

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

DTB523YE / DTB523YM

●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)

●Packaging specifications

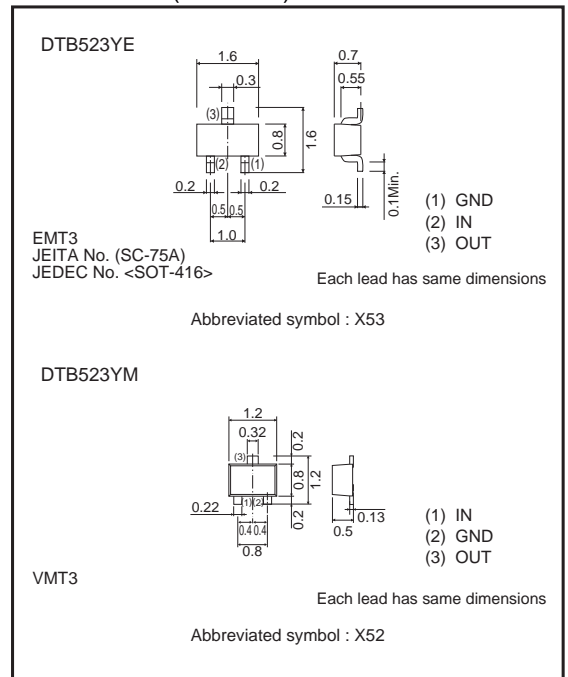
Part No.	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
	Basic ordering unit (pieces)	3000	8000
DTB523YE		○	—
DTB523YM		—	○

●Absolute maximum ratings (Ta=25°C)

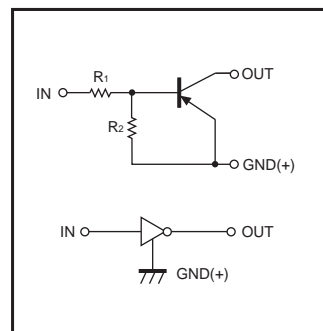
Parameter	Symbol	Limits		Unit
		DTB523YE	DTB523YM	
Supply voltage	V_{CC}	-12		V
Input voltage	V_{IN}	-12 to +5		V
Collector current *1	I_C (max)	-500		mA
Power dissipation *2	P_D	150		mW
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-55 to +150		°C

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

●Dimensions (Unit : mm)



●Inner circuit



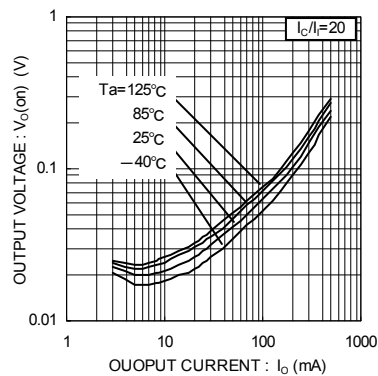
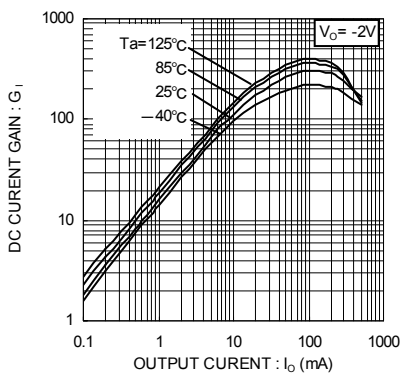
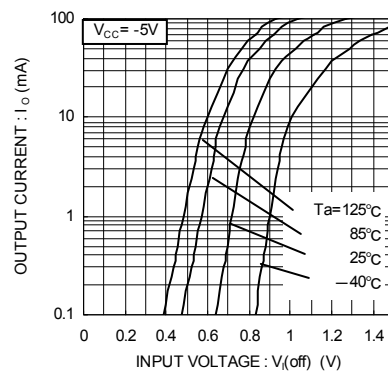
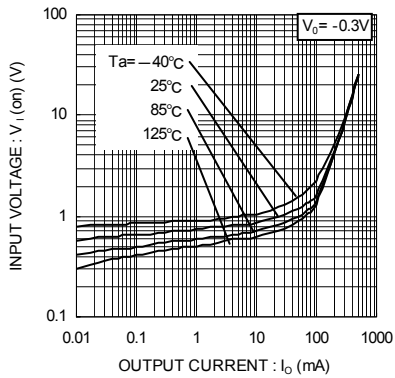
$R_1=2.2k\Omega$ / $R_2=10k\Omega$

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	-	-	-0.3	V	$V_{CC} = -5V, I_o = -100\mu A$
	$V_{I(on)}$	-2.5	-	-		$V_o = -0.3V, I_o = -20mA$
Output voltage	$V_{O(on)}$	-	-60	-300	mV	$I_o/I_i = -100mA / -5mA$
Input current	I_i	-	-	-3.0	mA	$V_i = -5V$
Output current	$I_o(off)$	-	-	-0.5	μA	$V_{CC} = -12V, V_i = 0V$
DC current gain	G_i	140	-	-	-	$V_o = -2V, I_o = -100mA$
Transition frequency *	f_T	-	260	-	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$
Input resistance	R_i	1.54	2.2	2.86	$k\Omega$	-
Resistance ratio	R_2/R_1	3.6	4.5	5.5	-	-

* Characteristics of built-in transistor.

●Electrical characteristics curves



Notes

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