

Transistors

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

DTB743EE / DTB743EM

●Applications

Inverter, Interface, Driver

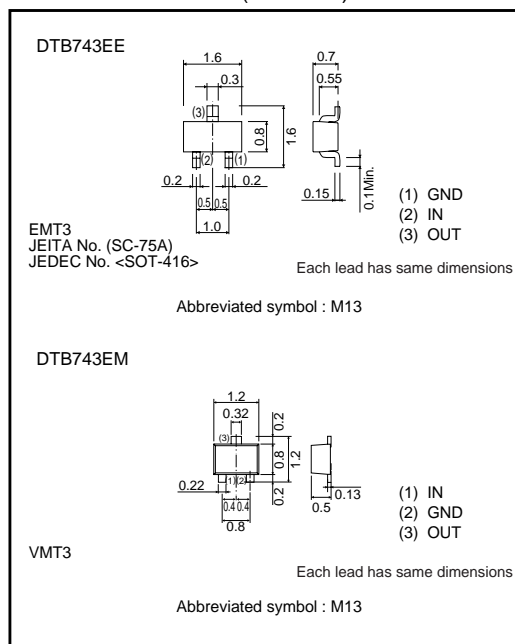
●Feature

- 1) $V_{CE(sat)}$ is lower than the 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
		DTB743EE	DTB743EM	
Supply voltage	V_{CC}	–30		V
Input voltage	V_{IN}	–20 to +10		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

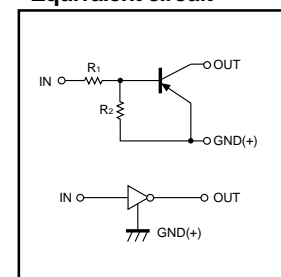
Part No.	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
	Basic ordering unit (pieces)	3000	8000
DTB743EE		○	–
DTB743EM		–	○

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	–0.5	V	$V_{CC} = -5V, I_{O} = -100\mu A$
	$V_{I(on)}$	–2.5	–	–		$V_O = -0.3V, I_{O} = -20mA$
Output voltage	$V_{O(on)}$	–	–70	–300	mV	$I_{O}/I_{I} = -50mA / -2.5mA$
Input current	I_I	–	–	–1.4	mA	$V_I = -5V$
Output current	$I_{O(off)}$	–	–	–500	nA	$V_{CC} = -30V, V_I = 0V$
DC current gain	G_I	115	–	–	–	$V_O = -2V, I_{O} = -100mA$
Transition frequency *	f_T	–	260	–	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$
Input resistance	R_1	3.29	4.7	6.11	k Ω	–
Resistance ratio	R_2/R_1	0.8	1.0	1.2	–	–

* Characteristics of built-in transistor.

●Equivalent circuit

 $R_1 = 4.7k\Omega / R_2 = 4.7k\Omega$

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