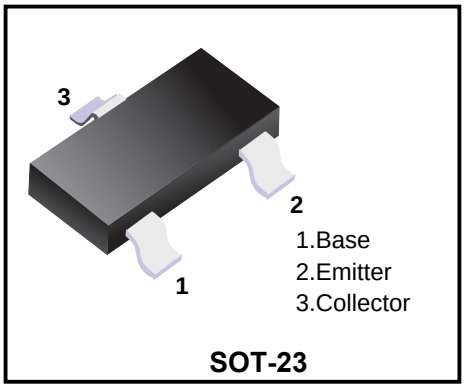
NPN Silicon AF and Switching Transistors



For general AF applications

High breakdown voltage

Low collector-emitter saturation voltage

Complementary types: BCX42, BSS63 (PNP)

Type	Marking	Pin Configuration			Package
BCX41	EKs	1 = B	2 = E	3 = C	SOT23
BSS64	AMs	1 = B	2 = E	3 = C	SOT23

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	BSS64	BCX41	Unit
Collector-emitter voltage	V_{CEO}	80	125	V
Collector-base voltage	V_{CBO}	120	125	
Emitter-base voltage	V_{EBO}	5	5	
DC collector current	I_C	800		mA
Peak collector current	I_{CM}	1		A
Base current	I_B	100		mA
Peak base current	I_{BM}	200		
Total power dissipation, T_S = 79 °C	P_{tot}	330		mW
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-65 ... 150		

Thermal Resistance

Junction - soldering point[1)]	R_{thJS}	215	K/W

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

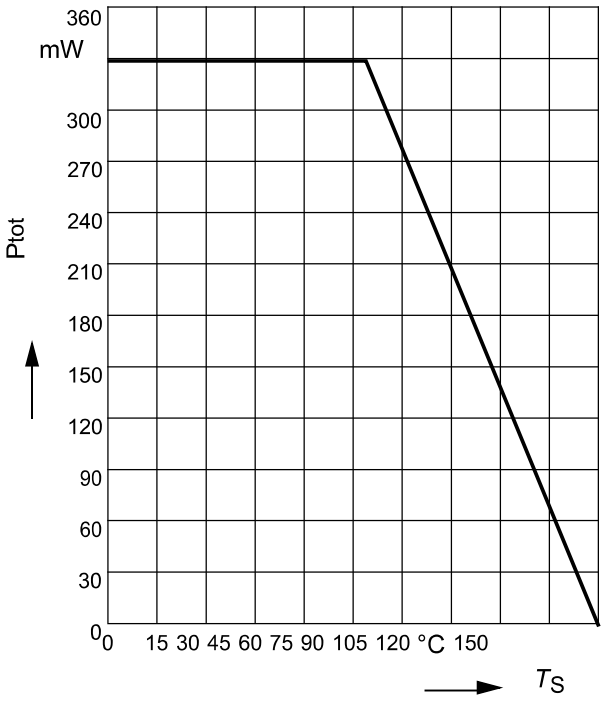
Parameter		Symbol	Values			Unit
			min.	typ.	max.	
DC Characteristics						
Collector-emitter breakdown voltage		$V_{(BR)CEO}$				V
I_C = 10 mA, I_B = 0	BSS64		80	-	-	
	BCX41		125	-	-	
Collector-base breakdown voltage		$V_{(BR)CBO}$				
I_C = 100 µA, I_B = 0	BSS64		120	-	-	
	BCX41		125	-	-	
Emitter-base breakdown voltage		$V_{(BR)EBO}$	5	-	-	
I_E = 10 µA, I_C = 0						
Collector cutoff current		I_{CBO}				nA
V_{CB} = 80 V, I_E = 0	BSS64		-	-	100	
V_{CB} = 100 V, I_E = 0	BCX41		-	-	100	
Collector cutoff current		I_{CBO}				µA
V_{CB} = 80 V, I_E = 0 , T_A = 150 °C	BSS64		-	-	20	
V_{CB} = 100 V, I_E = 0 , T_A = 150 °C	BCX41		-	-	20	
Emitter cutoff current		I_{EBO}	-	-	100	nA
V_{EB} = 4 V, I_C = 0						
Collector cutoff current		I_{CEO}				µA
V_{CE} = 100 V, T_A = 85 °C	BCX41		-	-	10	
V_{CE} = 100 V, T_A = 125 °C	BCX41		-	-	75	
DC current gain 1)		h_{FE}				-
I_C = 100 µA, V_{CE} = 1 V	BCX41		25	-	-	
I_C = 1 mA, V_{CE} = 1 V	BSS64		-	60	-	
I_C = 4 mA, V_{CE} = 1 V	BSS64		20	80	-	
I_C = 10 mA, V_{CE} = 1 V	BSS64		-	80	-	
I_C = 20 mA, V_{CE} = 1 V	BSS64		-	55	-	
I_C = 100 mA, V_{CE} = 1 V	BCX41		63	-	-	
I_C = 200 mA, V_{CE} = 1 V	BCX41		40	-	-	

1) Pulse test: t ≤ 300µs, D = 2%

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

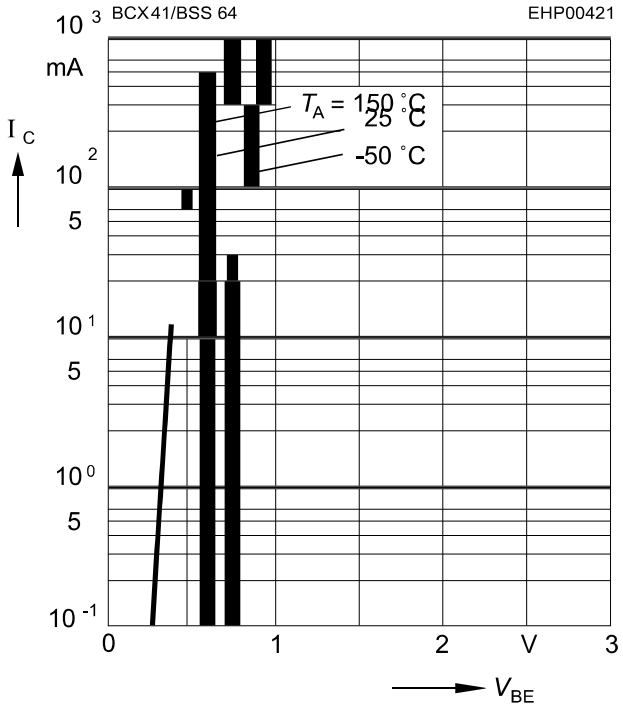
Parameter		Symbol	Values			Unit
			min.	typ.	max.	
DC Characteristics						
Collector-emitter saturation voltage1)		V_{CEsat}				V
I_C = 300 mA, I_B = 30 mA	BCX41		-	-	0.9	
I_C = 4 mA, I_B = 0.4 mA	BSS64		-	-	0.7	
I_C = 50 mA, I_B = 15 mA	BSS64		-	-	3	
Base-emitter saturation voltage 1)		V_{BEsat}	-	-	1.4	
I_C = 300 mA, I_B = 30 mA	BCX41					
AC Characteristics						
Transition frequency I_C = 20 mA, V_{CE} = 5 V, f = 20 MHz		f_T	-	100	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz		C_{cb}	-	12	-	pF

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



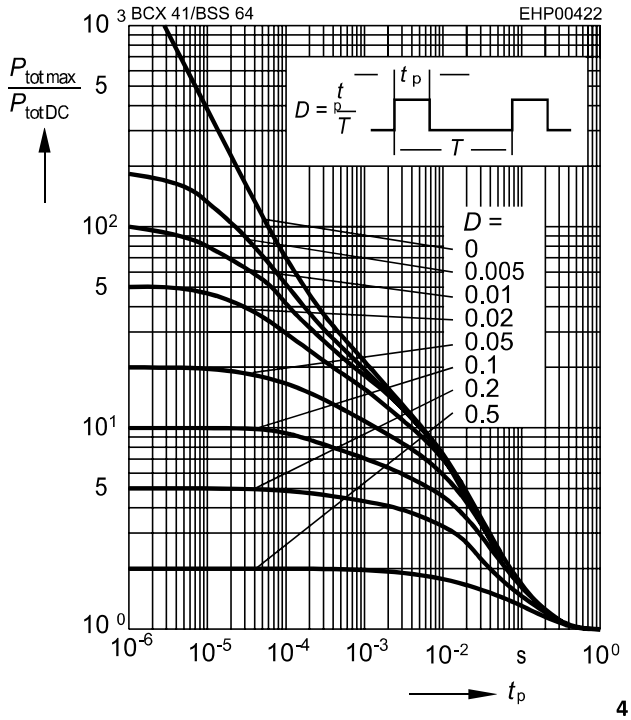
Collector current $I_C = f(V_{BE})$

V_{CE} = 1V



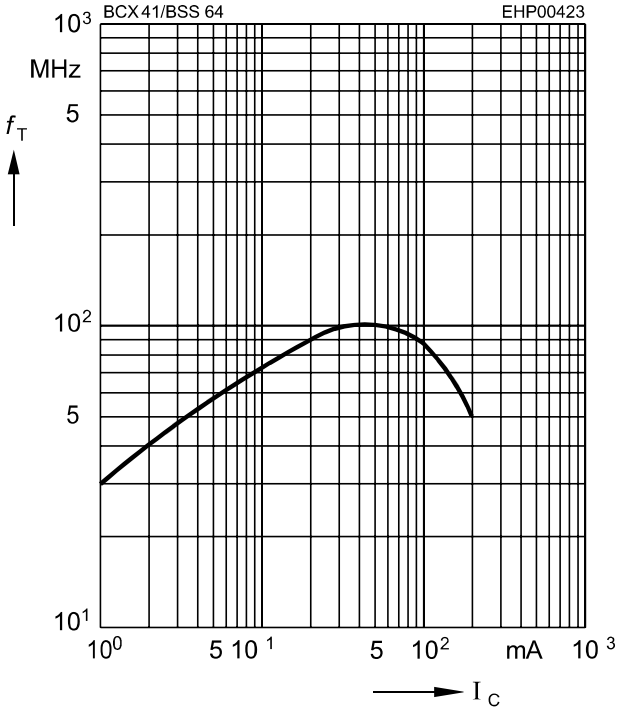
Permissible pulse load

$P_{totmax} / P_{totDC} = f(t_p)$



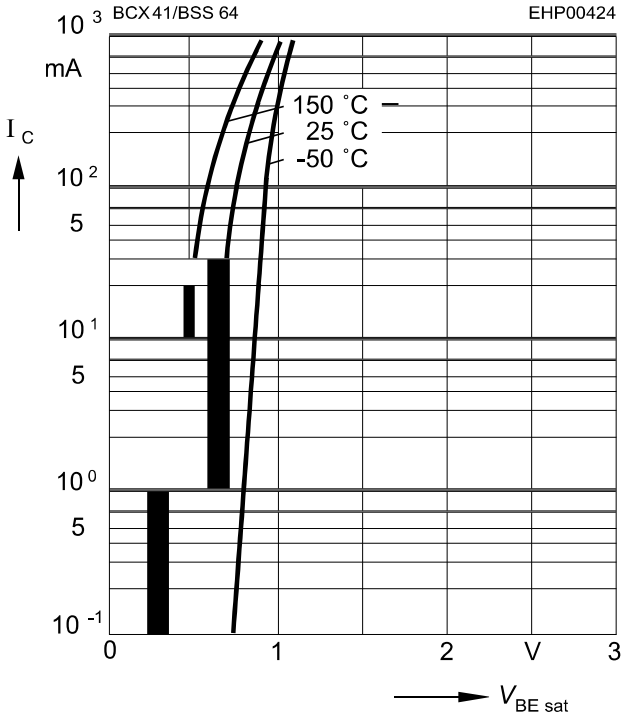
Transition frequency $f_T = f(I_C)$

V_{CE} = 5V



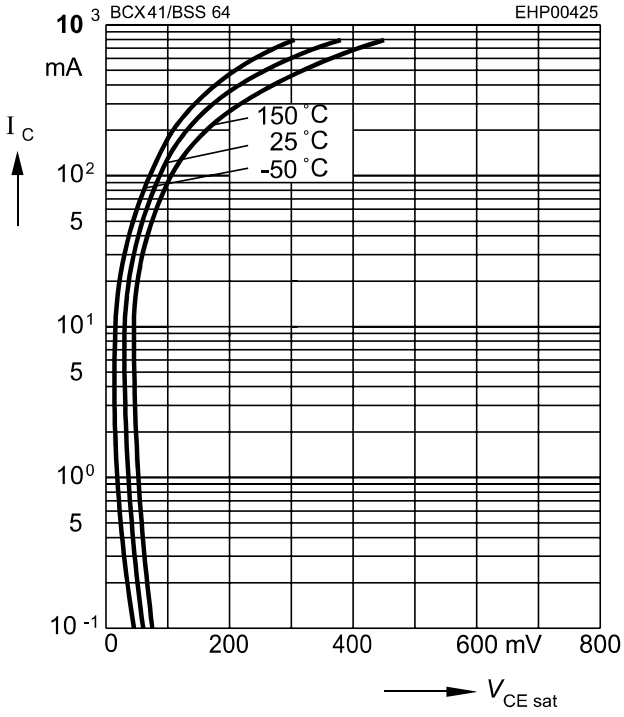
Base-emitter saturation voltage

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



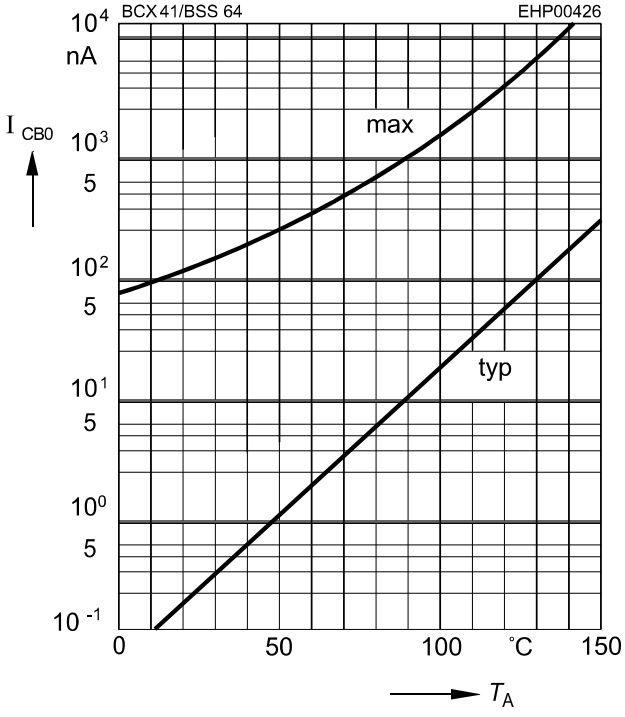
Collector-emitter saturation voltage

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



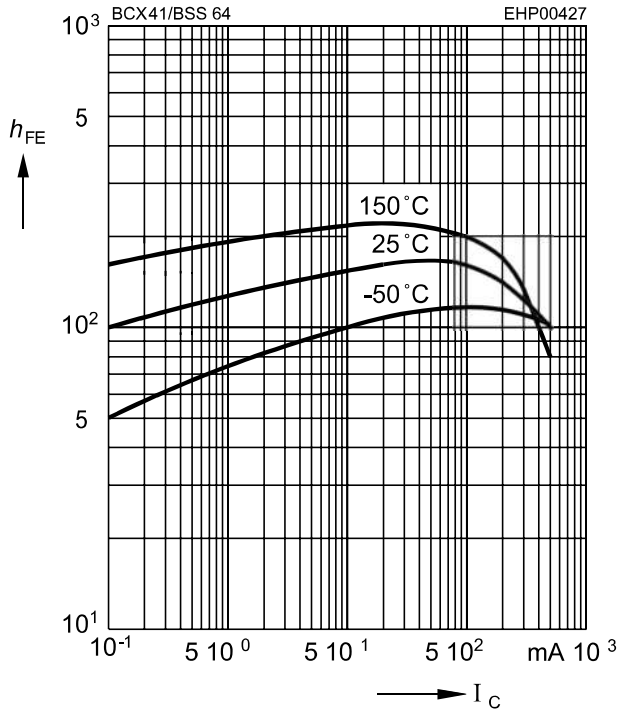
Collector cutoff current $I_{CBO} = f(T_A)$

V_{CB} = 80V



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

V_{CE} = 1V

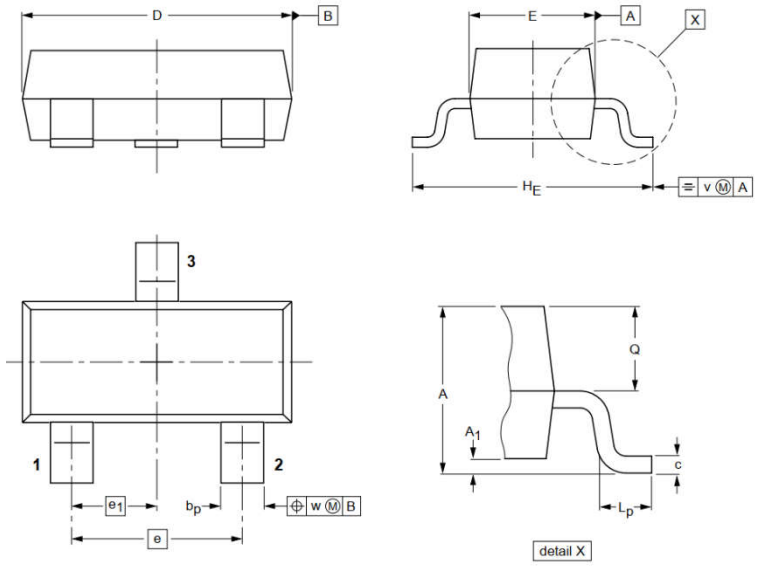


Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

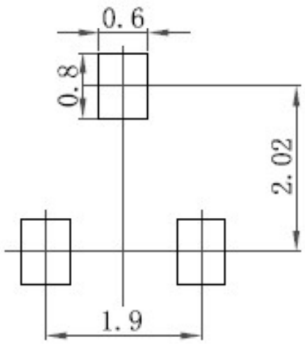
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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