

PNP General Purpose Transistor

UMT3906/SST3906/MMST3906

●Features

- 1) $BV_{CEO} > -40V$ ($I_c = -1mA$)
- 2) Complements the T3904/SST3904/MMST3909.
- 3) Low capacitance.

●Package, marking, and packaging specifications

| Type | UMT3906 | SST3906 | MMST3906 |
|------------------------------|---------|---------|----------|
| Packaging type | UMT3 | SST3 | SMT3 |
| Marking | R2A | R2A | R2A |
| Code | T106 | T116 | T146 |
| Basic ordering unit (pieces) | 3000 | 3000 | 3000 |

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

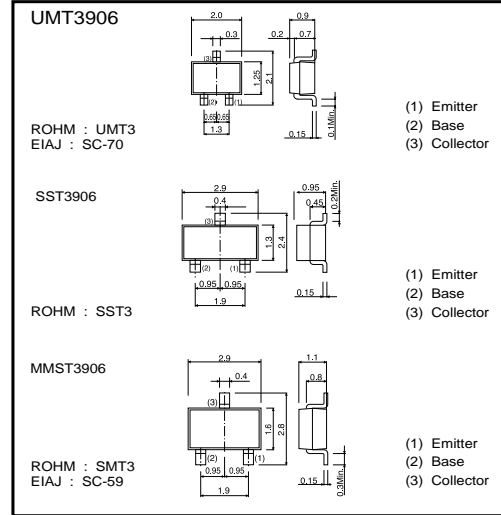
| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|------------|
| Collector-base voltage | V_{CBO} | -40 | V |
| Collector-emitter voltage | V_{CEO} | -40 | V |
| Emitter-base voltage | V_{EBO} | -5 | V |
| Collector current | I_c | -0.2 | A |
| Collector Power dissipation | Pd | 6.2 | W |
| | | 0.35 | W * |
| Junction temperature | T_j | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ C$ |

* When mounted on a 7x5x0.6mm ceramic board.

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|-------|------|-------|------|---|
| Collector-base breakdown voltage | BV_{CBO} | -40 | - | - | V | $I_c = -10\mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -40 | - | - | V | $I_c = -1mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | -5 | - | - | V | $I_E = -10\mu A$ |
| Collector cutoff current | I_{CES} | - | - | -50 | nA | $V_{CB} = -30V$ |
| Emitter cutoff current | I_{EBO} | - | - | -50 | nA | $V_{EB} = -3V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | -0.25 | V | $I_c/I_E = -10mA/-1mA$ |
| | | - | - | -0.4 | V | $I_c/I_E = -50mA/-5mA$ |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | -0.65 | - | -0.85 | V | $I_c/I_E = -10mA/-1mA$ |
| | | - | - | -0.95 | V | $I_c/I_E = -50mA/-5mA$ |
| DC current transfer ratio | h_{FE} | 60 | - | - | - | $V_{CE} = -1V, I_c = -0.1mA$ |
| | | 80 | - | - | - | $V_{CE} = -1V, I_c = -1mA$ |
| | | 100 | - | 300 | - | $V_{CE} = -1V, I_c = -10mA$ |
| | | 60 | - | - | - | $V_{CE} = -1V, I_c = -50mA$ |
| | | 30 | - | - | - | $V_{CE} = -1V, I_c = -100mA$ |
| Transition frequency | f_T | 250 | - | - | MHz | $V_{CE} = -20V, I_E = 10mA, f = 100MHz$ |
| Collector output capacitance | C_{ob} | - | - | 4.5 | pF | $V_{CB} = -10V, f = 100kHz, I_E = 0A$ |
| Emitter input capacitance | C_{ib} | - | - | 10 | pF | $V_{CB} = -0.5V, f = 100kHz, I_c = 0A$ |
| Delay time | t_d | - | - | 35 | ns | $V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_c = -10mA, I_{B1} = -1mA$ |
| Rise time | t_r | - | - | 35 | ns | $V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_c = -10mA, I_{B1} = -1mA$ |
| Storage time | t_{stg} | - | - | 225 | ns | $V_{CC} = -3V, I_c = -10mA, I_{B1} = -I_{B2} = -1mA$ |
| Fall time | t_f | - | - | 75 | ns | $V_{CC} = -3V, I_c = -10mA, I_{B1} = -I_{B2} = -1mA$ |

●Dimensions (Unit : mm)



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●Electrical characteristics curves

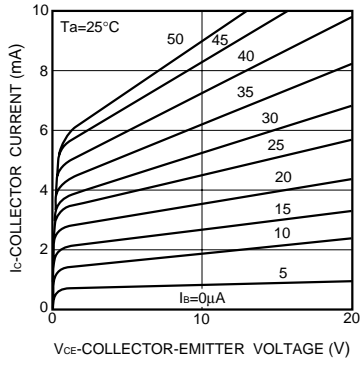


Fig.1 Grounded emitter output characteristics

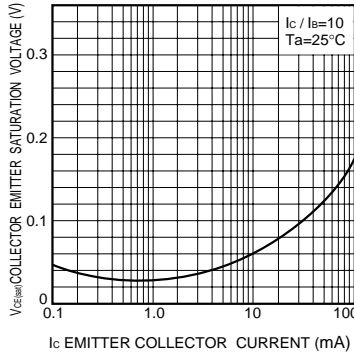


Fig.2 Collector-emitter saturation voltage vs. collector current

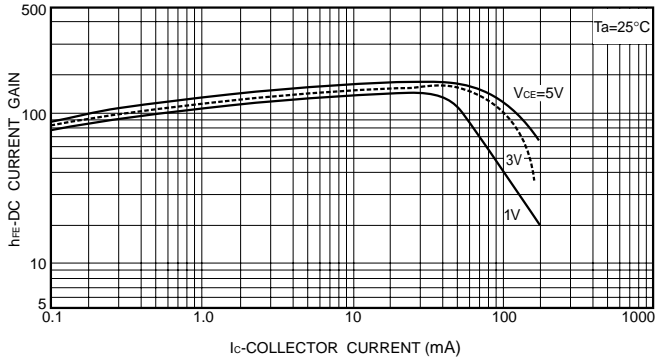


Fig.3 DC current gain vs. collector current (I)

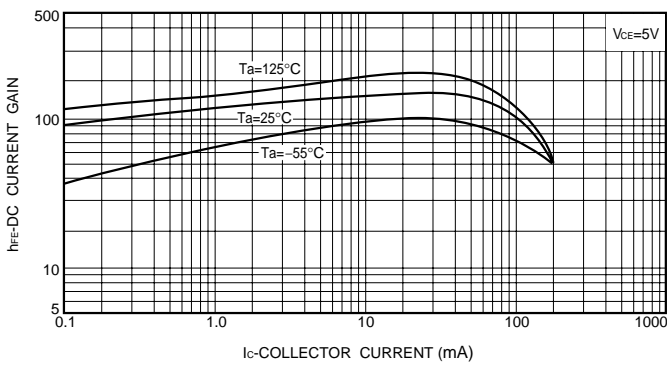


Fig.4 DC current gain vs. collector current (II)

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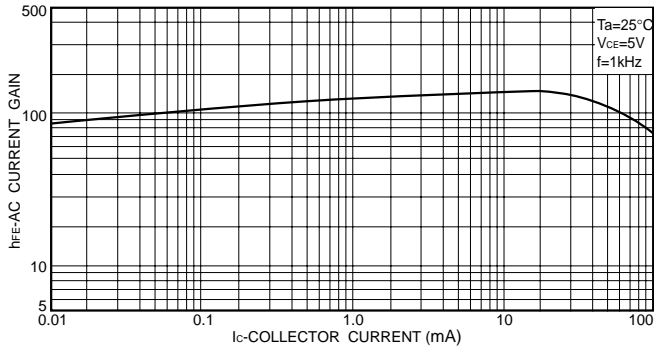


Fig.5 AC current gain vs. collector current

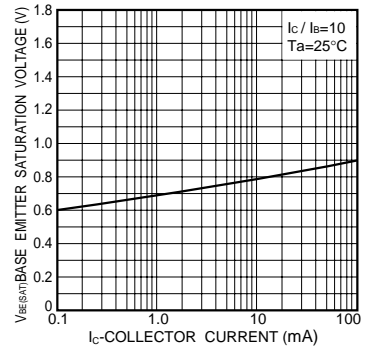


Fig.6 Base-emitter saturation voltage vs. collector current

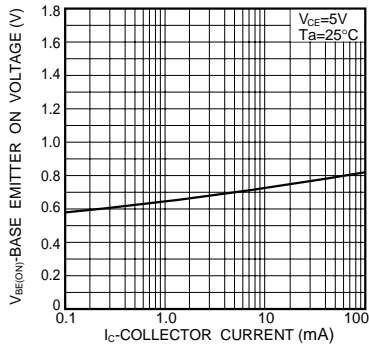


Fig.7 Grounded emitter propagation characteristics

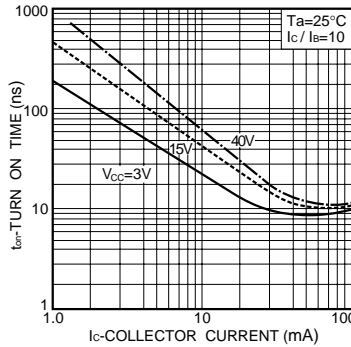


Fig.8 Turn-on time vs. collector current

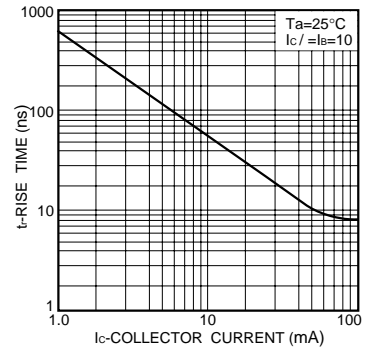


Fig.9 Rise time vs. collector current

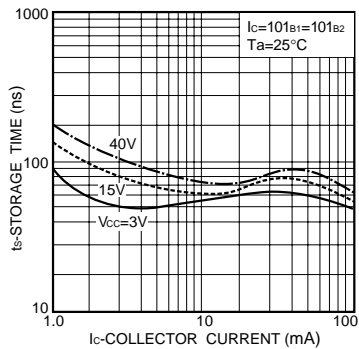


Fig.10 Storage time vs. collector current

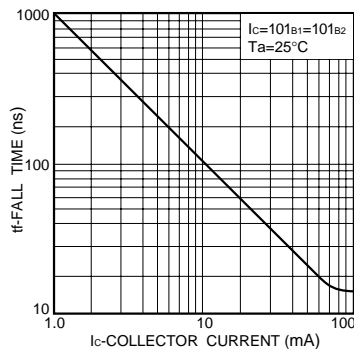


Fig.11 Fall time vs. collector current

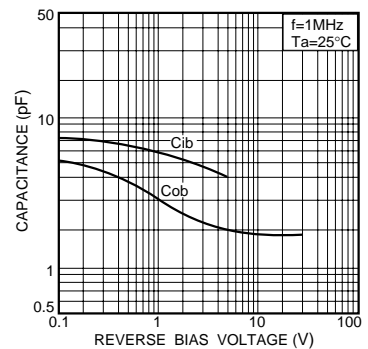


Fig.12 Input / output capacitance vs. voltage

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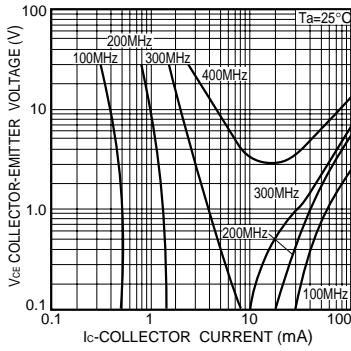


Fig.13 Gain bandwidth product

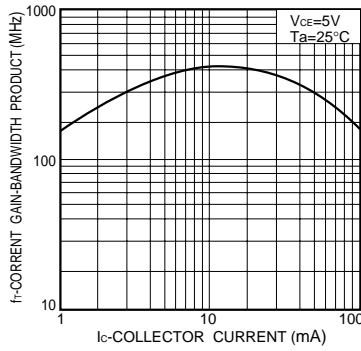


Fig.14 Gain bandwidth product vs. collector current

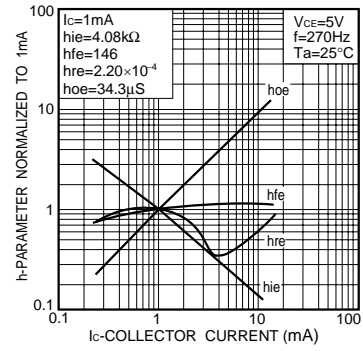


Fig.15 h parameter vs. collector current

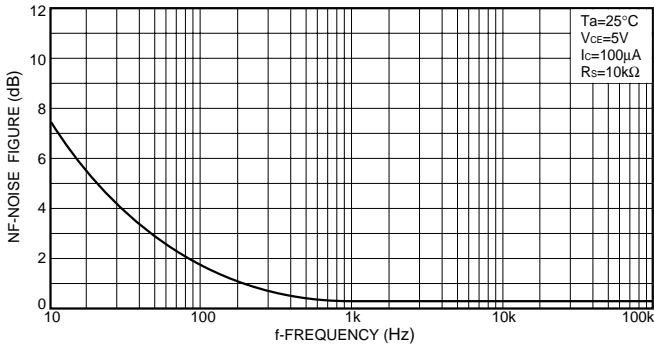


Fig.16 Noise vs. collector current

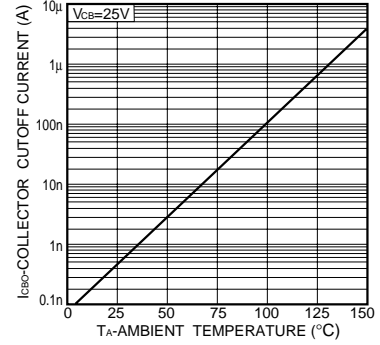


Fig.17 Noise characteristics (I)

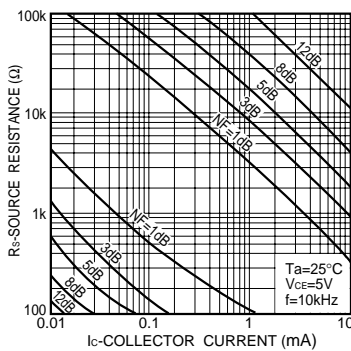


Fig.18 Noise characteristics (II)

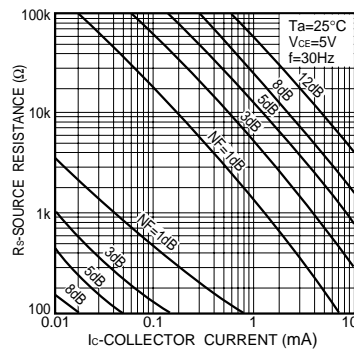


Fig.19 Noise characteristics (III)

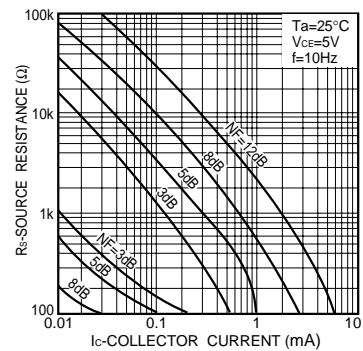


Fig.20 Noise characteristics (IV)

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