



**CHINA BASE**  
INTERNATIONAL

# SOT-23

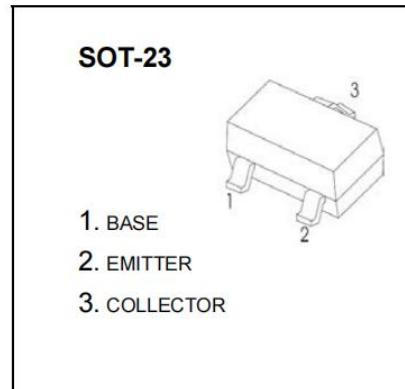
## BCX41

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### NPN Silicon AF and Switching Transistor

- For general AF applications
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: BCX42 (PNP)



Type	Marking	Pin Configuration			Package
BCX41	EKs	1 = B	2 = E	3 = C	SOT23

### Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	125	V
Collector-base voltage	$V_{CBO}$	125	
Emitter-base voltage	$V_{EBO}$	5	
Collector current	$I_C$	800	mA
Peak collector current, $t_p \leq 10 \text{ ms}$	$I_{CM}$	1	A
Base current	$I_B$	100	mA
Peak base current	$I_{BM}$	200	
Total power dissipation $T_S \leq 79 \text{ }^{\circ}\text{C}$	$P_{tot}$	330	mW
Junction temperature	$T_j$	150	$^{\circ}\text{C}$
Storage temperature	$T_{Stg}$	-65 ... 150	

### Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 215$	K/W

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)



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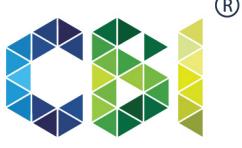
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>DC Characteristics</b>					
Collector-emitter breakdown voltage $I_C = 10 \text{ mA}, I_B = 0$	$V_{(\text{BR})\text{CEO}}$	125	-	-	V
Collector-base breakdown voltage $I_C = 100 \mu\text{A}, I_E = 0$	$V_{(\text{BR})\text{CBO}}$	125	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(\text{BR})\text{EBO}}$	5	-	-	
Collector-base cutoff current $V_{CB} = 100 \text{ V}, I_E = 0$ $V_{CB} = 100 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$	$I_{\text{CBO}}$	-	-	0.1 20	$\mu\text{A}$
Collector-emitter cutoff current $V_{CE} = 100 \text{ V}, T_A = 85^\circ\text{C}$ $V_{CE} = 100 \text{ V}, T_A = 125^\circ\text{C}$	$I_{\text{CEO}}$	-	-	10 75	
Emitter-base cutoff current $V_{EB} = 4 \text{ V}, I_C = 0$	$I_{\text{EBO}}$	-	-	100	
DC current gain <sup>1)</sup> $I_C = 100 \mu\text{A}, V_{CE} = 1 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}$ $I_C = 200 \text{ mA}, V_{CE} = 1 \text{ V}$	$h_{\text{FE}}$	25 63 40	-	-	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$	$V_{\text{CEsat}}$	-	-	0.9	V
Base emitter saturation voltage <sup>1)</sup> $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$	$V_{\text{BEsat}}$	-	-	1.4	

**AC Characteristics**

Transition frequency $I_C = 20 \text{ mA}, V_{CE} = 5 \text{ V}, f = 20 \text{ MHz}$	$f_T$	-	100	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	$C_{\text{cb}}$	-	12	-	pF

<sup>1</sup>Pulse test:  $t < 300\mu\text{s}$ ;  $D < 2\%$



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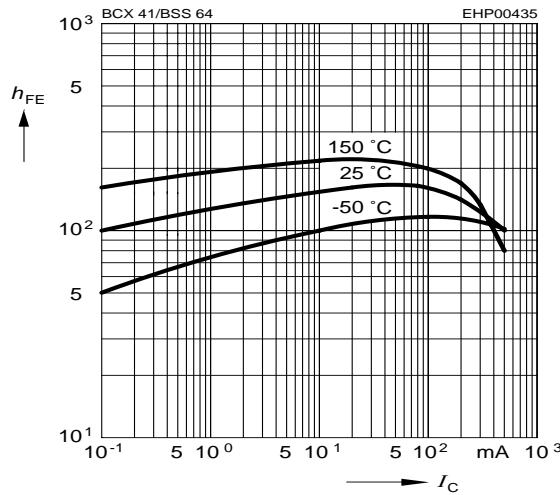
## BCX41



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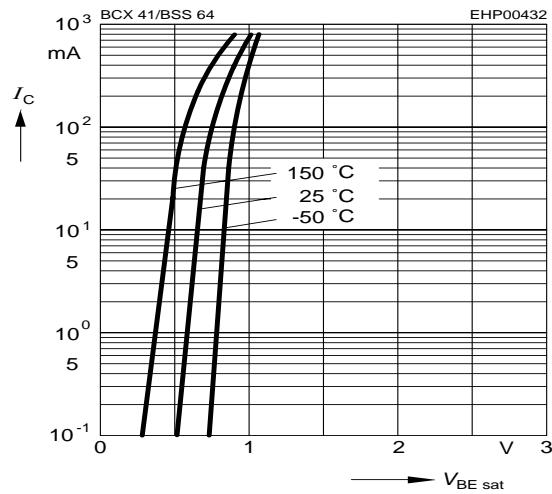
### DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1 \text{ V}$



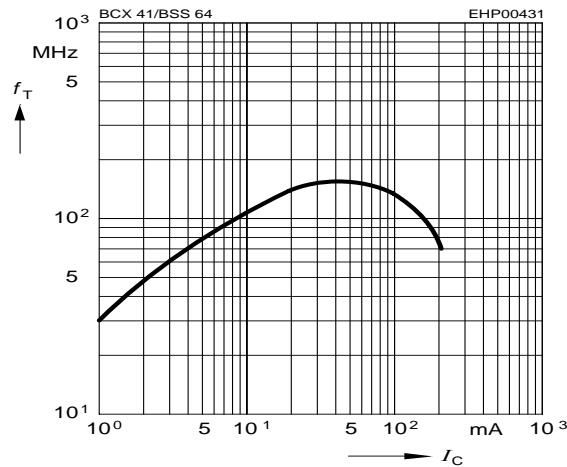
### Base-emitter saturation voltage

$I_C = f(V_{BEsat})$ ,  $h_{FE} = 10$



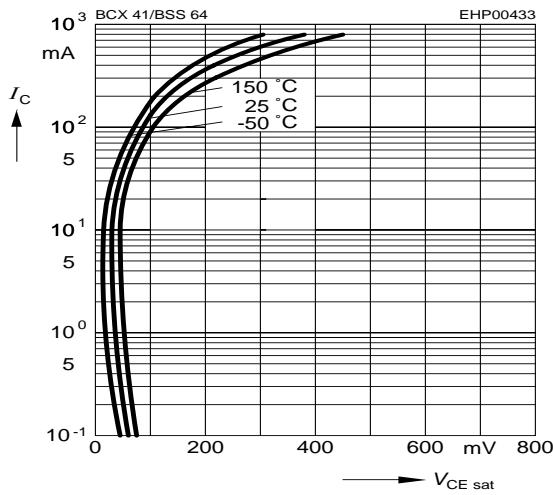
### Transition frequency $f_T = f(I_C)$

$V_{CE}$  = parameter in V,  $f = 2 \text{ GHz}$



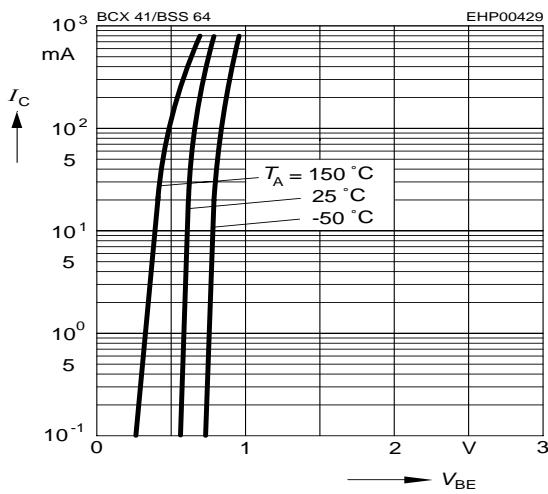
### Collector-emitter saturation voltage

$I_C = f(V_{CEsat})$ ,  $h_{FE} = 10$



### Collector current $I_C = f(V_{BE})$

$V_{CE} = 1 \text{ V}$



### Total power dissipation $P_{tot} = f(T_S)$

