

NPN Medium Power Transistor (Switching)

UMT2222A / SST2222A / MMST2222A

●Features

- 1) $BV_{CEO} > 40V$ ($I_C=10mA$)
- 2) Complements the UMT2907A/ SST2907A / MMST2907A.

●Package, marking, and packaging specifications

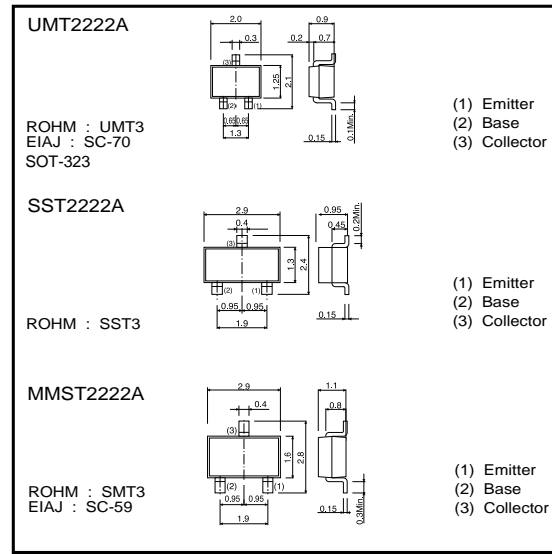
| Part No. | UMT2222A | SST2222A | MMST2222A |
|------------------------------|----------|----------|-----------|
| Packaging type | UMT3 | SST3 | SMT3 |
| Marking | R1P | R1P | R1P |
| Code | T106 | T116 | T146 |
| Basic ordering unit (pieces) | 3000 | 3000 | 3000 |

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

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------|-------------|------------|
| Collector-base voltage | V_{CBO} | 75 | V |
| Collector-emitter voltage | V_{CEO} | 40 | V |
| Emitter-base voltage | V_{EBO} | 6 | V |
| Collector current | I_C | 0.6 | A |
| Collector power dissipation | P_C | 0.2 | W |
| | | 0.35 | W * |
| Junction temperature | T_J | 150 | $^\circ C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ C$ |

* When mounted on a 7 x 5 x 0.6 mm ceramic board

●Dimensions (Unit : mm)



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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|------|--|
| Collector-base breakdown voltage | BV_{CBO} | 75 | - | - | V | $I_C=10\mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | 40 | - | - | V | $I_C=10mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | 6 | - | - | V | $I_E=10\mu A$ |
| Collector cutoff current | I_{CBO} | - | - | 100 | nA | $V_{CB}=60V$ |
| Emitter cutoff current | I_{EBO} | - | - | 100 | nA | $V_{EB}=3V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | 0.3 | V | $I_C/I_B=150mA/15mA$ |
| | | - | - | 1 | V | $I_C/I_B=500mA/50mA$ |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | 0.6 | - | 1.2 | V | $I_C/I_B=150mA/15mA$ |
| | | - | - | 2 | V | $I_C/I_B=500mA/50mA$ |
| DC current transfer ratio | h_{FE} | 35 | - | - | - | $V_{CE}=10V, I_C=0.1mA$ |
| | | 50 | - | - | - | $V_{CE}=10V, I_C=1mA$ |
| | | 75 | - | - | - | $V_{CE}=10V, I_C=10mA$ |
| | | 50 | - | - | - | $V_{CE}=1V, I_C=150mA$ |
| | | 100 | - | 300 | - | $V_{CE}=10V, I_C=150mA$ |
| | | 40 | - | - | - | $V_{CE}=10V, I_C=500mA$ |
| Transition frequency | f_r | 300 | - | - | MHz | $V_{CE}=20V, I_C=-20mA, f=100MHz$ |
| Output capacitance | C_{ob} | - | - | 8 | pF | $V_{CB}=10V, f=100kHz$ |
| Emitter input capacitance | C_{ib} | - | - | 25 | pF | $V_{EB}=0.5V, f=100kHz$ |
| Delay time | t_d | - | - | 10 | ns | $V_{CC}=30V, V_{BE(OFF)}=0.5V, I_C=150mA, I_{B1}=15mA$ |
| Rise time | t_r | - | - | 25 | ns | $V_{CC}=30V, V_{BE(OFF)}=0.5V, I_C=150mA, I_{B1}=15mA$ |
| Storage time | t_{stg} | - | - | 225 | ns | $V_{CC}=30V, I_C=150mA, I_{B1}=-I_{B2}=15mA$ |
| Fall time | t_f | - | - | 60 | ns | $V_{CC}=30V, I_C=150mA, I_{B1}=-I_{B2}=15mA$ |

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●Electrical characteristic curves

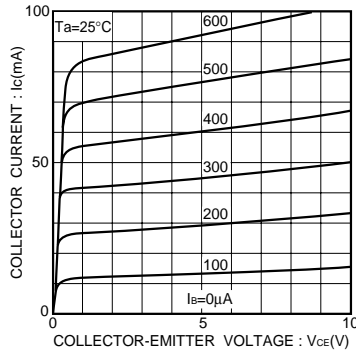


Fig.1 Grounded emitter output characteristics

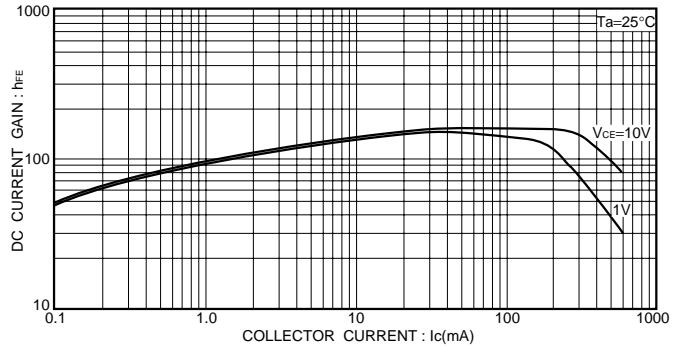


Fig.3 DC current gain vs. collector current(I)

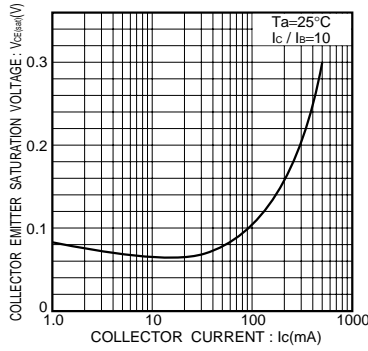


Fig.2 Collector-emitter saturation voltage vs. collector current

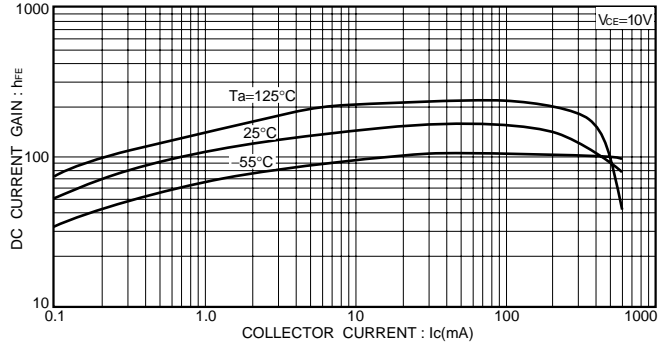


Fig.4 DC current gain vs. collector current(II)

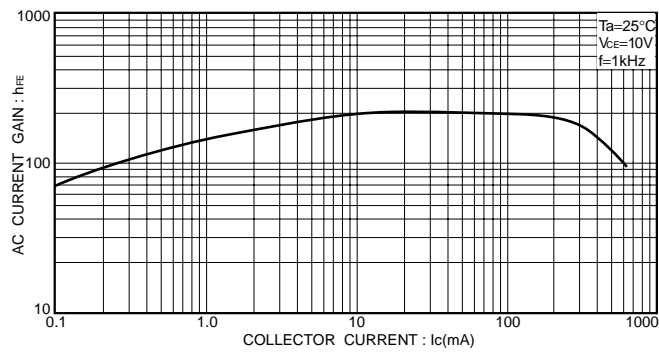


Fig.5 AC current gain vs. collector current

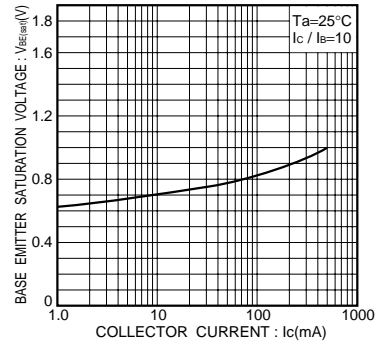


Fig.6 Base-emitter saturation voltage vs. collector current

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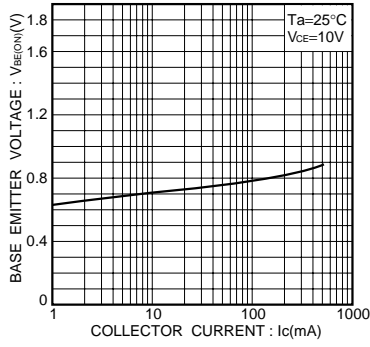


Fig.7 Grounded emitter propagation characteristics

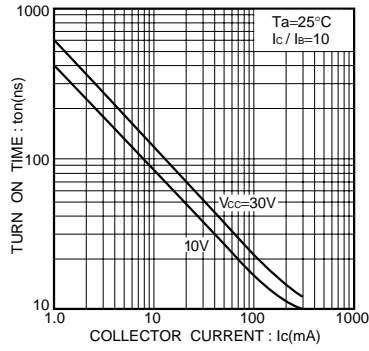


Fig.8 Turn-on time vs. collector current

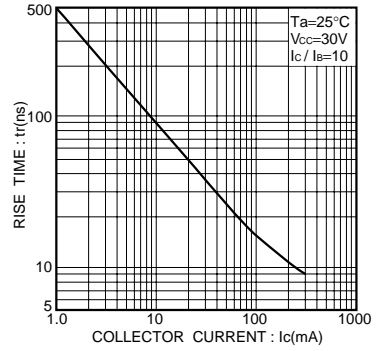


Fig.9 Rise time vs. collector current

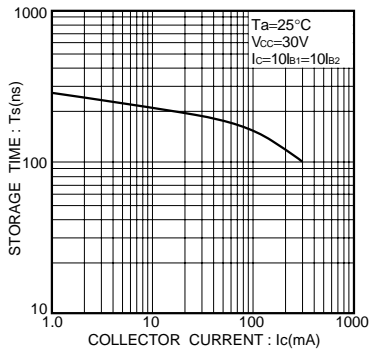


Fig.10 Storage time vs. collector current

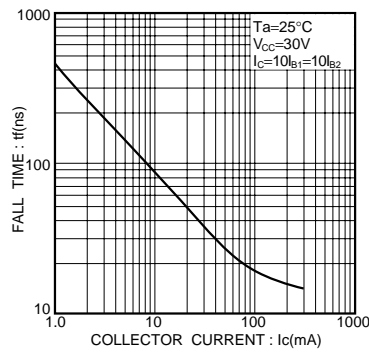


Fig.11 Fall time vs. collector current

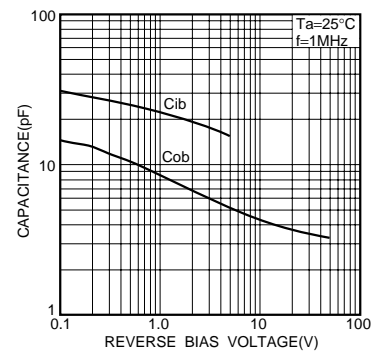


Fig.12 Input / output capacitance vs. voltage

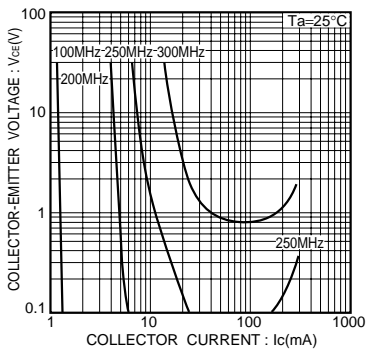


Fig.13 Gain bandwidth product

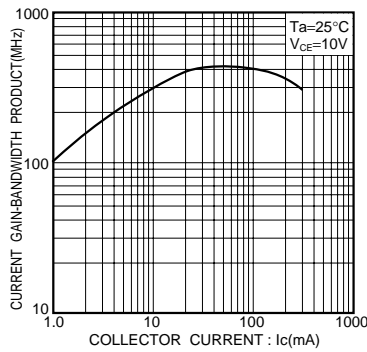


Fig.14 Gain bandwidth product vs. collector current

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