



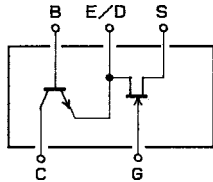
FC12

TR:NPN Epitaxial Planar Silicon Transistor
 FET:N-Channel Junction Silicon Transistor
**High-Frequency Amp, AM Applications,
 Low-Frequency Amp**

Features

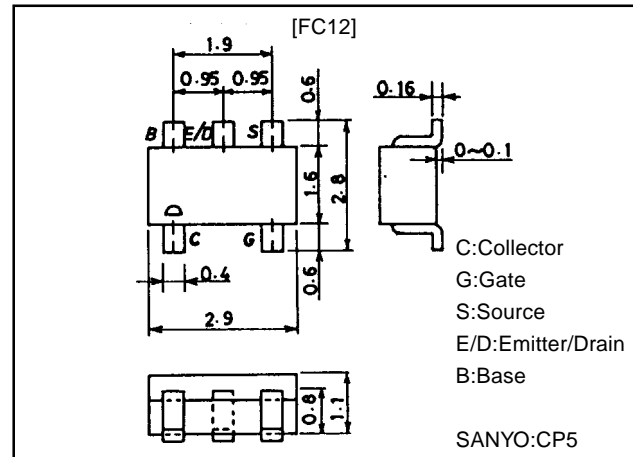
- Composite type with 2 transistors contained in the CP package currently in use, improving the mounting efficiency greatly.
- The FC12 is formed with two chips, being equivalent to the 2SC4639, placed in one package.
- Common drain and emitter.

Electrical Connection

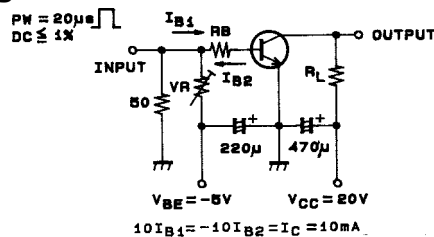


Package Dimensions

unit:mm
2075



Switching Time Test Circuit



Specifications

Absolute Maximum Ratings at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------|
| [FET] | | | | |
| Drain-to-Source Voltage | V_{DSX} | | 15 | V |
| Gate-to-Drain Voltage | V_{GDS} | | -15 | V |
| Gate Current | I_G | | 10 | mA |
| Drain Current | I_D | | 50 | mA |
| Allowable Power Dissipation | P_D | | 200 | mW |
| [TR] | | | | |
| Collector-to-Base Voltage | V_{CBO} | | 55 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | 50 | V |
| Emitter-to-Base Voltage | V_{EBO} | | 6 | V |
| Collector Current | I_C | | 150 | mA |
| Collector Current (Pulse) | I_{CP} | | 300 | mA |
| Base Current | I_B | | 30 | mA |
| Collector Dissipation | P_C | | 200 | mW |
| [Common Ratings] | | | | |
| Total Dissipation | PT | | 300 | mW |
| Junction Temperature | T_j | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

Marking:12

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FC12

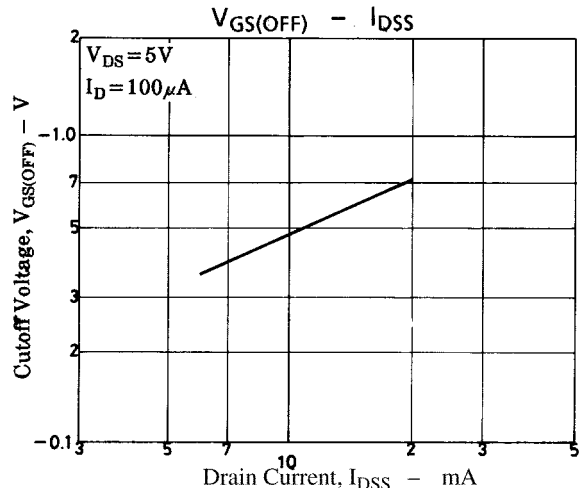
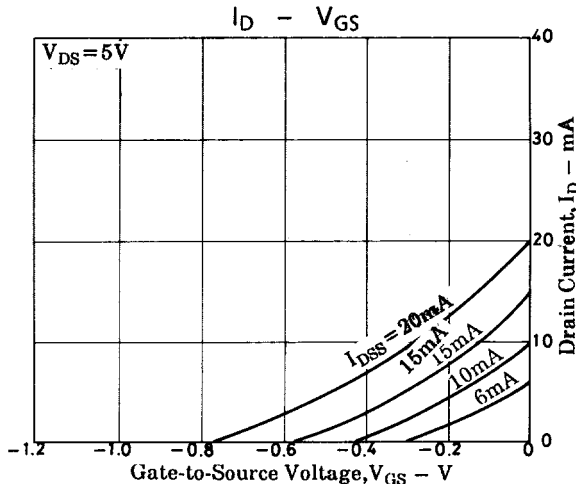
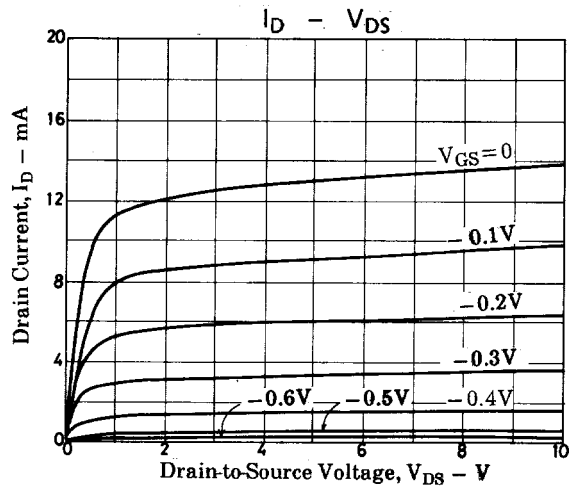
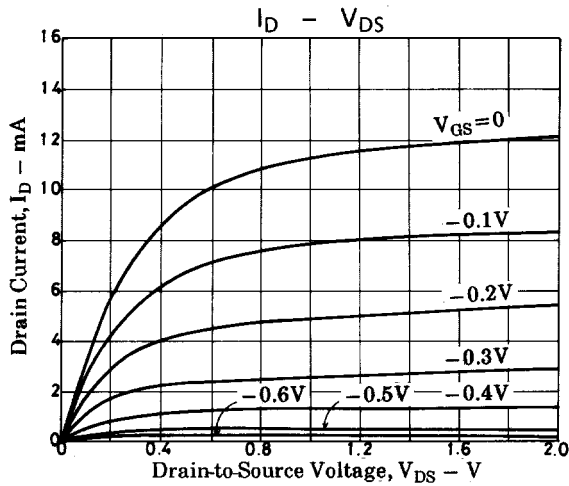
Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---------------------------------|---------------|--|---------|------|-------|---------------|
| | | | min | typ | max | |
| [FET] | | | | | | |
| Gate-to-Drain Breakdown Voltage | $V_{(BR)GDS}$ | $I_G = -10\mu\text{A}, V_{DS} = 0$ | -15 | | | V |
| Gate-to-Cutoff Current | I_{GSS} | $V_{GS} = -10\text{V}, V_{DS} = 0$ | | | -1.0 | nA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = 5\text{V}, I_D = 100\mu\text{A}$ | -0.2 | -0.6 | -1.4 | V |
| Drain Current | I_{DSS} | $V_{DS} = 5\text{V}, V_{GS} = 0$ | 6.0* | | 20.0* | mA |
| Forward Transfer Admittance | $ Y_{fs} $ | $V_{DS} = 5\text{V}, V_{GS} = 0, f = 1\text{kHz}$ | 25 | 50 | | mS |
| Input Capacitance | C_{iss} | $V_{DS} = 5\text{V}, V_{GS} = 0, f = 1\text{MHz}$ | | 10 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS} = 5\text{V}, V_{GS} = 0, f = 1\text{MHz}$ | | 3.0 | | pF |
| Noise Figure | NF | $V_{DS} = 5\text{V}, R_g = 1\text{k}\Omega, I_D = 1\text{mA}, f = 1\text{kHz}$ | | 1.5 | | dB |
| [TR] | | | | | | |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 35\text{V}, I_E = 0$ | | | 0.1 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 4\text{V}, I_C = 0$ | | | 0.1 | μA |
| DC Current Gain | h_{FE} | $V_{CE} = 6\text{V}, I_C = 1\text{mA}$ | 135 | | 400 | |
| Gain-Bandwidth Product | f_T | $V_{CE} = 6\text{V}, I_C = 10\text{mA}$ | | 200 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 6\text{V}, f = 1\text{MHz}$ | | 1.7 | | pF |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{mA}, I_B = 5\text{mA}$ | | 0.08 | 0.4 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C = 50\text{mA}, I_B = 5\text{mA}$ | | 0.8 | 1.0 | V |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 10\mu\text{A}, I_E = 0$ | 55 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 1\text{mA}, R_{BE} = \infty$ | 50 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 10\mu\text{A}, I_C = 0$ | 6 | | | V |
| Turn-ON Time | t_{on} | See specified Test Circuit | | 0.15 | | μs |
| Storage Time | t_{stg} | See specified Test Circuit | | 0.75 | | μs |
| Fall Time | t_f | See specified Test Circuit | | 0.20 | | μs |

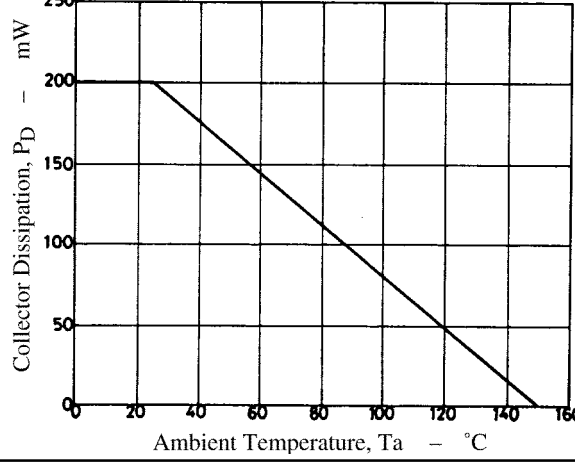
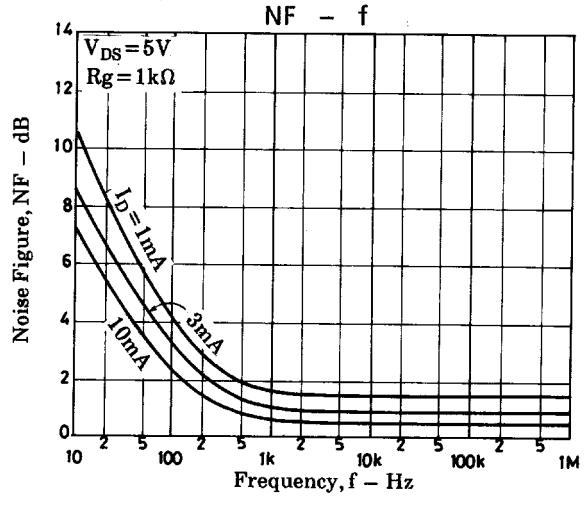
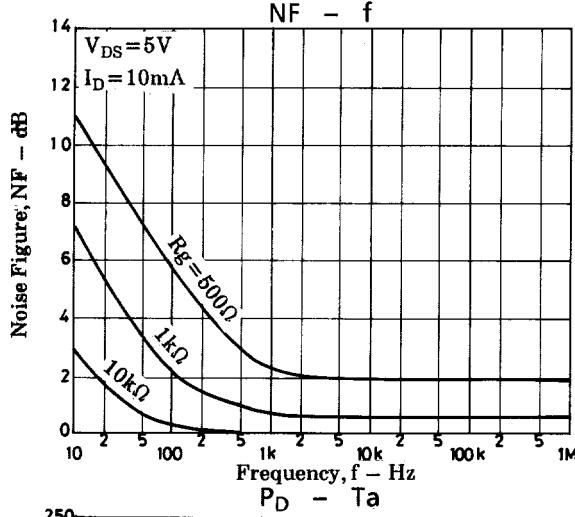
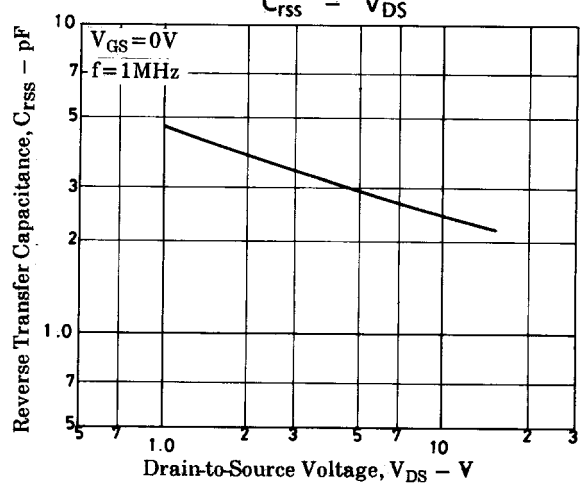
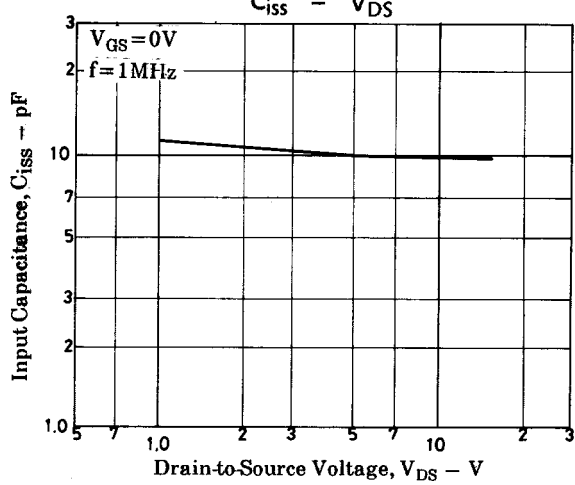
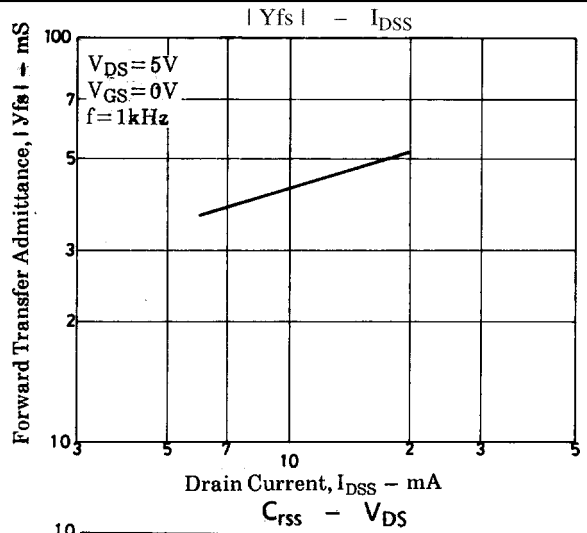
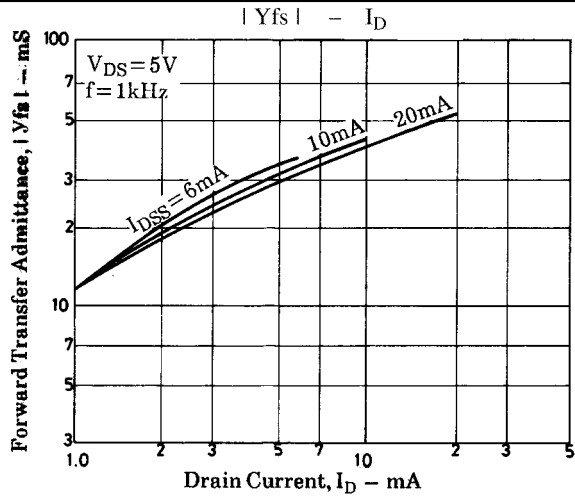
Note*: The FC12 is classified by I_{DSS} as follows : (unit: mA).

| | | | |
|-------|------|--------|------|
| 6.0 F | 12.0 | 10.0 G | 20.0 |
|-------|------|--------|------|

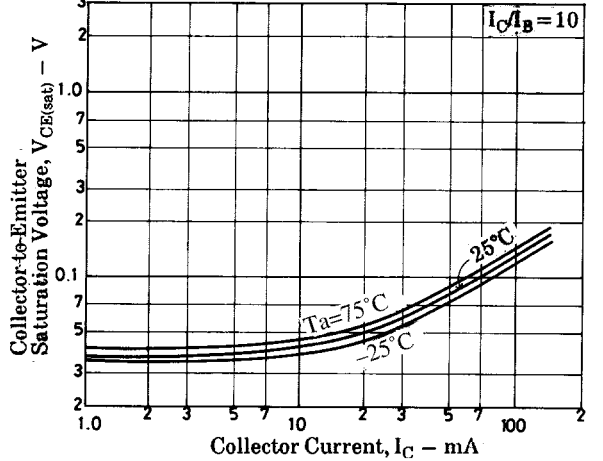
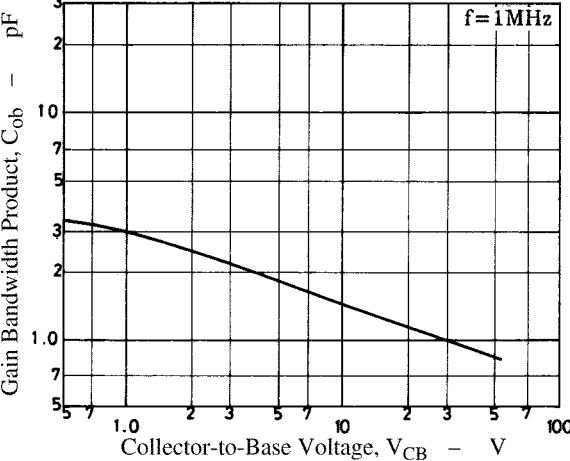
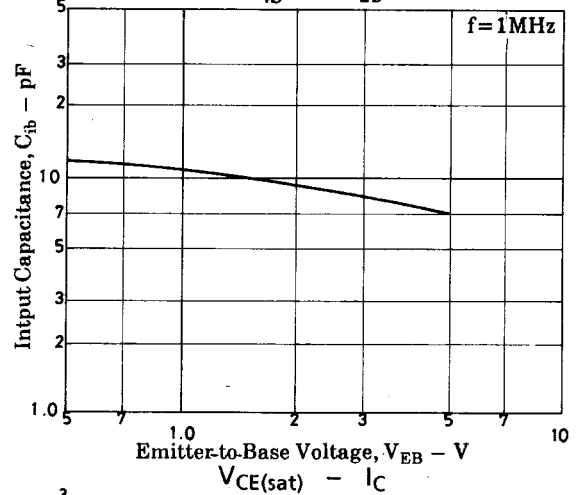
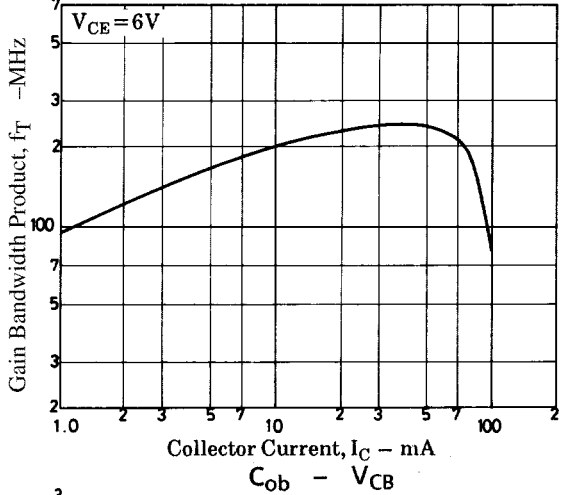
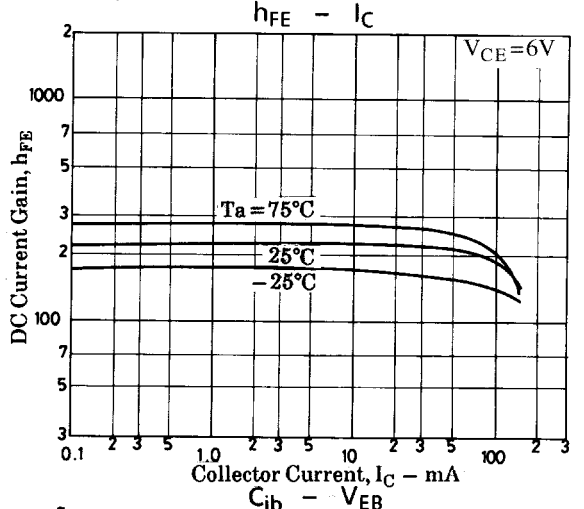
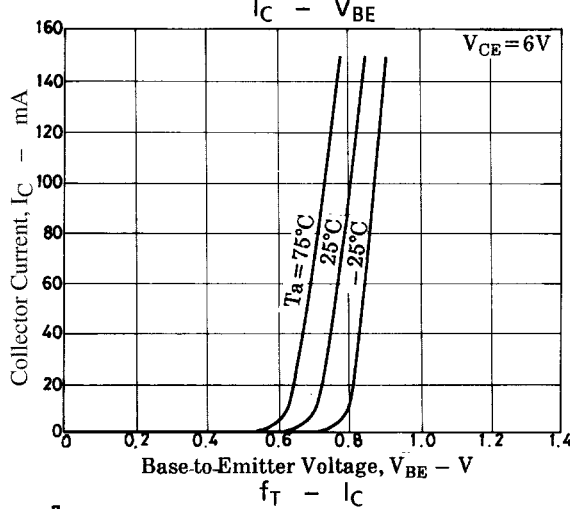
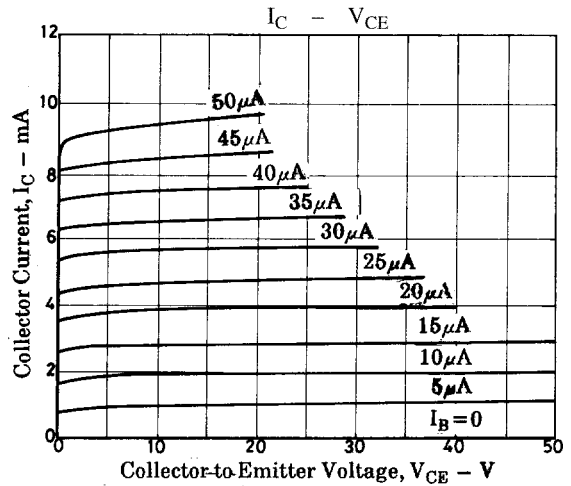
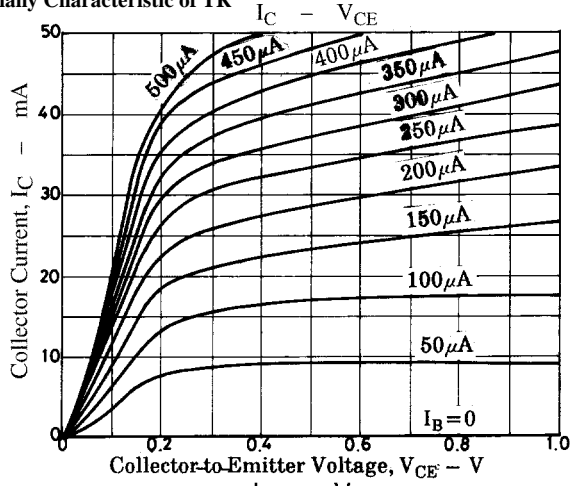
Primary Characteristics of FET

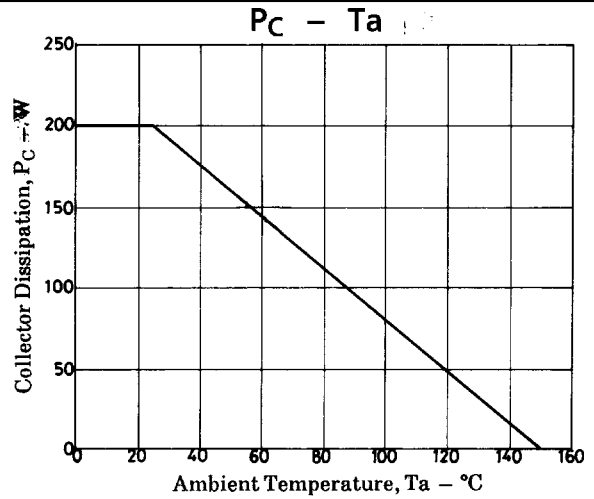
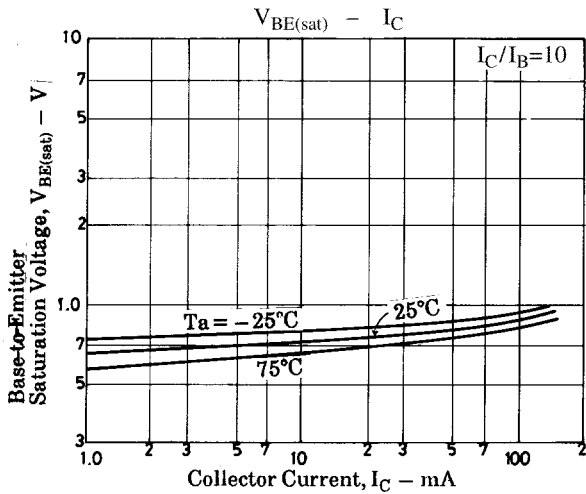


FC12



Primary Characteristic of TR





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