

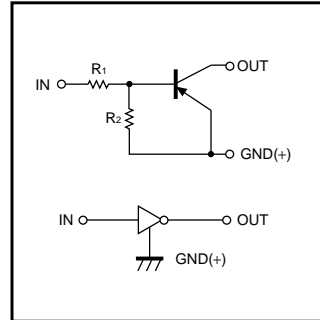
Digital transistors (built-in resistors)

DTA143EM / DTA143EE / DTA143EUA / DTA143EKA / DTA143ESA

●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

●Equivalent circuit



●Structure

PNP digital transistor
(with built-in resistors)

●External dimensions (Unit : mm)

| | |
|---|---|
| <p>DTA143EM</p> <p>ROHM : VMT3</p> <p>Abbreviated symbol : 13</p> <p>(1) IN (2) GND (3) OUT</p> | <p>DTA143EE</p> <p>ROHM : EMT3</p> <p>Abbreviated symbol : 13</p> <p>(1) GND (2) IN (3) OUT</p> |
| <p>DTA143EUA</p> <p>ROHM : UMT3 EIAJ : SC-70</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 13</p> <p>(1) GND (2) IN (3) OUT</p> | <p>DTA143EKA</p> <p>ROHM : SMT3 EIAJ : SC-59</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 13</p> <p>(1) GND (2) IN (3) OUT</p> |
| <p>DTA143ESA</p> <p>ROHM : SPT EIAJ : SC-72</p> <p>(1) GND (2) OUT (3) IN</p> | |

DTA143EM / DTA143EE / DTA143EUA DTA143EKA / DTA143ESA

Transistors

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits(DTA143E□) | | | | | Unit |
|----------------------|----------------------|------------------|-----|----|-----|----|------|
| | | M | E | UA | KA | SA | |
| Supply voltage | V _{CC} | -50 | | | | | V |
| Input voltage | V _{IN} | -30 to +10 | | | | | V |
| Output current | I _O | -100 | | | | | mA |
| | I _{C(Max.)} | -100 | | | | | |
| Power dissipation | P _d | 150 | 200 | | 300 | | mW |
| Junction temperature | T _j | 150 | | | | | °C |
| Storage temperature | T _{stg} | -55 to +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 =-20mA |
| Output voltage | V _{O(on)} | - | -0.1 | -0.3 | V | I _O /I _E =-10mA/-0.5mA |
| Input current | I _I | - | - | -1.8 | mA | V _I =-5V |
| Output current | I _{O(off)} | - | - | -0.5 | μA | V _{CC} =-50V, V _I =0V |
| DC current gain | G _i | 30 | - | - | - | V _O =-5V, I _O =-10mA |
| Input resistance | R ₁ | 3.29 | 4.7 | 6.11 | 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 * |

* Transition frequency of the device

●Packaging specifications

| Type | Package | VMT3 | EMT3 | UMT3 | SMT3 | SPT |
|-----------|------------------------------|--------|--------|--------|--------|--------|
| | Packaging type | Taping | Taping | Taping | Taping | Taping |
| | Code | T2L | TL | T106 | T146 | TP |
| | Basic ordering unit (pieces) | 8000 | 3000 | 3000 | 3000 | 5000 |
| DTA143EM | | ○ | - | - | - | - |
| DTA143EE | | - | ○ | - | - | - |
| DTA143EUA | | - | - | ○ | - | - |
| DTA143EKA | | - | - | - | ○ | - |
| DTA143ESA | | - | - | - | - | ○ |

Transistors

●Electrical characteristic curves

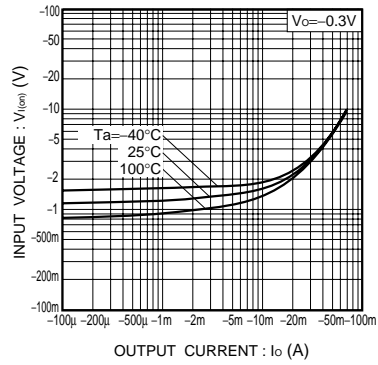


Fig.1 Input voltage vs. output current (ON characteristics)

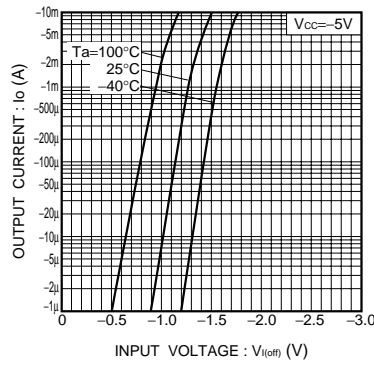


Fig.2 Output current vs. input voltage (OFF characteristics)

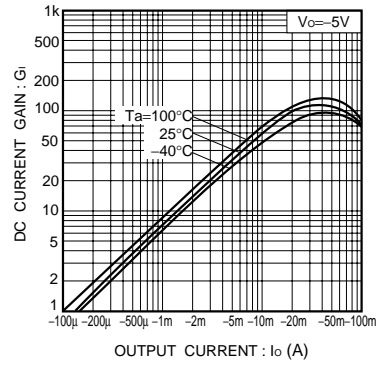


Fig.3 DC current gain vs. output current

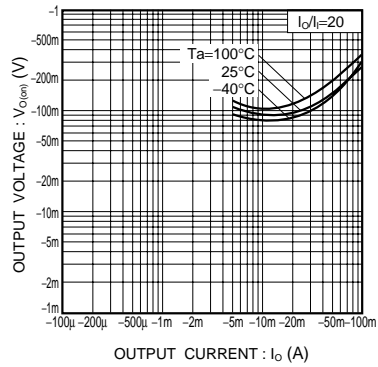


Fig.4 Output voltage vs. output current

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