

SOT-223 Plastic-Encapsulate Transistors (NPN)

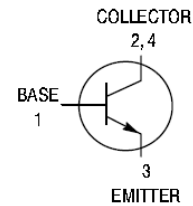
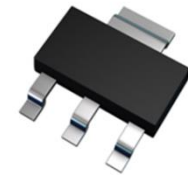
Feature

- Epitaxial planar die construction
- Low saturation voltage

Mechanical Data

- Case: SOT-223
- Molding compound: UL flammability classification rating 94V-0
- Terminal s: Tin-plated; solderability per MIL-STD-202, Method 208

SOT-223



Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
FZT651TA	SOT-223	4000 pcs / Tape & Reel	FZT651

Maximum Rating ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	80	V
Collector-Emitter Breakdown Voltage	V_{CEO}	60	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	3	A
Collector Current (Pulse)	I_{CM}	6	A

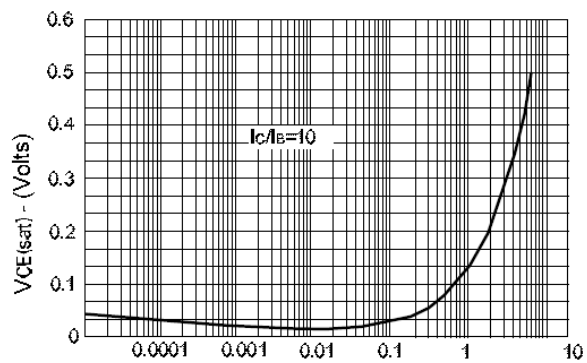
Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation($T_A = 25^{\circ}\text{C}$)	P_D	2	W
Thermal Resistance (Junction-to-Ambient)	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

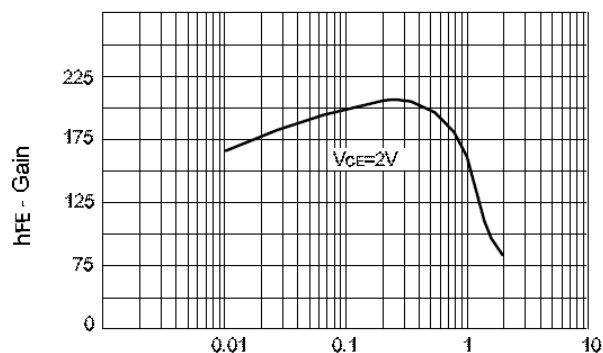
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	80	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	60	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 80\text{V}, I_E = 0$	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 4\text{V}, I_C = 0$	-	-	0.1	μA
DC Current Gain	h_{FE}	$V_{CE} = 2\text{V}, I_C = 50\text{mA}$	75	-	-	-
		$V_{CE} = 2\text{V}, I_C = 500\text{mA}$	75	-	-	-
		$V_{CE} = 2\text{V}, I_C = 1\text{A}$	75	-	-	-
		$V_{CE} = 2\text{V}, I_C = 2\text{A}$	40	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 0.1\text{A}$	-	-	0.3	V
		$I_C = 3\text{A}, I_B = 0.3\text{A}$	-	-	0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{A}, I_B = 0.1\text{A}$	-	-	1.25	V
Base-emitter Turn-on Voltage	$V_{BE(ON)}$	$I_C = 1\text{A}, V_{CE} = 2\text{V}$	-	-	1	V
Output Capacitance	C_{OBO}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	-	-	30	pF
Transition Frequency	f_T	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $f = 100\text{MHz}$	140	-	-	MHZ
Turn-on Time	t_{on}	$V_{CC} = 10\text{V}, I_C = 500\text{mA},$ $I_{B1} = I_{B2} = 50\text{mA}$	-	45	-	ns
Turn-off Time	t_{off}		-	800	-	ns

Ratings and Characteristics Curves ($T_A = 25^\circ\text{C}$ unless otherwise specified)



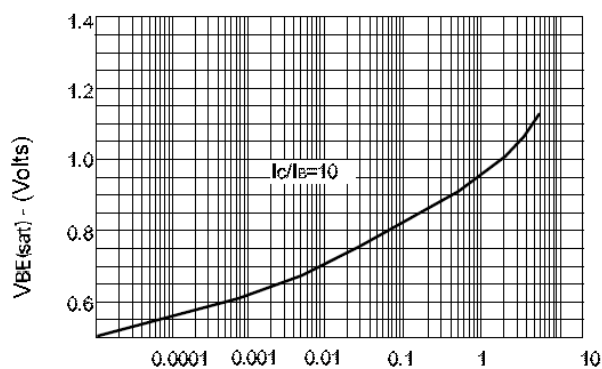
I_C - Collector Current (Amps)

$V_{CE(sat)}$ v I_C



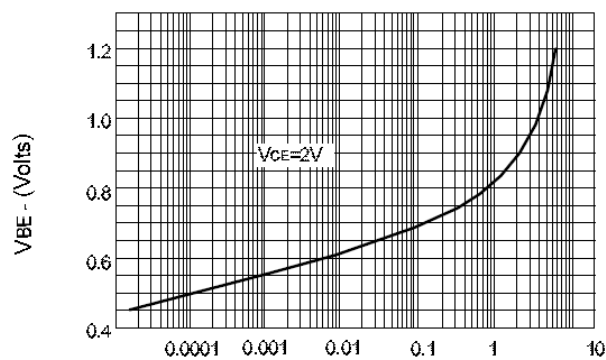
I_C - Collector Current (Amps)

h_{FE} v I_C



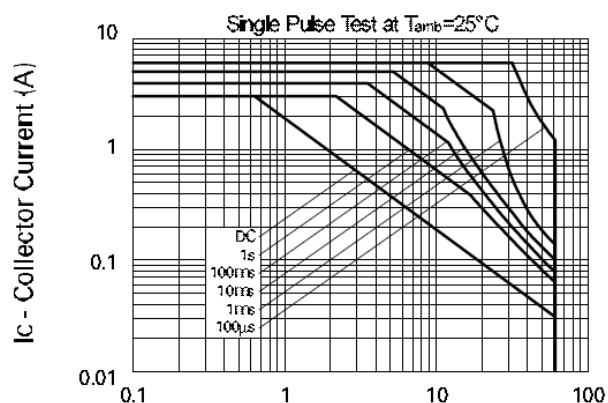
I_C - Collector Current (Amps)

$V_{BE(sat)}$ v I_C



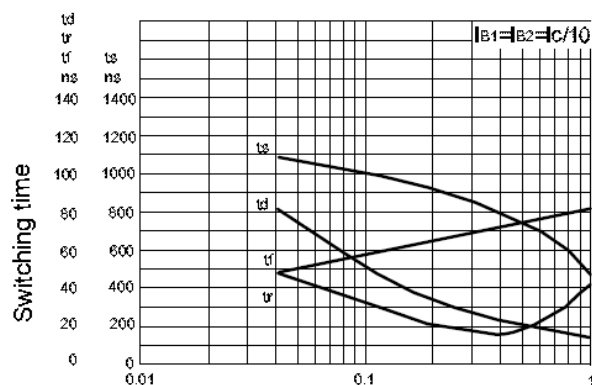
I_C - Collector Current (Amps)

$V_{BE(on)}$ v I_C



V_{CE} - Collector Emitter Voltage (V)

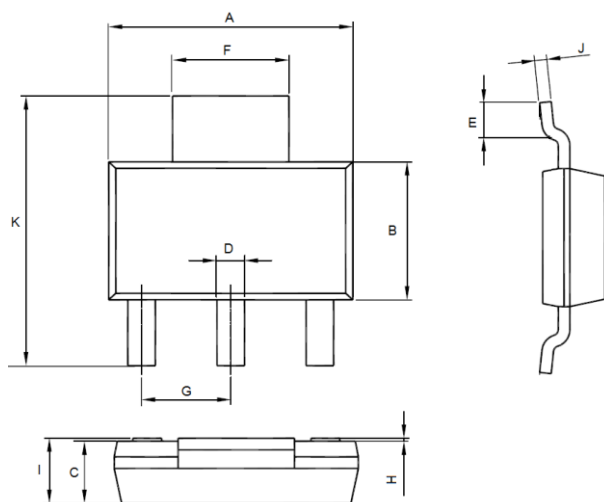
Safe Operating Area



I_C - Collector Current (Amps)

Switching Speeds

Package Outline Dimensions (Unit: mm)



SOT-223		
Dimension	Min.	Max.
A	6.10	6.50
B	3.30	3.70
C	1.50	1.70
D	0.66	0.82
E	0.90	1.15
F	2.90	3.10
G	2.20	2.40
H	0.02	0.10
I	1.52	1.80
J	0.20	0.40
K	6.70	7.30

Mounting Pad Layout (Unit: mm)

SOT-223

