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

DTD713ZE / DTD713ZM

●Applications

Inverter, Interface, Driver

●Feature

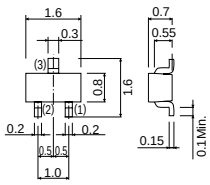
1) V_{CE} (sat) is lower than conventional products.
2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing 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)

DTD713ZE

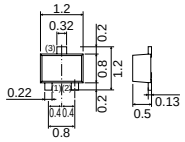


EMT3
JEITA No. (SC-75A)
JEDEC No. <SOT-416>

Each lead has same dimensions

Abbreviated symbol : P21

DTD713ZM



VMT3

Each lead has same dimensions

Abbreviated symbol : P21

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		DTD713ZE	DTD713ZM	
Supply voltage	V_{CC}	30		V
Input voltage	V_{IN}	−5 to +10		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

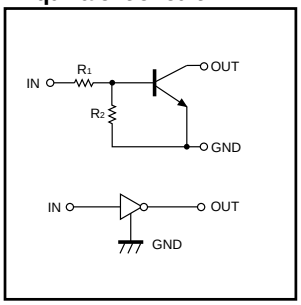
Part No.	Package	EMT3	VMT3
	Packaging type	Taping	Taping
	Code	TL	T2L
	Basic ordering unit (pieces)	3000	8000
DTD713ZE		◯	–
DTD713ZM		–	◯

●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	–	–	6.4	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	0.7	1.0	1.3	kΩ	–
Resistance ratio	R_2/R_1	8.0	10	12	–	–

∗ Characteristics of built-in transistor.

●Equivalent circuit



R_1=1.0kΩ / R_2=10kΩ

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