-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.

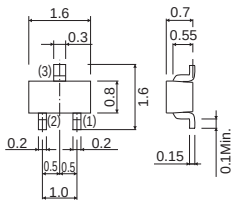
●Structure
PNP epitaxial plannar silicon transistor
(Resistor built-in type)

●Packaging specifications

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

●Dimensions (Unit : mm)

DTB523YE

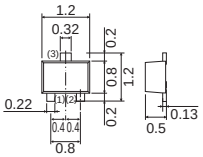


EMT3
JEITA No. (SC-75A)
JEDEC No. <SOT-416>

Each lead has same dimensions

Abbreviated symbol : X53

DTB523YM



VMT3

Each lead has same dimensions

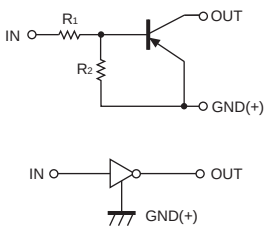
Abbreviated symbol : X52

●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	Tj	150		℃
Storage temperature	Tstg	−55 to +150		℃

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

●Inner circuit



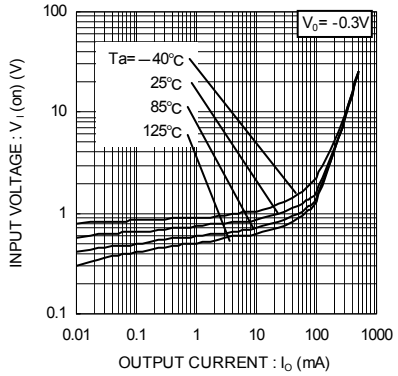
R_1=2.2kΩ / R_2=10kΩ

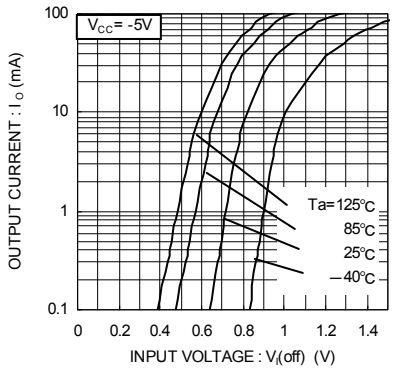
●Electrical characteristics (Ta=25°C)

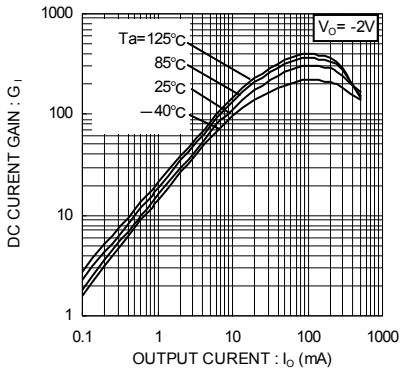
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	–0.3	V	V_{CC}=–5V, I_O=–100μA
	$V_{I(on)}$	–2.5	–	–		V_O=–0.3V, I_O=–20mA
Output voltage	$V_{O(on)}$	–	–60	–300	mV	I_O/I_I= –100mA / –5mA
Input current	I_I	–	–	–3.0	mA	V_I= –5V
Output current	$I_{O(off)}$	–	–	–0.5	μA	V_{CC}= –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_1	1.54	2.2	2.86	kΩ	–
Resistance ratio	R_2/R_1	3.6	4.5	5.5	–	–

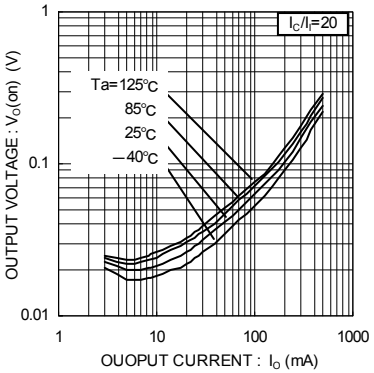
* Characteristics of built-in transistor.

●Electrical characteristics curves









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