

S8050T

25V 500 mA NPN switching transistor

1. Description

- SOT-523 Plastic-Encapsulate Transistors

2. Features

- Complementary to S8550T
- Power Dissipation of 200mW
- High Stability and High Reliability

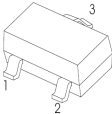
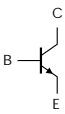
3. Mechanical Data

- SOT-523 Small Outline Plastic Package
- Epoxy UL: 94V-0
- Mounting Position: Any

4. MAXIMUM RATINGS (Ta=25 °C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	40	V
Collector-Emitter Voltage	V _{CE0}	25	V
Emitter-Base Voltage	V _{EB0}	5	V
Collector Current	I _C	500	mA
Collector Power Dissipation	P _C	200	mW
Thermal Resistance From Junction To Ambient	R _{θJA}	625	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~+150	°C

5. Pinning information

Pin	Symbol	Description	Simplified outline	Equivalent Circuit	Marking	Package
1	B	BASE			J3Y	SOT-523
2	E	EMITTER				
3	C	COLLECTOR				

6. Electrical Characteristics (Ta=25 unless otherwise specified)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=100\mu A, I_E=0$	40	—	—	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=1mA, I_B=0$	25	—	—	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=100\mu A, I_C=0$	5	—	—	V
I_{CBO}	Collector cut-off current	$V_{CB}=40V, I_E=0$	—	—	0.1	μA
I_{CEO}	Collector cut-off current	$V_{CB}=20V, I_E=0$	—	—	0.1	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=5V, I_C=0$	—	—	0.1	μA
$h_{FE(1)}$	DC current gain	$V_{CE}=1V, I_C=50mA$	120	—	400	—
$h_{FE(2)}$		$V_{CE}=1V, I_C=500mA$	50	—	—	—
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C=500mA, I_B=50mA$	—	—	0.6	V
$V_{BE(sat)}$	Base-emitter saturation voltage	$I_C=500mA, I_B=50mA$	—	—	1.2	V
V_{BE}	Base -emitter voltage	$V_{CE}=1V, I_C=10mA$	—	—	0.70	V
f_T	Transition frequency	$V_{CE}=6V, I_C=20mA, f=30MHz$	150	—	—	MHz

7. CLASSIFICATION OF h_{FE}

RANK	L	H	J
RANGE	120–200	200–350	300–400

8. Electrical Characteristics Diagrams

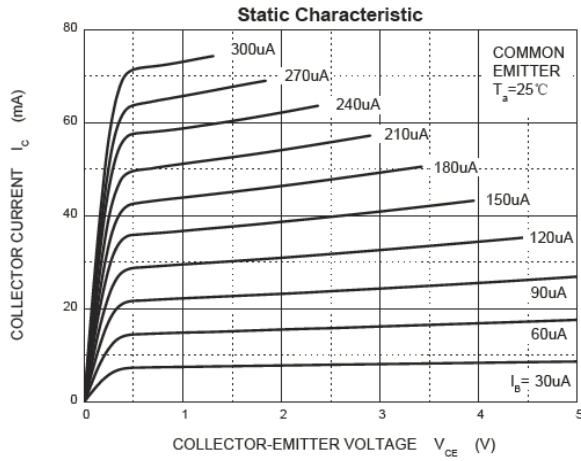


Figure 1. Static Characteristics

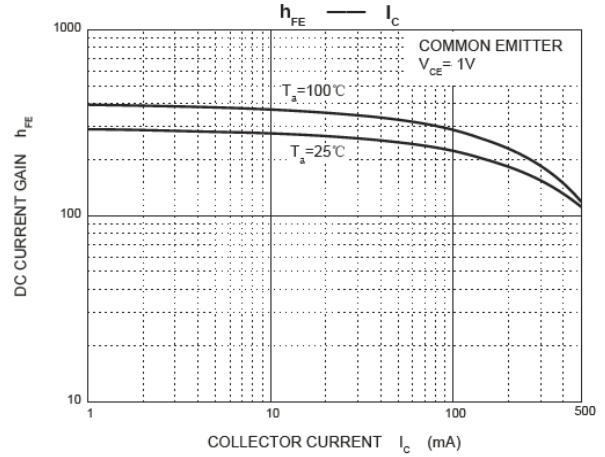


Figure 2. DC Current Gain Characteristics

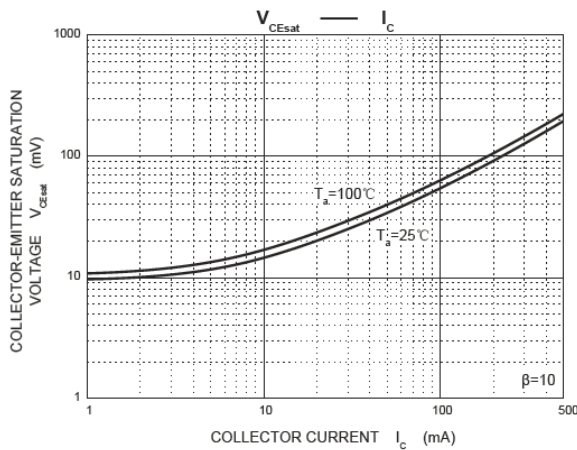


Figure 3. Collector-Emitter Saturation Voltage Characteristics

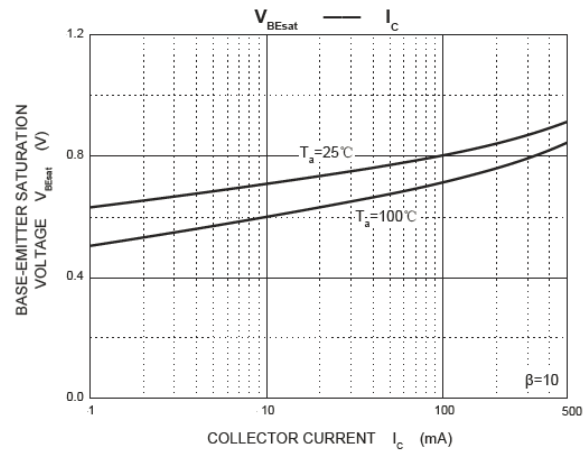


Figure 4. Base-Emitter Saturation Voltage Characteristics

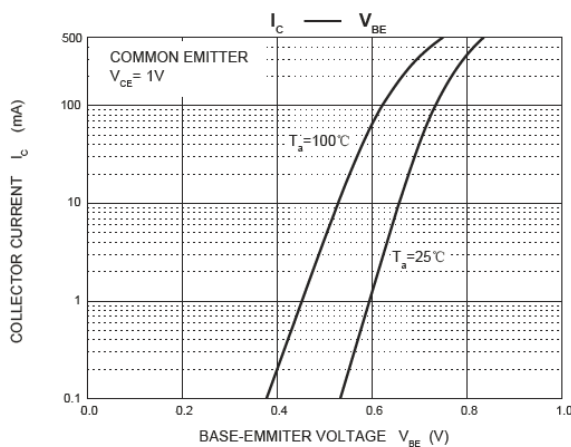


Figure 5. Base-Emitter Voltage Characteristics

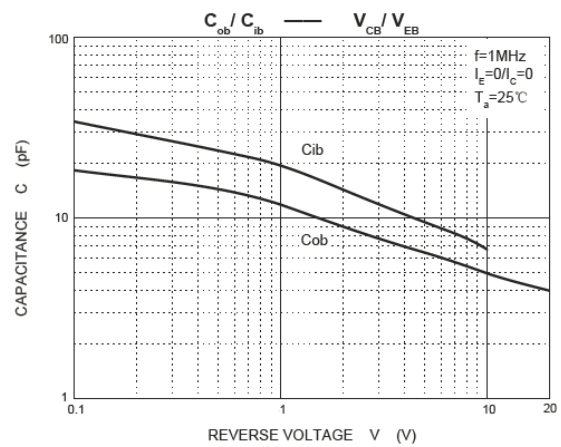


Figure 6. Capacitance Characteristics

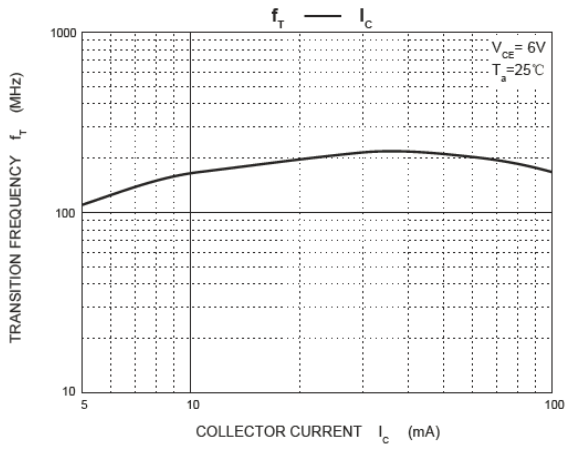


Figure 7. Collector Current Characteristics

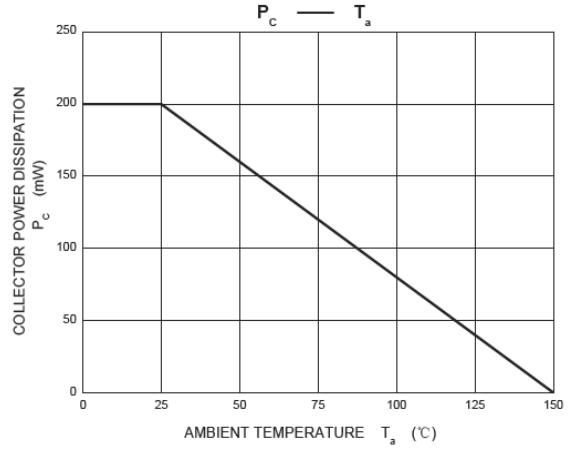
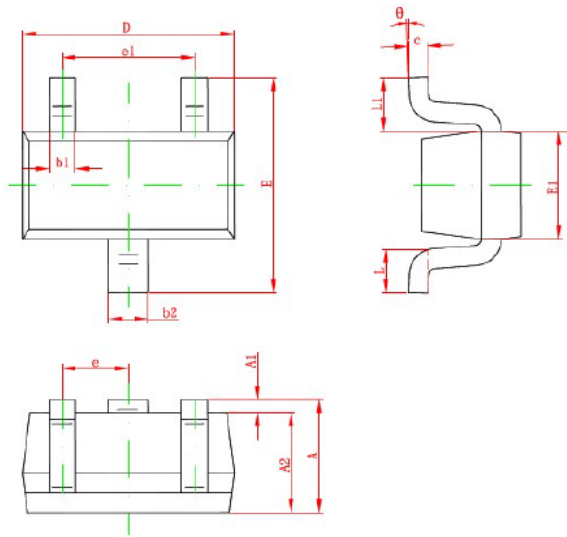


Figure 8. Collector Power Derating Curve

The curve above is for reference only.

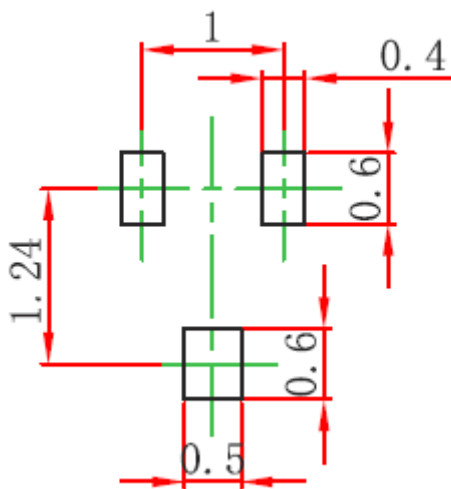
9. Outline Drawing

SOT-523 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	1.450	1.750	0.057	0.069
E1	0.700	0.900	0.028	0.035
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.260	0.460	0.010	0.018
L1	0.400 REF.		0.016 REF.	
theta	0°	8°	0°	8°

10. Suggested Pad Layout



- Note:
1. Controlling dimension: in/millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.