

Digital transistors (built-in resistors)

DTC363EU / DTC363EK / DTC363ES

●Features

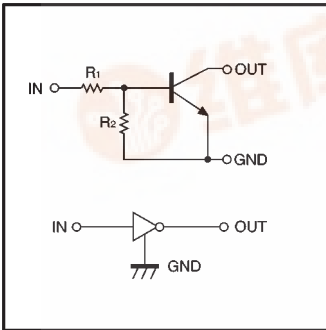
In addition to the features of regular digital transistors,

- 1) Low $V_{O(on)}$ makes these transistors optimal for muting circuits.
 $V_{O(on)} = 40\text{mV}$ (Typ.)
 $(I_o/I_i = 50\text{mA}/2.5\text{mA})$
- 2) They can be used at high current ($I_c = 600\text{mA}$).

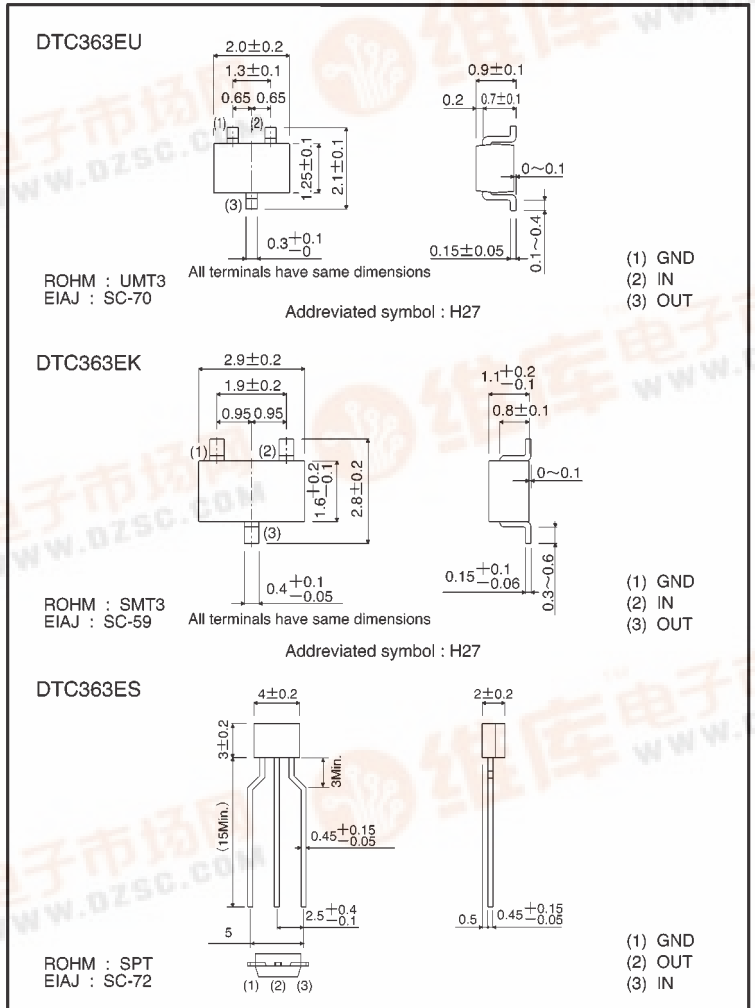
●Structure

NPN digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Units: mm)



Transistors

DTC363EU / DTC363EK / DTC363ES

● Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits(DTC363E□) | | | Unit |
|----------------------|------------------|------------------|-----|---|------|
| | | U | K | S | |
| Supply voltage | V _{CC} | 20 | | | V |
| Input voltage | V _{IN} | -10~+10 | | | V |
| Output current | I _c | 600 | | | mA |
| Power dissipation | P _d | 200 | 300 | | 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 μA |
| | V _{I(on)} | 2 | — | — | | V _o =0.3V, I _o =10mA |
| Output voltage | V _{O(on)} | — | 40 | 80 | mV | I _o /I _i =50mA/2.5mA |
| Input current | I _i | — | — | 1.3 | mA | V _i =5V |
| Output current | I _{o(off)} | — | — | 0.5 | μA | V _{CC} =15V, V _i =0V |
| DC current gain | G _i | 70 | — | — | — | V _o =5V, I _o =50mA |
| Input resistance | R _i | 4.76 | 6.8 | 8.84 | kΩ | — |
| Resistance ratio | R ₂ /R ₁ | 0.8 | 1 | 1.2 | — | — |
| Transition frequency | f _T | — | 200 | — | MHz | V _{CE} =10V, I _E =-50mA, f=100MHz * |
| Output "ON" resistance | R _{on} | — | 1.1 | — | Ω | V _i =7V, R _L =1kΩ, f=1kHz |

* Transition frequency of the device

● Packaging specifications

| Part No. | Package | UMT3 | SMT3 | SPT |
|----------|------------------------------|--------|--------|--------|
| | Packaging type | Taping | Taping | Taping |
| | Code | T106 | T146 | TP |
| | Basic ordering unit (pieces) | 3000 | 3000 | 5000 |
| DTC363EU | | ○ | — | — |
| DTC363EK | | — | ○ | — |
| DTC363ES | | — | — | ○ |

● R_{on} measurement circuit

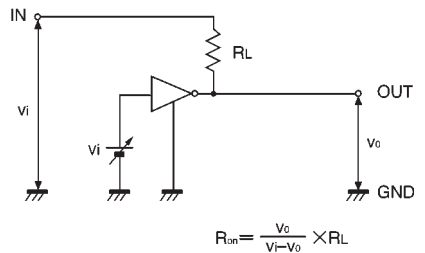


Fig.1 Input "ON" resistance (R_{on}) measurement circuit

● Electrical characteristic curves

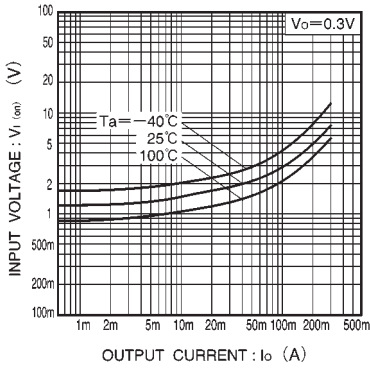


Fig.2 Input voltage vs. output current (ON characteristics)

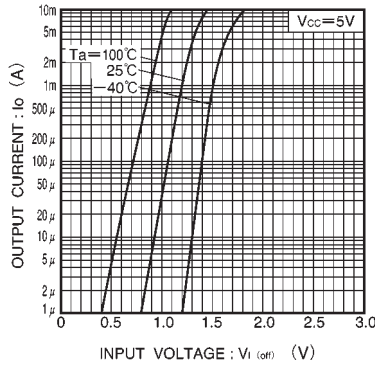


Fig.3 Output current vs. input voltage (OFF characteristics)

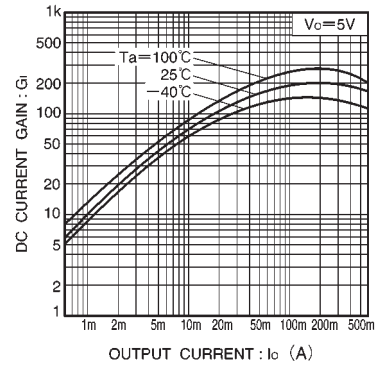


Fig.4 DC current gain vs. output current

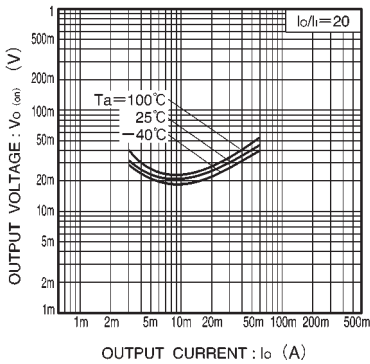


Fig.5 Output voltage vs. output current

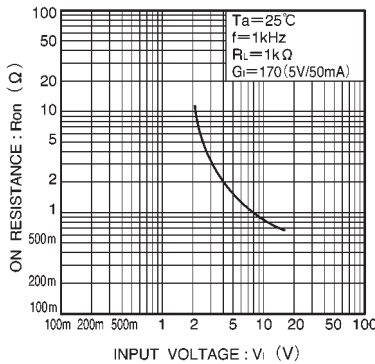


Fig.6 "ON" resistance vs. input voltage