



## 2SA1406/2SC3600

### Ultrahigh-Definition CRT Display Video Output Applications

#### Applications

- Ultrahigh-definition CRT display.
- Video output.
- Color TV chroma output.
- Wide-band amp.

#### Features

- High  $f_T$  :  $f_T$  typ=400MHz.
- High breakdown voltage :  $V_{CEO} \geq 200V$ .
- Small reverse transfer capacitance and excellent HF response  
:  $C_{re}=1.4pF$  (NPN),  $1.7pF$  (PNP).
- Complementary PNP and NPN types.
- Adoption of FBET process.

( ) : 2SA1406

#### Specifications

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

| Parameter                    | Symbol    | Conditions       | Ratings     | Unit       |
|------------------------------|-----------|------------------|-------------|------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                  | (-)200      | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                  | (-)200      | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                  | (-)4        | V          |
| Collector Current            | $I_C$     |                  | (-)100      | mA         |
| Collector Current (Pulse)    | $I_{CP}$  |                  | (-)200      | mA         |
| Collector Dissipation        | $P_C$     |                  | 1.2         | W          |
|                              |           | $T_c=25^\circ C$ | 7           | W          |
| 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 | $I_{CBO}$ | $V_{CB}=(-)150V, I_E=0$      |         |     | (-)0.1 | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$ | $V_{EB}=(-)2V, I_C=0$        |         |     | (-)1.0 | $\mu A$ |
| DC Current Gain          | $h_{FE1}$ | $V_{CE}=(-)10V, I_C=(-)10mA$ | 40*     |     | 320*   |         |
|                          | $h_{FE2}$ | $V_{CE}=(-)10V, I_C=(-)60mA$ | 20      |     |        |         |
| Gain-Bandwidth Product   | $f_T$     | $V_{CE}=(-)10V, I_C=(-)30mA$ |         | 400 |        | MHz     |

\* : The SA1406/2SC3600 are classified by 10mA  $h_{FE}$  as follows :

| Rank     | C        | D         | E          | F          |
|----------|----------|-----------|------------|------------|
| $h_{FE}$ | 40 to 80 | 60 to 120 | 100 to 200 | 160 to 320 |

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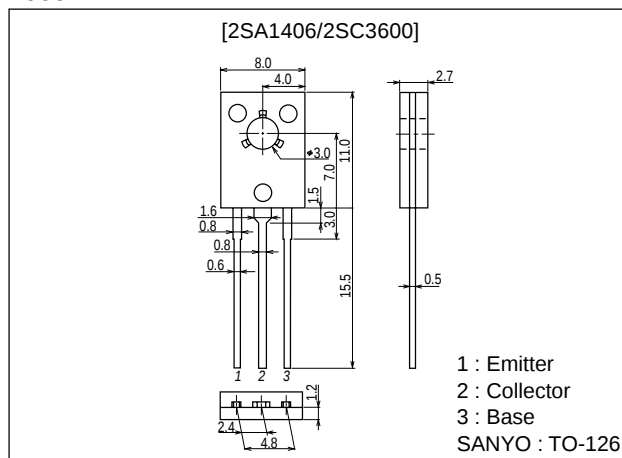
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#### Package Dimensions

unit:mm

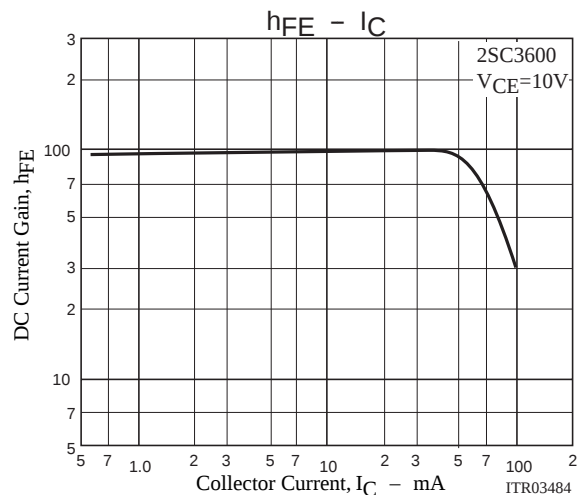
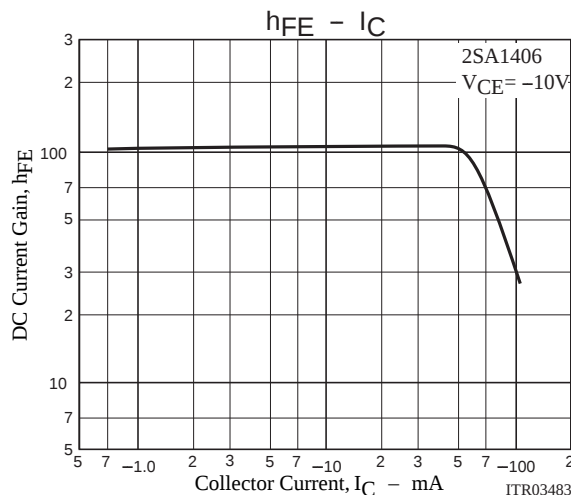
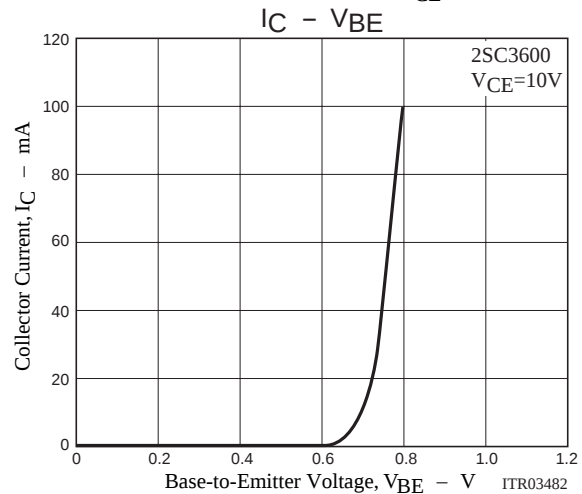
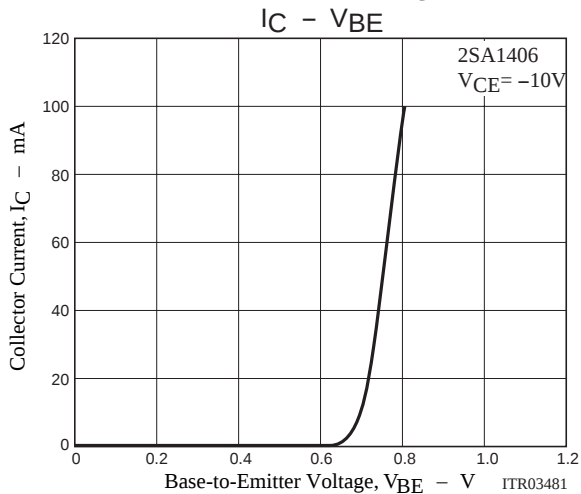
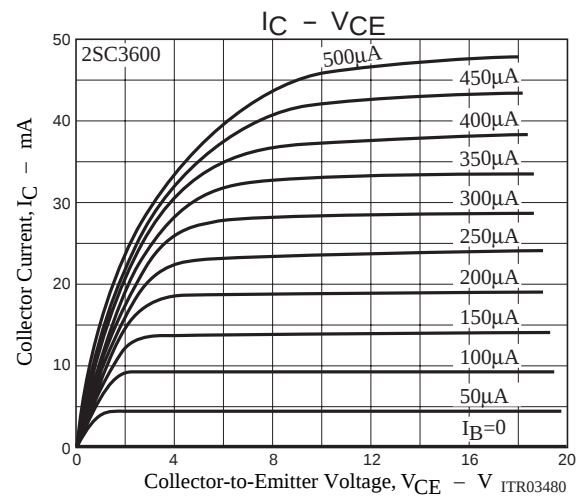
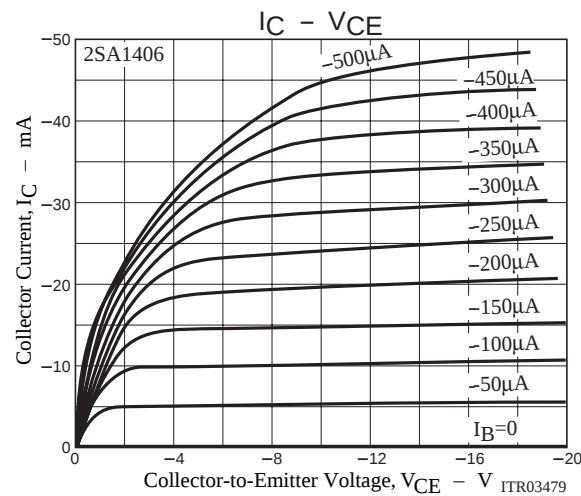
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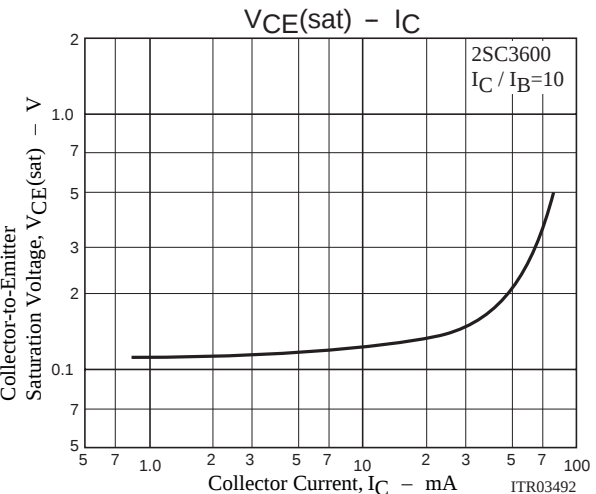
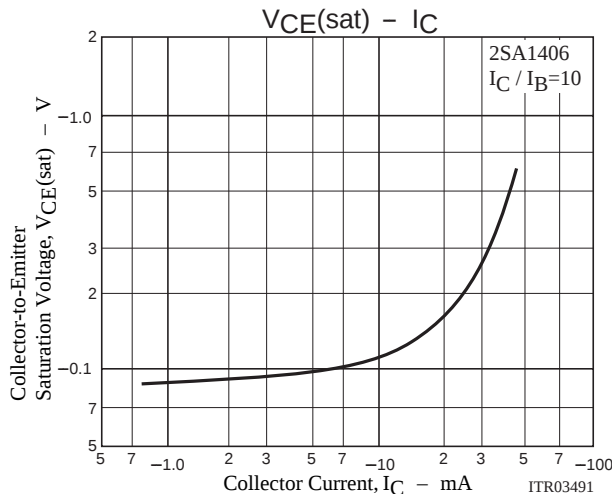
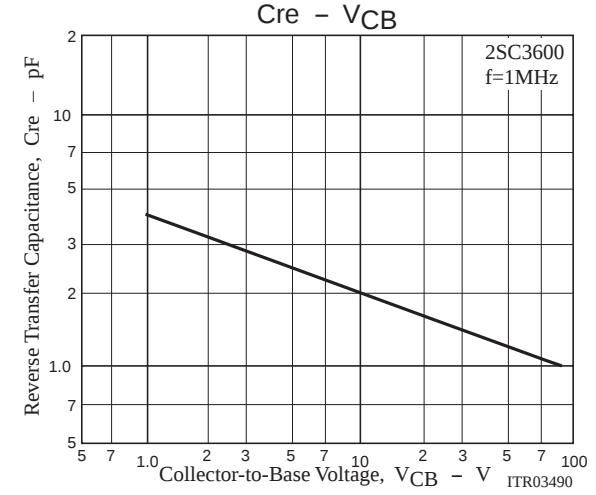
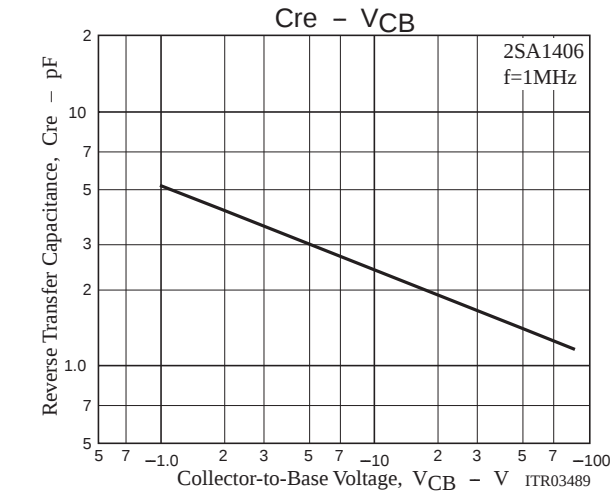
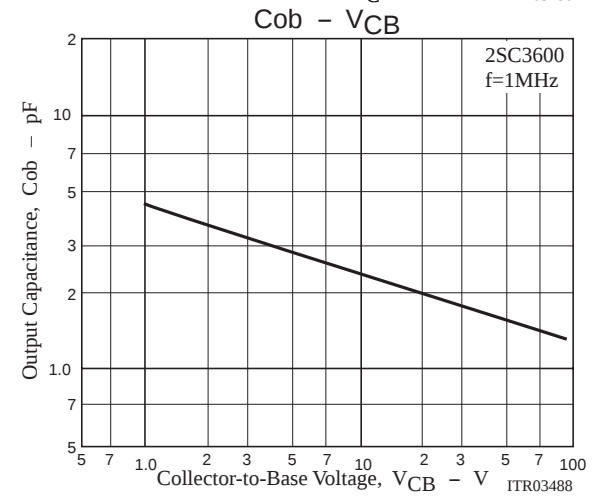
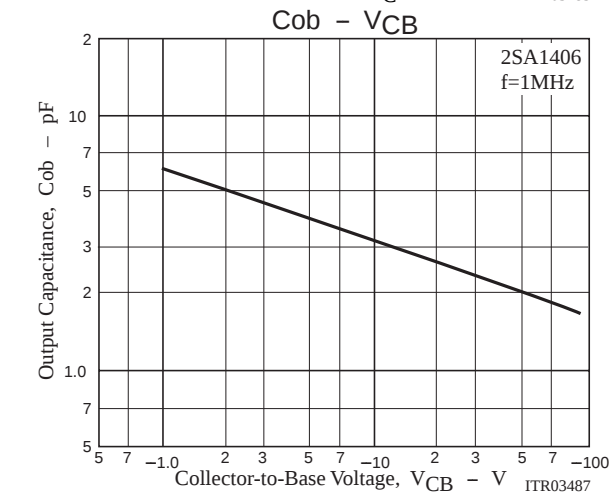
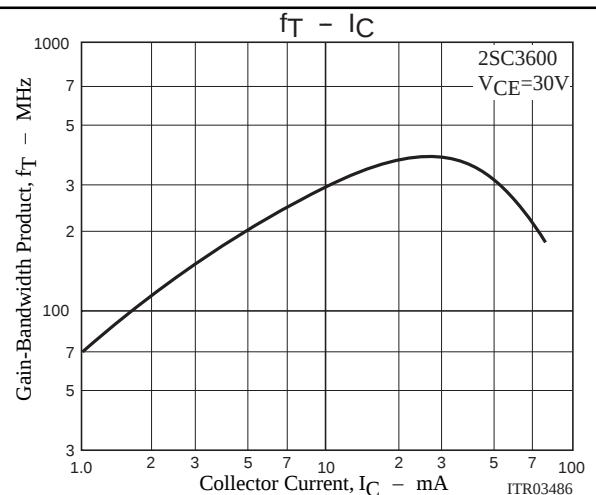
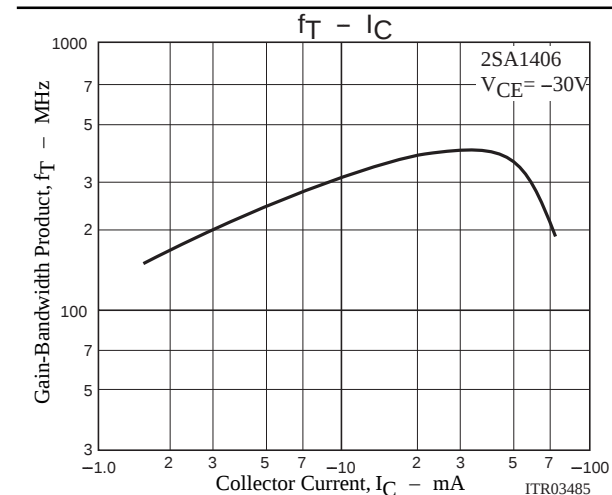
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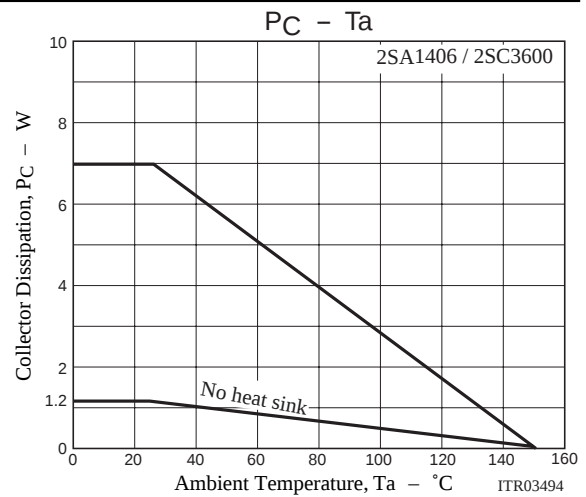
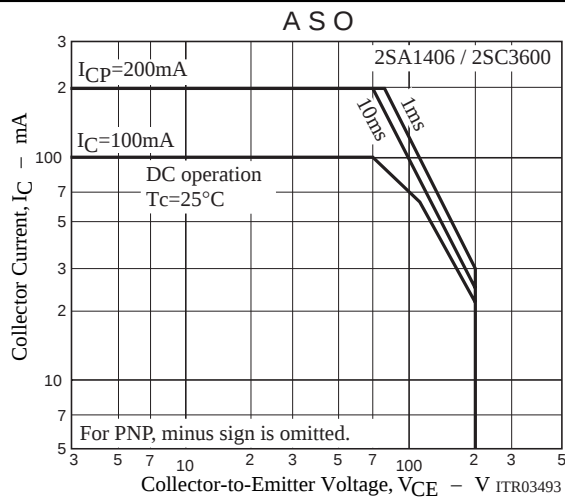
| Parameter                               | Symbol        | Conditions                                 | Ratings |       |        | Unit |
|-----------------------------------------|---------------|--------------------------------------------|---------|-------|--------|------|
|                                         |               |                                            | min     | typ   | max    |      |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)30\text{mA}$ , $I_B=(-)3\text{mA}$ |         |       | 0.6    | V    |
|                                         |               |                                            |         |       | (-0.8) | V    |
| Base-to-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=30\text{mA}$ , $I_B=(-)3\text{mA}$    |         |       | (-1.0) | V    |
| Collector-to-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=(-)10\mu\text{A}$ , $I_E=0$           | (-)200  |       |        | V    |
| Collector-to-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=(-)1\text{mA}$ , $R_{BE}=\infty$      | (-)200  |       |        | V    |
| Emitter-to-Base Breakdown Votage        | $V_{(BR)EBO}$ | $I_E=(-)100\mu\text{A}$ , $I_C=0$          | (-)4    |       |        | V    |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=(-)30\text{V}$ , $f=1\text{MHz}$   |         | 1.8   |        | pF   |
|                                         |               |                                            |         | (2.3) |        | pF   |
| Reverse Transfer Capacitance            | $C_{re}$      | $V_{CB}=(-)30\text{V}$ , $f=1\text{MHz}$   |         | 1.4   |        | pF   |
|                                         |               |                                            |         | (1.7) |        | pF   |



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