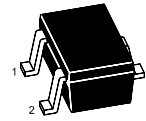
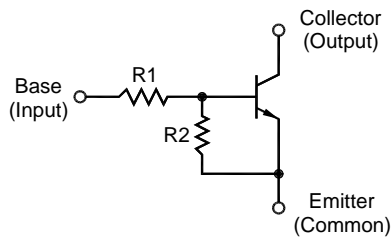


NPN Silicon Epitaxial Planar Digital Transistor

 1.Base 2.Emitter 3.Collector
 SOT-323 Plastic Package

Resistance Values

Type	R1 (KΩ)	R2 (KΩ)	Type	R1 (KΩ)	R2 (KΩ)
MMDT5210W	47	-	MMDT521DW	47	10
MMDT5211W	10	10	MMDT521EW	47	22
MMDT5212W	22	22	MMDT521FW	4.7	10
MMDT5213W	47	47	MMDT521KW	10	4.7
MMDT5214W	10	47	MMDT521LW	4.7	4.7
MMDT5215W	10	-	MMDT521MW	2.2	47
MMDT5216W	4.7	-	MMDT521NW	4.7	47
MMDT5217W	22	-	MMDT521TW	22	47
MMDT5218W	0.51	5.1	MMDT521VW	2.2	2.2
MMDT5219W	1	10	MMDT521ZW	4.7	22

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	50	V
Collector Emitter Voltage	V_{CEO}	50	V
Collector Current	I_c	100	mA
Total Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Characteristics at T_a = 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V _{CE} = 5 V, I _C = 10 mA	MMDT5218/521K/521L/521VW MMDT5219/521D/521FW MMDT5211W MMDT5212/521EW MMDT521ZW MMDT5213/5214/521MW MMDT521N/521TW MMDT5210/5215/5216/5217W ¹⁾	20 30 35 60 60 80 80 160	- - - - - - - -	- - - - 200 - 400 460	- - - - - - - -
Collector Base Cutoff Current at V _{CB} = 50 V	I _{CBO}	-	-	100	nA
Emitter Base Cutoff Current at V _{EB} = 6 V	MMDT5210/5215/5216/5217W MMDT5213W MMDT5212/5214/521D/521E/521M/521N/521TW MMDT521ZW MMDT5211W MMDT521F/521KW MMDT5219W MMDT5218/521L/521VW	- - - - - - - -	- - - - - - - -	0.01 0.1 0.2 0.4 0.5 1 1.5 2	mA
Collector Base Breakdown Voltage at I _C = 10 μA	V _{(BR)CBO}	50	-	-	V
Collector Emitter Breakdown Voltage at I _C = 2 mA	V _{(BR)CEO}	50	-	-	V
Collector Emitter Saturation Voltage at I _C = 10 mA, I _B = 0.5 mA	V _{CEsat}	-	-	0.3	V
Transition Frequency at V _{CB} = 10 V, -I _E = 5 mA, f = 100 MHz	f _T	-	250	-	MHz
Input Voltage (ON) at V _O = 0.3 V, I _O = 20 mA at V _O = 0.3 V, I _O = 20 mA at V _O = 0.3 V, I _O = 2 mA at V _O = 0.3 V, I _O = 2 mA at V _O = 0.3 V, I _O = 2 mA at V _O = 0.3 V, I _O = 10 mA at V _O = 0.2 V, I _O = 5 mA at V _O = 0.3 V, I _O = 2 mA at V _O = 0.3 V, I _O = 5 mA at V _O = 0.2 V, I _O = 5 mA at V _O = 0.3 V, I _O = 5 mA at V _O = 0.3 V, I _O = 1 mA	MMDT521V/521L/5219/5218W MMDT521FW MMDT521TW MMDT521DW MMDT521EW MMDT5211W MMDT5212W MMDT5213/521KW MMDT521MW MMDT521ZW MMDT521NW MMDT5214W	- - - - - - - - - - - - -	- - - - - - - - - - - - -	3 2.5 2.5 5 4 3 3 3 1.1 1.7 1.3 1.4	V

¹⁾ h_{FE} Rank Classification: Q: 160~260, R: 210~340, S: 290~460, No-rank: 160~460

**Characteristics at T_a = 25 °C**

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Input Voltage (OFF) at V _{CC} = 5 V, I _O = 100 μA	MMDT521V/521L/5211/5212/5213W MMDT5218/5219/521M/521Z/521NW MMDT521F/5214W MMDT521TW MMDT521DW MMDT521K/521EW	V _{I(OFF)}	0.5 0.5 0.3 0.4 1 0.8	- - - - - -	- - - - - -	V
Input Resistance	MMDT5218W MMDT5219W MMDT521M/521V MMDT5216/521F/521L/521N/521ZW MMDT5211/5214/5215/521KW MMDT5212/5217/521TW MMDT5210/5213/521D/521EW	R1	- 30%	0.51 1 2.2 4.7 10 22 47	+ 30%	KΩ
Resistance Ratio	MMDT521MW MMDT521NW MMDT5218/5219W MMDT521ZW MMDT5214W MMDT521TW MMDT521FW MMDT521VW MMDT5211/5212/5213/521LW MMDT521KW MMDT521EW MMDT521DW	R1/R2	- - 0.08 - 0.17 - 0.37 - 0.8 1.7 1.7 3.7	0.047 0.1 0.1 0.21 0.21 0.47 0.47 1 1 2.13 2.14 4.7	- - 0.12 - 0.25 - 0.57 - 1.2 2.6 2.6 5.7	- - - - - - - - - - - -