

DTB543ZE / DTB543ZM

Transistors

-500mA / -12V Low $V_{CE(sat)}$ Digital transistors (with built-in resistors)

DTB543ZE / DTB543ZM

●Applications

Inverter, Interface, Driver

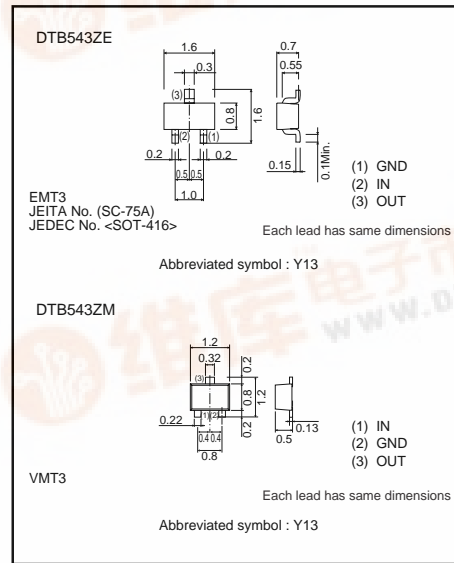
●Feature

- 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
		DTB543ZE	DTB543ZM	
Supply voltage	V_{CC}	-12		V
Input voltage	V_{IN}	-12 to +5		V
Collector current *1	$I_{C(max)}$	-500		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

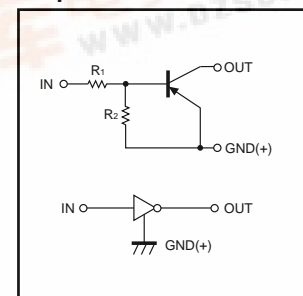
Package	EMT3	VMT3
	Packaging type	Taping
Code	TL	T2L
Basic ordering unit (pieces)	3000	8000
Part No.		
DTB543ZE	○	-
DTB543ZM	-	○

●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	$V_{O(on)}$	-	-60	-300	mV	$I_{O}/I_{I} = -100\text{mA} / -5\text{mA}$
Input current	I_I	-	-	-1.4	mA	$V_I = -5V$
Output current	$I_{O(off)}$	-	-	-0.5	μA	$V_{CC} = -12V, V_I = 0V$
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	3.29	4.7	6.11	k Ω	-
Resistance ratio	R_2/R_1	8.0	10	12	-	-

* Characteristics of built-in transistor.

●Equivalent circuit



$R_1 = 4.7\text{k}\Omega / R_2 = 47\text{k}\Omega$

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