# NPN general purpose transistor

## SSTA28 / MMSTA28

### ●Features

1) $BV_{CES}$ < 80V ($I_C$=100μA)

### ●Package, marking and packaging specifications

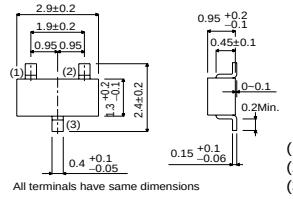
| Part No. | SSTA28 | MMSTA28 |
|---|---|---|
| Packaging type | SST3 | SMT3 |
| Marking | RAT | RAT |
| Code | T116 | T146 |
| Basic ordering unit (pieces) | 3000 | 3000 |

### ●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Collector-base voltage | $V_{CBO}$ | 80 | V |
| Collector-emitter voltage | $V_{CEO}$ | 80 | V |
| Emitter-base voltage | $V_{EBO}$ | 12 | V |
| Collector current | $I_C$ | 0.3 | A |
| Collector power dissipation | $P_C$ | 0.2 | W |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

### ●External dimensions (Unit : mm)

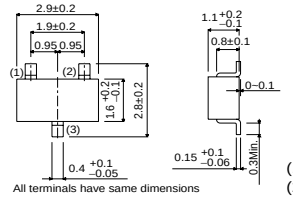
SSTA28




ROHM : SST3
JEDEC : SOT-23
All terminals have same dimensions

(1) Emitter
(2) Base
(3) Collector

MMSTA28




ROHM : SMT3
EIAJ : SC-59
JEDEC : SOT-346
All terminals have same dimensions

(1) Emitter
(2) Base
(3) Collector

### ●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | 80 | – | – | V | $I_C$ = 100μA |
| Collector-emitter breakdown voltage | $BV_{CES}$ | 80 | – | – | V | $I_C$ = 100μA |
| Emitter-base breakdown voltage | $BV_{EBO}$ | 12 | – | – | V | $I_E$ = 10μA |
| Collector cutoff current | $I_{CBO}$ | – | – | 0.1 | μA | $V_{CB}$ = 60V |
| | $I_{EBO}$ | – | – | 0.1 | μA | $V_{EB}$ = 10V |
| | $I_{CES}$ | – | – | 0.5 | μA | $V_{CE}$ = 10V |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ 1 | – | 0.7 | 1.2 | V | $I_C/I_B$ = 10mA/10μA |
| | $V_{CE(sat)}$ 2 | – | 0.8 | 1.5 | V | $I_C/I_B$ = 100mA/0.1mA |
| Base-emitter saturation voltage | $V_{BE(on)}$ | – | 1.4 | 2.0 | V | $V_{CE}/I_B$ = 5V/100mA |
| DC current transfer ratio | $h_{FE}$ | 10000 | – | – | – | $V_{CE}$ = 5V , $I_C$ = 10mA |
| | | 10000 | – | – | | $V_{CE}$ = 5V , $I_C$ = 100mA |
| Transition frequency | $f_T$ | 125 | 200 | – | MHz | $V_{CE}$ = 5V , $I_E$ = 10mA , f = 100MHz |
| Output Capecitance | Cob | – | 5.0 | 8.0 | pF | $V_{CB}$ = 10V , $I_E$ = 0 , f = 1MHz |

**●Electrical characteristic curves**

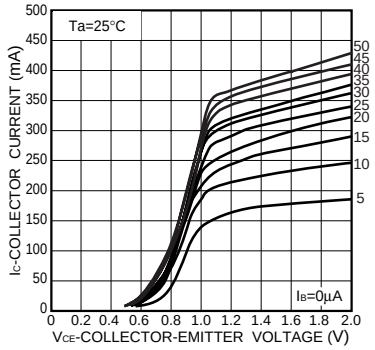



Fig.1 Grounded emitter output characteristics

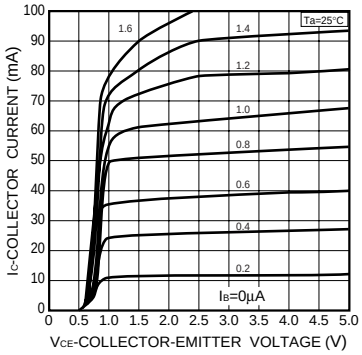



Fig.2 Typical output characteristics

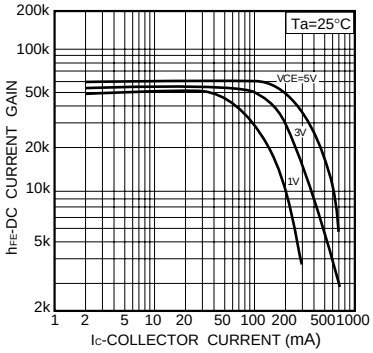



Fig.3 DC current gain vs. collector current ( II )

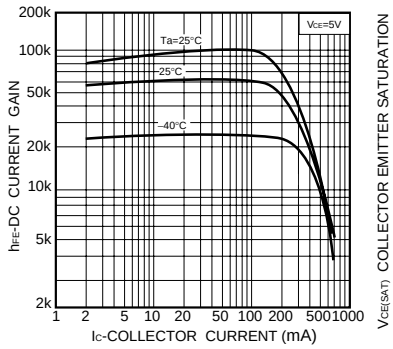



Fig.4 DC current gain vs. collector current

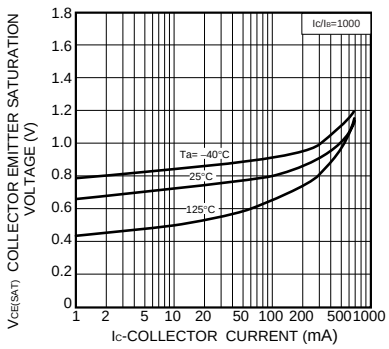



Fig.5 Collecor emitter saturation voltage vs collector current

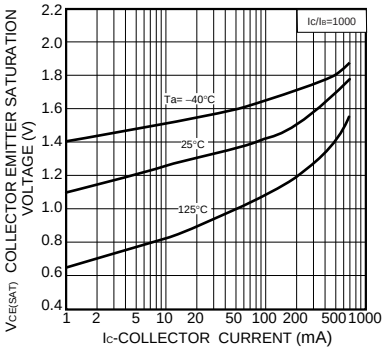



Fig.6 Base emitter saturation voltage vs collector current

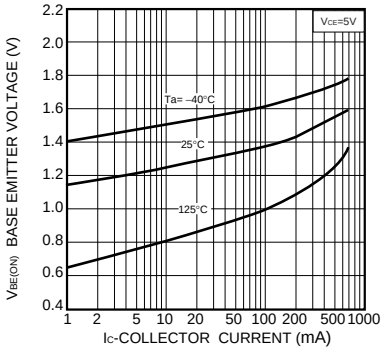



Fig.7 Base emitter "ON" voltage vs collector current

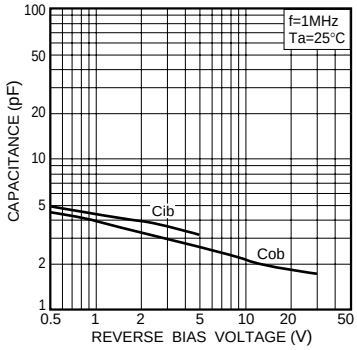



Fig.8 Capacitance vs reverse bias voltage

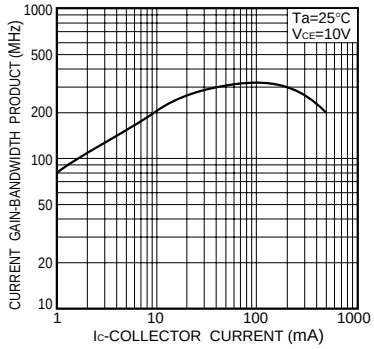



Fig.9 Current gain-bandwdth product vs collector current

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