



TRANSISTOR (NPN)

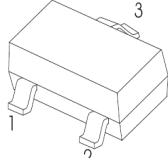
## FEATURES

- Small reverse Transfer Capacitance:  $C_{re}=0.7\text{pF}(\text{typ.})$
- Low Noise Figure:  $NF=2.5\text{dB}(\text{typ.})$  ( $f=100\text{MHz}$ )

MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	30	V
$V_{EBO}$	Emitter-Base Voltage	4	V
$I_C$	Collector Current -Continuous	20	mA
$P_C$	Collector Power Dissipation	100	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	1000	$^\circ\text{C/W}$
$T_j$	Junction Temperature	125	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55~+125	$^\circ\text{C}$

SOT-23

- 
1. BASE
  2. EMITTER
  3. COLLECTOR

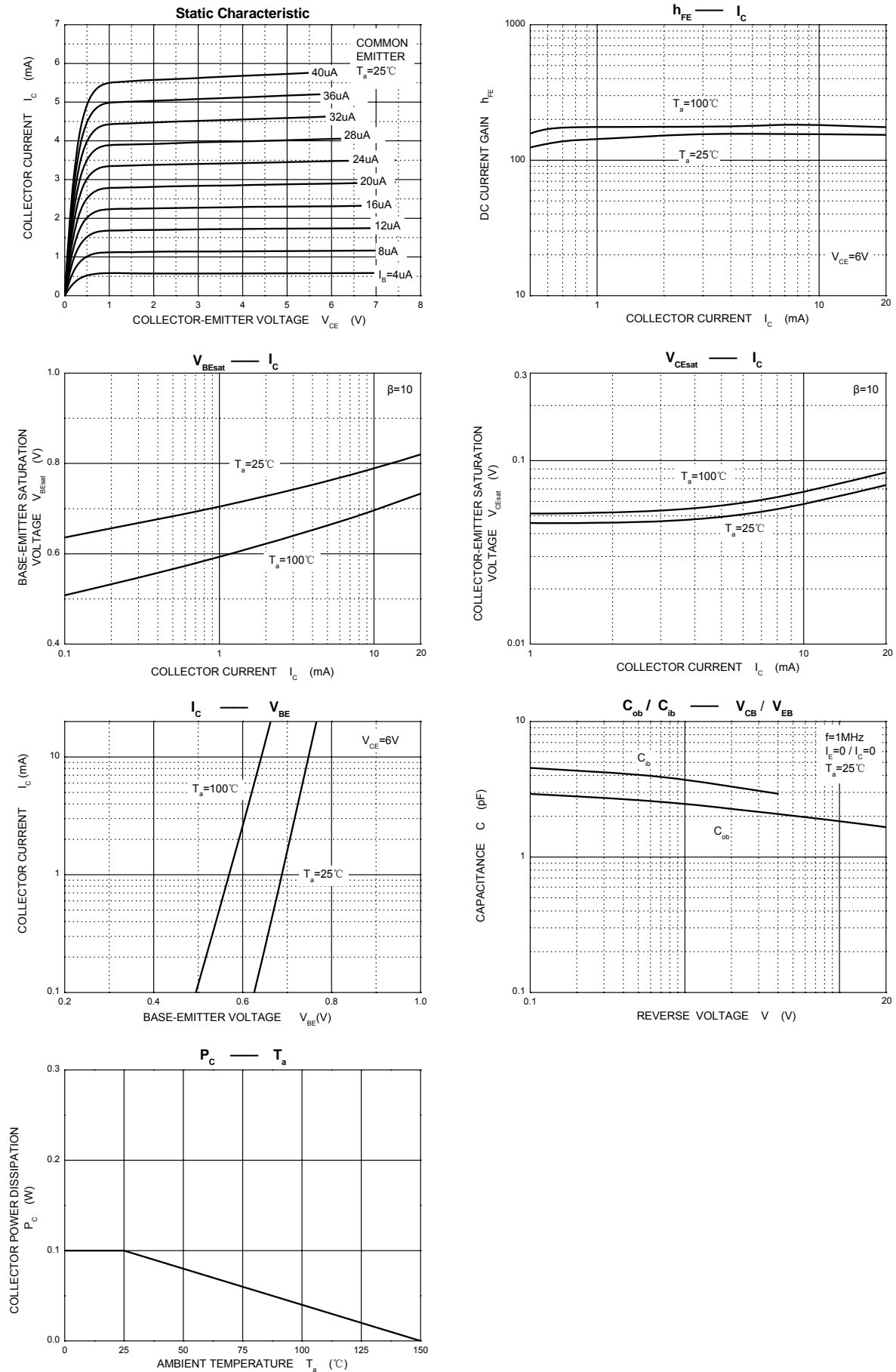
ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	30			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	4			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=18\text{V}, I_E=0$			0.5	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			0.5	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40		200	
Transition frequency	$f_T$	$V_{CE}=6\text{V}, I_C=1\text{mA}$		550		MHz
Reverse Transfer capacitance	$C_{re}$	$V_{CB}=6\text{V}, I_E=0, f=1\text{MHz}$		0.7		pF
Noise figure	NF	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}$		2.5	5	dB

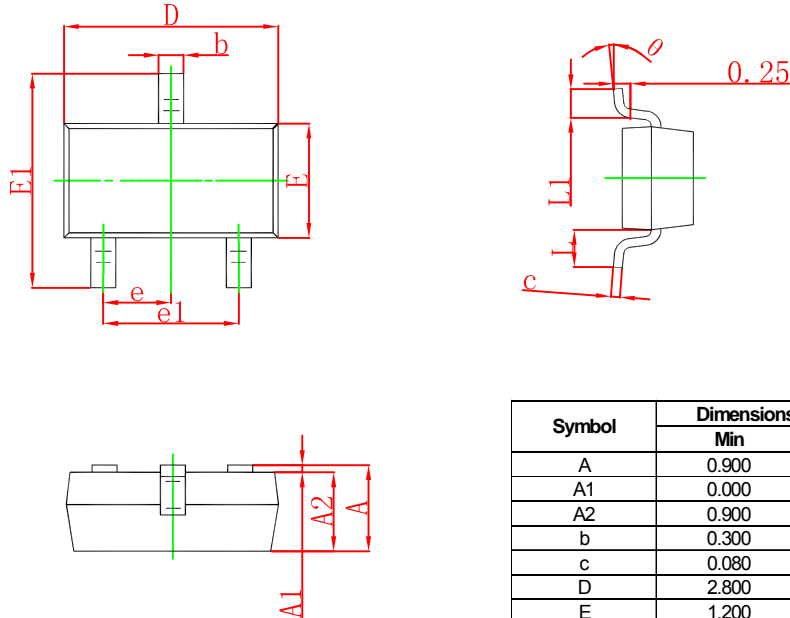
CLASSIFICATION OF  $h_{FE}$ 

Rank	R	O	Y
Range	40-80	70-140	100-200
Marking	QR	QO	QY

# Typical Characteristics

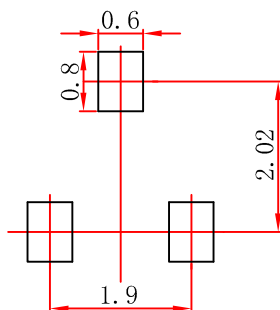


## SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

## SOT-23 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.