

# FUJITSU MICROELECTRONICS

2SC2356

3749762 FUJITSU MICROELECTRONICS

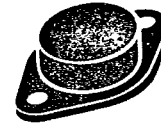
37C 01751

## SILICON HIGH SPEED TRIPLE DIFFUSED NPN POWER TRANSISTOR 10 AMP, 400 VOLT

T-33-13

### ABSOLUTE MAXIMUM RATINGS

| Ratings   | Symbol    | Value    | Unit             |
|---|-----------|----------|------------------|
| Collector-Base Voltage                                    | $V_{CBO}$ | 500      | V                |
| Emitter-Base Voltage                                      | $V_{EBO}$ | 7        | V                |
| Collector-Emitter Voltage                                 | $V_{CEO}$ | 400      | V                |
| Collector Current-Continuous                              | $I_C$     | 10       | A                |
| Base Current-Continuous                                   | $I_B$     | 3        | A                |
| Collector Power Dissipation<br>( $T_c=25^\circ\text{C}$ ) | $P_C$     | 100      | W                |
| Junction Temperature                                      | $T_j$     | 175      | $^\circ\text{C}$ |
| Storage Temperature Range                                 | $T_{stg}$ | -65~+175 | $^\circ\text{C}$ |



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

| Characteristics                      | Symbol         | Test Conditions   | Limits |      |      | Unit          |
|--------------------------------------|----------------|---|--------|------|------|---------------|
|                                      |                |   | MIN.   | TYP. | MAX. |               |
| Collector Cutoff Current             | $I_{CBO}$      | $V_{CB}=500\text{V}, I_E=0$   | —      | —    | 100  | $\mu\text{A}$ |
| Emitter Cutoff Current               | $I_{EBO}$      | $V_{EB}=7\text{V}, I_C=0$   | —      | —    | 100  | $\mu\text{A}$ |
| Collector Cutoff Current             | $I_{CEO}$      | $V_{CE}=320\text{V}, I_B=0$   | —      | —    | 500  | $\mu\text{A}$ |
| Collector-Base Breakdown Voltage     | $V_{CBO}$      | $I_C=100\mu\text{A}, I_E=0$   | 500    | —    | —    | V             |
| Emitter-Base Breakdown Voltage       | $V_{EBO}$      | $I_E=100\mu\text{A}, I_C=0$   | 7      | —    | —    | V             |
| Collector-Emitter Breakdown Voltage  | $V_{CEO}$      | $I_C=10\text{mA}, R_{BE}=\infty$                                      | 400    | —    | —    | V             |
| Collector-Emitter Breakdown Voltage  | $V_{CEO(SUS)}$ | $I_C=200\text{mA}, R_{BE}=\infty$                                     | 400    | —    | —    | V             |
| DC Current Gain                      | $h_{FE}$       | $V_{CE}=5\text{V}, I_C=5\text{A}^*$                                   | 10     | 20   | 50   | —             |
| Output Capacitance                   | $C_{ob}$       | $V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$                             | —      | 160  | —    | pF            |
| Collector-Emitter Saturation Voltage | $V_{CE(Sat)}$  | $I_C=5\text{A}, I_B=1\text{A}^*$                                      | —      | 0.3  | 0.7  | V             |
| Base-Emitter Saturation Voltage      | $V_{BE(Sat)}$  |   | —      | 1.0  | 1.5  | V             |
| Gain-Bandwidth Product               | fT             | $V_{CE}=10\text{V}, I_E=1\text{A}$                                    | —      | 20   | —    | MHz           |
| Rise Time                            | tr             | $I_C=7.5\text{A}, V_{CC}=150\text{V}$<br>$I_{B1}=-I_{B2}=1.5\text{A}$ | —      | 0.4  | 1.0  | $\mu\text{S}$ |
| Storage Time                         | tstg           |   | —      | 1.6  | 3.0  | $\mu\text{S}$ |
| Fall Time                            | tf             |   | —      | 0.5  | 1.2  | $\mu\text{S}$ |

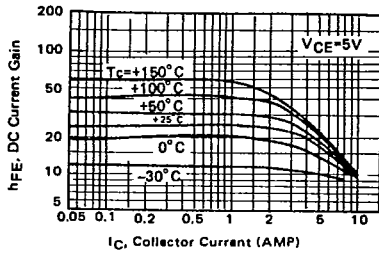
\* pulsed: pulse width  $\leq 300\mu\text{S}$ , Duty cycle  $\leq 2\%$ 

PACKAGE TYPE: TO-3 See page 5-23 for dimensions.

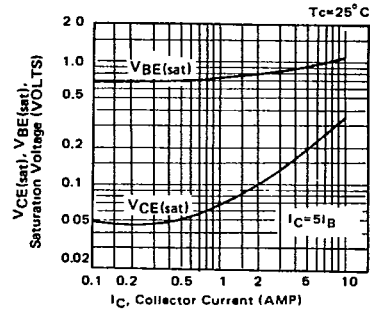
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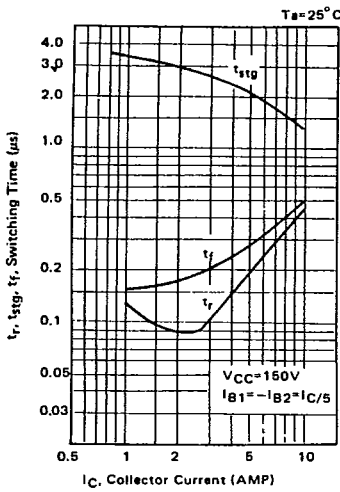
DC CURRENT GAIN



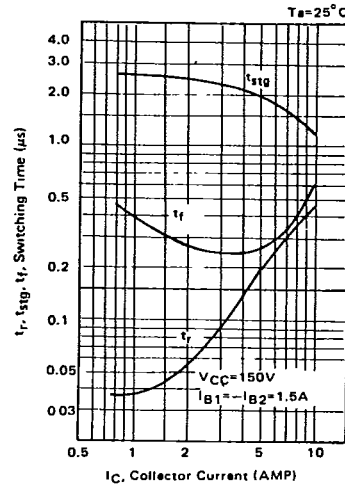
SATURATION VOLTAGE



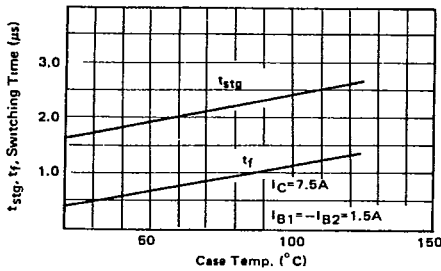
SWITCHING TIME



SWITCHING TIME (with constant base drive)



SWITCHING TIME



SAFE OPERATING AREAS

