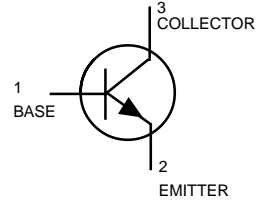
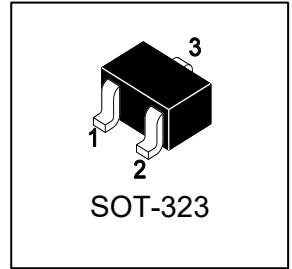


MBT2222AW

S-MBT2222AW

General Purpose Transistors NPN Silicon



1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.

2. DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|-----------|---------|----------------|
| MBT2222AW | P1 | 3000/Tape&Reel |

3. MAXIMUM RATINGS(Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|--------------------------------|------------------|--------|------|
| Collector–Emitter Voltage | V _{CEO} | 40 | V |
| Collector–Base Voltage | V _{CBO} | 75 | V |
| Emitter–Base Voltage | V _{EB0} | 6 | V |
| Collector Current — Continuous | I _C | 600 | mA |

4. THERMAL CHARACTERISTICS

| Parameter | Symbol | Limits | Unit |
|---|-----------------------------------|----------|------|
| Total Device Dissipation, FR-5 Board @ TA = 25°C | PD | 150 | mW |
| Thermal Resistance, Junction–to–Ambient | R _{θJA} | 833 | °C/W |
| Junction and Storage temperature | T _J , T _{stg} | -55~+150 | °C |



5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

| Characteristic | Symbol | Min. | Typ. | Max | Unit |
|---|----------|------|------|------|------|
| Collector–Emitter Breakdown Voltage (IC = 10 mA, IB = 0) | VBR(CEO) | 40 | - | - | V |
| Collector–Base Breakdown Voltage (IC = 10 μA, IE = 0) | VBR(CBO) | 75 | - | - | V |
| Emitter–Base Breakdown Voltage (IE = 10 μA, IC = 0) | VBR(EBO) | 6 | - | - | V |
| Collector Cutoff Current (VCE = 60 V, VBE = 3.0V) | ICEX | - | - | 10 | nA |
| Collector-Emitter cutoff Current (VCE = 40V, IB=0) | ICEO | - | - | 10 | μA |
| Collector Cutoff Current (VCB = 60 V, IE = 0) | ICBO | - | - | 0.01 | μA |
| Emitter Cutoff Current (VBE = 5.0 V, IC = 0) | IEBO | - | - | 50 | nA |
| Base Cutoff Current (VCE = 60 V, VEB = 3.0 V) | IBL | - | - | 20 | nA |

ON CHARACTERISTICS

| | | | | | |
|---|----------|-----|---|-----|---|
| DC Current Gain (IC = 0.1 mA, VCE = 10 V) | HFE | 35 | - | - | |
| (IC = 1.0 mA, VCE = 10 V) | | 50 | - | - | |
| (IC = 10 mA, VCE = 10 V) | | 75 | - | - | |
| (IC = 150 mA, VCE = 10 V) | | 100 | - | 300 | |
| (IC = 500 mA, VCE = 10 V) | | 40 | - | - | |
| Collector–Emitter Saturation Voltage (IC = 150 mA, IB = 15 mA) | VCE(sat) | - | - | 0.3 | V |
| (IC = 500 mA, IB = 50 mA) | | - | - | 1 | |
| Base–Emitter Saturation Voltage (IC = 150 mA, IB = 15 mA) | VBE(sat) | 0.6 | - | 1.2 | V |
| (IC = 500 mA, IB = 50 mA) | | - | - | 2 | |

SMALL–SIGNAL CHARACTERISTICS

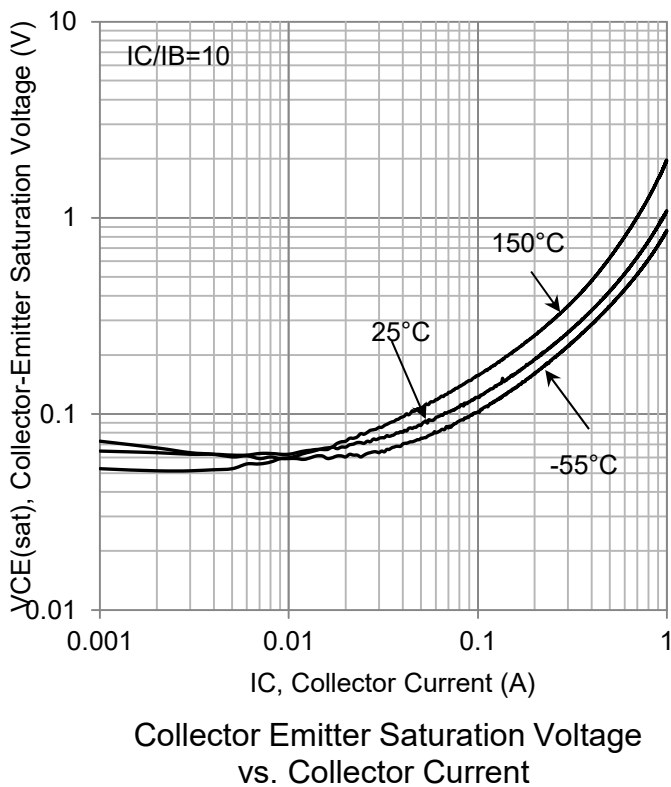
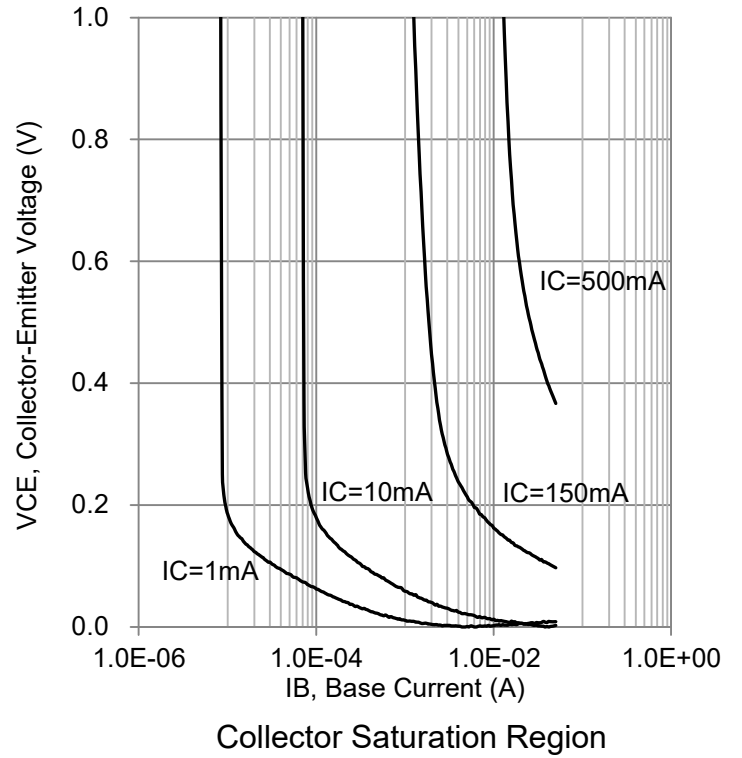
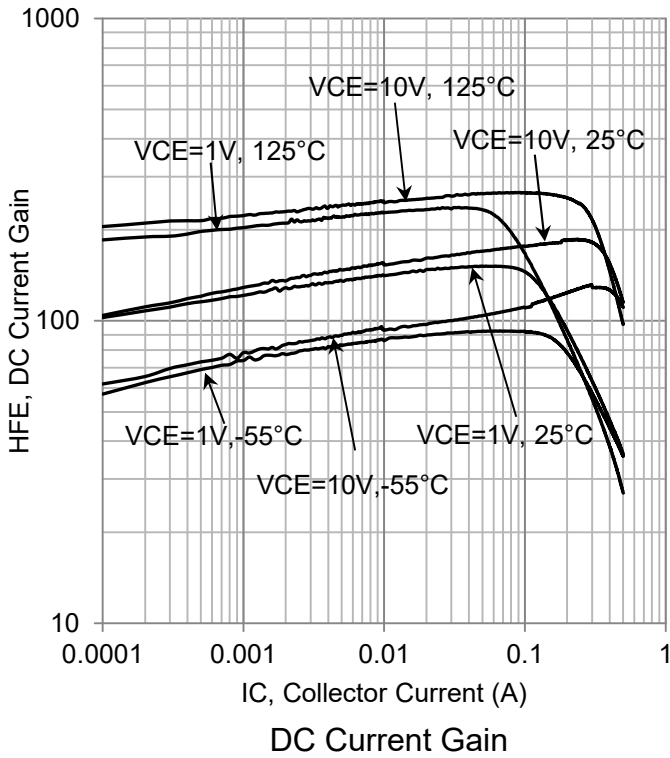
| | | | | | |
|---|------|-----|---|----|-----|
| Current–Gain — Bandwidth Product (IC = 20mA, VCE= 20V, f = 100MHz) | fT | 300 | - | - | MHz |
| Output Capacitance (VCB = 10 V, IE = 0, f = 1.0 MHz) | Cobo | - | - | 8 | pF |
| Input Capacitance (VEB = 0.5 V, IC = 0, f = 1.0 MHz) | Cibo | - | - | 30 | pF |

SWITCHING CHARACTERISTICS

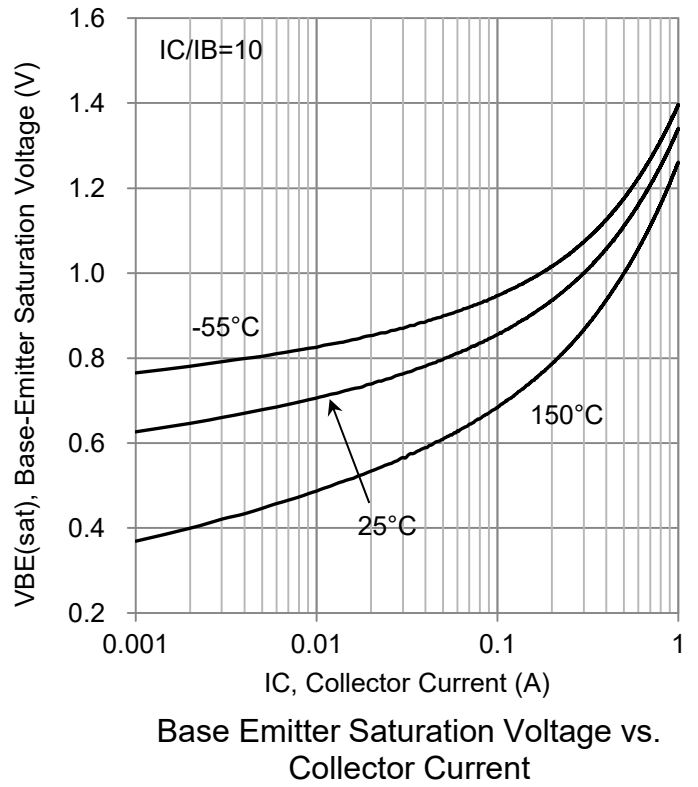
| | | | | | | |
|--------------|--|----|---|---|-----|----|
| Delay Time | (VCC = 30 V, VEB=-0.5V, IC = 150mA, IB1 = 15 mA) | td | - | - | 10 | ns |
| Rise Time | | tr | - | - | 25 | |
| Storage Time | (VCC = 30 V, IC = 150 mA, IB1 = IB2 = 15 mA) | ts | - | - | 225 | |
| Fall Time | | tf | - | - | 60 | |



6.ELECTRICAL CHARACTERISTICS CURVES

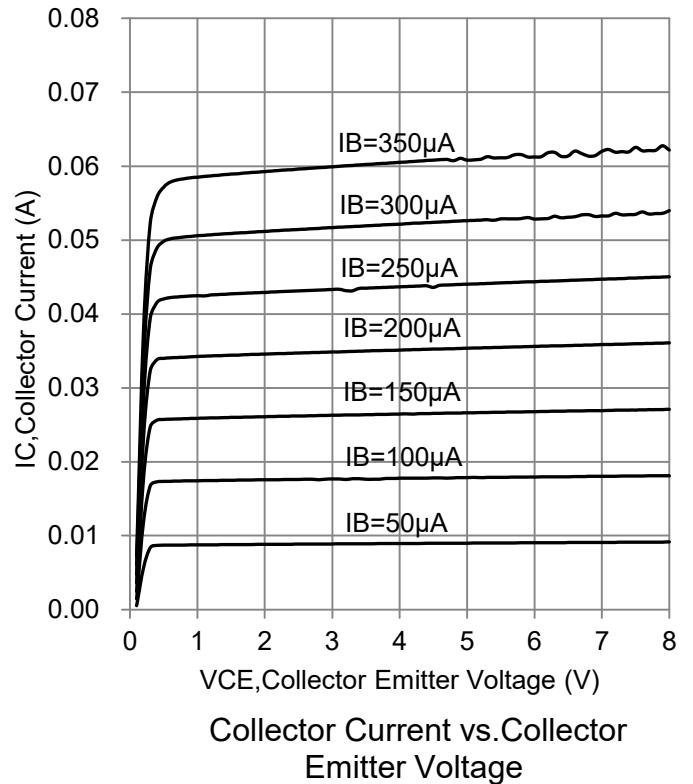
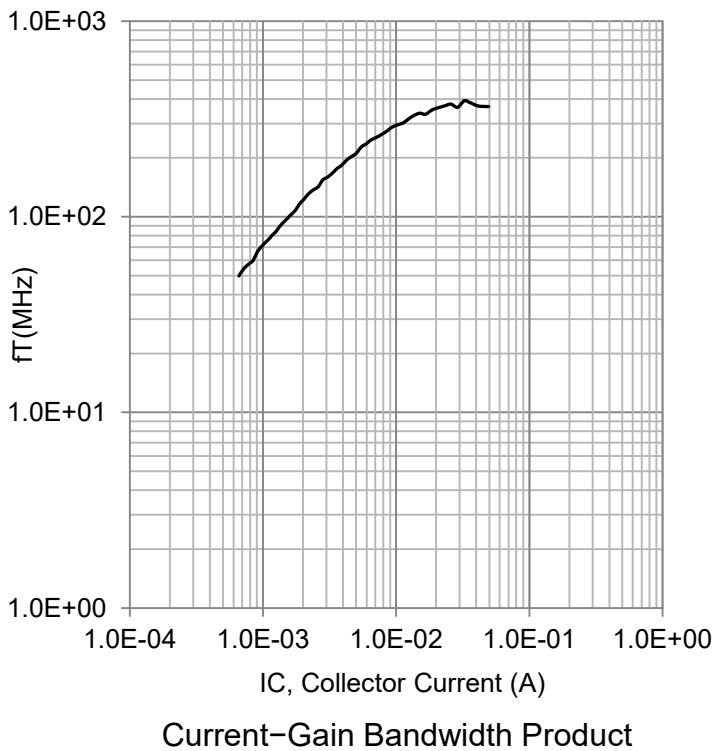
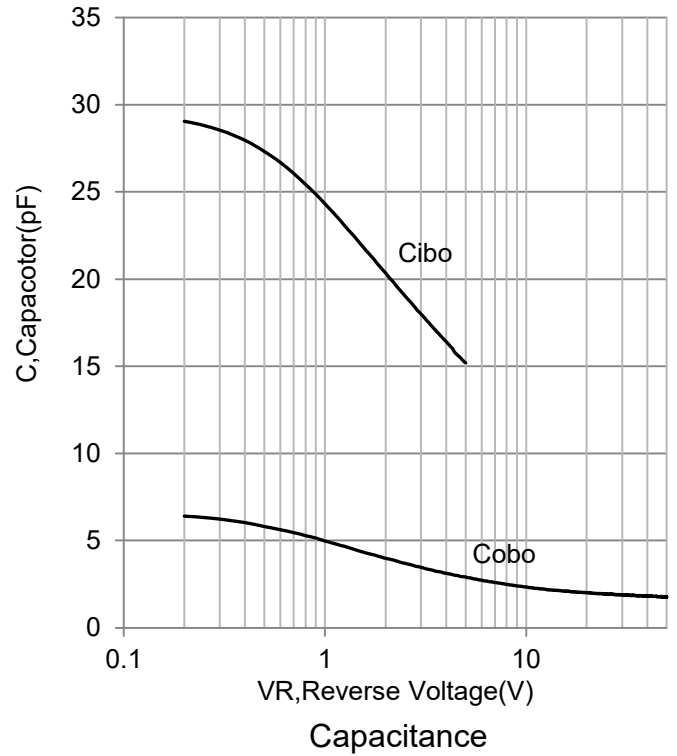
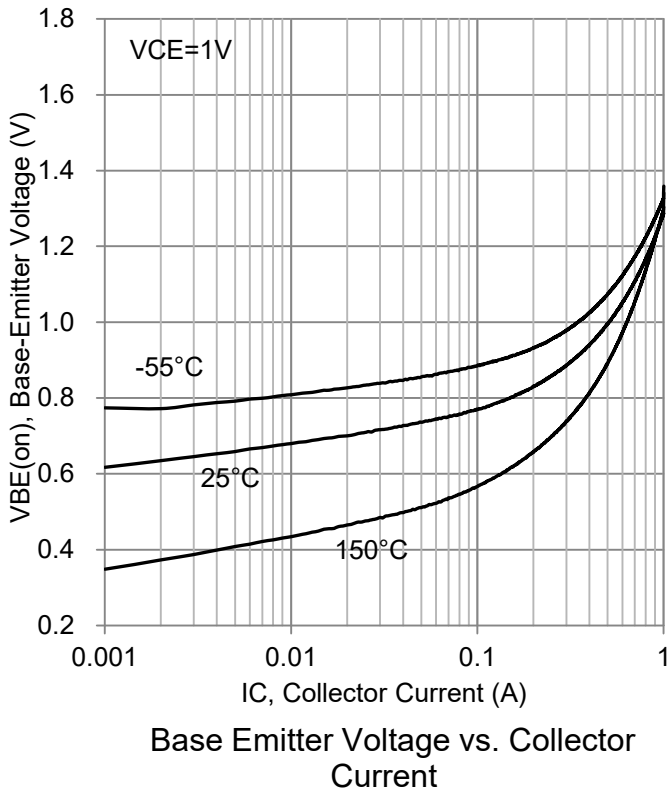


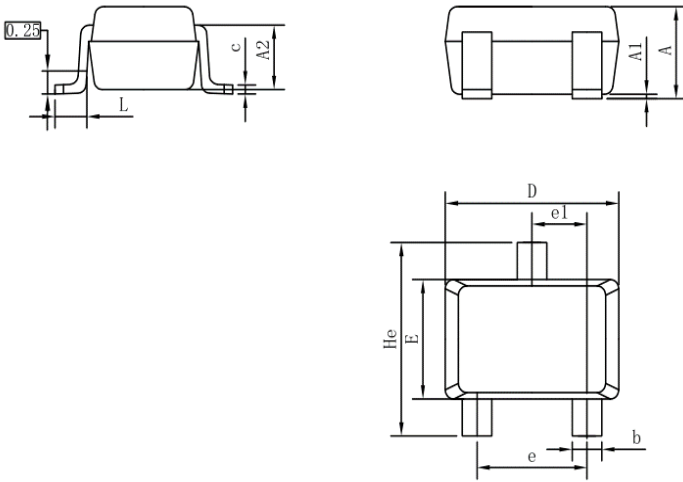
Collector Emitter Saturation Voltage vs. Collector Current



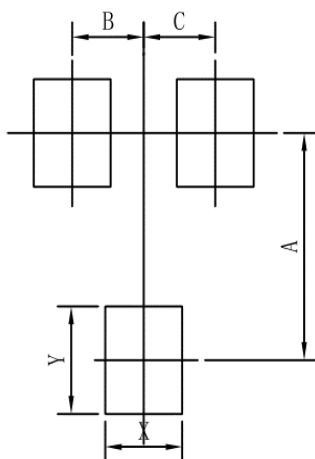
Base Emitter Saturation Voltage vs. Collector Current



6.ELECTRICAL CHARACTERISTICS CURVES(Con.)


7.OUTLINE AND DIMENSIONS


| SOT-323 | | | |
|---------------------|----------|------|------|
| DIM | MIN | NOR | MAX |
| A | 0.80 | 0.95 | 1.00 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 0.7 REF | | |
| b | 0.30 | 0.35 | 0.40 |
| c | 0.10 | 0.15 | 0.25 |
| D | 1.80 | 2.05 | 2.20 |
| E | 1.15 | 1.30 | 1.35 |
| e | 1.20 | 1.30 | 1.40 |
| e1 | 0.65 BSC | | |
| L | 0.20 | 0.35 | 0.56 |
| He | 2.00 | 2.10 | 2.40 |
| ALL Dimension in mm | | | |

8.SOLDERING FOOTPRINT


| SOT-323 | |
|---------|------|
| DIM | MIN |
| A | 1.90 |
| B | 0.65 |
| C | 0.65 |
| X | 0.70 |
| Y | 0.90 |

