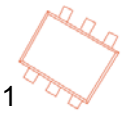
# General purpose transistors (dual transistors)

**FEATURES**

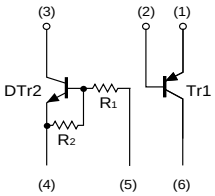
- 2SA2018 and DTC144E are housed independently in a package.
- Mounting possible with SOT-563 automatic mounting machines.
- Transistor elements are independent, eliminating interference.
- Mounting cost and area be cut in half.

**SOT-563**




**Marking: F5**

Equivalent circuit




**Tr1 Absolute maximum ratings (Ta=25℃)**

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | -15 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | -12 | V |
| $V_{EBO}$ | Emitter-Base Voltage | -6 | V |
| $I_C$ | Collector Current | -500 | mA |
| $P_C$ | Collector Power Dissipation | 150 | mW |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature | -55-150 | ℃ |

**ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)**

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Collector-base breakdown voltage** | $V_{(BR)CBO}$ | $I_C$=-10μA, $I_E$=0 | -15 | | | V |
| **Collector-emitter breakdown voltage** | $V_{(BR)CEO}$ | $I_C$=-1mA, $I_B$=0 | -12 | | | V |
| **Emitter-base breakdown voltage** | $V_{(BR)EBO}$ | $I_E$=-10μA, $I_C$=0 | -6 | | | V |
| **Collector cut-off current** | $I_{CBO}$ | $V_{CB}$=-15V, $I_E$=0 | | | -0.1 | μA |
| **Emitter cut-off current** | $I_{EBO}$ | $V_{EB}$=-6V, $I_C$=0 | | | -0.1 | μA |
| **DC current gain** | $h_{FE}$ | $V_{CE}$=-2V, $I_C$=-10mA | 270 | | 680 | |
| **Collector-emitter saturation voltage** | $V_{CE(sat)}$ | $I_C$=-200mA, $I_B$=-10mA | | | -0.25 | V |
| **Transition frequency** | $f_T$ | $V_{CE}$=-2V, $I_E$=-10mA, f=100MHz | | 260 | | MHz |
| **Collector output capacitance** | $C_{ob}$ | $V_{CB}$=-10V, $I_E$=0, f=1MHz | | 6.5 | | pF |

### Tr2 Absolute maximum ratings(Ta=25℃)

| 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** | Pd | 150 | mW |
| **Junction temperature** | Tj | 150 | ℃ |
| **Storage temperature** | Tstg | -55~150 | ℃ |

### Electrical characteristics (Ta=25℃)

| Parameter | Symbol | Min. | Typ | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|
| **Input voltage** | $V_{I(off)}$ | | | 0.5 | V | $V_{CC}$=5V, $I_O$=100μA |
| | $V_{I(on)}$ | 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 | μA | $V_{CC}$=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 | KΩ | - |
| **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 |