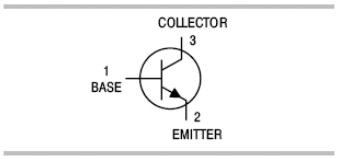
2SC4003

Bipolar Transistors(NPN)

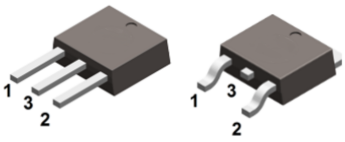
Features

- High h_{FE}
- Low $V_{CE(sat)}$



Mechanic al Data

- Case: TO-251, TO-252
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



TO-251 **TO-252**

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
2SC4003I	TO-251	80 pcs / Tube	C4003I
2SC4003D	TO-252	80 pcs / Tube or 2500 pcs / Tape & Reel	C4003D

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	400	V
Collector-Emitter Breakdown Voltage	V_{CEO}	400	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	0.2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	1	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	49	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	9.8	°C/W
Thermal Resistance Junction-to-Lead	$R_{\theta JL}$	2.4	°C/W
Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

2SC4003

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Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	400	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	400	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 300V, I_E = 0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V, I_C = 0	-	-	0.1	μA
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 50mA	60	-	200	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA	-	-	0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 50mA, I_B = 5mA	-	-	1	V
Transition Frequency	f_T	I_C = 10mA, V_{CE} = 30V	-	70	-	MHz

Classification of h_{FE}

Rank	D	E
Range	60-120	100-200

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Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

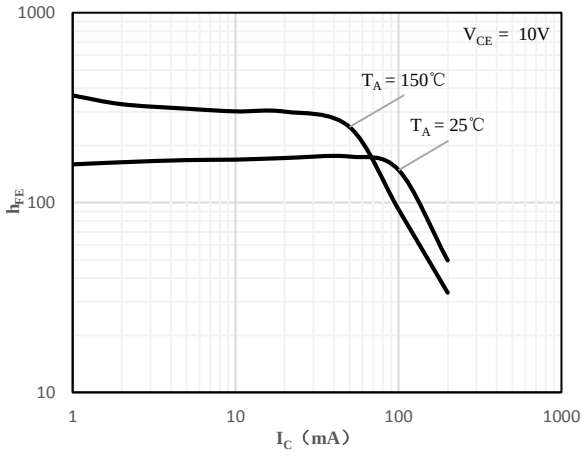


Fig 1 h_{FE} vs. I_C

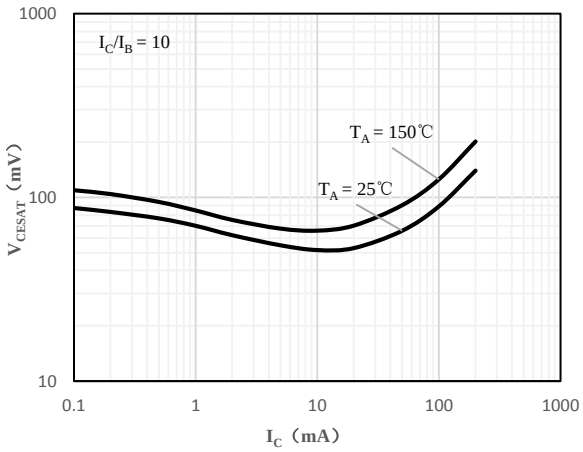


Fig 2 $V_{CE(sat)}$ vs. I_C

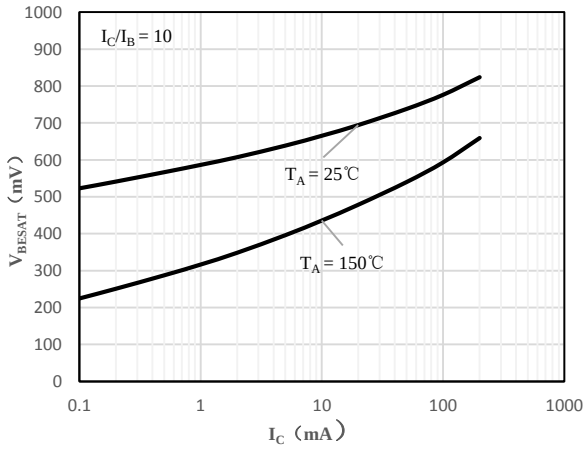


Fig 3 $V_{BE(sat)}$ vs. I_C

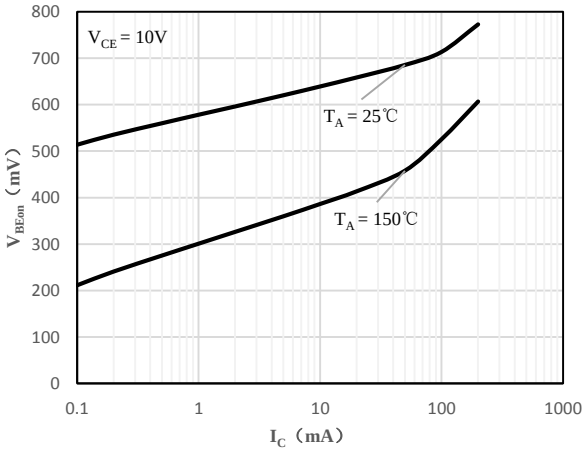
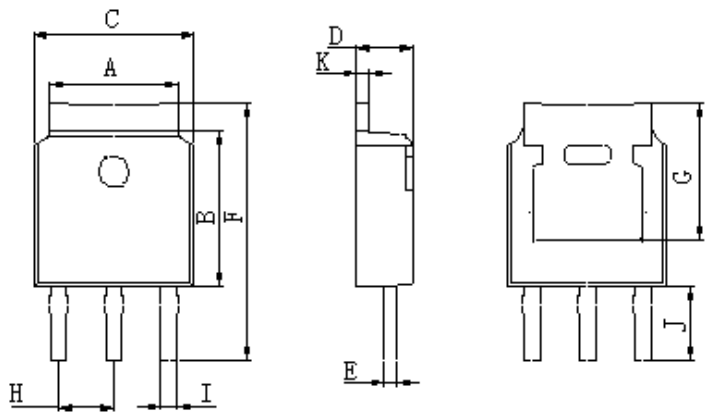


Fig 4 $V_{BE(ON)}$ vs. I_C

Package Outline Dimensions (Unit: mm)



TO-251		
Dimension	**Min.**	**Max.**
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	11.00	11.60
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	4.00	4.40
K	0.40	0.60

2SC4003

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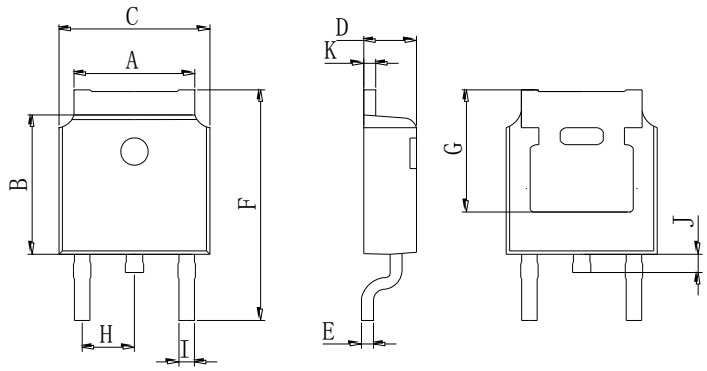
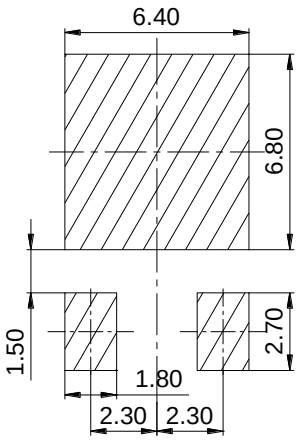
Package Outline Dimensions (Unit: mm)



TO-252		
Dimension	**Min.**	**Max.**
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60

Mounting Pad Layout (Unit: mm)

TO-252



Package	Packing	Quantity	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-251	Bulk	500pcs/Bag	5000pcs	245×170×100	50,000pcs	525×375×270
TO-251	Tube	80pcs/Tube	4000pcs	560×178×35	40,000pcs	585×385×220

Packge	Packing	Box Size L×W×H(mm)	Quatity(pcs/box)	Carton Size L×W×H(mm)	Quatity(pcs/carton)
TO-252	80pcs/Tube	560×150×50	4000	570×290×180	40000
TO-252	2500pcs/Reel	335×335×40	2500	370×370×440	12500/25000