

High-Frequency Amplifier Transistor (20V, 50mA, 1.5GHz)

2SC5661 / 2SC4725 / 2SC4082 / 2SC3837K

●Features

- 1) High transition frequency. (Typ. $f_T = 1.5\text{GHz}$)
- 2) Small $r_{bb} \cdot C_c$ and high gain. (Typ. 6ps)
- 3) Small NF.

●Packaging specifications and h_{FE}

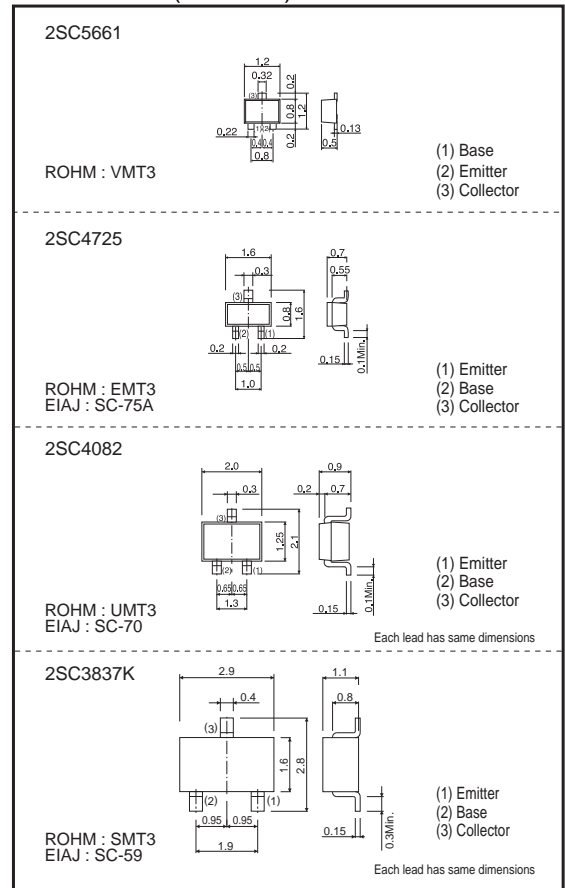
| Type | 2SC5661 | 2SC4725 | 2SC4082 | 2SC3837K |
|------------------------------|---------|---------|---------|----------|
| Package | VMT3 | EMT3 | UMT3 | SMT3 |
| h_{FE} | NP | NP | NP | NP |
| Marking | AC* | AC* | 1C* | AC* |
| Code | T2L | TL | T106 | T146 |
| Basic ordering unit (pieces) | 8000 | 3000 | 3000 | 3000 |

* Denotes h_{FE}

● Absolute maximum ratings ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|------------------|
| Collector-base voltage | V_{CB0} | 30 | V |
| Collector-emitter voltage | V_{CE0} | 20 | V |
| Emitter-base voltage | V_{EB0} | 3 | V |
| Collector current | I_C | 50 | mA |
| Collector power dissipation | P_C | 0.15 | W |
| | | 0.2 | |
| Junction temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

●Dimensions (Unit : mm)



●Electrical characteristics ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|--------------------|------|------|------|---------------|--|
| Collector-base breakdown voltage | BV_{CB0} | 30 | - | - | V | $I_C = 10\mu\text{A}$ |
| Collector-emitter breakdown voltage | BV_{CE0} | 20 | - | - | V | $I_C = 1\text{mA}$ |
| Emitter-base breakdown voltage | BV_{EB0} | 3 | - | - | V | $I_E = 10\mu\text{A}$ |
| Collector cutoff current | I_{CBO} | - | - | 0.5 | μA | $V_{CB} = 15\text{V}$ |
| Emitter cutoff current | I_{EBO} | - | - | 0.5 | μA | $V_{EB} = 2\text{V}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | 0.5 | V | $I_C/I_B = 20\text{mA}/4\text{mA}$ |
| DC current transfer ratio | h_{FE} | 82 | - | 180 | - | $V_{CE}/I_C = 10\text{V}/10\text{mA}$ |
| Transition frequency | f_T | 600 | 1500 | - | MHz | $V_{CE} = 10\text{V}, I_E = -10\text{mA}, f = 200\text{MHz}$ |
| Output capacitance | C_{ob} | - | 0.9 | 1.5 | pF | $V_{CB} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$ |
| Collector-base time constant | $r_{bb} \cdot C_c$ | - | 6 | 13 | ps | $V_{CB} = 10\text{V}, I_C = 10\text{mA}, f = 31.8\text{MHz}$ |
| Noise factor | NF | - | 4.5 | - | dB | $V_{CE} = 12\text{V}, I_C = 2\text{mA}, f = 200\text{MHz}, R_g = 50\Omega$ |

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

●Electrical characteristic curves

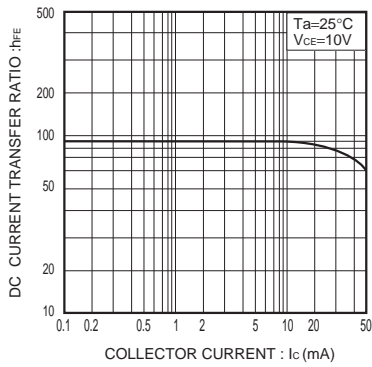


Fig.1 DC current gain vs. collector current

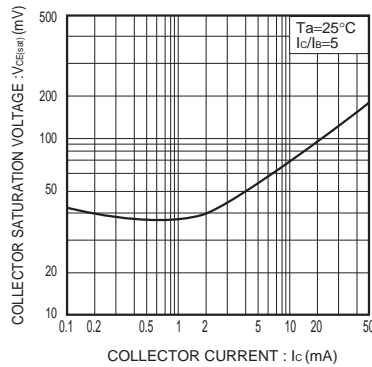


Fig.2 Collector-emitter saturation voltage vs. collector current

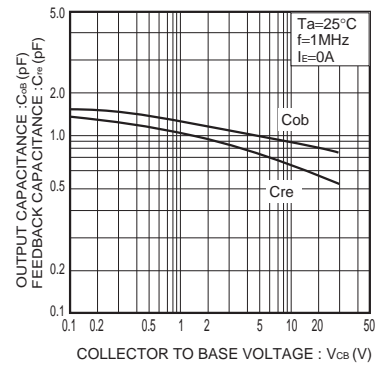


Fig.3 Capacitance vs. reverse bias voltage

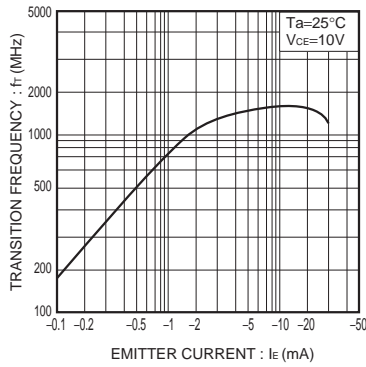


Fig.4 Gain bandwidth product vs. emitter current

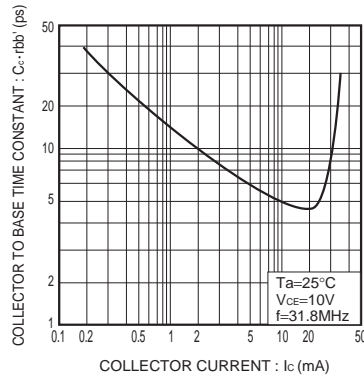


Fig.5 Collector to base time constant vs. collector current

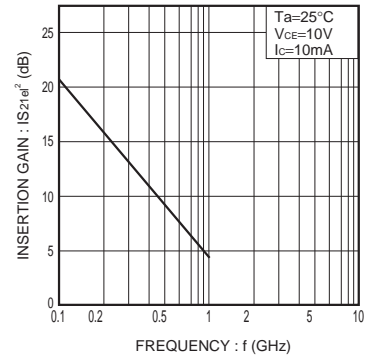


Fig.6 Insertion gain vs. frequency

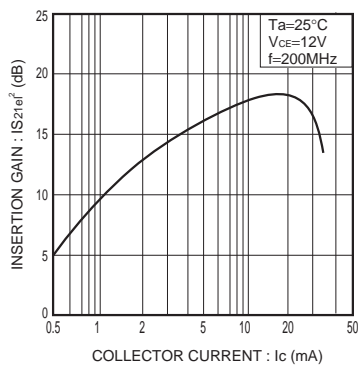


Fig.7 Insertion gain vs. collector current

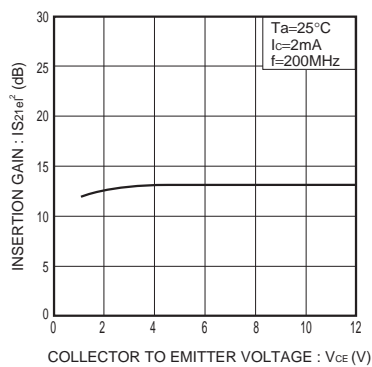


Fig.8 Insertion gain vs. collector voltage

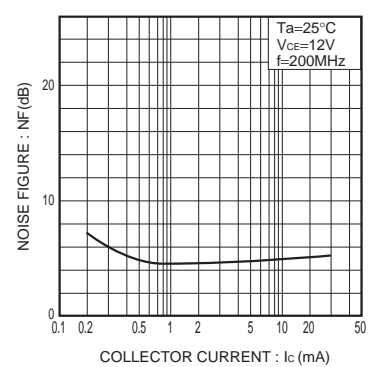


Fig.9 Noise factor vs. collector current

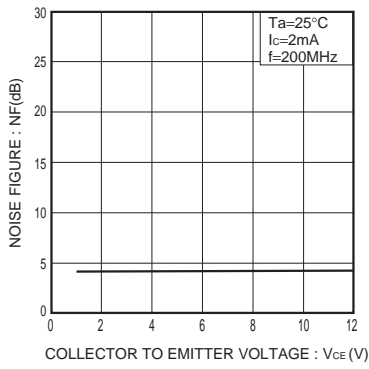


Fig.10 Noise factor vs. collector voltage

Notes

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