

**2SC4403****VHF/UHF Local Oscillator Applications****Applications**

- VHF/UHF oscillators.

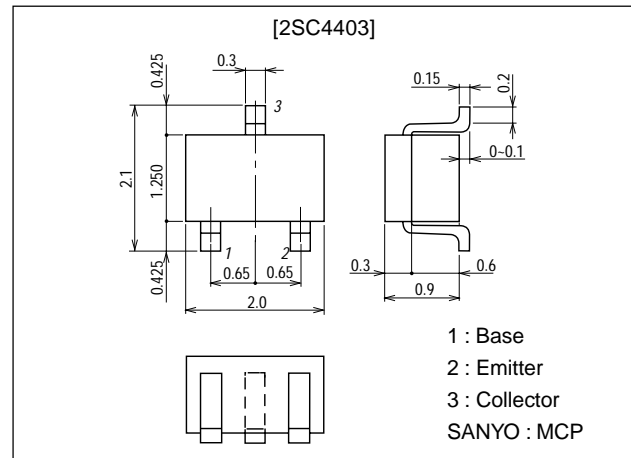
Features

- High cutoff frequency : $f_T=3.0\text{GHz}$ typ
- High power gain : $\text{MAG}=12\text{dB}$ typ ($f=0.9\text{GHz}$)
- Small noise figure : $\text{NF}=2.5\text{dB}$ typ ($f=0.9\text{GHz}$)
- Very small-sized package permitting 2SC4403-applied sets to be made smaller and slimmer.

Package Dimensions

unit:mm

2059B

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

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | | 25 | V |
| Collector-to-Emitter Voltage | V_{CE0} | | 16 | V |
| Emitter-to-Base Voltage | V_{EBO} | | 3 | V |
| Collector Current | I_C | | 70 | mA |
| Collector Dissipation | P_C | | 150 | mW |
| 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_{CB0} | $V_{CB}=16\text{V}, I_E=0$ | | | 1.0 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=2\text{V}, I_C=0$ | | | 10 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=10\text{V}, I_C=10\text{mA}$ | 40* | | 200* | |
| Gain-Bandwidth Product | f_T | $V_{CE}=10\text{V}, I_C=10\text{mA}$ | 1.5 | 3.0 | | GHz |
| Output Capacitance | C_{ob} | $V_{CB}=10\text{V}, f=1\text{MHz}$ | | 0.65 | 1.0 | pF |
| Reverse Transfer Capacitance | C_{re} | $V_{CB}=10\text{V}, f=1\text{MHz}$ | | 0.45 | | pF |

* : The 2SC4403 is classified by 10mA h_{FE} as follows :

| | | | | | | | | |
|----|---|----|----|---|-----|-----|---|-----|
| 40 | 2 | 80 | 60 | 3 | 120 | 100 | 4 | 200 |
|----|---|----|----|---|-----|-----|---|-----|

(Note) Marking : LY

 h_{FE} rank : 2, 3, 4

- For CP package version, use the 2SC3772.

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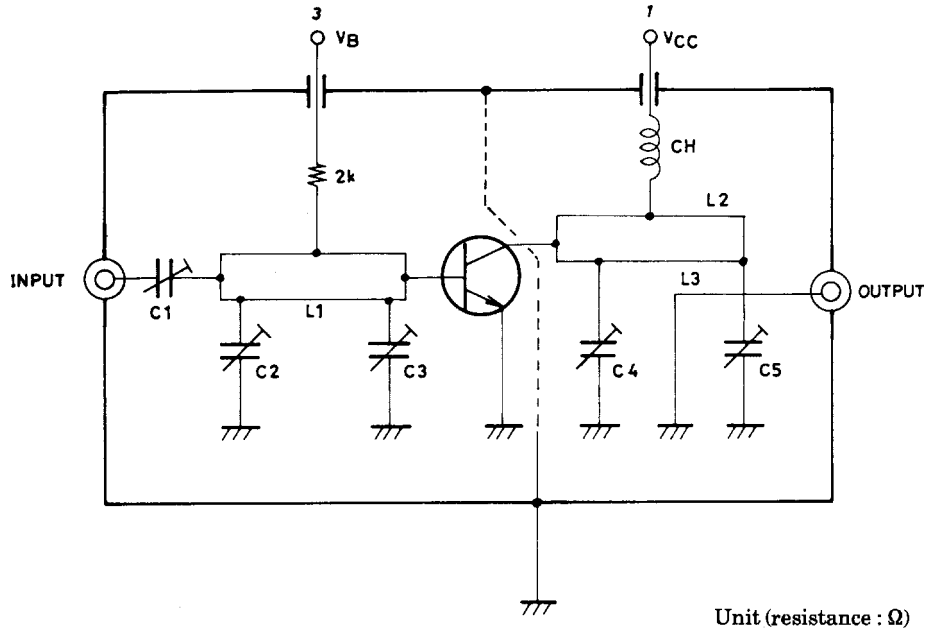
SANYO Electric Co., Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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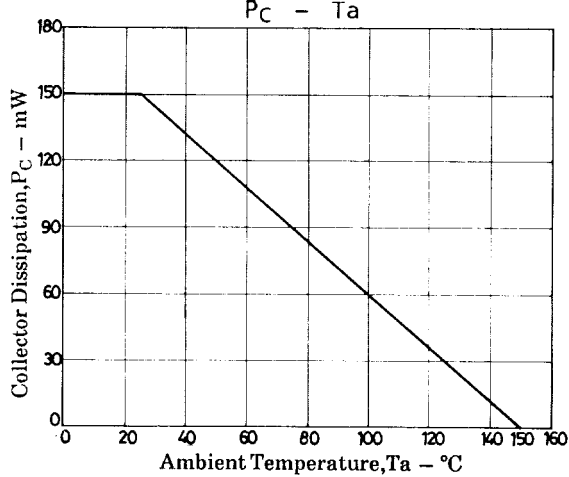
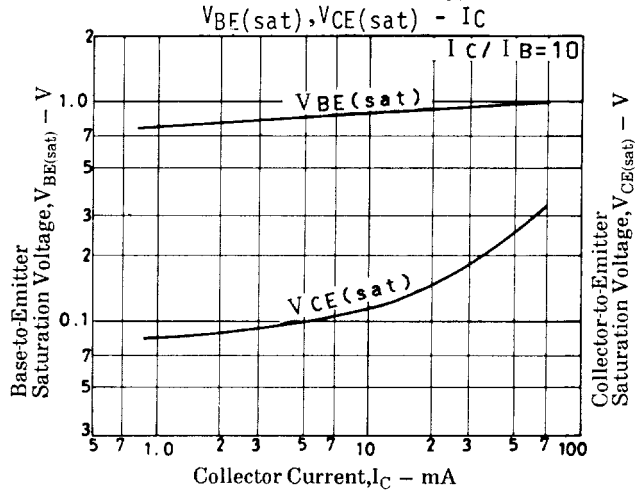
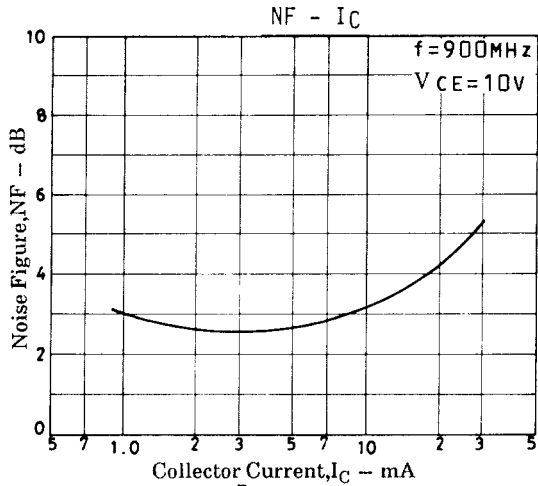
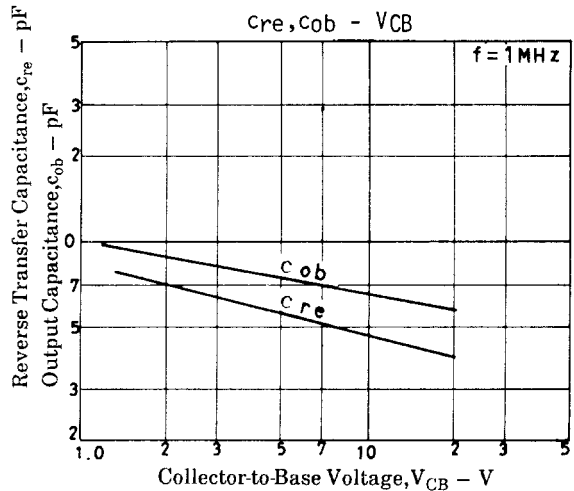
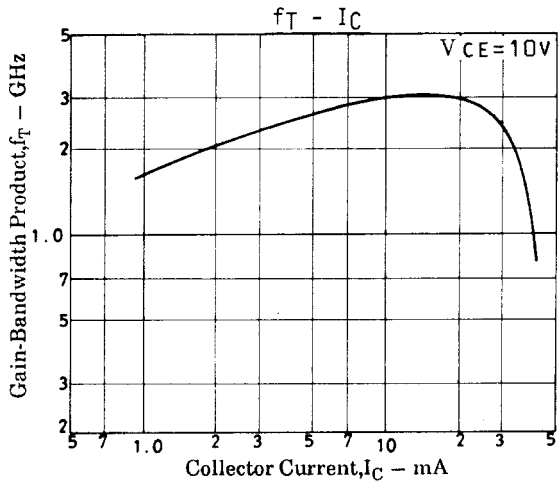
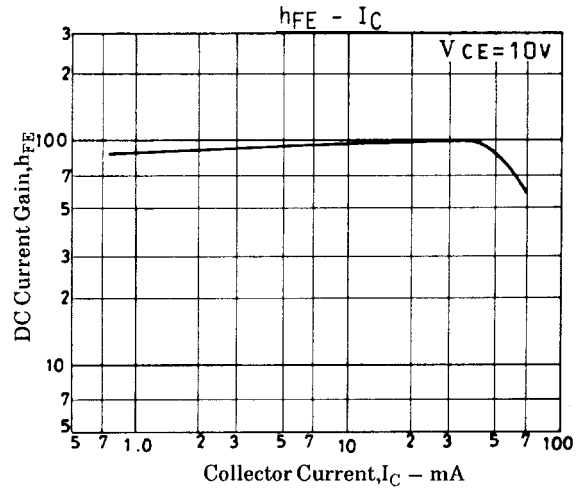
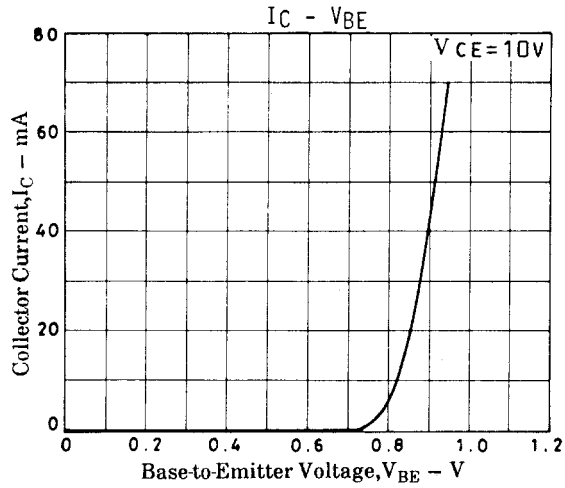
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|------------------------------|---------------|--|---------|-----|-----|------|
| | | | min | typ | max | |
| Forward Transfer Gain | $ S_{21e} ^2$ | $V_{CE}=10V, I_C=10mA, f=0.9GHz$ | 7 | 9 | | dB |
| Maximum Available Power Gain | MAG | $V_{CE}=10V, I_C=10mA, f=0.9GHz$ | | 12 | | dB |
| Noise Figure | NF | $V_{CE}=10V, I_C=3mA, f=0.9GHz$ See specified Test Circuit. | | 2.5 | | dB |

NF Test Circuit



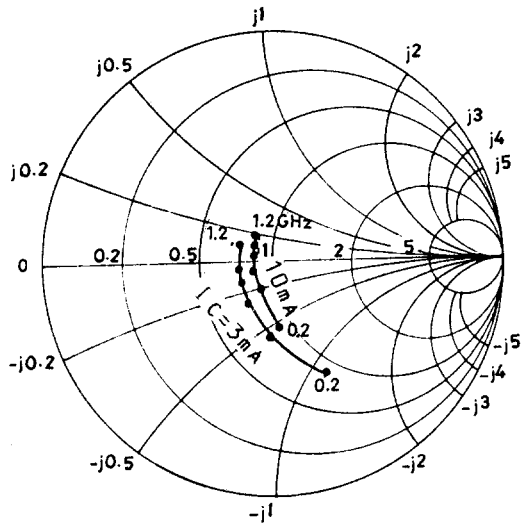
| 900MHz | |
|--------|---|
| C1 | ~5pF |
| C2 | ~10pF |
| C3 | ~10pF |
| C4 | ~10pF |
| C5 | ~10pF |
| L1 | W \approx 1.5mm, l \approx 25mm Strip line |
| L2 | W \approx 4mm, l \approx 25mm Strip line |
| L3 | 0.5 ϕ , l \approx 40mm |
| CH | 2t+bead core |

2SC4403

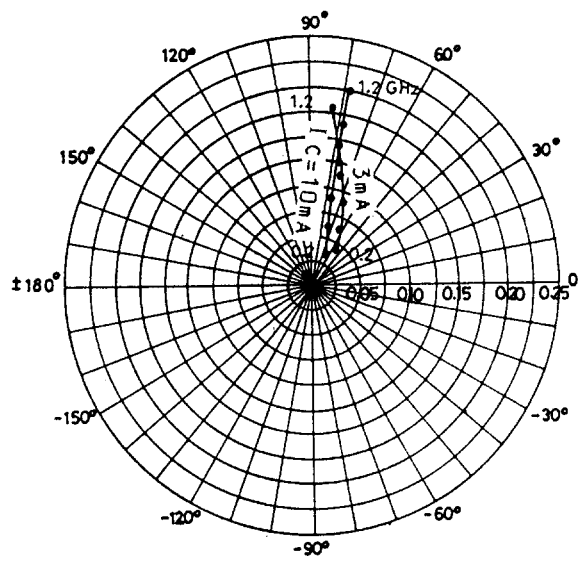


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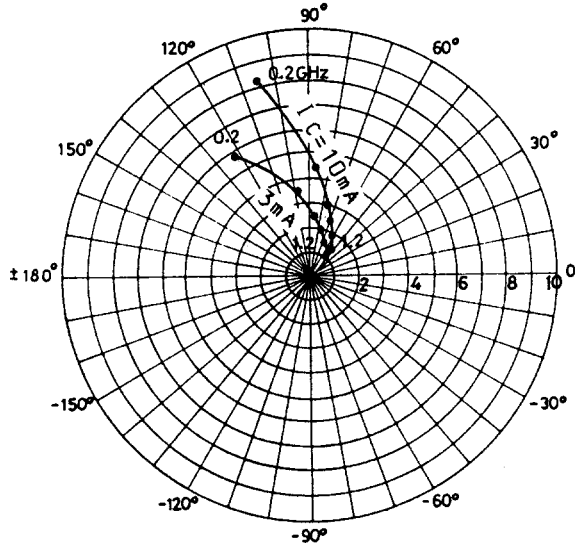
S11e : VCE=10V
f=200MHz step



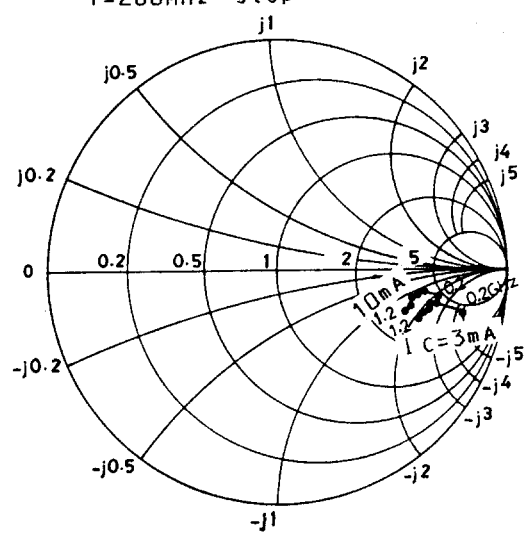
S12e : VCE=10V
f=200MHz step



S21e : VCE=10V
f=200MHz step



S22e : VCE=10V
f=200MHz step



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