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

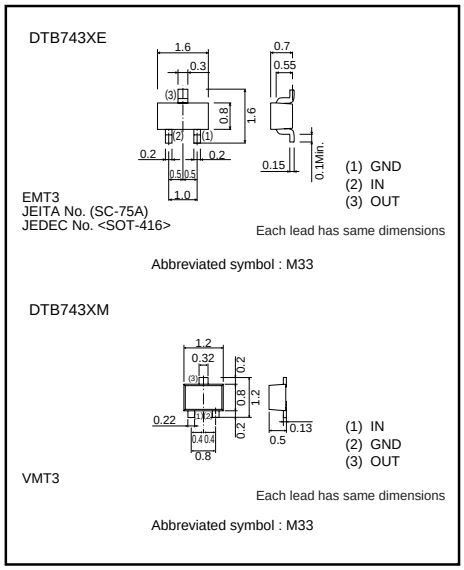
DTB743XE / DTB743XM

●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 plannar silicon transistor
(Resistor built-in type)

●Dimensions (Unit : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		DTB743XE	DTB743XM	
Supply voltage	V_{CC}	−30		V
Input voltage	V_{IN}	−20 to +7		V
Collector current *1	$I_{C\ (max)}$	−200		mA
Power dissipation *2	P_D	150		mW
Junction temperature	Tj	150		℃
Storage temperature	Tstg	−55 to +150		℃

*1 Characteristics of built-in transistor.
*2 Each terminal mounted on a recommended land.

●Packaging specifications

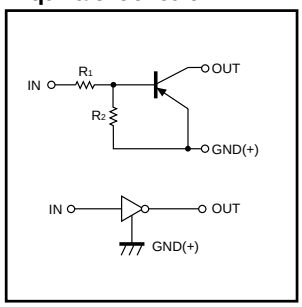
	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
Part No.	Basic ordering unit (pieces)	3000	8000
DTB743XE		○	–
DTB743XM		–	○

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	−0.3	V	V_{CC}= −5V, I_O= −100μA
	$V_{I(on)}$	−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	$I_{O(off)}$	–	–	−0.5	μA	V_{CC}= −30V, V_I=0V
DC current gain	G_I	140	–	–	–	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	kΩ	–
Resistance ratio	R_2/R_1	1.7	2.1	2.6	–	–

* Characteristics of built-in transistor.

●Equivalent circuit



R_1=4.7kΩ / R_2=10kΩ

●**Electrical characteristics curves**

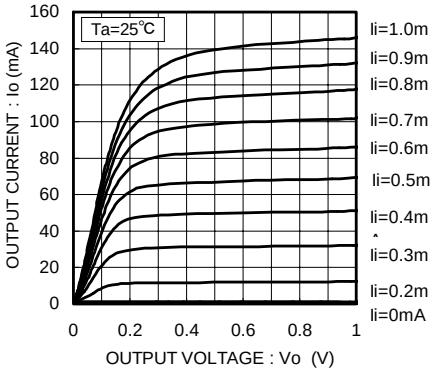


Fig.1 Output Current vs. Output Voltage

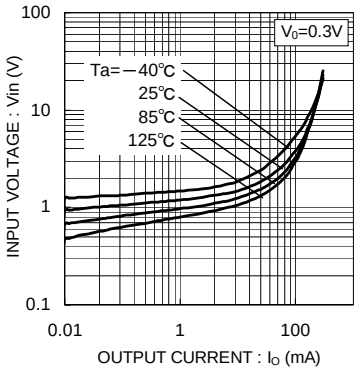


Fig.2 Input Voltage vs. Output Current

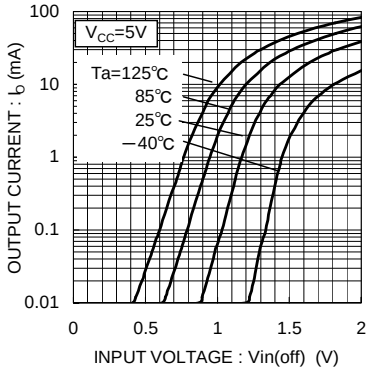


Fig.3 Output Current vs. Input Voltage

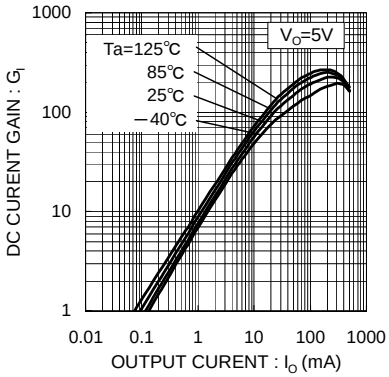


Fig.4 DC Current Gain vs. Output Current

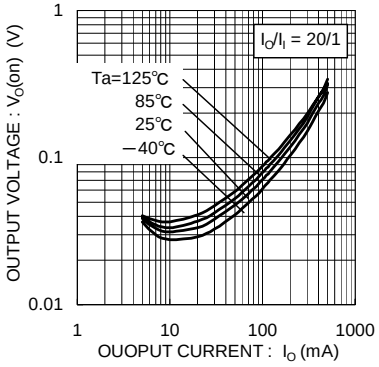


Fig.5 Output Voltage vs. Output Current

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