

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

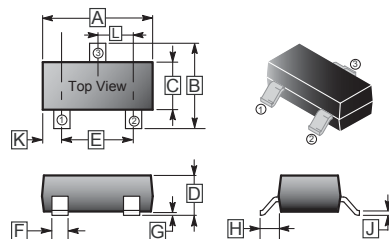
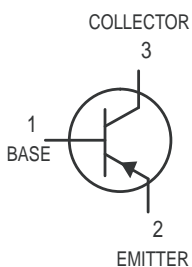
SOT-323

FEATURE

- Complementary NPN Type Available(MMBT2222AW)
- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching

MARKING CODE

MMBT2907AW = K3F, 20



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 1.80 | 2.20 | G | 0.100 | REF. |
| B | 1.80 | 2.45 | H | 0.525 | REF. |
| C | 1.15 | 1.35 | J | 0.08 | 0.25 |
| D | 0.80 | 1.10 | K | - | - |
| E | 1.20 | 1.40 | L | 0.650 | TYP. |
| F | 0.20 | 0.40 | | | |

ABSOLUTE MAXIMUM RATINGS at Ta = 25°C

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-------------------------------|----------------|------------------|------|
| Collector to Base Voltage | V_{CBO} | -60 | V |
| Collector to Emitter Voltage | V_{CEO} | -60 | V |
| Emitter to Base Voltage | V_{EBO} | -5 | V |
| Collector Current | I_C | -600 | mA |
| Total Power Dissipation | P_D | 200 | mW |
| Junction, Storage Temperature | T_J, T_{STG} | +150, -55 ~ +150 | °C |

ELECTRICAL CHARACTERISTICS at Ta = 25°C

| CHARACTERISTIC | TEST CONDITION | SYMBOL | MIN. | MAX. | UNIT |
|--------------------------------------|------------------------------------------|---------------|------|------|------|
| Collector-Base Breakdown Voltage | $I_C = -10\mu A, I_E = 0$ | BV_{CBO} | -60 | | V |
| Collector-Emitter Breakdown Voltage | $I_C = -10 mA, I_B = 0$ | BV_{CEO} | -60 | | V |
| Emitter-Base Breakdown Voltage | $I_E = -10\mu A, I_C = 0$ | BV_{EBO} | -5 | | V |
| Collector Cutoff Current | $V_{CB} = -50V, I_E = 0$ | I_{CBO} | | -100 | nA |
| Collector Cutoff Current | $V_{EB} = -30V, I_B = 0$ | I_{CES} | | -100 | nA |
| Emitter Cutoff Current | $V_{EB} = -3V, I_C = 0$ | I_{EBO} | | -100 | nA |
| DC Current Gain | $V_{CE} = -10V, I_C = -0.1mA$ | h_{FE1} | 75 | | |
| | $V_{CE} = -10V, I_C = -1mA$ | h_{FE2} | 100 | | |
| | $V_{CE} = -10V, I_C = -10mA$ | h_{FE3} | 100 | | |
| | $V_{CE} = -10V, I_C = -150mA$ | h_{FE4} | 100 | 300 | |
| | $V_{CE} = -10V, I_C = -500mA$ | h_{FE5} | 50 | | |
| Collector-emitter Saturation Voltage | $I_C = -150mA, I_B = -15mA$ | $V_{CE(sat)}$ | | -0.4 | V |
| | $I_C = -500mA, I_B = -50mA$ | $V_{CE(sat)}$ | | -1.6 | V |
| Base-Emitter Saturation Voltage | $I_C = -150mA, I_B = -15mA$ | $V_{BE(sat)}$ | -0.6 | -1.3 | V |
| | $I_C = -500mA, I_B = -50mA$ | $V_{BE(sat)}$ | | -2.6 | V |
| Transition Frequency | $V_{CE} = -20V, I_C = -50mA, f = 100MHz$ | f_T | 200 | | MHz |
| Output Capacitance | $V_{CB} = -10V, I_E = 0, f = 0.1MHz$ | C_{obo} | | 8 | pF |
| Input Capacitance | $V_{EB} = -2V, I_C = 0, f = 0.1MHz$ | C_{ib} | | 30 | pF |
| Delay Time | $V_{cc} = -30V, V_{BE(off)} = -1.5V$ | T_d | | 10 | nS |
| Rise Time | $I_C = -150mA, I_{B1} = -15mA$ | T_r | | 40 | nS |
| Storage Time | $V_{cc} = -30V, I_C = -150mA$ | T_s | | 80 | nS |
| Fall Time | $I_{B1} = -I_{B2} = -15mA$ | T_f | | 30 | nS |

CHARACTERISTIC CURVES

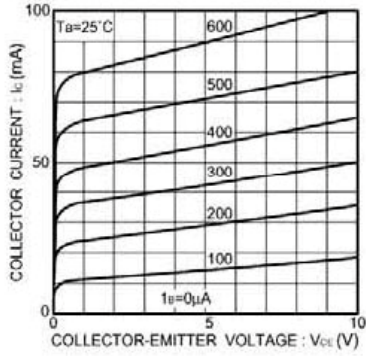


Fig.1 Grounded emitter output characteristics

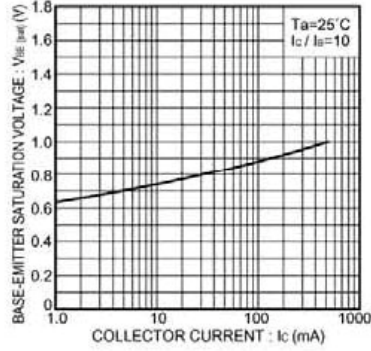


Fig.2 Base-emitter saturation voltage vs. collector current

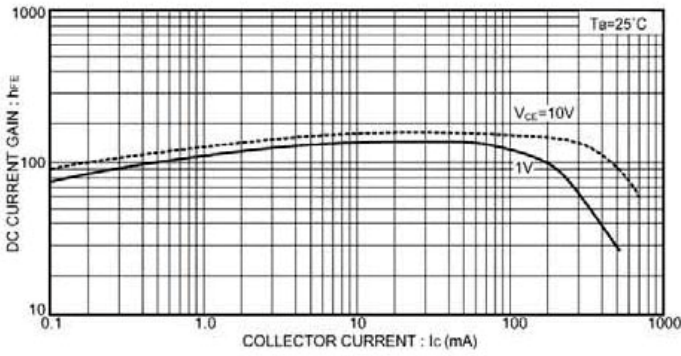


Fig.3 DC current gain vs. collector current (I)

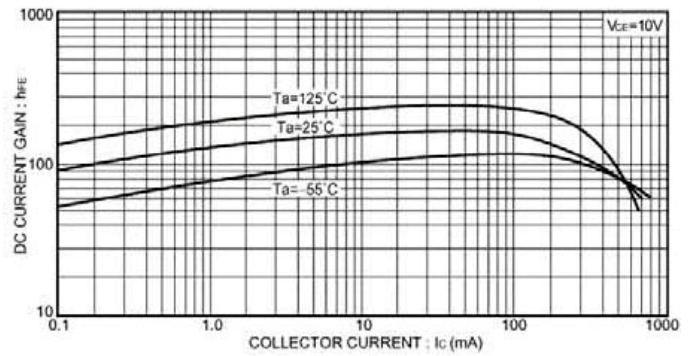


Fig.4 DC current gain vs. collector current (II)

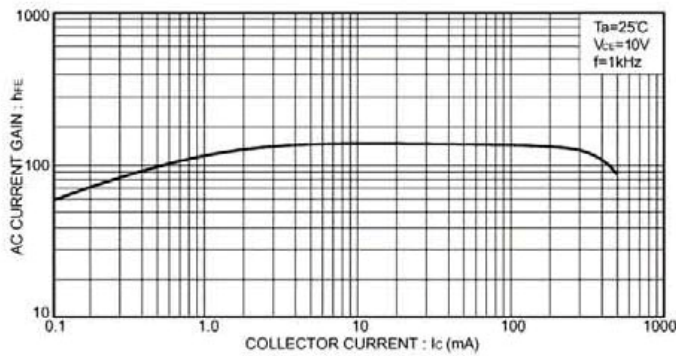


Fig.5 AC current gain vs. collector current

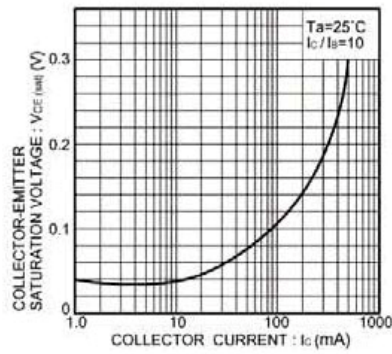


Fig.6 Collector-emitter saturation voltage vs. collector current

CHARACTERISTIC CURVES

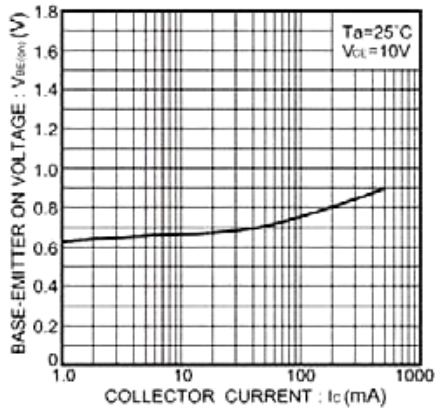


Fig.7 Grounded emitter propagation characteristics

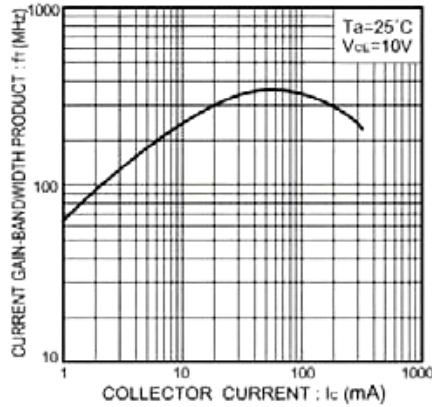


Fig.8 Gain bandwidth product vs. collector current

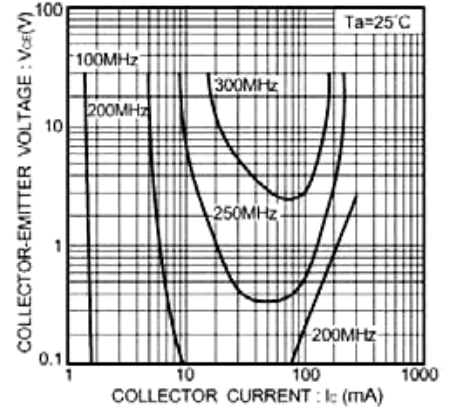


Fig.9 Gain bandwidth product

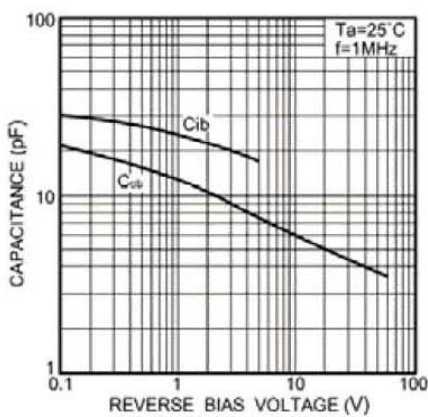


Fig.10 Input/output capacitance vs. voltage

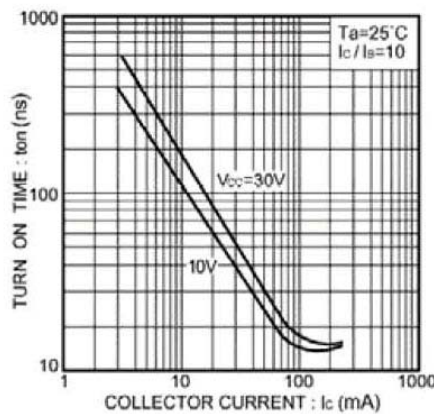


Fig.11 Turn-on time vs. collector current

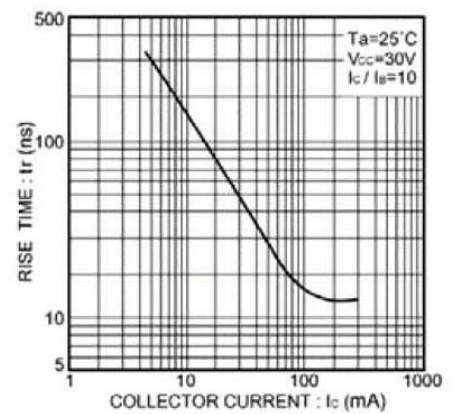


Fig.12 Rise time vs. collector current

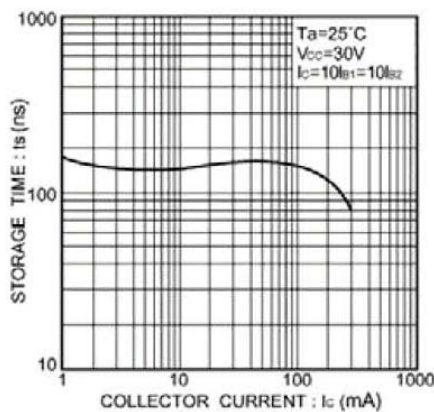


Fig.13 Storage time vs. collector current

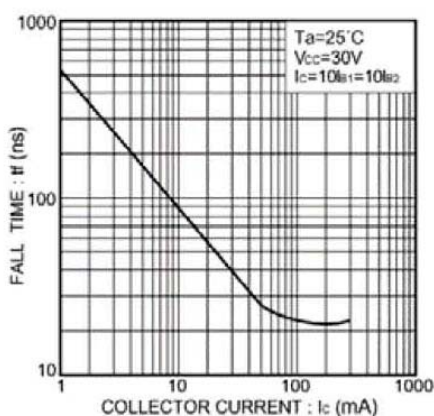


Fig.14 Fall time vs. collector current