

Transistors

-200mA / -30V Low V_{CE} (sat) Digital transistors (with built-in resistors)

DTB713ZE / DTB713ZM

●Applications

Inverter, Interface, Driver

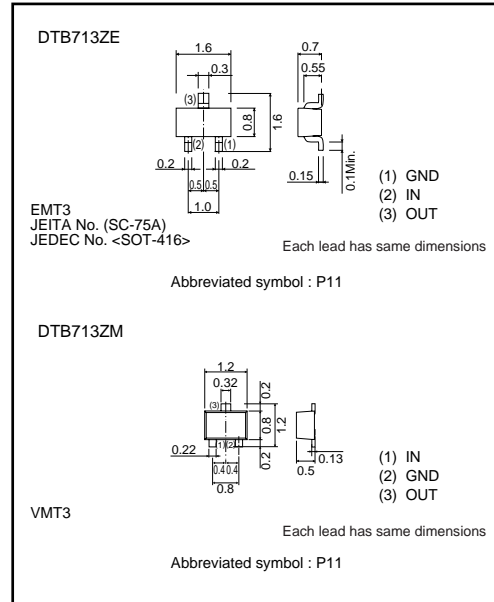
●Feature

- 1) V_{CE} (sat) is lower than conventional products.
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 3) 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.
- 4) 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)



●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits		Unit
		DTB713ZE	DTB713ZM	
Supply voltage	V_{CC}	-30		V
Input voltage	V_{IN}	-10 to +5		V
Collector current *1	I_C (max)	-200		mA
Power dissipation *2	P_D	150		mW
Junction temperature	T_j	150		$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150		$^\circ\text{C}$

*1 Characteristics of built-in transistor.

*2 Each terminal mounted on a recommended land.

●Packaging specifications

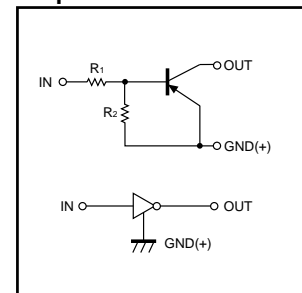
Part No.	Package	EMT3	VMT3
	Package type	Taping	Taping
	Code	TL	T2L
	Basic ordering unit (pieces)	3000	8000
DTB713ZE		○	-
DTB713ZM		-	○

●Electrical characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-	-	-0.3	V	$V_{CC}=-5V, I_O=-100\mu\text{A}$
	$V_{I(on)}$	-2.5	-	-		$V_O=-0.3V, I_O=-20\text{mA}$
Output voltage	$V_{O(on)}$	-	-70	-300	mV	$I_O/I_E=-50\text{mA} / -2.5\text{mA}$
Input current	I_i	-	-	-6.4	mA	$V_i=-5V$
Output current	$I_{O(off)}$	-	-	-0.5	μA	$V_{CC}=-30V, V_i=0V$
DC current gain	G_I	140	-	-	-	$V_O=-2V, I_O=-100\text{mA}$
Transition frequency *	f_T	-	260	-	MHz	$V_{CE}=-10V, I_E=5\text{mA}, f=100\text{MHz}$
Input resistance	R_1	0.7	1.0	1.3	$k\Omega$	-
Resistance ratio	R_2/R_1	8.0	10	12	-	-

* Characteristics of built-in transistor.

●Equivalent circuit



$R_1=1.0k\Omega / R_2=10k\Omega$

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