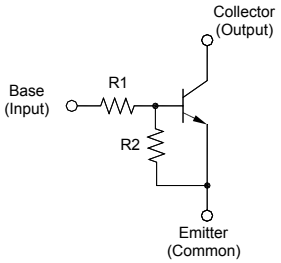
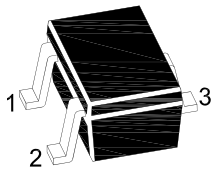
MMDTC1104E

NPN Silicon Epitaxial Planar Digital Transistor

Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process





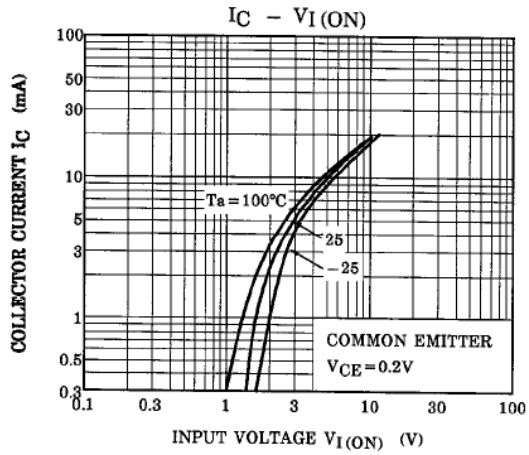
1.Base 2.Emitter 3.Collector
SOT-523 Plastic Package

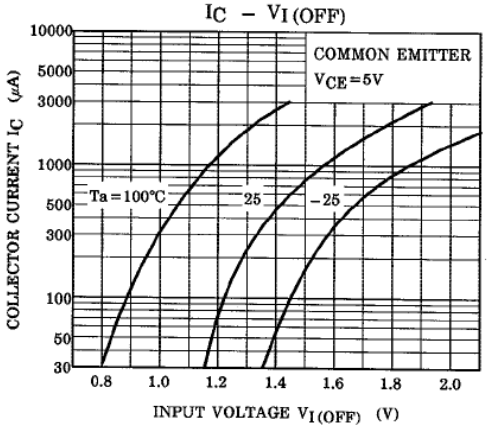
Absolute Maximum Ratings (T_a = 25 °C)

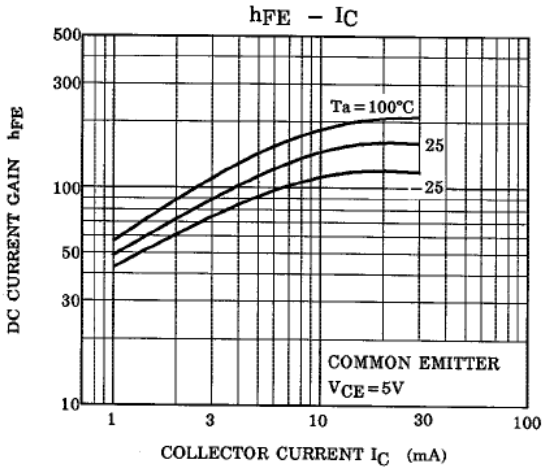
Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	50	V
Collector Emitter Voltage	V_{CEO}	50	V
Emitter Base Voltage	V_{EBO}	10	V
Collector Current	I_C	100	mA
Power Dissipation	P_{tot}	100	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 55 to + 150	°C

Characteristics at T_a = 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 10 mA	h_{FE}	80	-	-	-
Collector Base Cutoff Current at V_{CB} = 50 V	I_{CBO}	-	-	0.1	µA
Collector Emitter Cutoff Current at V_{CE} = 50 V	I_{CEO}	-	-	0.5	µA
Emitter Base Cutoff Current at V_{EB} = 10 V	I_{EBO}	0.082	-	0.15	mA
Collector Emitter Saturation Voltage at I_C = 5 mA, I_B = 0.25 mA	$V_{CE(sat)}$	-	-	0.3	V
Input Voltage (ON) at V_{CE} = 0.2 V, I_C = 5 mA	$V_{I(ON)}$	1.5	-	5	V
Input Voltage (OFF) at V_{CE} = 5 V, I_C = 0.1 mA	$V_{I(OFF)}$	1	-	1.5	V
Transition Frequency at V_{CE} = 10 V, I_C = 5 mA	f_T	-	250	-	MHz
Collector Output Capacitance at V_{CB} = 10V, f = 1 MHz	C_{ob}	-	-	6	pF
Input Resistance	R_1	32.9	47	61.1	KΩ
Resistance Ratio	R_2 / R_1	0.8	1	1.2	-


I_C – $V_{I(ON)}$
COLLECTOR CURRENT I_C (mA)
100
50
30
10
5
3
1
0.5
0.3
Ta = 100°C
25
– 25
COMMON EMITTER
V_{CE} = 0.2V
0.1
0.3
1
3
10
30
100
INPUT VOLTAGE $V_{I(ON)}$ (V)


I_C – $V_{I(OFF)}$
COLLECTOR CURRENT I_C (μA)
10000
5000
3000
1000
500
300
100
50
30
COMMON EMITTER
V_{CE} = 5V
Ta = 100°C
25
– 25
0.8
1.0
1.2
1.4
1.6
1.8
2.0
INPUT VOLTAGE $V_{I(OFF)}$ (V)


h_{FE} – I_C
DC CURRENT GAIN h_{FE}
500
300
100
50
30
10
Ta = 100°C
25
– 25
COMMON EMITTER
V_{CE} = 5V
1
3
10
30
100
COLLECTOR CURRENT I_C (mA)