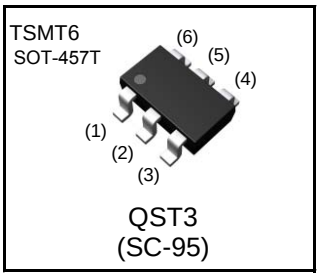
# QST3

**PNP -5A -30V Middle Power Transistor** Datasheet

| Parameter | Value |
|---|---|
| $V_{CEO}$ | −30V |
| $I_C$ | −5A |

## ●Outline

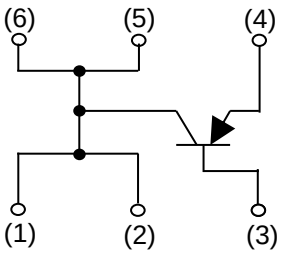



QST3
(SC-95)

## ●Features

1) Suitable for Middle Power Driver
2) Complementary NPN Types : QSX2
3) Low $V_{CE(sat)}$
   $V_{CE(sat)}$= −0.25V(Max.)
   ($I_C$/$I_B$= −2A / −40mA)
4) Lead Free/RoHS Compliant.

## ●Inner circuit




(1) Collector
(2) Collector
(3) Base
(4) Emitter
(5) Collector
(6) Collector

## ●Applications

Motor driver , LED driver
Power supply

## ●Packaging specifications

| Part No. | Package | Package size (mm) | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit (pcs) | Marking |
|---|---|---|---|---|---|---|---|
| QST3 | TSMT6 | 2928 | TR | 180 | 8 | 3,000 | T03 |

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

| Parameter | | Symbol | Values | Unit |
|---|---|---|---|---|
| Collector-base voltage | | $V_{CBO}$ | −30 | V |
| Collector-emitter voltage | | $V_{CEO}$ | −30 | V |
| Emitter-base voltage | | $V_{EBO}$ | −6 | V |
| Collector current | DC | $I_C$ | −5.0 | A |
| | Pulsed | $I_{CP}$ *1 | −8.0 | A |
| Power dissipation | | $P_D$ *2 | 500 | mW |
| | | $P_D$ *3 | 1.25 | W |
| Junction temperature | | $T_j$ | 150 | °C |
| Range of storage temperature | | $T_{stg}$ | −55 to +150 | °C |

*1 Pw=1ms , single pulse

*2 Each terminal mounted on a reference land

*3 Mounted on a ceramic board (25×25×0.8 mm)

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

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Collector-emitter breakdown voltage | $BV_{CEO}$ | $I_C$ = −1mA | −30 | - | - | V |
| Collector-base breakdown voltage | $BV_{CBO}$ | $I_C$ = −10μA | −30 | - | - | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$ = −10μA | −6 | - | - | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = −30V | - | - | −100 | nA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = −6V | - | - | −100 | nA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = −2A, $I_B$ = −40mA | - | −170 | −250 | mV |
| DC current gain | $h_{FE}$ | $V_{CE}$ = −2V, $I_C$ = −500mA | 270 | - | 680 | - |
| Transition frequency | $f_T$ | $V_{CE}$ = −2V, $I_E$ = 500mA f=100MHz | - | 200 | - | MHz |
| Output capacitance | $C_{ob}$ | $V_{CB}$ = −10V, $I_E$ = 0A f = 1MHz | - | 60 | - | pF |

## ●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

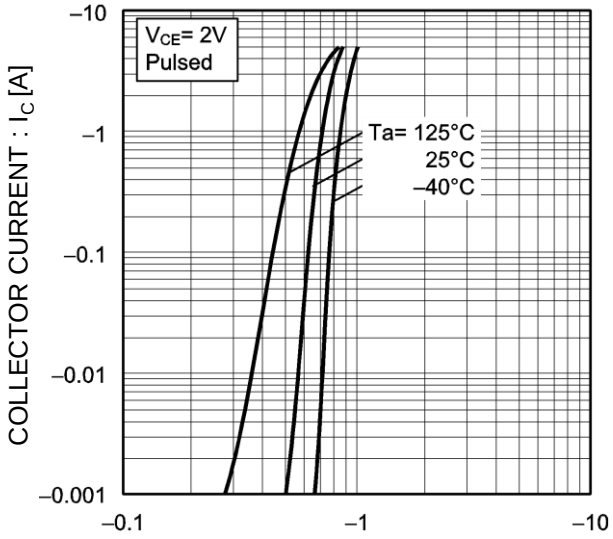



Fig.2 Typical Output Characteristics

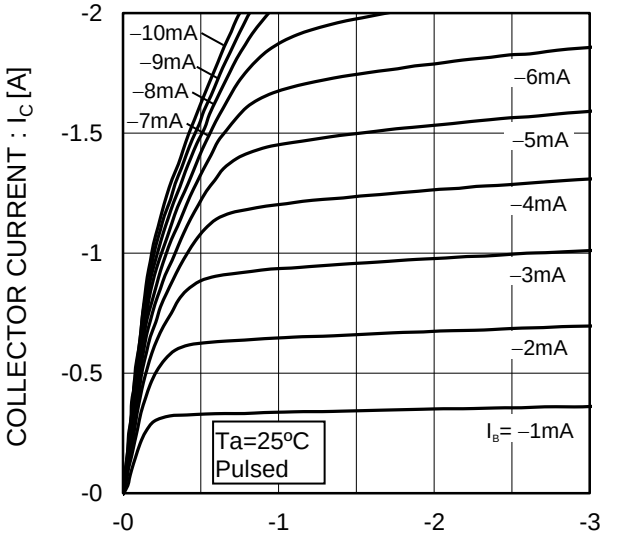



Fig.3 DC Current Gain vs. Collector Current(I)

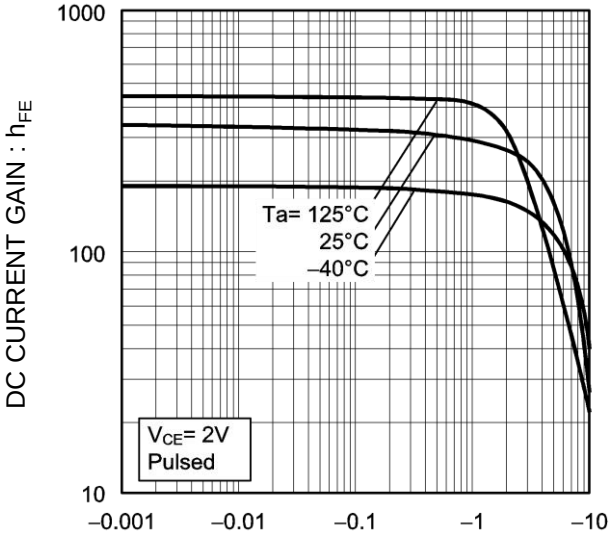
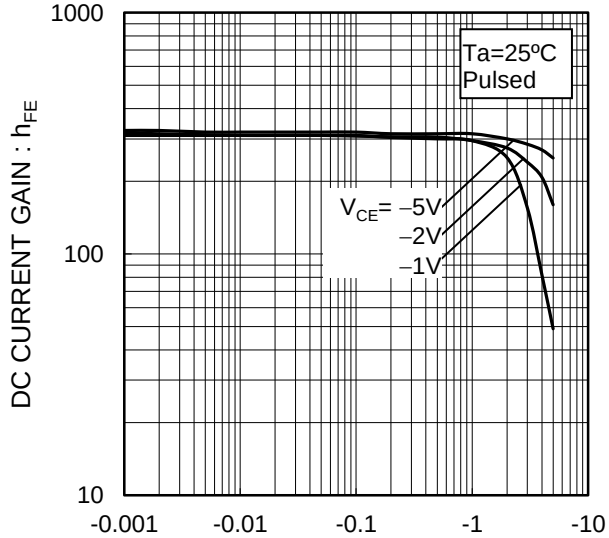



Fig.4 DC Current Gain vs. Collector Current(II)



## ●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

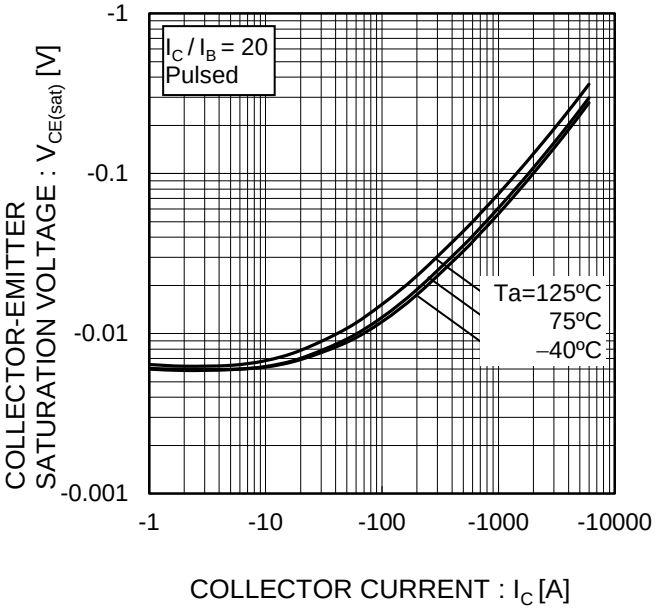



Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

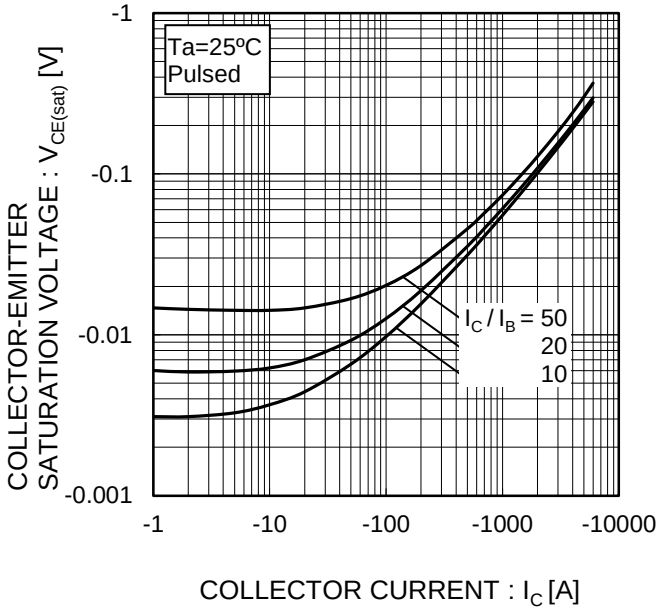



Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

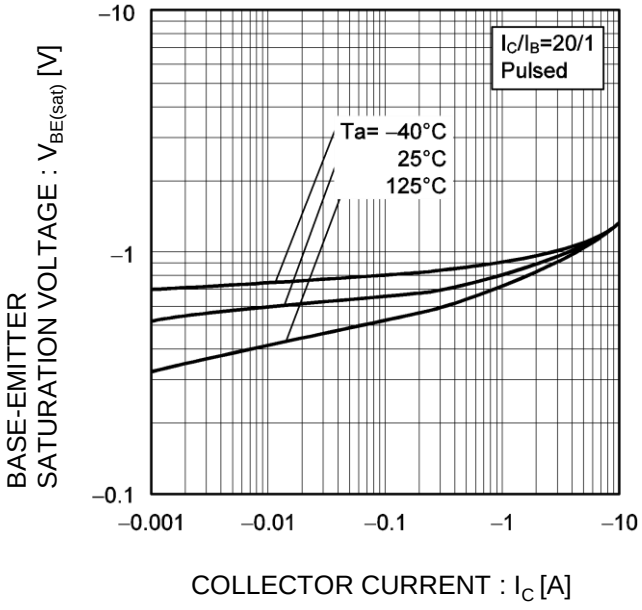
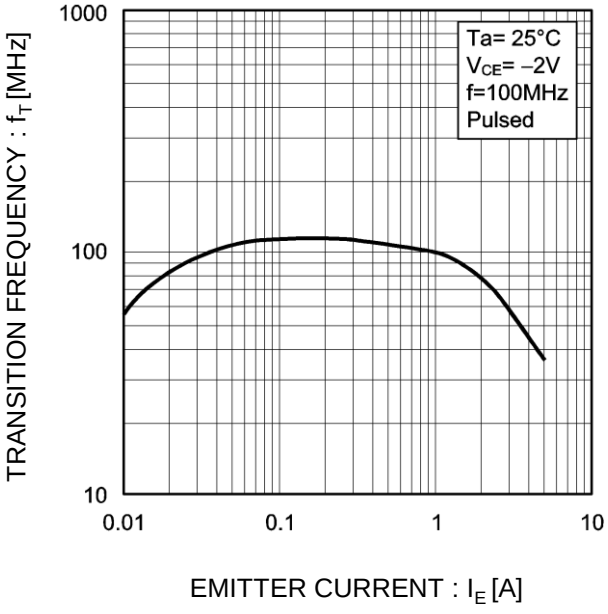



Fig.8 Gain Bandwidth Product vs. Emitter Current



## ●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

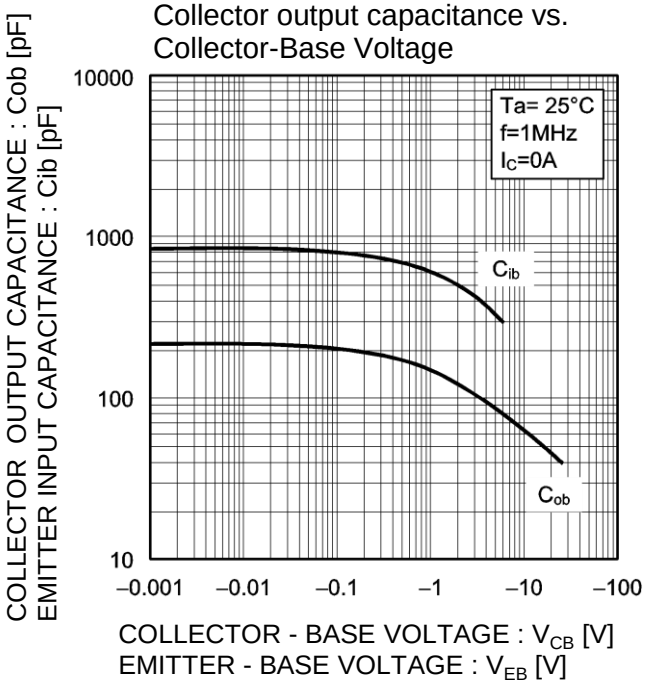
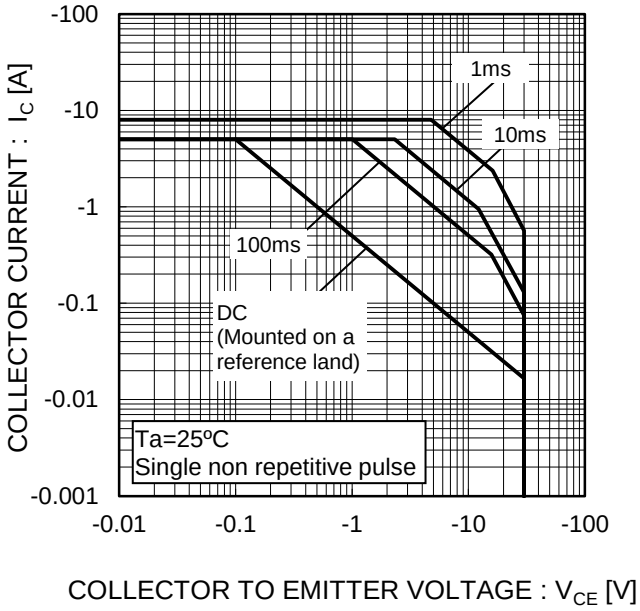
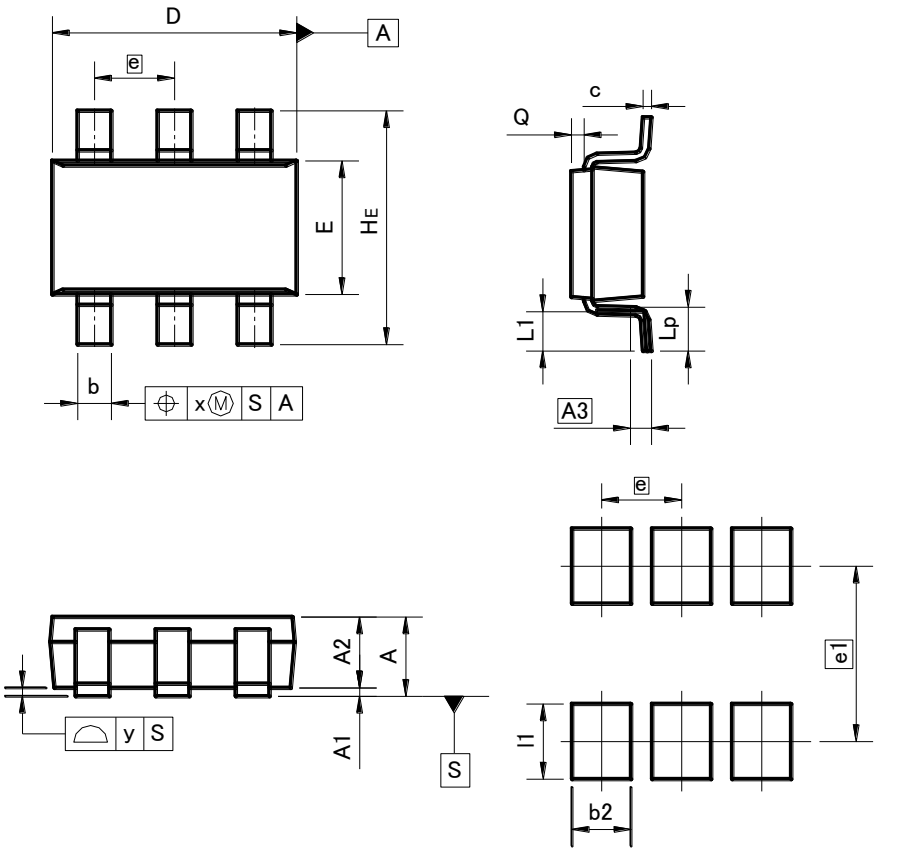



Fig.10 Safe Operating Area



●**Dimensions** (Unit : mm)

**TSMT6**




Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | – | 1.00 | – | 0.039 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.75 | 0.95 | 0.030 | 0.037 |
| A3 | 0.25 | | 0.010 | |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.10 | 0.26 | 0.004 | 0.010 |
| D | 2.80 | 3.00 | 0.110 | 0.118 |
| E | 1.50 | 1.80 | 0.059 | 0.071 |
| e | 0.95 | | 0.037 | |
| HE | 2.60 | 3.00 | 0.102 | 0.118 |
| L1 | 0.30 | 0.60 | 0.012 | 0.024 |
| Lp | 0.40 | 0.70 | 0.016 | 0.028 |
| Q | 0.05 | 0.25 | 0.002 | 0.010 |
| x | – | 0.20 | – | 0.008 |
| y | – | 0.10 | – | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | | 0.70 | – | 0.028 |
| e1 | 2.10 | | 0.083 | |
| l1 | – | 0.90 | – | 0.035 |

Dimension in mm / inches

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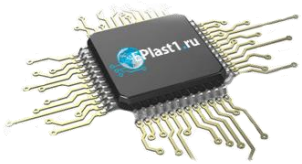


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