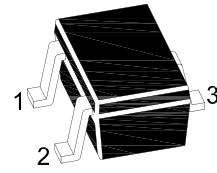
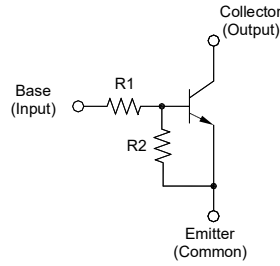


# MMDTC114EE

## 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

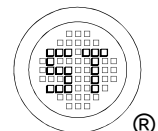
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	50	V
Input Voltage	$V_I$	- 10 to + 40	V
Collector Current	$I_C$	100	mA
Power Dissipation	$P_{tot}$	150	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 <sup>1)</sup>	$R_{\theta JA}$	833	$^\circ\text{C/W}$

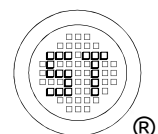
<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



# MMDTC114EE

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 5\text{ mA}$	$h_{FE}$	30	-	-	-
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$	$I_{CBO}$	-	-	500	nA
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	-	0.88	mA
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$	$V_{CE(sat)}$	-	-	0.3	V
Input on Voltage at $V_{CE} = 0.3\text{ V}$ , $I_C = 10\text{ mA}$	$V_{I(on)}$	-	-	3	V
Input off Voltage at $V_{CE} = 5\text{ V}$ , $I_C = 100\text{ }\mu\text{A}$	$V_{I(off)}$	0.5	-	-	V
Transition frequency at $V_{CE} = 10\text{ V}$ , $-I_E = 5\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	-	250	-	MHz
Input Resistance	$R_1$	7	10	13	K $\Omega$
Resistance Ratio	$R_2 / R_1$	0.8	1	1.2	-



# MMDTC114EE

## Electrical Characteristics Curves

Fig 1. Power Derating Curve

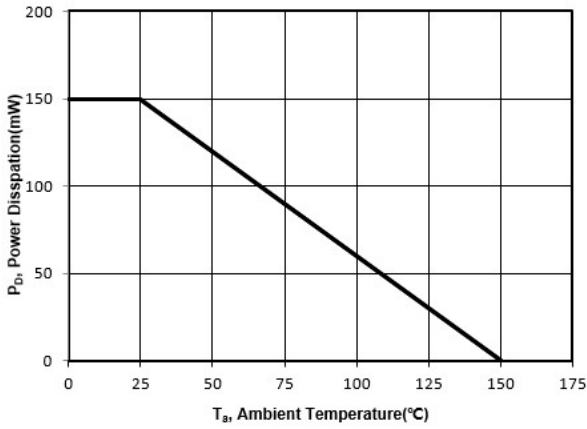


Fig. 2 Output Characteristics Curve

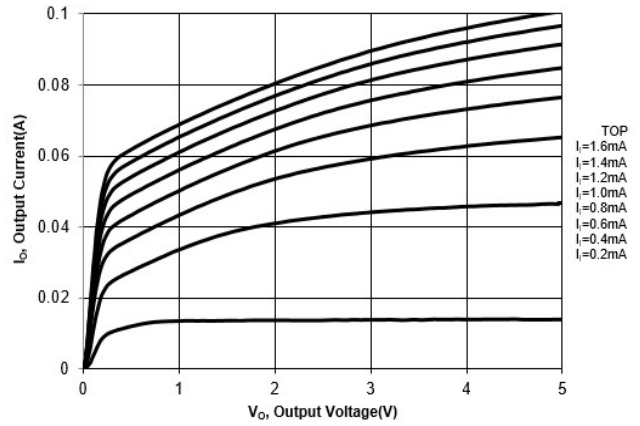


Fig. 3 Output Current vs. V<sub>I(ON)</sub>, Input Voltage

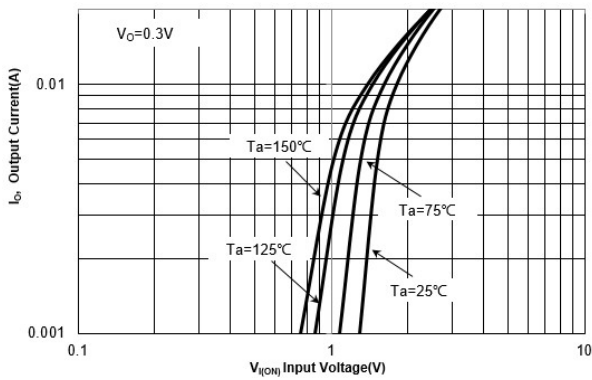


Fig. 4 Output Current vs. V<sub>I(OFF)</sub>, Input Voltage

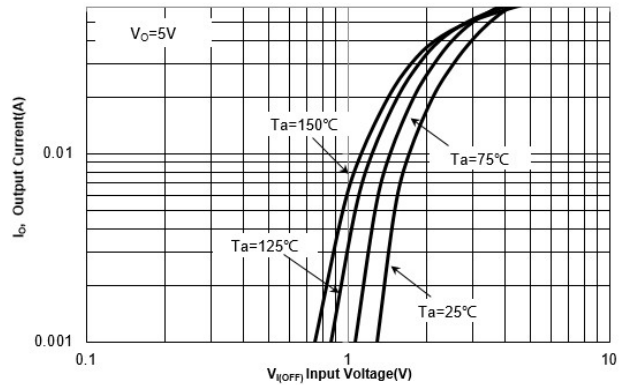


Fig. 5 DC Current Gain vs. Output Current

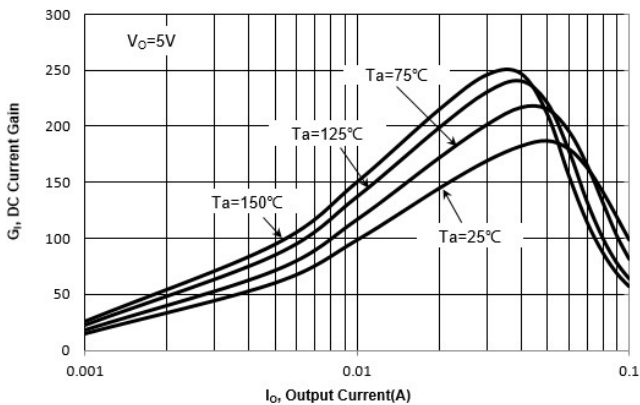
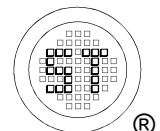
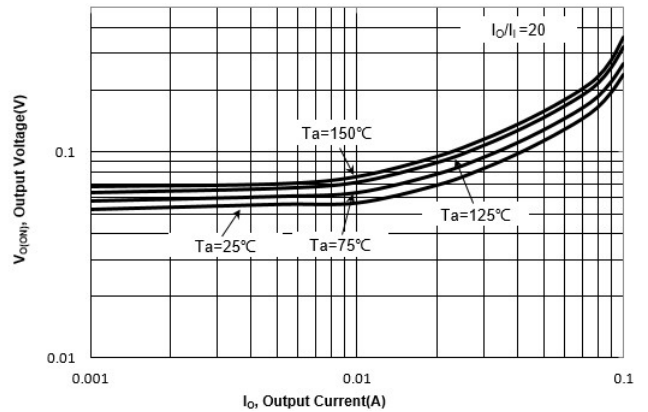


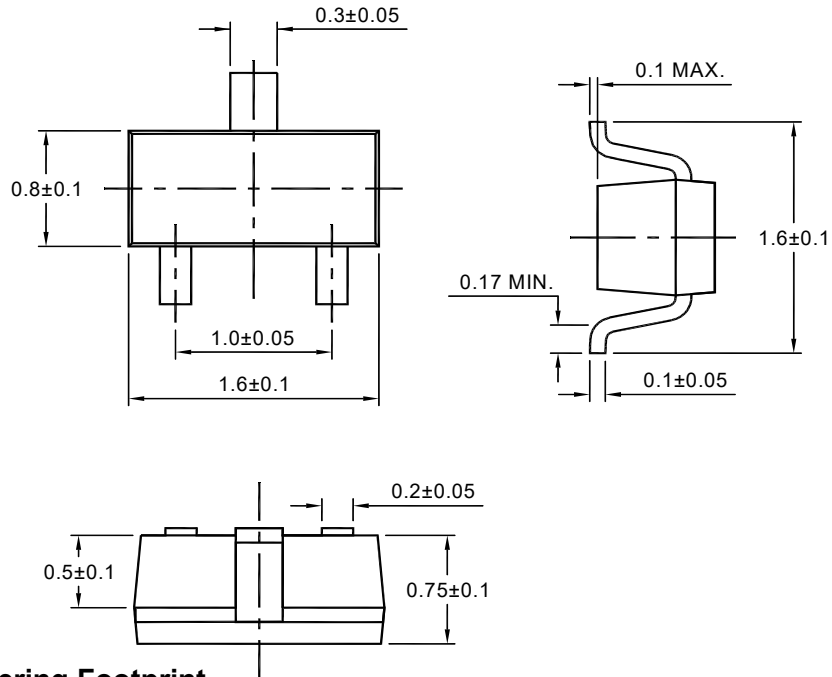
Fig. 6 V<sub>o(ON)</sub> vs. Output Current



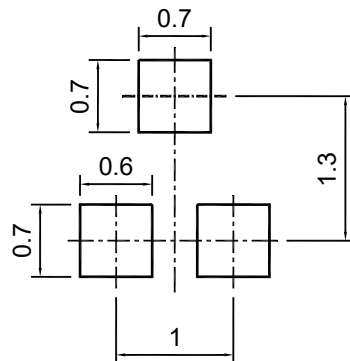
# MMDTC114EE

## Package Outline (Dimensions in mm)

SOT-523



## Recommended Soldering Footprint

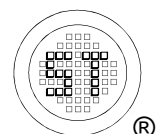
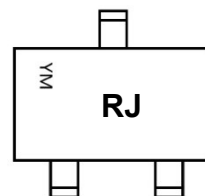


## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-523	8	$4 \pm 0.1$	$0.157 \pm 0.004$	178	7	4,000

## Marking information

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



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