# Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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## Contact us

Transistors

# -100mA / -50V Digital transistors (with built-in resistors)
## DTA143EM / DTA143EE / DTA143EUA / DTA143EKA / DTA143ESA
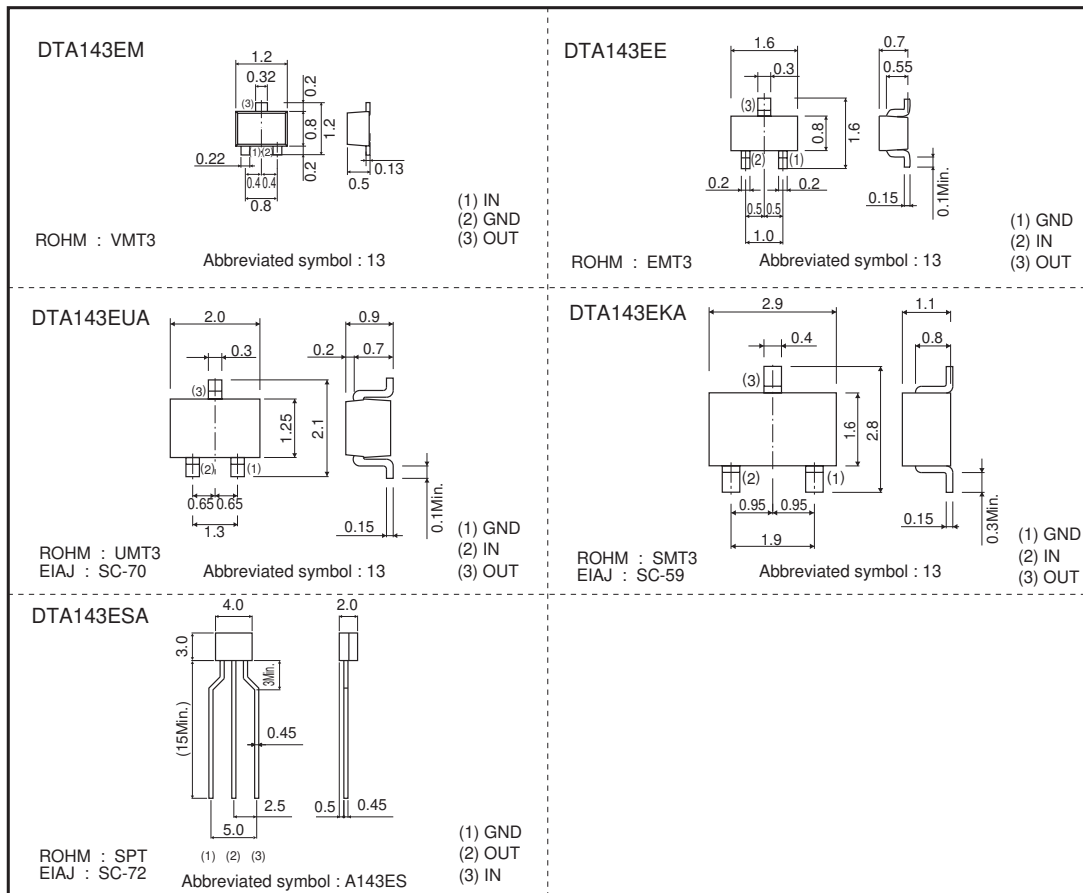
●**Applications**

Inverter, Interface, Driver

●**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 the device design easy.

●**Structure**

PNP epitaxial planar silicon transistor (Resistor built-in type)

●**External dimensions** (Unit : mm)



DTA143EM
ROHM : VMT3
Abbreviated symbol : 13
(1) IN
(2) GND
(3) OUT

DTA143EE
ROHM : EMT3
Abbreviated symbol : 13
(1) GND
(2) IN
(3) OUT

DTA143EUA
ROHM : UMT3
EIAJ : SC-70
Abbreviated symbol : 13
(1) GND
(2) IN
(3) OUT

DTA143EKA
ROHM : SMT3
EIAJ : SC-59
Abbreviated symbol : 13
(1) GND
(2) IN
(3) OUT

DTA143ESA
ROHM : SPT
EIAJ : SC-72
Abbreviated symbol : A143ES
(1) GND
(2) OUT
(3) IN

## ●Packaging specifications

| Part No. | 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 | | – | – | – | – | ○ |

## ●Equivalent circuit
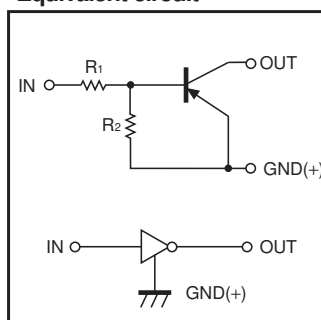


$R_1=R_2=4.7k\Omega$

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

| Parameter | Symbol | Limits DTA143EM | DTA143EE | DTA143EUA | DTA143EKA | DTA143ESA | Unit |
|---|---|---|---|---|---|---|---|
| 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 | $I_O/I_I$=–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 |

∗ Characteristics of built-in transistor

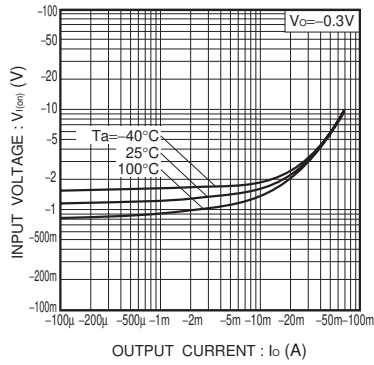●**Electrical characteristic curves**



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


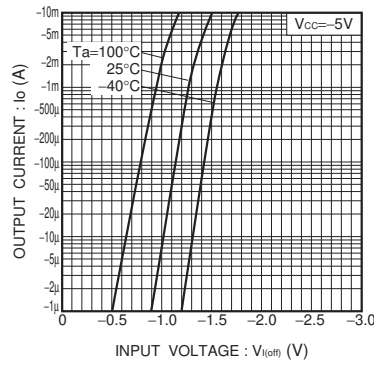
Fig.2　Output current vs. input voltage
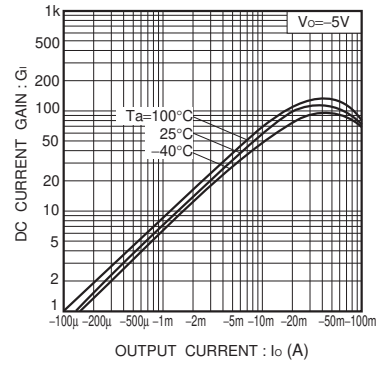　　　　(OFF characteristics)
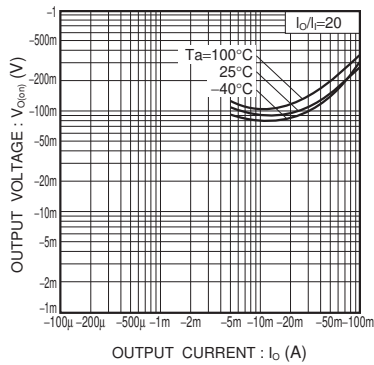


Fig.3　DC current gain vs. output
　　　　current



Fig.4　Output voltage vs. output
　　　　current

ROHM

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