

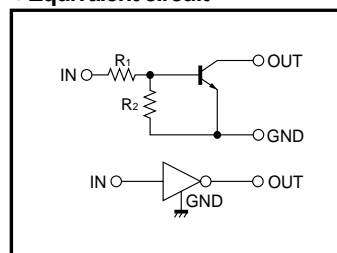
Digital transistors (built-in resistors)

DTC115EM / DTC115EE / DTC115EUA DTC115EKA / DTC115ESA

●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see the equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on/off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

●Equivalent circuit



●Structure

NPN digital transistor (with built-in resistors)

●External dimensions (Units : mm)

| | |
|---|---|
| <p>DTC115EM</p> <p>ROHM : VMT3</p> <p>Abbreviated symbol : 29</p> <p>(1) IN (2) GND (3) OUT</p> | <p>DTC115EE</p> <p>ROHM : EMT3</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p> |
| <p>DTC115EUA</p> <p>ROHM : UMT3 EIAJ : SC-70</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p> | <p>DTC115EKA</p> <p>ROHM : SMT3 EIAJ : SC-59</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 29</p> <p>(1) GND (2) IN (3) OUT</p> |
| <p>DTC115ESA</p> <p>ROHM : SPT EIAJ : SC-72</p> <p>(1) GND (2) OUT (3) IN</p> | |

DTC115EM / DTC115EE / DTC115EUA DTC115EKA / DTC115ESA

Transistors

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|----------------------|-----------------------|----------|------|
| Supply voltage | V _{CC} | 50 | V |
| Input voltage | V _I | -10~+40 | V |
| Output current | I _O | 20 | mA |
| | I _{C(Max.)} | 100 | |
| Power dissipation | DTC115EM / DTC115EE | 150 | mW |
| | DTC115EUA / DTC115EKA | 200 | |
| | DTC115ESA | 300 | |
| 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 =100μA |
| | V _{I(on)} | 3 | — | — | | V _O =0.3V, I _O =1mA |
| Output voltage | V _{O(on)} | — | 0.1 | 0.3 | V | I _O =5mA, I _E =0.25mA |
| Input current | I _I | — | — | 0.15 | mA | V _I =5V |
| Output current | I _{O(off)} | — | — | 0.5 | μA | V _{CC} =50V, V _I =0V |
| DC current gain | G _I | 82 | — | — | — | I _O =5mA, V _O =5V |
| Input resistance | R _I | 70 | 100 | 130 | kΩ | — |
| Resistance ratio | R ₂ /R ₁ | 0.8 | 1 | 1.2 | — | — |
| Transition frequency | f _r | — | 250 | — | MHz | V _{CE} =10V, I _E =-5mA, f=100MHz * |

*Transition frequency of the device.

●Package, marking, and packaging specifications

| Type | DTC115EM | DTC115EE | DTC115EUA | DTC115EKA | DTC115ESA |
|------------------------------|----------|----------|-----------|-----------|-----------|
| Package | VMT3 | EMT3 | UMT3 | SMT3 | SPT |
| Marking | 29 | 29 | 29 | 29 | — |
| Packaging code | T2L | TL | T106 | T146 | TP |
| Basic ordering unit (pieces) | 8000 | 3000 | 3000 | 3000 | 5000 |

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