



## 2SA1538/2SC3953

### High-Definition CRT Display Video Output Applications

#### Applications

- High-definition CRT display video output, wide-band amplifier.

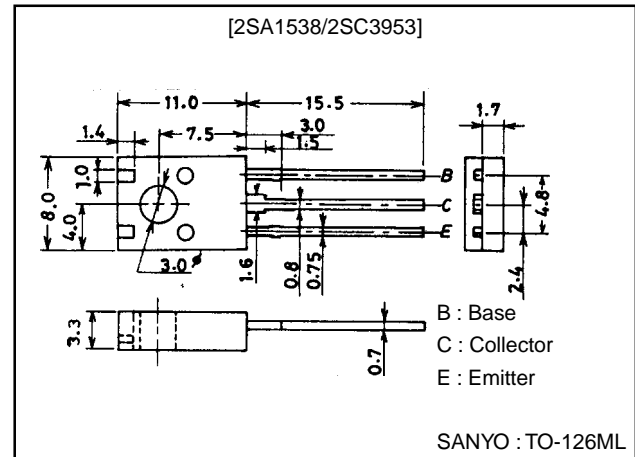
#### Features

- High  $f_T$  :  $f_T=400\text{MHz}$ .
- High breakdown voltage :  $V_{CEO}=120\text{Vmin}$ .
- Small reverse transfer capacitance and excellent HF response :  $C_{re}=1.7\text{pF/NPN}$ ,  $2.2\text{pF/PNP}$ .
- Complementary PNP and NPN types.
- Adoption of FBET process.
- Micaless type : TO-126 plastic package.

#### Package Dimensions

unit:mm

2042A



() : 2SA1538

#### Specifications

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

| Parameter                    | Symbol    | Conditions             | Ratings     | Unit             |
|------------------------------|-----------|------------------------|-------------|------------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                        | (-)120      | V                |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                        | (-)120      | V                |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                        | (-)3        | V                |
| Collector Current            | $I_C$     |                        | (-)200      | mA               |
| Peak Collector Current       | $I_{CP}$  |                        | (-)400      | mA               |
| Collector Dissipation        | $P_C$     |                        | 1.3         | W                |
|                              |           | $T_c=25^\circ\text{C}$ | 8           | W                |
| Junction Temperature         | $T_j$     |                        | 150         | $^\circ\text{C}$ |
| Storage Temperature          | $T_{stg}$ |                        | -55 to +150 | $^\circ\text{C}$ |

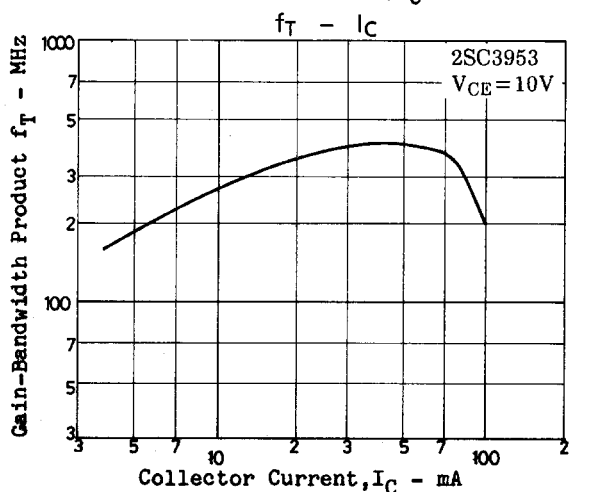
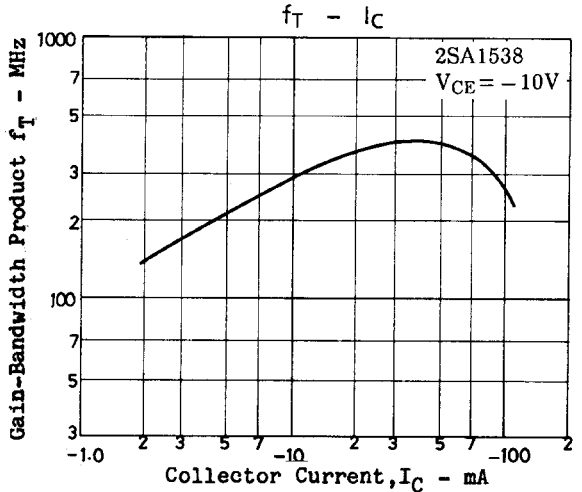
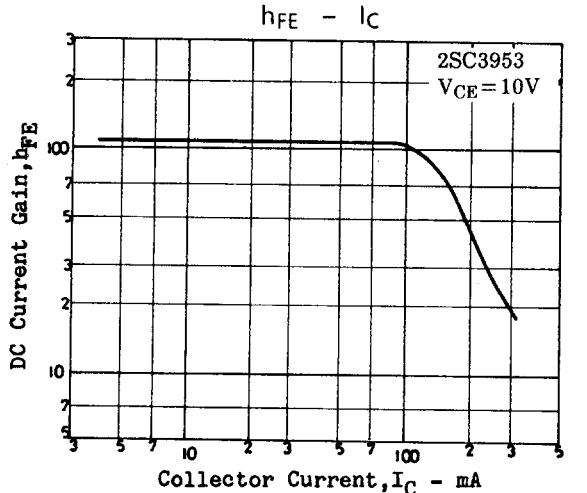
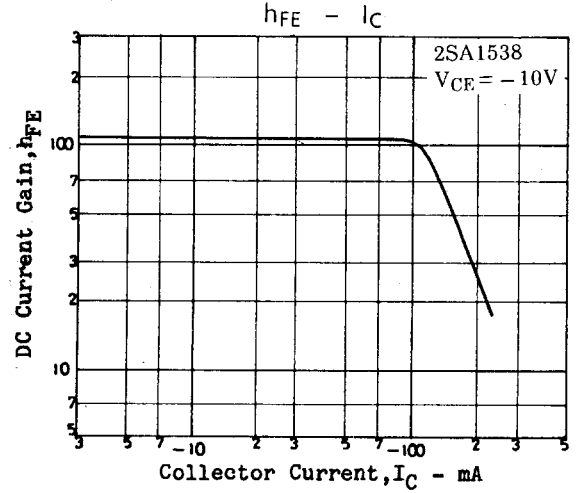
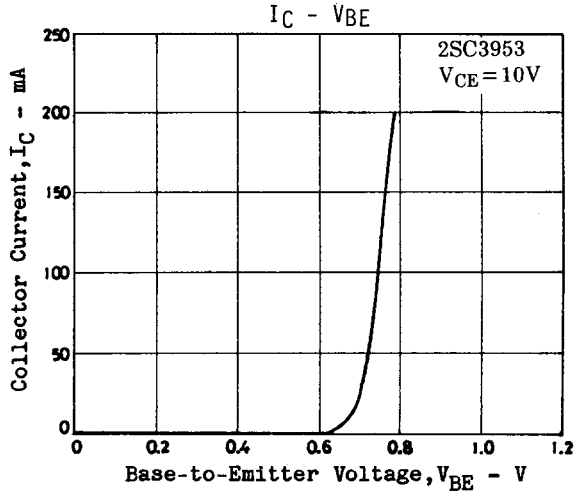
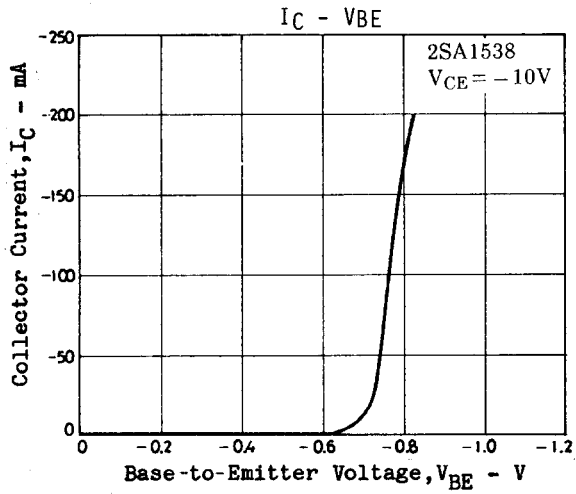
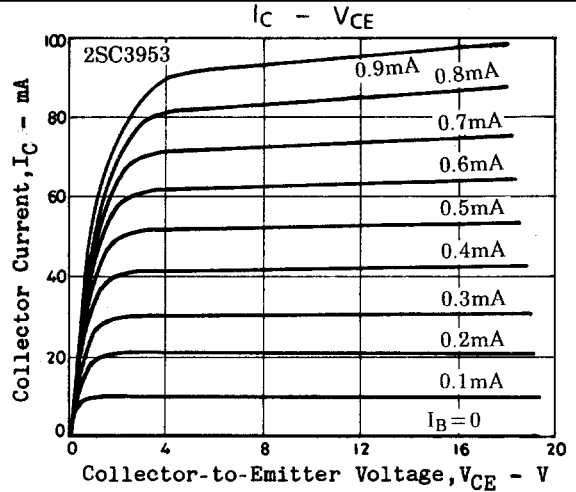
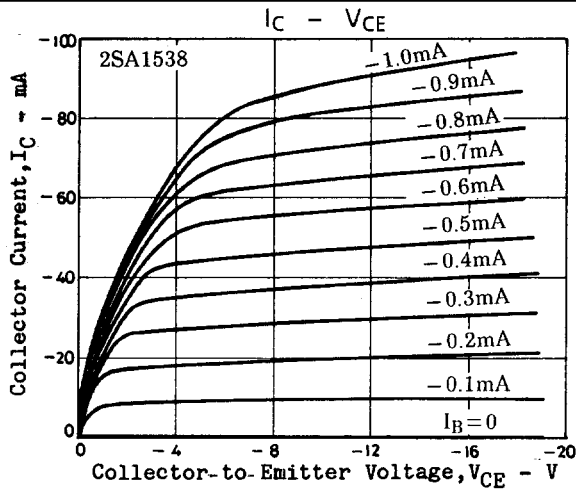
##### Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                               | Symbol        | Conditions                                     | Ratings |       |        | Unit          |
|---|---------------|--|---------|-------|--------|---------------|
|   |               |  | min     | typ   | max    |               |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=(-)80\text{V}$ , $I_E=0$               |         |       | (-)0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=(-)2\text{V}$ , $I_C=0$                |         |       | (-)1.0 | $\mu\text{A}$ |
| DC Current Gain                         | $h_{FE1}$     | $V_{CE}=(-)10\text{V}$ , $I_C=(-)10\text{mA}$  | 40*     |       | 320*   |               |
|   | $h_{FE2}$     | $V_{CE}=(-)10\text{V}$ , $I_C=(-)100\text{mA}$ | 20      |       |        |               |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=(-)10\text{V}$ , $I_C=(-)50\text{mA}$  |         | 400   |        | MHz           |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=(-)30\text{V}$ , $f=1\text{MHz}$       |         | 2.1   |        | pF            |
|   |               |  |         | (2.8) |        | pF            |
| Reverse Transfer Capacitance            | $C_{re}$      | $V_{CB}=(-)30\text{V}$ , $f=1\text{MHz}$       |         | 1.7   |        | pF            |
|   |               |  |         | (2.2) |        | pF            |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=(-)30\text{mA}$ , $I_B=(-)3\text{mA}$     |         |       | (-)1.0 | V             |
| Emitter-to-Base Saturation Voltage      | $V_{BE(sat)}$ | $I_C=(-)30\text{mA}$ , $I_B=(-)3\text{mA}$     |         |       | (-)1.0 | V             |

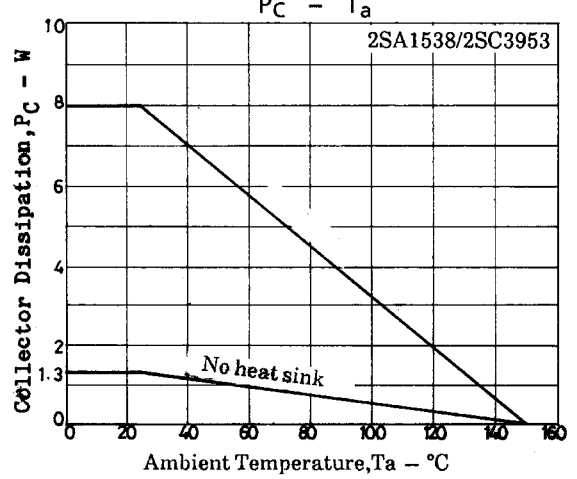
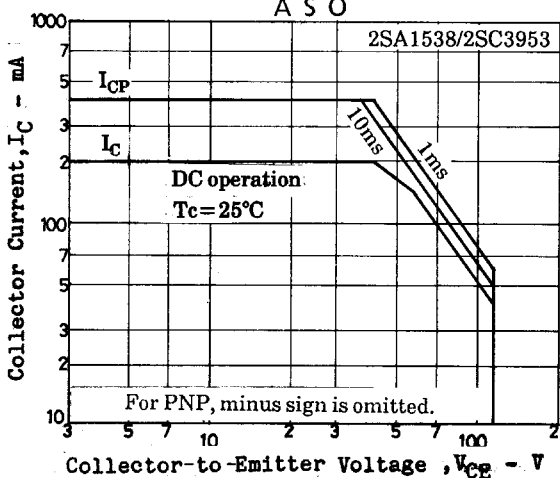
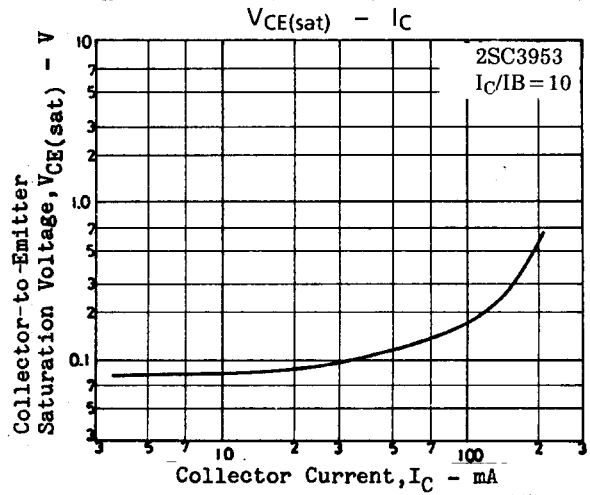
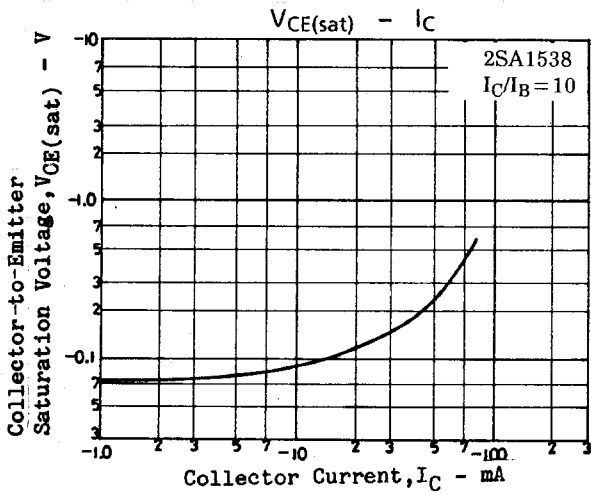
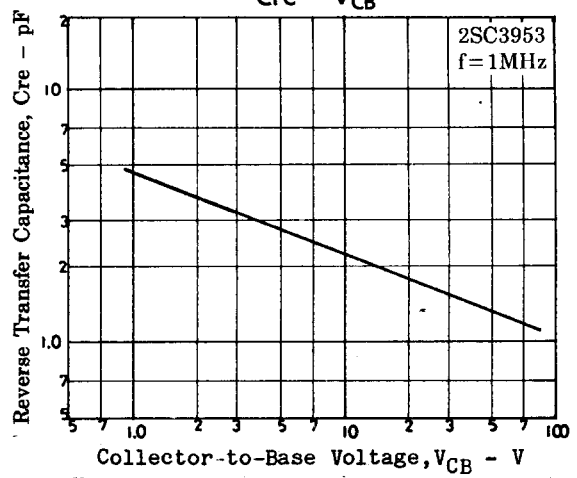
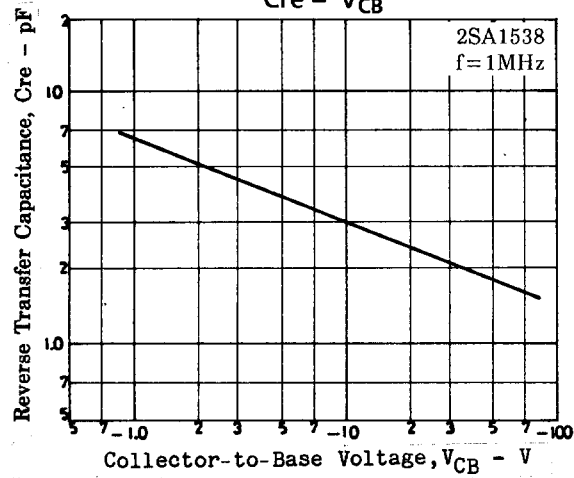
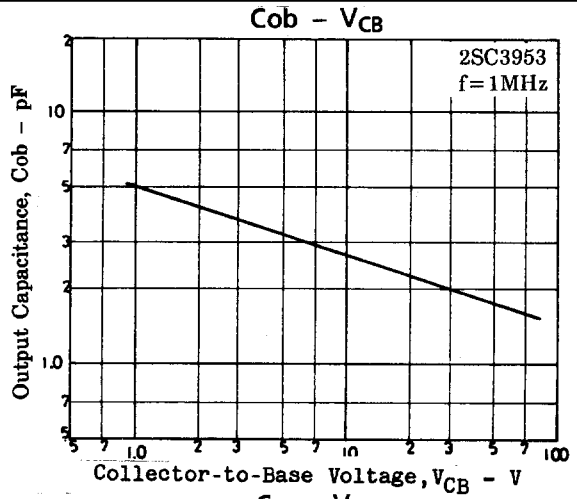
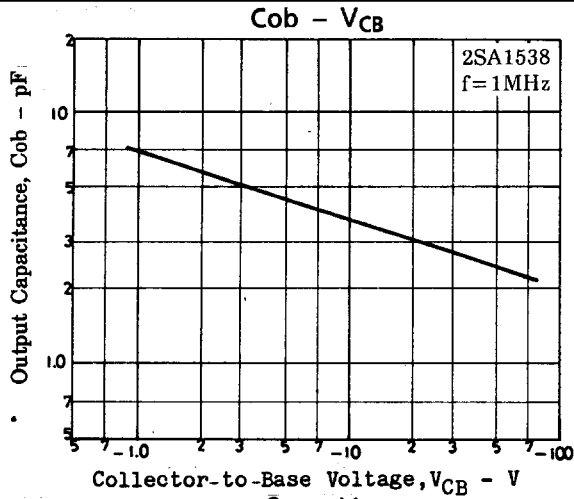
\*  $h_{FE1}$  : The 2SA1538/2SC3953 are classified by 50mA  $h_{FE}$  as follows :

|    |   |    |    |   |     |     |   |     |     |   |     |
|----|---|----|----|---|-----|-----|---|-----|-----|---|-----|
| 40 | C | 80 | 60 | D | 120 | 100 | E | 200 | 160 | F | 320 |
|----|---|----|----|---|-----|-----|---|-----|-----|---|-----|

# 2SA1538/2SC3953



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