

DTB713Z series

PNP -200mA -30V Digital Transistors (Bias Resistor Built-in Transistors) Datasheet

Parameter	Value
V _{CC}	-30V
I _{C(MAX.)}	-200mA
R ₁	1.0kΩ
R ₂	10kΩ

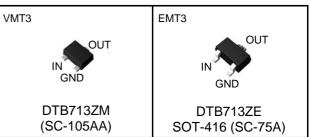
Features

- 1) Built-In Biasing Resistors
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 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 NPN Types :DTD713Z series
- 6) Lead Free/RoHS Compliant.

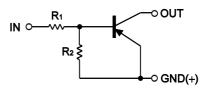
Application

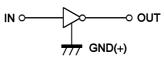
Switching circuit, Inverter circuit, Interface circuit, Driver circuit

Outline



Inner circuit





Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
DTB713ZM	VMT3	1212	T2L	180	8	8,000	P11
DTB713ZE	EMT3	1616	TL	180	8	3,000	P11

•Packaging specifications

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Values	Unit
Supply voltage	V _{CC}	-30	V
Input voltage	V _{IN}	-10 to +5	V
Collector current	۲ _{C(MAX.)} *1	-200	mA
Power dissipation	P_{D}^{*2}	150	mW
Junction temperature	Тj	150	°C
Range of storage temperature	T _{stg}	-55 to +150	°C

•Electrical characteristics(Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit	
lanut valtana	V _{I(off)}	$V_{CC} = -5V, I_{O} = -100 \mu A$	-	-	-0.3	V	
Input voltage	V _{I(on)}	$V_0 = -0.3V, I_0 = -20mA$	-2.5	-	-	v	
Output voltage	V _{O(on)}	I _O / I _I = -50mA / -2.5mA	-	-0.07	-0.3	V	
Input current	I _I	$V_1 = -5V$	-	-	-6.4	mA	
Output current	I _{O(off)}	$V_{CC} = -30V, \ V_I = 0V$	-	-	-0.5	μA	
DC current gain	G _I	$V_0 = -2V, I_0 = -100 \text{mA}$	140	-	-	-	
Input resistance	R ₁	-	0.7	1.0	1.3	kΩ	
Resistance ratio	R ₂ /R ₁	-	8	10	12	-	
Transition frequency	f _T *1	V _{CE} = -10V, I _E = 5mA, f = 100MHz	-	260	-	MHz	

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference footprint

●Electrical characteristic curves(Ta = 25°C)

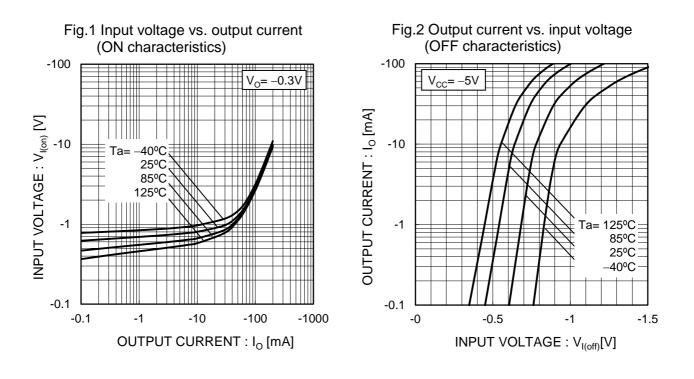
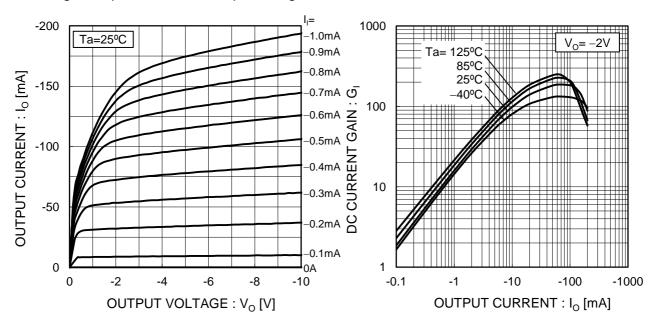


Fig.3 Output current vs. output voltage

Fig.4 DC current gain vs. output current



•Electrical characteristic curves(Ta = 25°C)

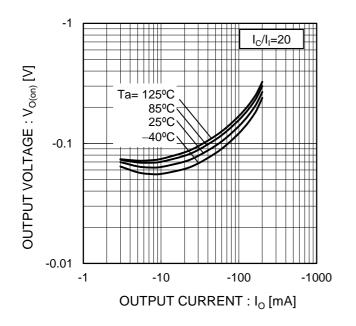
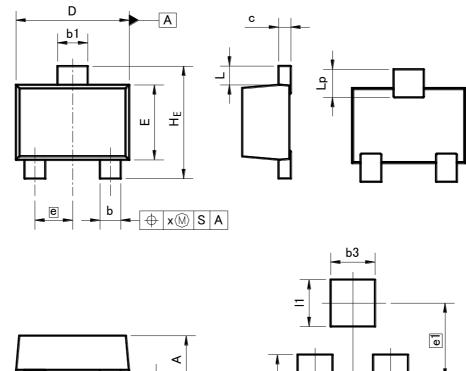
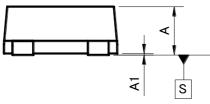


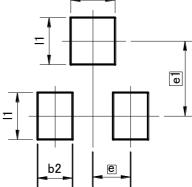
Fig.5 Output voltage vs. output current

•Dimensions (Unit : mm)









Pattern of terminal position areas [Not a recommended pattern of soldering pads]

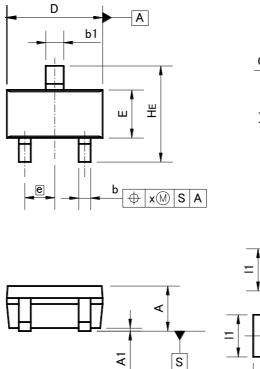
DIM	MILIM	MILIMETERS		HES
DIM	MIN	MAX	MIN	MAX
А	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
е	0.4	40	0.0	02
HE	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	0.012
Lp	0.20	0.40	0.008	0.016
х	-	0.10	_	0.004

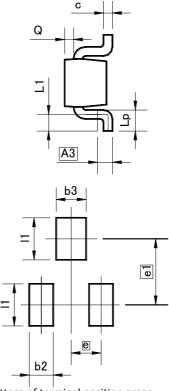
DIM	MILIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
b2	-	0.37	-	0.015
b3	-	0.47	-	0.019
e1	0.80		0.0	31
1	_	0.50	_	0.020

Dimension in mm / inches

•Dimensions (Unit : mm)

EMT3





Pattern of terminal position areas [Not a recommended pattern of soldering pads]

	MILIM	ETERS	INC	HES
DIM	MIN	MAX	MIN	MAX
А	0.60	0.80	0.024	0.031
A1	0.00	0.10	0.000	0.004
A3	0.:	25	0.0	10
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
с	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
е	0.	50	0.0	20
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	0.010
х	_	0.10	_	0.004

DIM	MILIM	ETERS	INCHES	
DIM	MIN	MAX	MIN	MAX
b2	-	0.40	-	0.016
b3	-	0.50	-	0.020
e1	1.10		0.0	43
1	_	0.70	_	0.028

Dimension in mm / inches

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