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

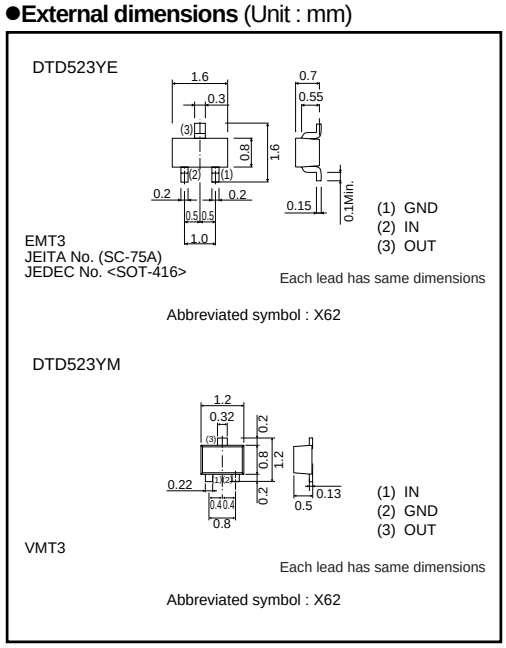
DTD523YE / DTD523YM

●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 negative 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
NPN epitaxial plannar silicon transistor
(Resistor built-in type)

●External dimensions (Unit : mm)



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		DTD523YE	DTD523YM	
Supply voltage	V_{CC}	12		V
Input voltage	V_{IN}	−5 to +12		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.

●Packaging specifications

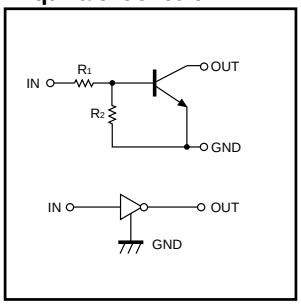
	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
Part No.	Basic ordering unit (pieces)	3000	8000
DTD523YE		○	−
DTD523YM		−	○

●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	$I_{O(off)}$	−	−	500	nA	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.

●Equivalent circuit



R_1=2.2kΩ / R_2=10kΩ

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