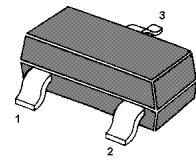
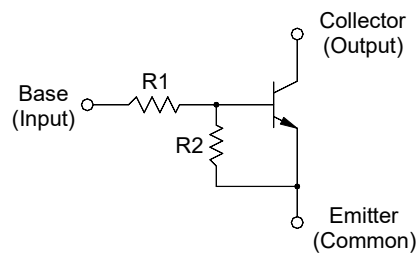


MMDT3104R

NPN Silicon Epitaxial Planar Digital Transistor



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

Applications

- For digital circuits applications

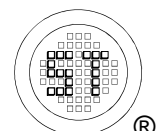
Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	50	V
Collector Emitter Voltage	V_{CEO}	50	V
Emitter Base Voltage	V_{EBO}	10	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	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	625	$^\circ\text{C/W}$

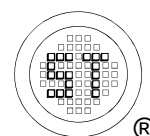
¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout



MMDT3104R

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 5\text{ mA}$	h_{FE}	68	-	-	-
Collector Base Cutoff Current at $V_{CB} = 40\text{ V}$	I_{CBO}	-	-	0.1	μA
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	50	-	-	V
Collector Emitter Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CEO}$	50	-	-	V
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$	V_{CEsat}	-	-	0.3	V
Input Off Voltage at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ }\mu\text{A}$	$V_{i(off)}$	0.5	-	-	V
Input On Voltage at $V_{CE} = 0.3\text{ V}$, $I_C = 2\text{ mA}$	$V_{i(on)}$	-	-	3	V
Transition Frequency at $V_{CE} = 10\text{ V}$, $I_C = 5\text{ mA}$	f_T	-	250	-	MHz
Output Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{ob}	-	3.7	-	pF
Input Resistor	R1	32	47	62	K Ω
Resistor Ratio	R1 / R2	0.9	1	1.1	-



MMDT3104R

Electrical Characteristics Curves

Fig 1. Collector Current vs. $V_{I(ON)}$

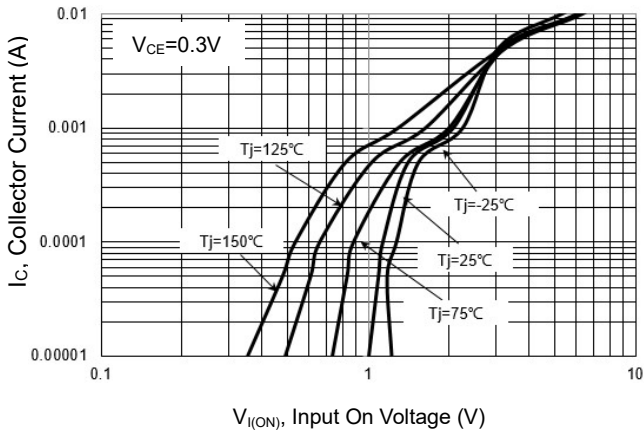


Fig 2. Collector Current vs. $V_{I(off)}$

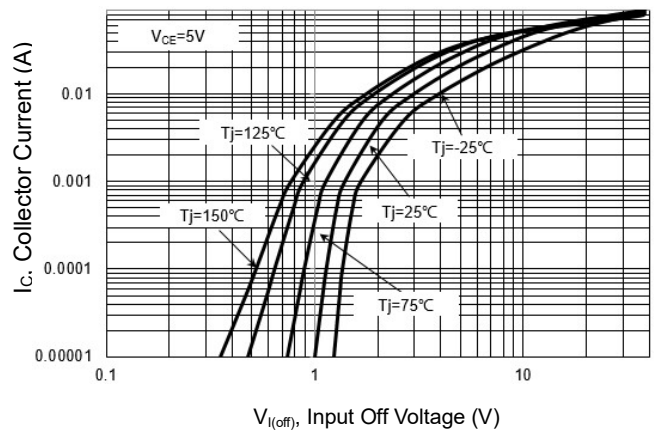


Fig 3. DC Current Gain vs. Collector Current

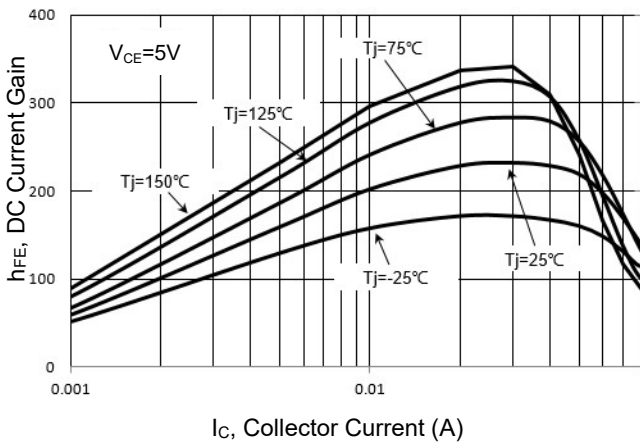


Fig 4. $V_{CE(sat)}$ vs. Collector Current

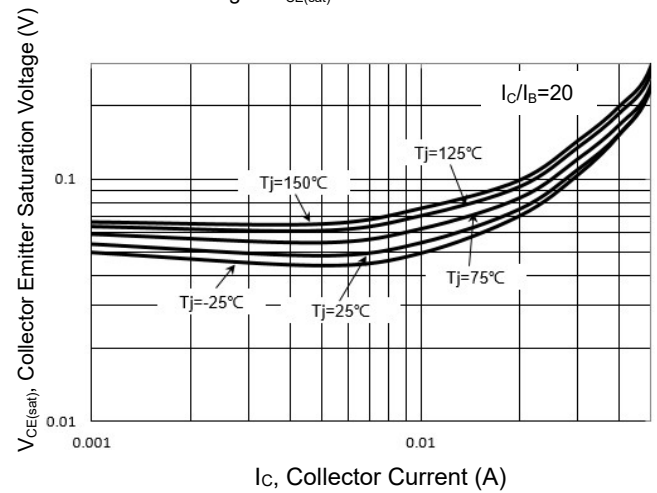
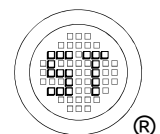
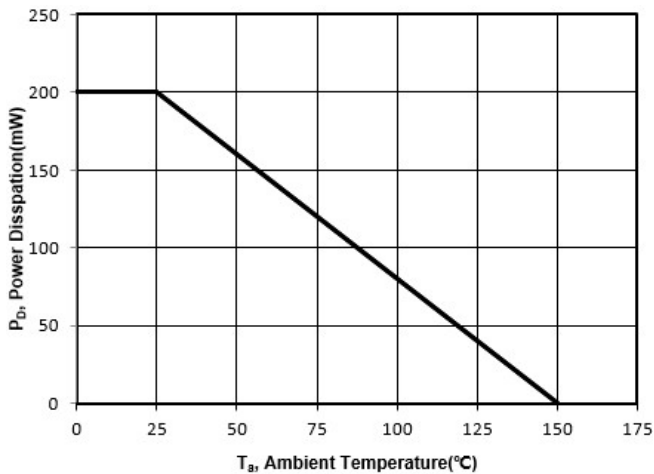


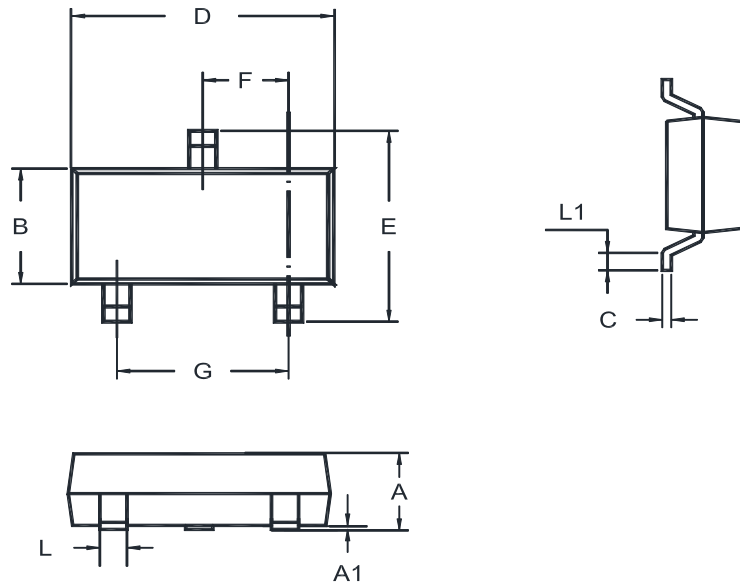
Fig 5. Power Derating Curve



MMDT3104R

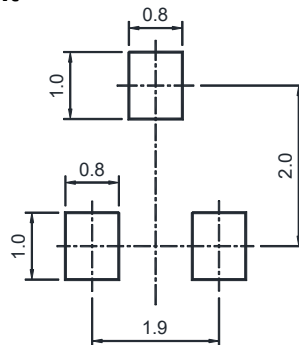
Package Outline (Dimensions in mm)

SOT-23



Unit	A	A1	B	C	D	E	F	G	L	L1
mm	1.20	0.100	1.40	0.19	3.04	2.6	1.02	2.04	0.51	0.2
	0.89	0.013	1.20	0.08	2.80	2.2	0.89	1.78	0.37	MIN

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

- "HX" = Part No.
 - "YM" = Date Code Marking
 - "Y" = Year
 - "M" = Month
- Font type: Arial

