SOT-23 Plastic-Encapsulate Transistors

Features

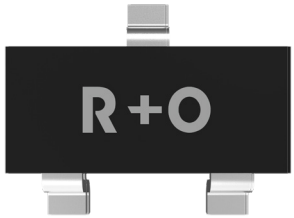
- Complementary to S9013
- Power dissipation of 300mW
- High stability and high reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

Collector-Base Voltage
VCBO -40V
Collector Current
-0.5 Ampere

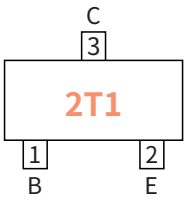
Mechanical Data

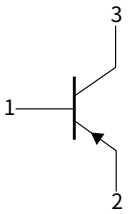
- Case: SOT-23
  Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

SOT-23



Function Diagram





Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Collector-Base Voltage	V_{CBO}	V	-40
Collector-Emitter Voltage	V_{CEO}		-25
Emitter-Base Voltage	V_{EBO}		-5.0
Collector Current	I_C	A	-0.5
Collector Power Dissipation	P_C	mW	300
Storage temperature	T_{stg}	°C	-55 ~+150
Junction temperature	T_j	°C	-55 ~+150
Typical Thermal Resistance	$R_{\theta J-A}$	°C /W	417

Electrical Characteristics (Ta=25°C Unless otherwise noted)

PARAMETER	SYMBOL	UNIT	Condition	Min	Max
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	V	I_C=-100μA, I_E=0	-40	—
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$		I_C=-1.0mA, I_B=0	-25	—
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$		I_E=-100μA, I_C=0	-5.0	—
Collector-Emitter cut-off current	I_{CEO}	nA	V_{CE}= -20V, I_B=0	—	-100
Collector-Base cut-off current	I_{CBO}		V_{CB}= -40V,I_E=0	—	-100
Emitter-Base cut-off current	I_{EBO}		V_{EB}= -5.0V,I_C=0	—	-100
DC Current Gain	h_{FE}	—	I_C= -50mA V_{CE}= -1.0V	120	400
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	I_C= -500mA I_B= -50mA	—	-0.6
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	V	I_C= -500mA I_B= -50mA	—	-1.2

Classification Of h_{FE}

RANK	L	H	J
Range	120-200	200-350	300-400

Small-signal Characteristics

ITEM	SYMBOL	Condition	UNIT	Min	Max
Transition frequency	f_T	I_C= -20mA, V_{CE}= -6.0V,f=30MHz	MHz	150	—

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	45000	180000	7''

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

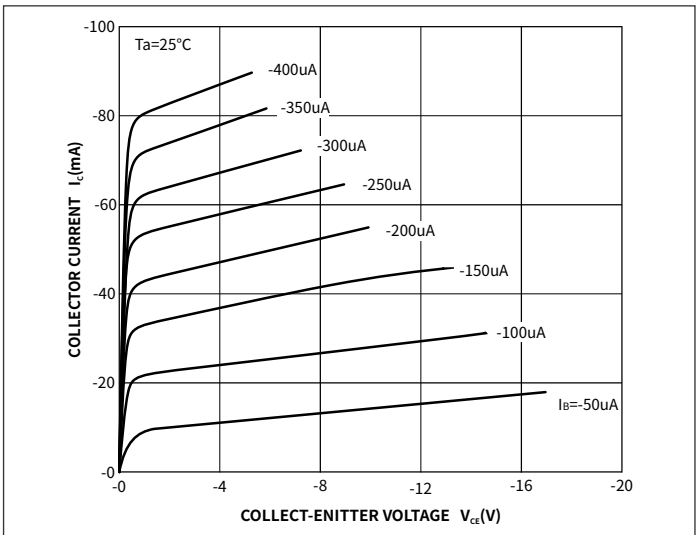


Fig.1 Static Characteristic

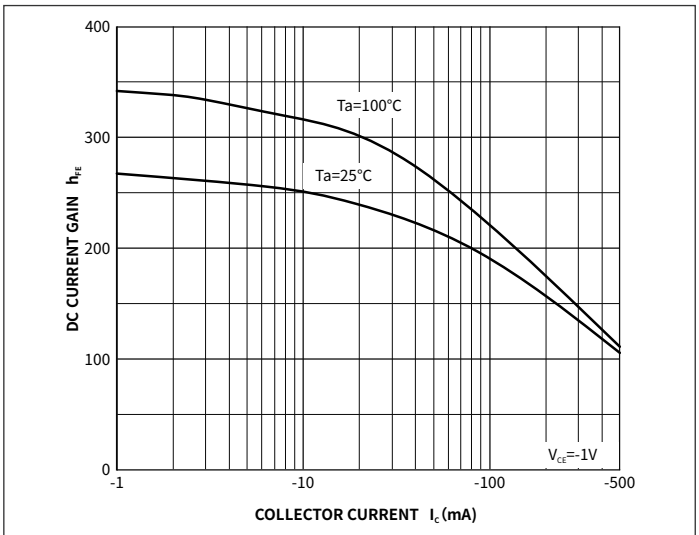


Fig.2 DC Current Gain

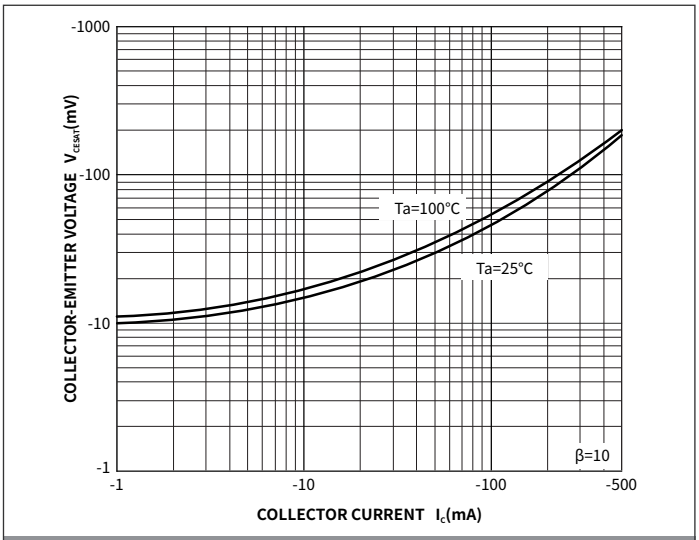


Fig.3 Collector-Emitter Saturation Voltage

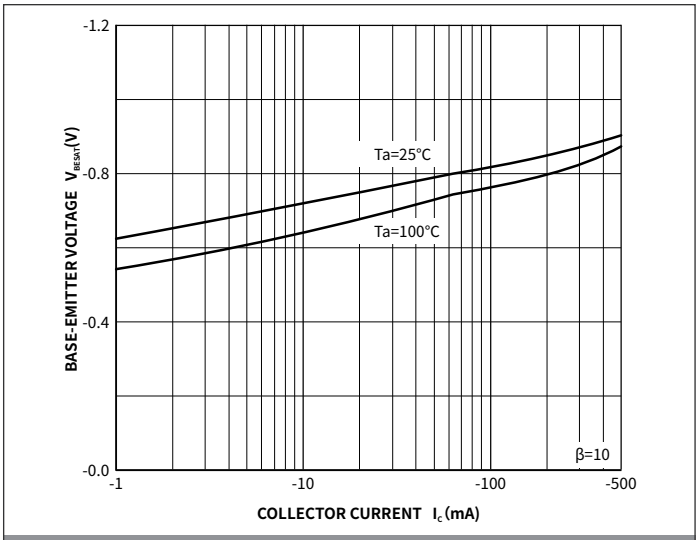


Fig.4 Base-Emitter Saturation Voltage

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

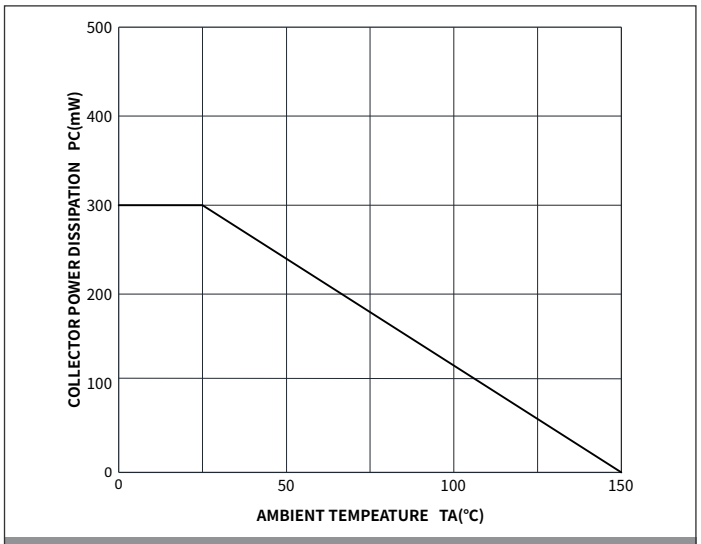


Fig.5 Power Derating Curve

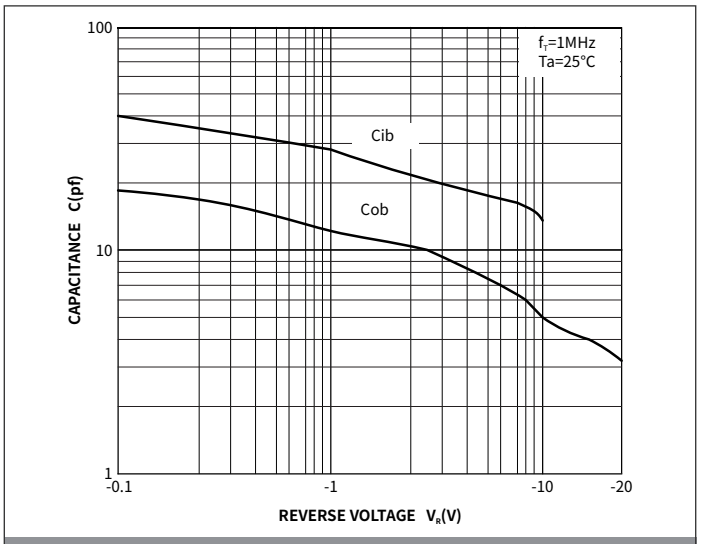
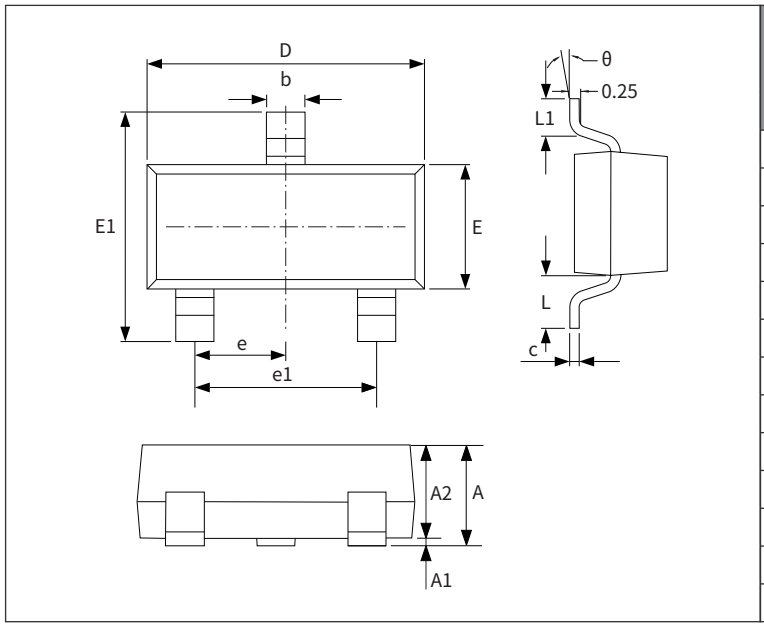


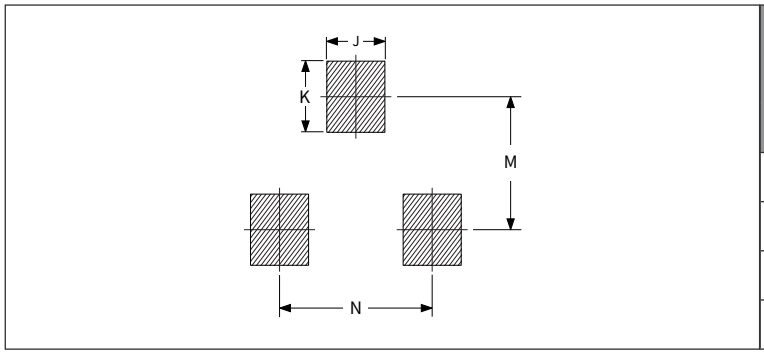
Fig.6 Cob/Cib-$V_{CB}V_{EB}$

Package Outline Dimensions (SOT-23)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077