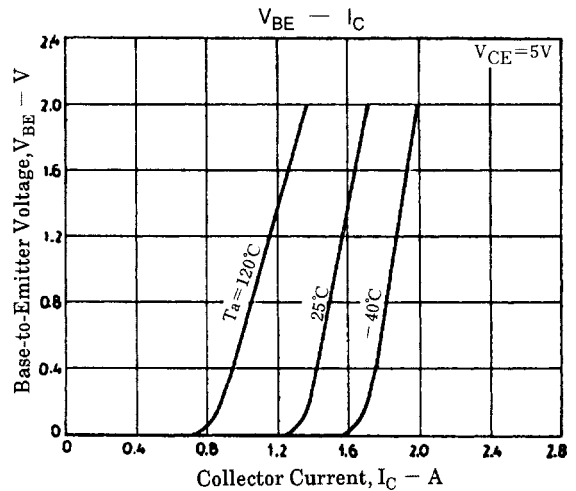
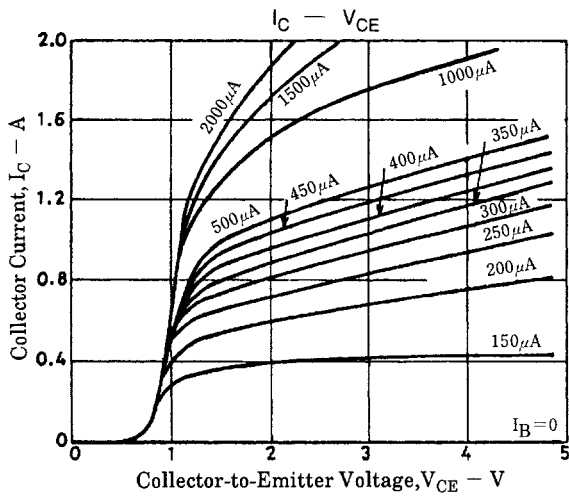
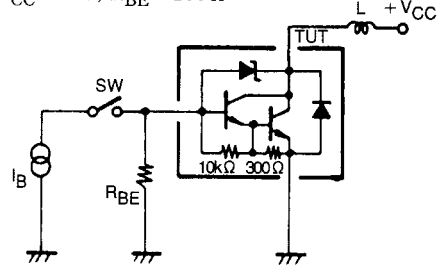
Switching Time Test Circuit

PW = 50 μs , Duty Cycle \leq 1%
 $I_{B1} = -I_{B2} = 4mA$

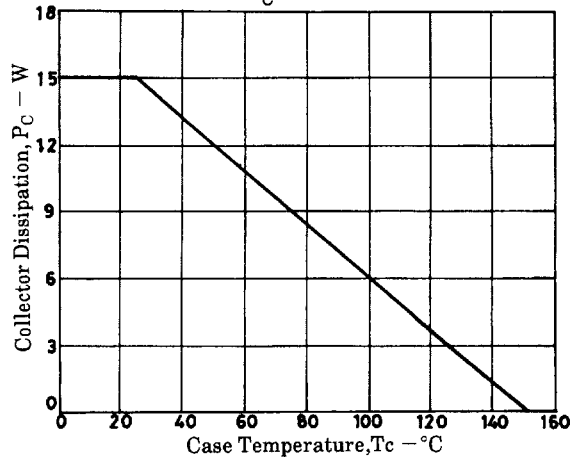
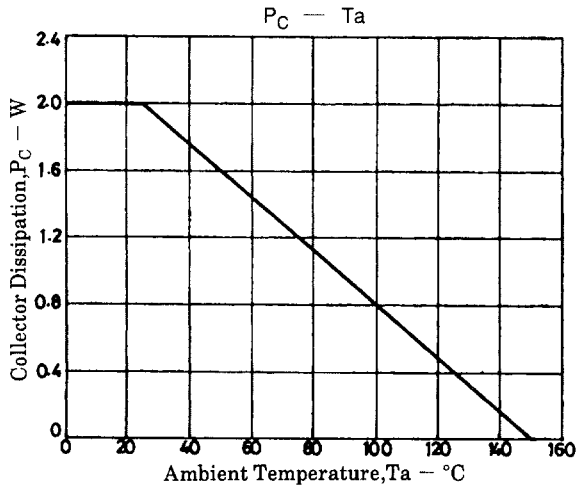
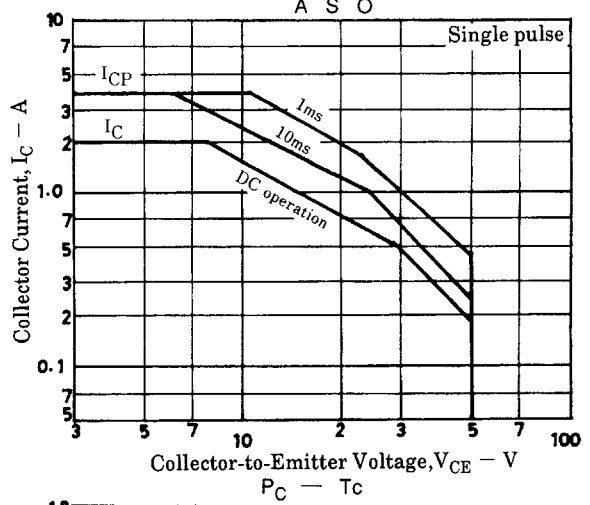
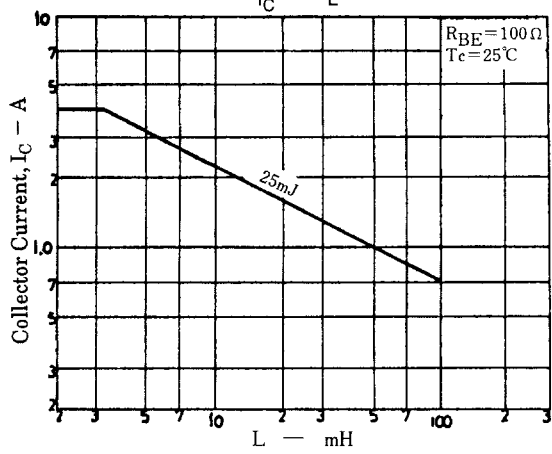
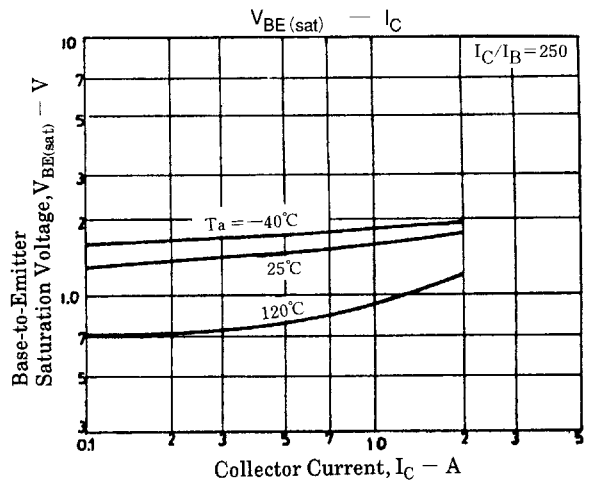
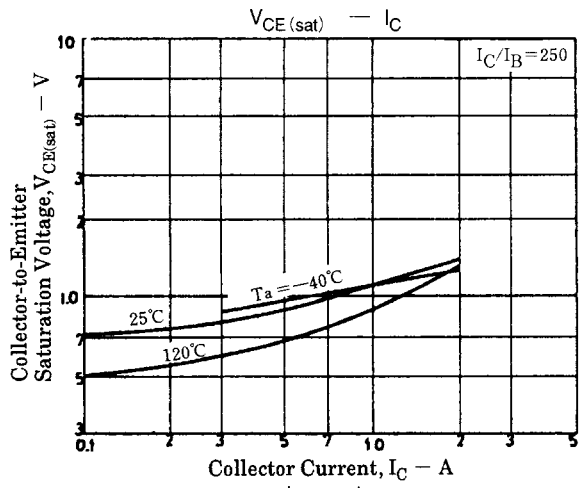


Es/b Test Circuit

$V_{CC} = 20V, R_{BE} = 100\Omega$



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