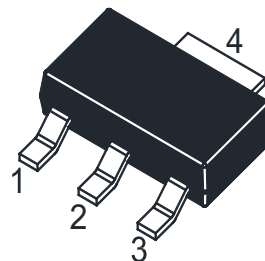


# FZT653Q-HAF

## NPN Silicon Epitaxial Planar Power Transistor

### Features

- High Continuous Current
- Low Saturation Voltage
- Halogen and Antimony Free(HAF), RoHS compliant



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

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	120	V
Collector Emitter Voltage	$V_{CEO}$	100	V
Emitter Base Voltage	$V_{EBO}$	7	V
Collector Current	$I_C$	2	A
Peak Collector Current, Pulesd	$I_{CM}$	6	A
Power Dissipation <sup>1)</sup>	$P_{tot}$	2	W
Thermal Resistance, Junction to Ambient <sup>1)</sup>	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_j, T_{stg}$	- 55 to + 150	$^\circ\text{C}$

<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

# FZT653Q-HAF

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_{CE} = 2\text{ V}$ , $I_C = 50\text{ mA}$	$h_{FE}$	70	-	-	-
at $V_{CE} = 2\text{ V}$ , $I_C = 500\text{ mA}$	$h_{FE}$	100	-	300	-
at $V_{CE} = 2\text{ V}$ , $I_C = 1\text{ A}$	$h_{FE}$	55	-	-	-
at $V_{CE} = 2\text{ V}$ , $I_C = 2\text{ A}$	$h_{FE}$	25	-	-	-
Collector Base Cutoff Current at $V_{CB} = 100\text{ V}$	$I_{CBO}$	-	-	100	nA
Emitter Base Cutoff Current at $V_{EB} = 5.6\text{ V}$	$I_{EBO}$	-	-	100	nA
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	120	-	-	V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	100	-	-	V
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	7	-	-	V
Collector Emitter Saturation Voltage at $I_C = 1\text{ A}$ , $I_B = 100\text{ mA}$	$V_{CE(sat)}$	-	-	0.3	V
at $I_C = 2\text{ A}$ , $I_B = 200\text{ mA}$		-	-	0.5	
Base Emitter Saturation Voltage at $I_C = 1\text{ A}$ , $I_B = 100\text{ mA}$	$V_{BE(sat)}$	-	-	1.25	V
Base Emitter Turn-On Voltage at $I_C = 1\text{ A}$ , $V_{CE} = 2\text{ V}$	$V_{BE(on)}$	-	-	1	V
Gain Bandwidth Product at $V_{CE} = 5\text{ V}$ , $I_C = 100\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	140	-	-	MHz
Turn-On Time at $I_C = 500\text{ mA}$ , $V_{CC} = 10\text{ V}$ , $I_{B1} = -I_{B2} = 50\text{ mA}$	$t_{on}$	-	80	-	ns
Turn-Off Time at $I_C = 500\text{ mA}$ , $V_{CC} = 10\text{ V}$ , $I_{B1} = -I_{B2} = 50\text{ mA}$	$t_{off}$	-	1200	-	ns
Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{obo}$	-	-	30	pF

# FZT653Q-HAF

## Electrical Characteristics Curves

Fig 1. Single Pulse Test

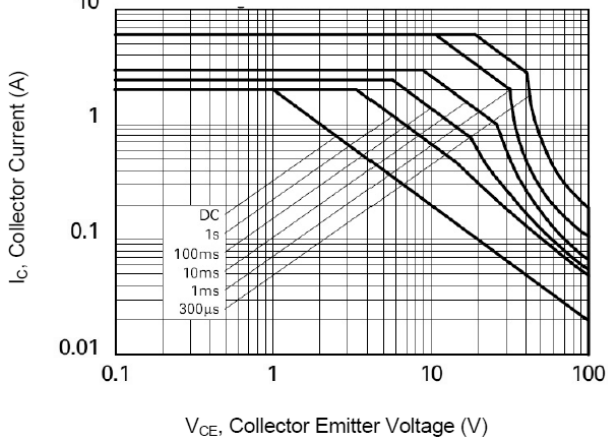


Fig 2. Pulse Power Dissipation

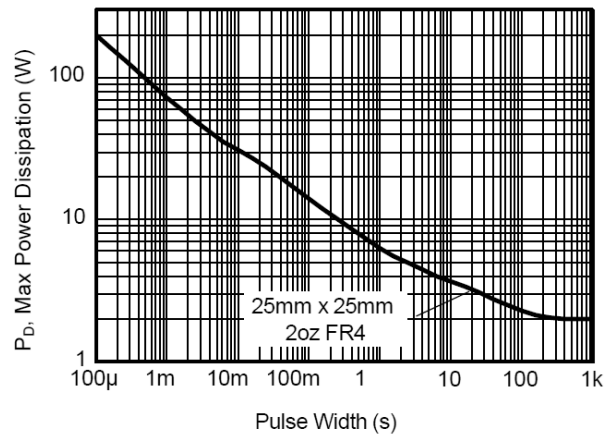


Fig 3. Deratig Curve

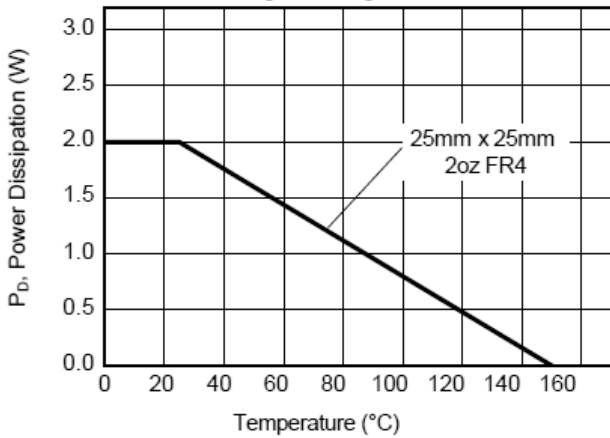
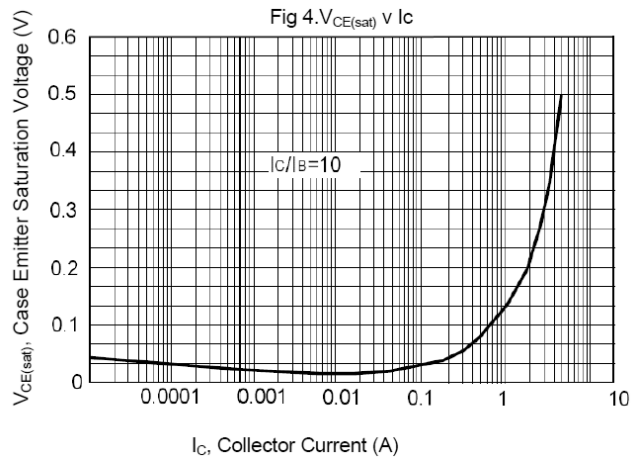


Fig 4.  $V_{CE(sat)}$  v  $I_C$



# FZT653Q-HAF

## Electrical Characteristics Curves

Fig 5.  $h_{FE}$  v  $I_C$

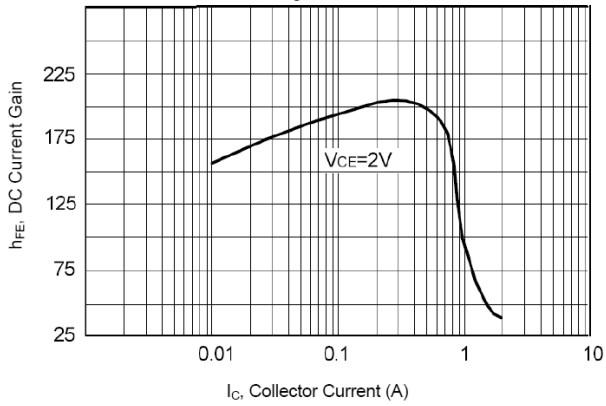


Fig 6.  $V_{BE(sat)}$  v  $I_C$

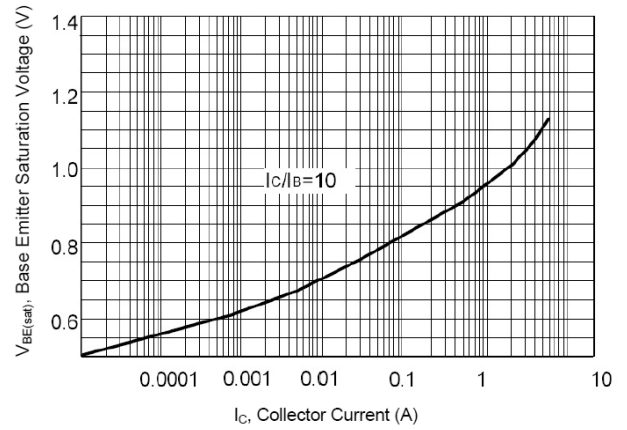
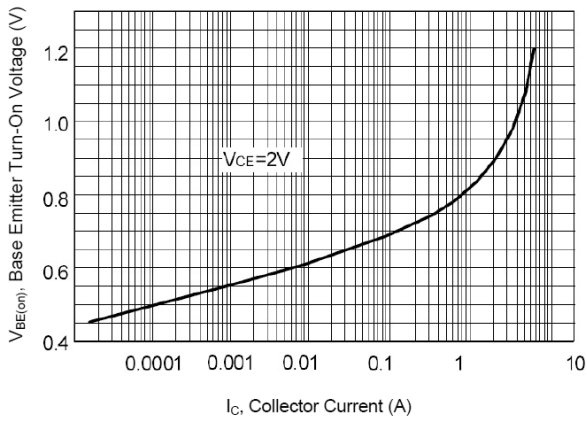


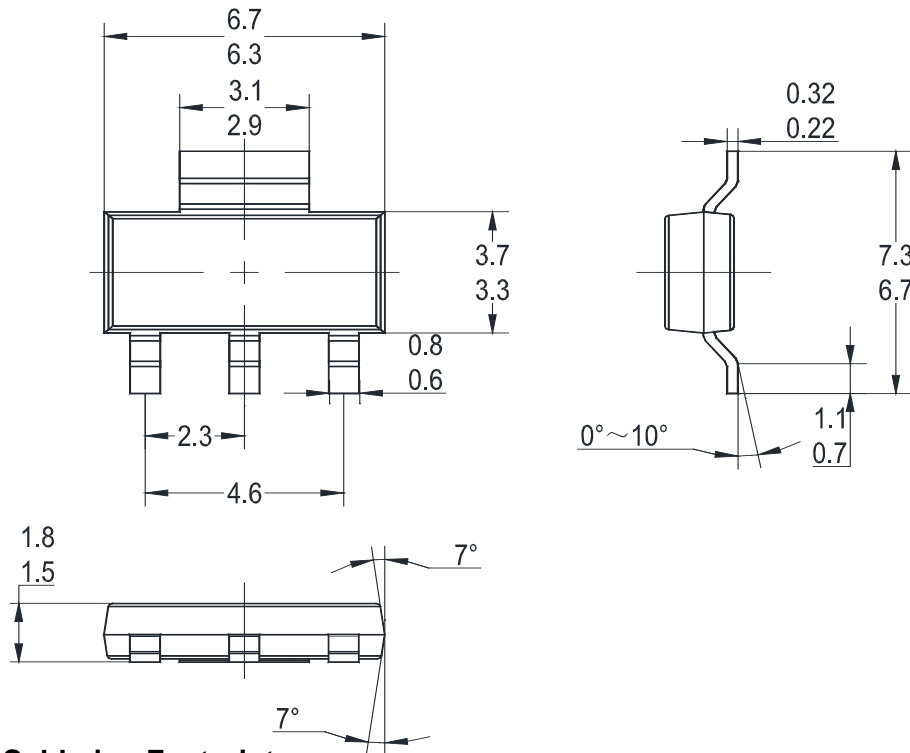
Fig 7.  $V_{BE(on)}$  v  $I_C$



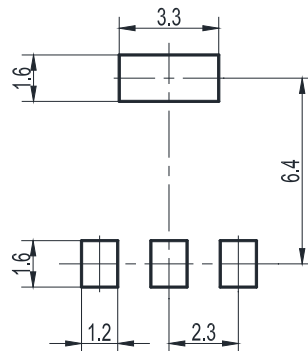
# FZT653Q-HAF

## Package Outline (Dimensions in mm)

SOT-223



## Recommended Soldering Footprint



## Packing information

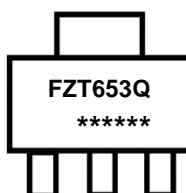
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-223	12	4 ± 0.1	0.157 ± 0.004	330	13	3,000

## Marking information

" FZT653Q " = Part No.

" \*\*\*\*\* " = Date Code Marking

Font type: Arial



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