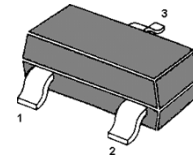
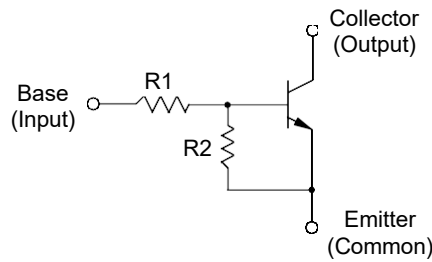


# MMDT221K NPN Silicon Epitaxial Planar Transistor

For digital circuits applications



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CB0}$	50	V
Collector Emitter Voltage	$V_{CE0}$	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	$T_s$	- 55 to + 150	$^\circ\text{C}$

## Resistance Values

Type	R1 (K $\Omega$ )	R2 (K $\Omega$ )
MMDT221K	10	4.7

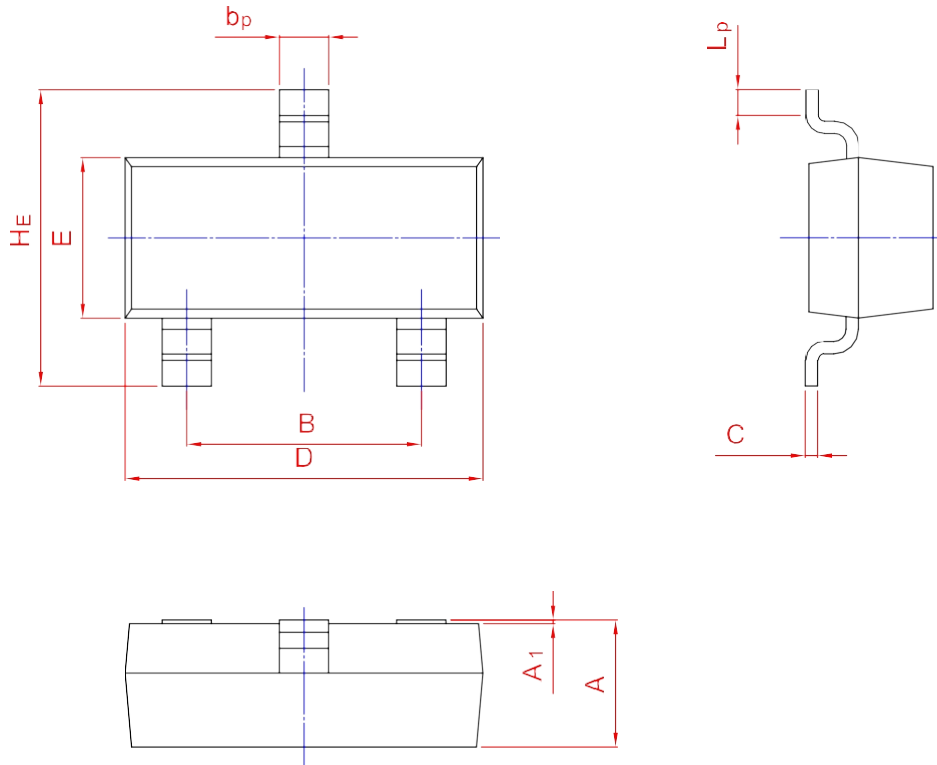
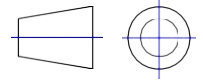
## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 10\text{ V}$ , $I_C = 5\text{ mA}$	$h_{FE}$	20	-	-	-
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at $I_C = 2\text{ mA}$	$V_{(BR)CEO}$	50	-	-	V
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$	$I_{CBO}$	-	-	100	nA
Collector Emitter Cutoff Current at $V_{CE} = 50\text{ V}$	$I_{CEO}$	-	-	500	nA
Emitter Base Cutoff Current at $V_{EB} = 6\text{ V}$	$I_{EBO}$	-	-	1	mA
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 0.3\text{ mA}$	$V_{CEsat}$	-	-	0.25	V
Output Voltage Low Level at $V_{CC} = 5\text{ V}$ , $V_B = 3.5\text{ V}$ , $R_L = 1\text{ K}\Omega$	$V_{OL}$	-	-	0.2	V
Output Voltage High Level at $V_{CC} = 5\text{ V}$ , $V_B = 0.5\text{ V}$ , $R_L = 1\text{ K}\Omega$	$V_{OH}$	4.9	-	-	V
Transition Frequency at $V_{CB} = 10\text{ V}$ , $-I_E = 2\text{ mA}$ , $f = 200\text{ MHz}$	$f_T$	-	150	-	MHz
Input Resistance	R1	7	10	13	K $\Omega$
Resistance Ratio	R1/R2	1.7	-	2.6	-

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b <sub>p</sub>	C	D	E	H <sub>E</sub>	A <sub>1</sub>	L <sub>p</sub>
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20