

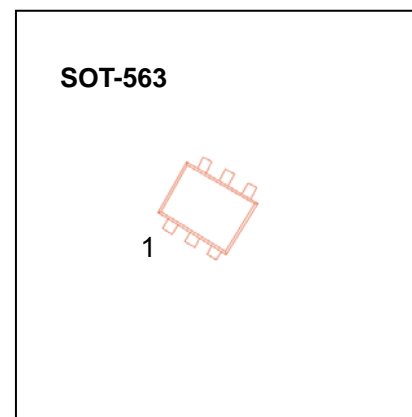
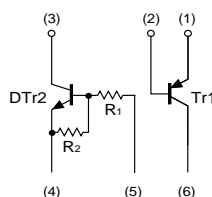
## General purpose transistors (dual transistors)

### FEATURES

- 2SA2018 and DTC144E are housed independently in a package.
- Mounting possible with SOT-563 automatic mounting machines.
- Transistor elements are independent, eliminating interference.
- Mounting cost and area be cut in half.

### Marking: F5

Equivalent circuit



### Tr1 Absolute maximum ratings (Ta=25°C)

| Symbol           | Parameter                   | Value   | Units |
|------------------|-----------------------------|---------|-------|
| V <sub>CBO</sub> | Collector-Base Voltage      | -15     | V     |
| V <sub>CEO</sub> | Collector-Emitter Voltage   | -12     | V     |
| V <sub>EBO</sub> | Emitter-Base Voltage        | -6      | V     |
| I <sub>C</sub>   | Collector Current           | -500    | mA    |
| P <sub>C</sub>   | Collector Power Dissipation | 150     | mW    |
| T <sub>J</sub>   | Junction Temperature        | 150     | °C    |
| T <sub>stg</sub> | Storage Temperature         | -55-150 | °C    |

### ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter                            | Symbol               | Test conditions                                       | Min | Typ | Max   | Unit |
|--------------------------------------|----------------------|---|-----|-----|-------|------|
| Collector-base breakdown voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =-10μA, I <sub>E</sub> =0              | -15 |     |       | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =-1mA, I <sub>B</sub> =0               | -12 |     |       | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =-10μA, I <sub>C</sub> =0              | -6  |     |       | V    |
| Collector cut-off current            | I <sub>CBO</sub>     | V <sub>CB</sub> =-15V, I <sub>E</sub> =0              |     |     | -0.1  | μA   |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> =-6V, I <sub>C</sub> =0               |     |     | -0.1  | μA   |
| DC current gain                      | h <sub>FE</sub>      | V <sub>CE</sub> =-2V, I <sub>C</sub> =-10mA           | 270 |     | 680   |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA         |     |     | -0.25 | V    |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> =-2V, I <sub>E</sub> =-10mA, f=100MHz |     | 260 |       | MHz  |
| Collector output capacitance         | C <sub>ob</sub>      | V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz      |     | 6.5 |       | pF   |

**Tr2 Absolute maximum ratings(Ta=25°C)**

| Parameter            | Symbol       | Limits  | Unit |
|----------------------|--------------|---------|------|
| Supply voltage       | $V_{CC}$     | 50      | V    |
| Input voltage        | $V_{IN}$     | -10~+40 | V    |
| Output current       | $I_o$        | 30      | mA   |
|                      | $I_{C(MAX)}$ | 100     |      |
| Power dissipation    | $P_d$        | 150     | mW   |
| Junction temperature | $T_j$        | 150     | °C   |
| Storage temperature  | $T_{stg}$    | -55~150 | °C   |

**Electrical characteristics (Ta=25°C)**

| Parameter            | Symbol       | Min. | Typ | Max. | Unit       | Conditions                       |
|----------------------|--------------|------|-----|------|------------|----------------------------------|
| Input voltage        | $V_{I(off)}$ |      |     | 0.5  | V          | $V_{CC}=5V, I_o=100\mu A$        |
|                      | $V_{I(on)}$  | 3.0  |     |      |            | $V_o=0.3V, I_o=2mA$              |
| Output voltage       | $V_{O(on)}$  |      | 0.1 | 0.3  | V          | $I_o/I_i=10mA/0.5mA$             |
| Input current        | $I_i$        |      |     | 0.18 | mA         | $V_i=5V$                         |
| Output current       | $I_{O(off)}$ |      |     | 0.5  | $\mu A$    | $V_{CC}=50V, V_i=0$              |
| DC current gain      | $G_i$        | 68   |     |      |            | $V_o=5V, I_o=5mA$                |
| Input resistance     | $R_1$        | 32.9 | 47  | 61.1 | K $\Omega$ | -                                |
| Resistance ratio     | $R_2/R_1$    | 0.8  | 1   | 1.2  |            | -                                |
| Transition frequency | $f_T$        |      | 250 |      | MHz        | $V_{CE}=10V, I_E=-5mA, f=100MHz$ |