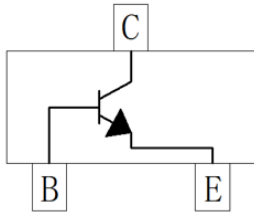


NPN General Purpose Amplifier



SOT-23

Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- High Voltage Transistors NPN Silicon
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- Linear amplification

Mechanical Data

- **Case:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** G1

■ Maximum Ratings (Ta=25°C unless otherwise noted)

| Item | Symbol | Unit | Conditions | Value |
|---|-----------------|------|------------|-------------|
| Collector-Base Voltage | V_{CBO} | V | | 180 |
| Collector-Emitter Voltage | V_{CEO} | V | | 160 |
| Emitter-Base Voltage | V_{EBO} | V | | 6.0 |
| Collector Current -Continuous | I_C | mA | | 600 |
| Total Device Dissipation (*) | P_D | mW | | 300 |
| Thermal Resistance From Junction To Ambient (*) | $R_{\theta JA}$ | °C/W | | 417 |
| Maximum Junction Temperature | T_J | °C | | 150 |
| Storage Temperature | T_{STG} | °C | | -55 to +150 |

(*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch.



MMBT5551Q

■ Electrical Characteristics (Ta=25°C unless otherwise noted)

| Item | Symbol | Unit | Conditions | Min | Max |
|--------------------------------------|---------------|------|--------------------------|-----|-----|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | V | $I_C=100\mu A, I_E=0$ | 180 | |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | V | $I_C=1.0mA, I_B=0$ | 160 | |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | V | $I_E=10\mu A, I_C=0$ | 6.0 | |
| Collector cut-off current | I_{CBO} | nA | $V_{CB}=120V, I_E=0$ | | 50 |
| Emitter cut-off current | I_{EBO} | nA | $V_{EB}=4.0V, I_C=0$ | | 50 |
| DC current gain | h_{FE} | | $V_{CE}=5.0V, I_C=1.0mA$ | 80 | |
| | h_{FE} | | $V_{CE}=5.0V, I_C=10mA$ | 100 | 300 |
| | h_{FE} | | $V_{CE}=5.0V, I_C=50mA$ | 50 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | V | $I_C=50mA, I_B=5.0mA$ | | 0.2 |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | V | $I_C=50mA, I_B=5.0mA$ | | 1.0 |

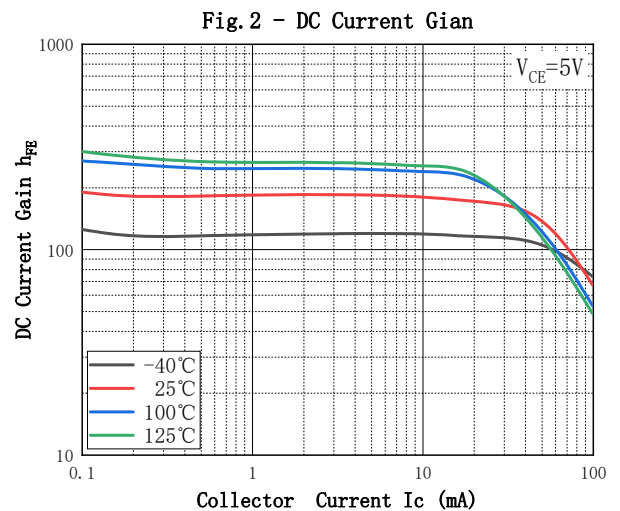
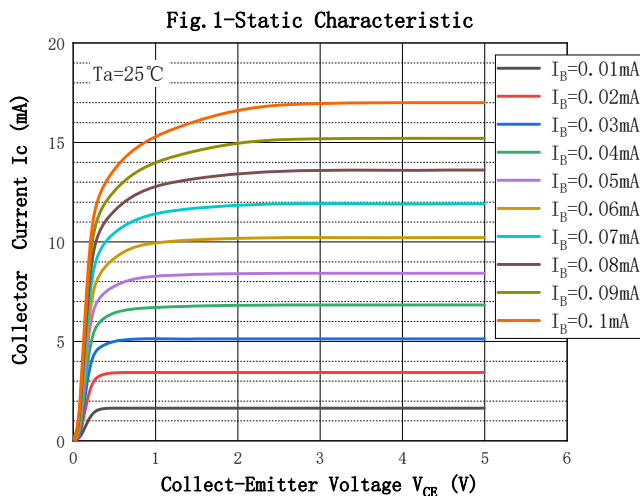
■ Small-signal Characteristics

| Item | Symbol | Unit | Conditions | Min | Max |
|----------------------|--------|------|------------------------------------|-----|-----|
| Transition frequency | f_T | MHz | $V_{CE}=5.0Vdc, I_C=10mA, f=30MHz$ | 100 | 300 |

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|------------------|----------------------|-------------------------|----------------------------|---------------|
| MMBT5551Q | F2 | Approximate 0.01 | 3000 | 30000 | 120000 | 7" reel |

■ Characteristics (Typical)





MMBT5551Q

Fig. 3 - Collect-Emmitter Saturation Voltage

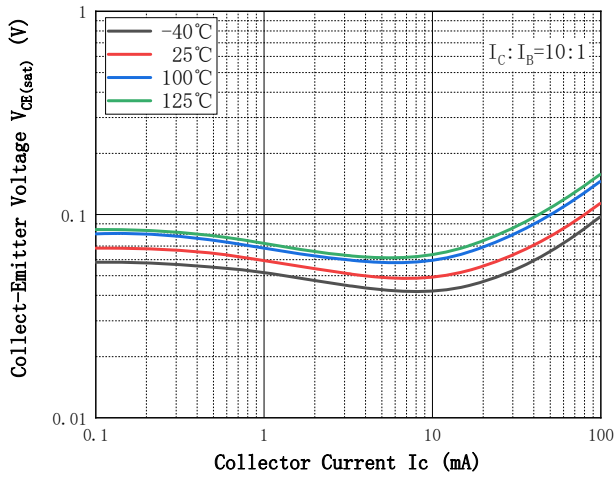


Fig. 4 - Base-Emmitter Voltage

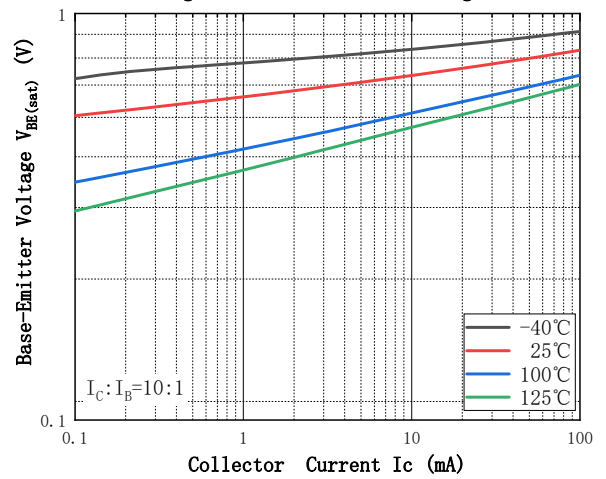


Fig. 5 - Base-Emmitter On Voltage

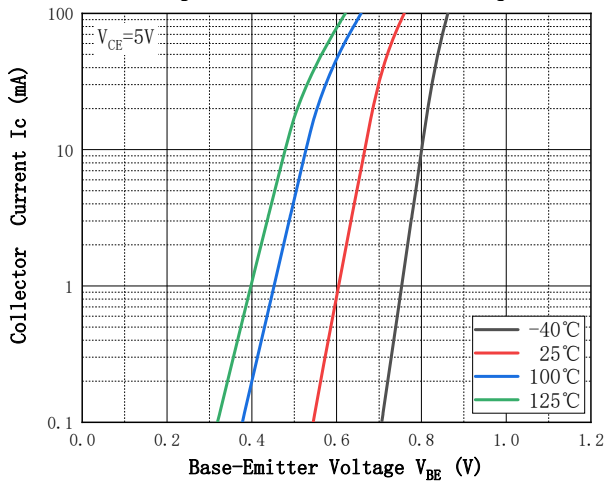
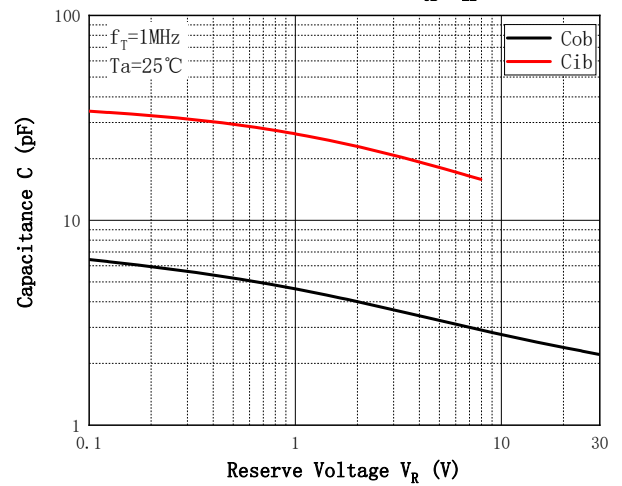
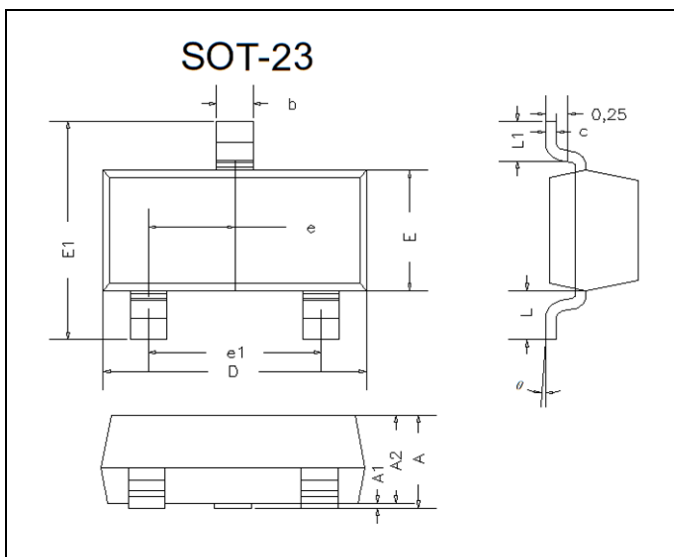


Fig. 6 - Cob/Cib—V_CE/V_BE



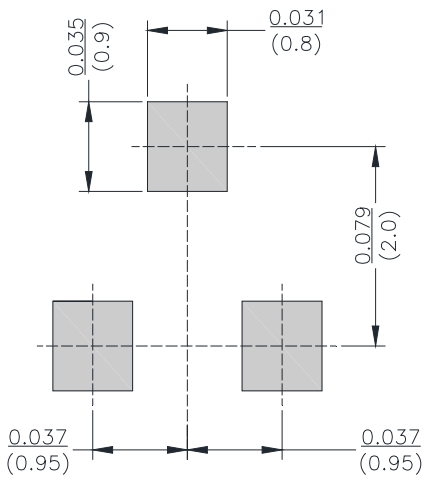
■SOT-23 Package Outline Dimensions



| DIM | INCHES | | MM | | NOTE |
|-----|----------|-------|---------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.035 | 0.045 | 0.90 | 1.15 | |
| A1 | 0.000 | 0.004 | 0.00 | 0.10 | |
| A2 | 0.035 | 0.041 | 0.90 | 1.05 | |
| b | 0.012 | 0.020 | 0.30 | 0.50 | |
| c | 0.004 | 0.008 | 0.10 | 0.20 | |
| D | 0.110 | 0.118 | 2.80 | 3.00 | |
| E | 0.047 | 0.055 | 1.20 | 1.40 | |
| E1 | 0.089 | 0.100 | 2.25 | 2.55 | |
| e | 0.370TYP | | 0.95TYP | | |
| e1 | 0.071 | 0.079 | 1.80 | 2.00 | |
| L | 0.220REF | | 0.55REF | | |
| L1 | 0.012 | 0.020 | 0.30 | 0.50 | |
| θ | 0° | 8° | 0° | 8° | |



■SOT-23 Suggested Pad Layout



Unit: $\frac{\text{inch}}{\text{mm}}$



MMBT5551Q

Disclaimer

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