

Parameter	Value
$V_{CC}$	30V
$I_C(\text{MAX.})$	200mA
$R_1$	1k $\Omega$
$R_2$	10k $\Omega$

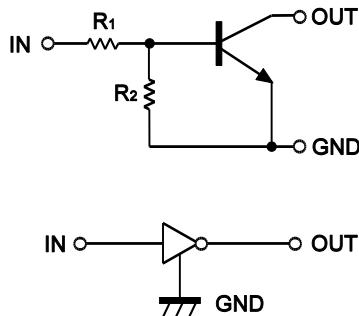
### ●Outline

VMT3  DTD713ZM (SC-105AA)	EMT3  DTD713ZE SOT-416 (SC-75A)
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### ●Features

- 1) Built-In Biasing Resistors
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 4) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 5) Complementary PNP Types :DTB713Z series
- 6) Lead Free/RoHS Compliant.

### ●Inner circuit



### ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

### ●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
DTD713ZM	VMT3	1212	T2L	180	8	8,000	P21
DTD713ZE	EMT3	1616	TL	180	8	3,000	P21

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

Parameter	Symbol	Values	Unit
Supply voltage	V <sub>CC</sub>	30	V
Input voltage	V <sub>IN</sub>	-5 to +10	V
Collector current	I <sub>C</sub> <sup>*1</sup>	200	mA
Power dissipation	P <sub>D</sub> <sup>*2</sup>	150	mW
Junction temperature	T <sub>j</sub>	150	°C
Range of storage temperature	T <sub>stg</sub>	-55 to +150	°C

## ● Electrical characteristics(Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I(off)</sub>	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA	-	-	0.3	V
	V <sub>I(on)</sub>	V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA	2.5	-	-	
Output voltage	V <sub>O(on)</sub>	I <sub>O</sub> / I <sub>I</sub> = 50mA / 2.5mA	-	0.07	0.3	V
Input current	I <sub>I</sub>	V <sub>I</sub> = 5V	-	-	6.4	mA
Output current	I <sub>O(off)</sub>	V <sub>CC</sub> = 30V, V <sub>I</sub> = 0V	-	-	0.5	μA
DC current gain	G <sub>I</sub>	V <sub>O</sub> = 2V, I <sub>O</sub> = 100mA	140	-	-	-
Input resistance	R <sub>1</sub>	-	0.7	1	1.3	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	-	8	10	12	-
Transition frequency	f <sub>T</sub> <sup>*1</sup>	V <sub>CE</sub> = 10V, I <sub>E</sub> = -50mA, f = 100MHz	-	260	-	MHz

\*1 Characteristics of built-in transistor

\*2 Each terminal mounted on a reference footprint

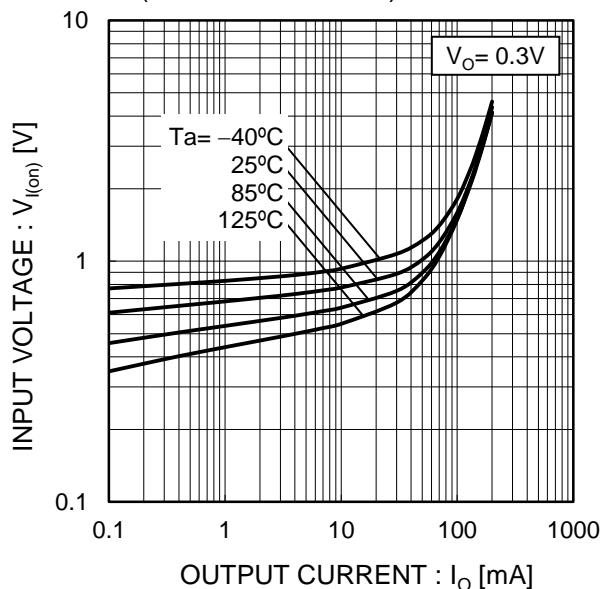
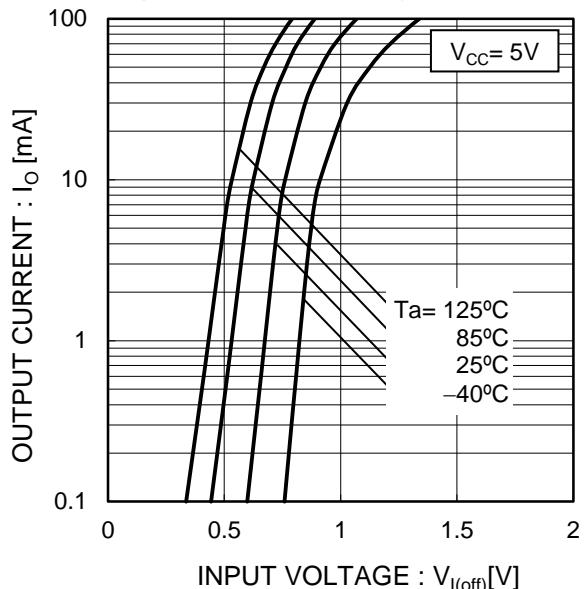
●Electrical characteristic curves( $T_a = 25^\circ\text{C}$ )Fig.1 Input voltage vs. output current  
(ON characteristics)Fig.2 Output current vs. input voltage  
(OFF characteristics)

Fig.3 Output current vs. output voltage

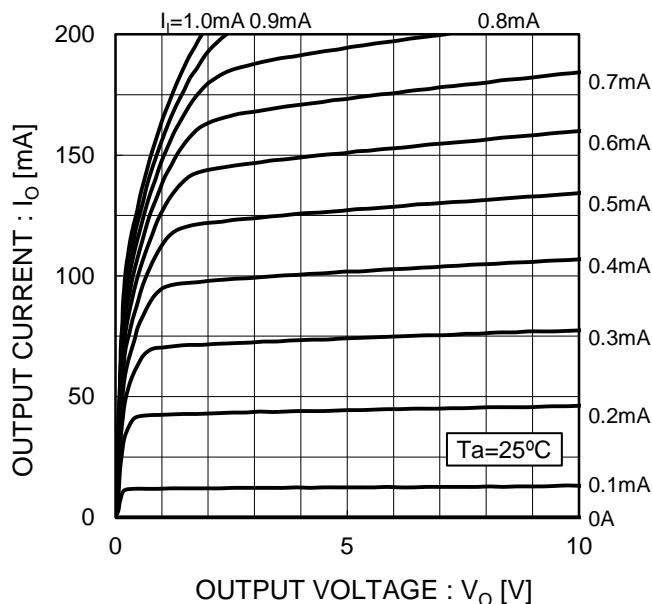
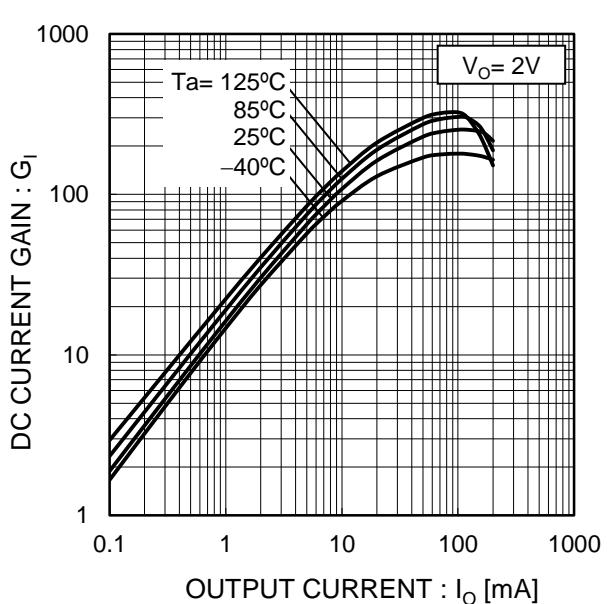
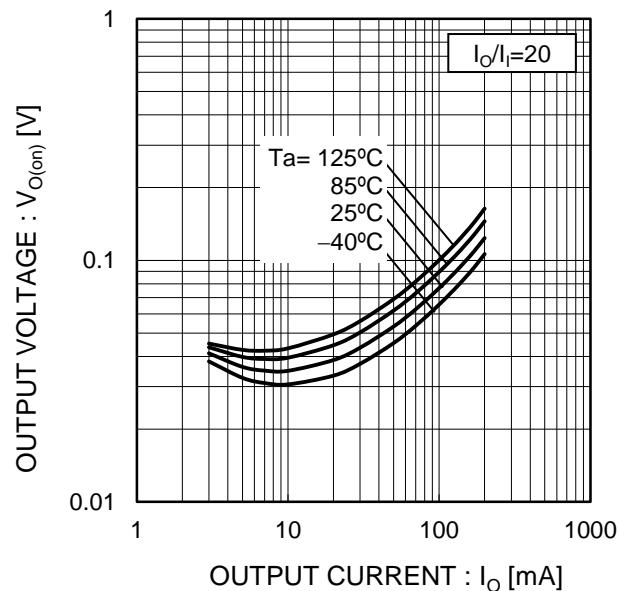


Fig.4 DC current gain vs. output current

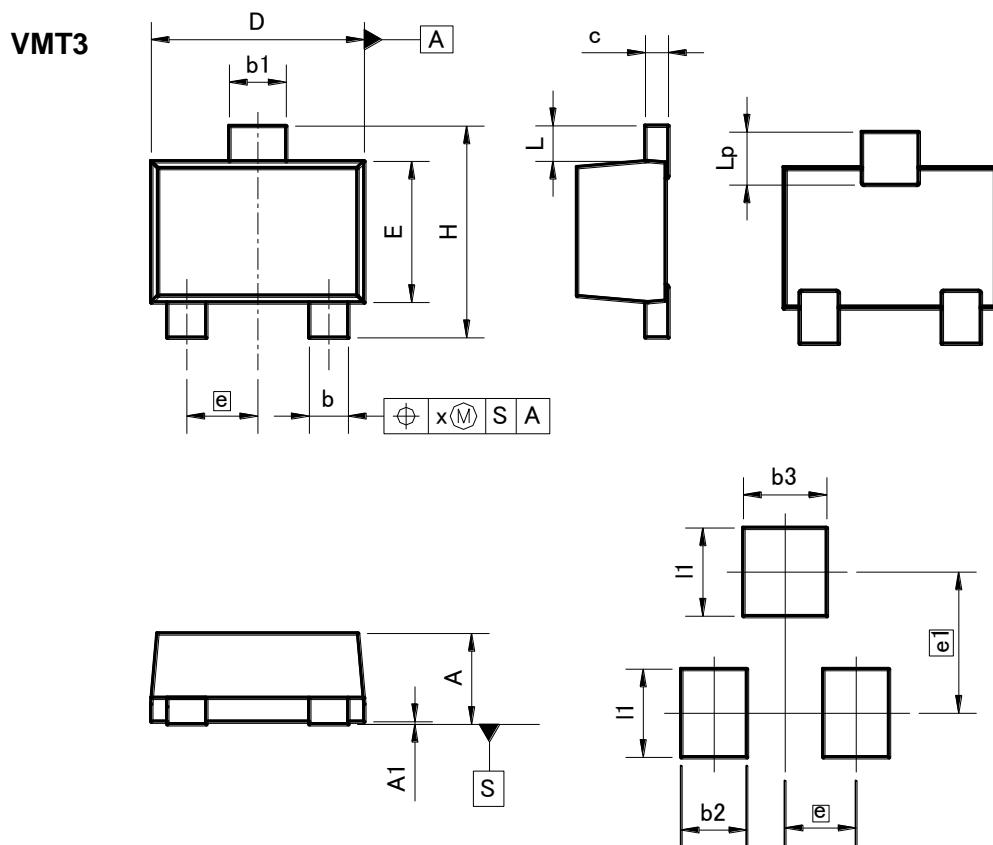


## ●Electrical characteristic curves(Ta = 25°C)

Fig.5 Output voltage vs. output current



## ●Dimensions (Unit : mm)

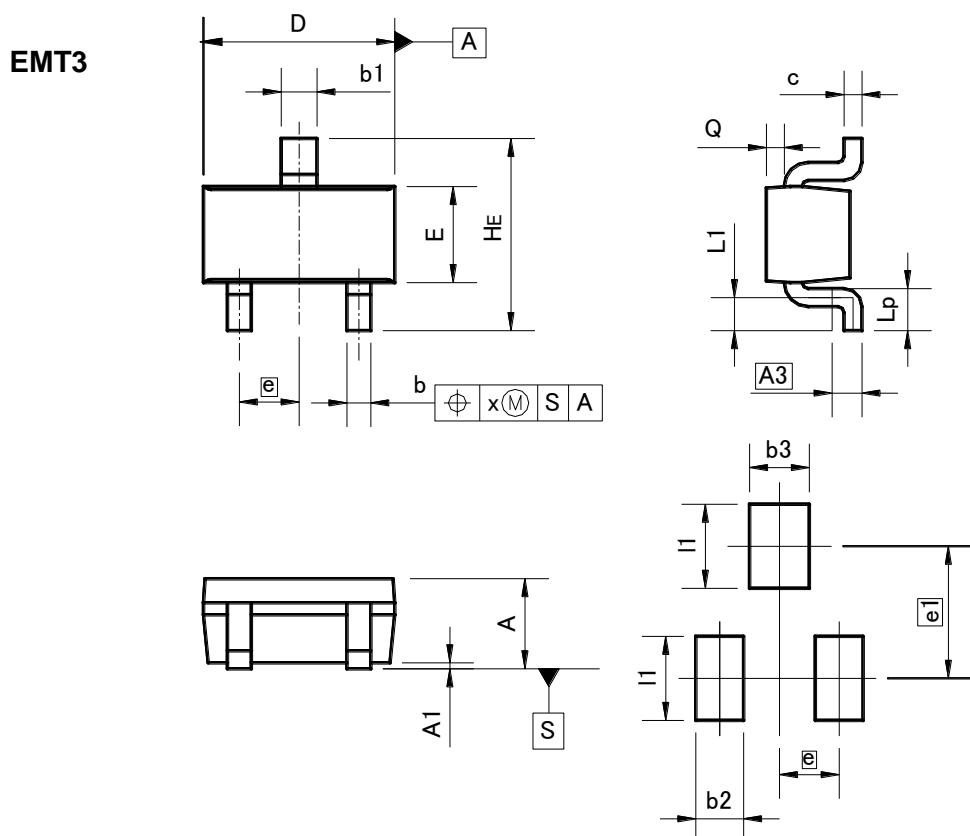
Pattern of terminal position areas

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0	0.004
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
e	0.40		0.02	
HE	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	—
Lp	0.20	0.40	0.008	—
x	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
e1	0.80		0.03	
b2	—	0.37	—	0.015
b3	—	0.47	—	0.019
l1	—	0.50	—	0.02

Dimension in mm/inches

## ●Dimensions (Unit : mm)



Pattern of terminal position areas

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.60	0.80	0.024	0.031
A1	0.00	0.10	0	0.004
A3	0.25		0.01	
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.01	0.016
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
e	0.50		0.02	
HE	1.40	1.80	0.055	0.071
L1	0.10	—	0.004	—
Lp	0.15	—	0.006	—
Q	0.05	0.25	0.002	0.01
x	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
e1		1.10		0.04
b2	—	0.40	—	0.016
b3	—	0.50	—	0.02
l1	—	0.70	—	0.028

Dimension in mm/inches

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