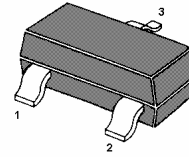


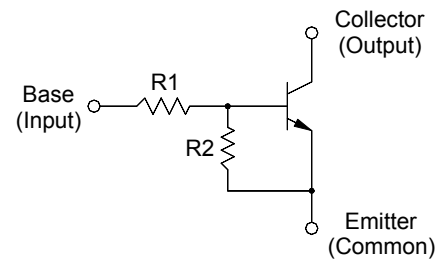
# MMDT221F

## NPN Silicon Epitaxial Planar Transistor

For digital circuits applications



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

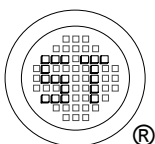


### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	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	$T_s$	-55 to +150	$^\circ\text{C}$

### Resistor Values

Type	R1 (K $\Omega$ )	R2 (K $\Omega$ )
MMDT221F	4.7	10



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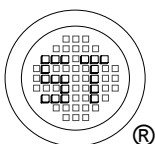


Dated : 31/03/2006

# MMDT221F

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 10\text{ V}$ , $I_C = 5\text{ mA}$	$h_{FE}$	30	-	-	-
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 $V_{CC} = 5\text{ V}$ , $V_B = 2.5\text{ V}$ , $R_L = 1\text{ K}\Omega$	$V_{OL}$	-	-	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 Resistor	R1	3.3	4.7	6.1	K $\Omega$
Resistor Ratio	R1/R2	0.37	-	0.57	-



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