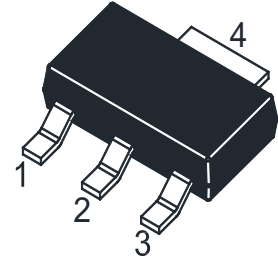


2SD651Q-HAF

NPN Silicon Epitaxial Planar Transistor

Features

- High current
- Halogen and Antimony Free(HAF), RoHS compliant



1.Base 2.Collector 3.Emitter 4.Collector
SOT-223 Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	80	V
Collector Emitter Voltage	V_{CEO}	60	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	2	A
Power Dissipation ¹⁾	P_D	0.8	W
Maximum Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	156	$^\circ\text{C/W}$
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 65 to + 150	$^\circ\text{C}$

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

2SD651Q-HAF

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

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $V_{CE} = 2\text{ V}$, $I_C = 50\text{ mA}$	h_{FE}	75	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 500\text{ mA}$	h_{FE}	75	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 1\text{ A}$	h_{FE}	75	-	-
at $V_{CE} = 2\text{ V}$, $I_C = 2\text{ A}$	h_{FE}	40	-	-
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$	$V_{(BR)CBO}$	80	-	V
Collector Emitter Breakdown Voltage at $I_C = 10\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	60	-	V
Emitter Base Breakdown Voltage at $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	V
Collector Base Cutoff Current at $V_{CB} = 80\text{ V}$	I_{CBO}	-	100	nA
Emitter Base Cutoff Current at $V_{EB} = 4\text{ V}$	I_{EBO}	-	100	nA
Collector Emitter Saturation Voltage at $I_C = 2\text{ A}$, $I_B = 200\text{ mA}$ at $I_C = 1\text{ A}$, $I_B = 100\text{ mA}$	V_{CEsat}	- -	0.5 0.3	V
Base Emitter Saturation Voltage at $I_C = 1\text{ A}$, $I_B = 100\text{ mA}$	V_{BEsat}	-	1.2	V
Base Emitter Voltage at $V_{CE} = 2\text{ V}$, $I_C = 1\text{ A}$	$V_{BE(on)}$	-	1	V
Transition Frequency at $V_{CE} = 5\text{ V}$, $I_C = 50\text{ mA}$, $f = 100\text{ MHz}$	f_T	75	-	MHz

2SD651Q-HAF

Ratings and Electrical Characteristics Curves

Fig 1. Typical DC Current Gain

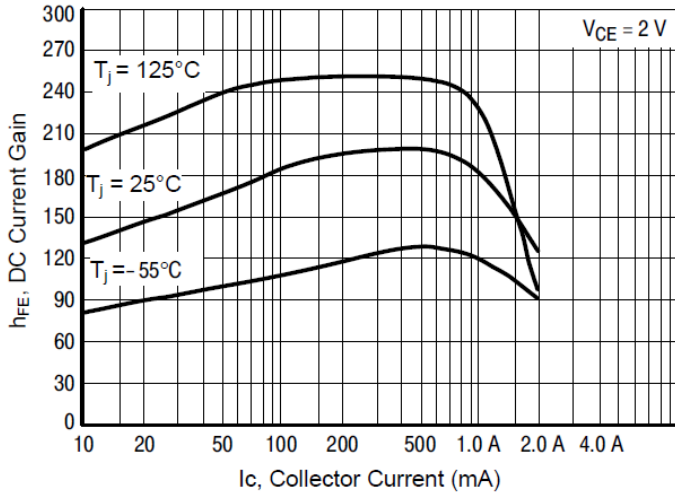


Fig 2. On Voltages

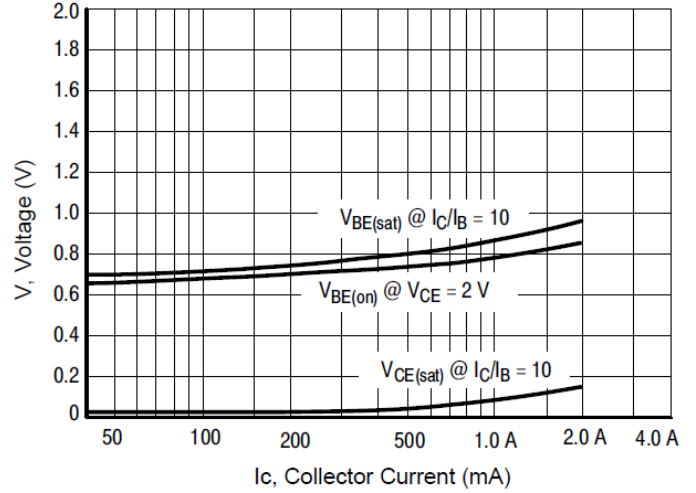
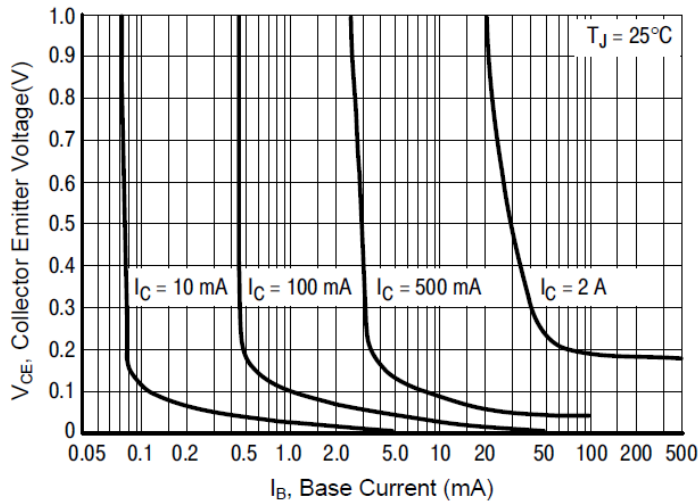


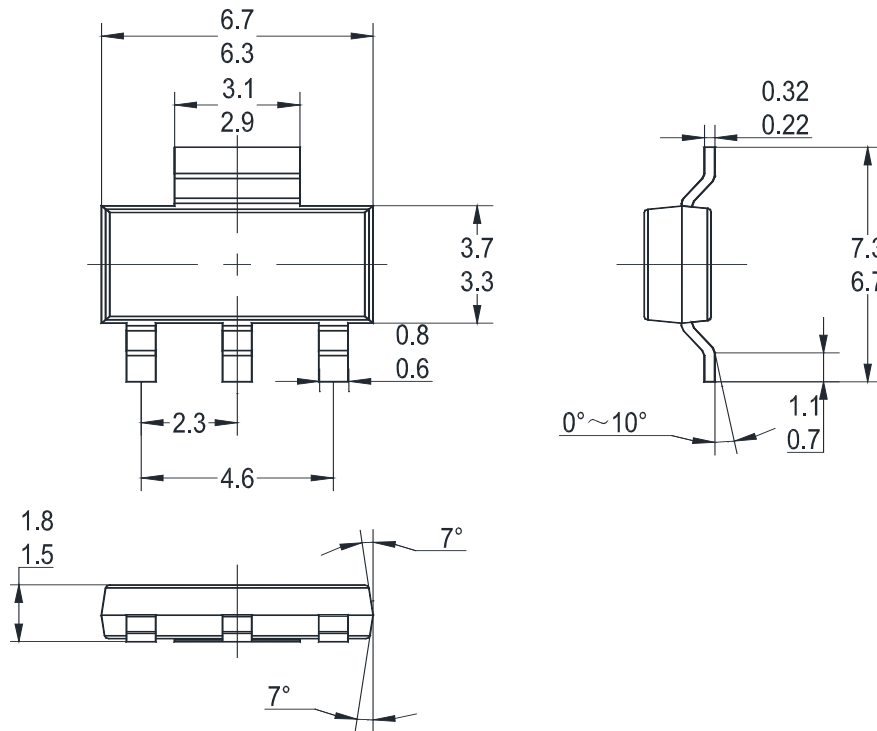
Fig 3. Collector Saturation Region



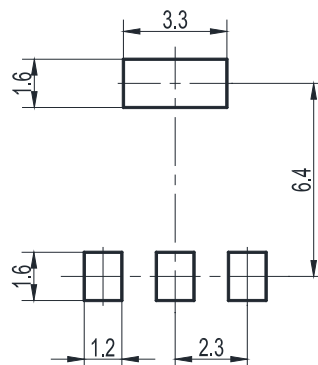
2SD651Q-HAF

Package Outline (Dimensions in mm)

SOT-223



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-223	12	8 ± 0.1	0.315 ± 0.004	330	13	3,000

Marking information

" 2SD651Q " = Part No.
 " YYWW " = Date Code Marking
 " Y " = Year (ex: 19 = 2019)
 " W " = Week (ex: 09 = the 9th week of the year)
 Font type: Arial

