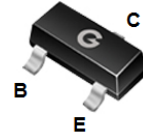
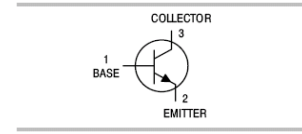


Features

- High current gain
- Low collector-emitter saturation voltage
- Complement to TBCX71
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF



SOT-23

Mechanical Data

- Case: SOT-23
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBCX70G	SOT-23	3000 pcs / Tape & Reel	AG
TBCX70H	SOT-23	3000 pcs / Tape & Reel	AH
TBCX70J	SOT-23	3000 pcs / Tape & Reel	AJ
TBCX70K	SOT-23	3000 pcs / Tape & Reel	AK

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	45	V
Collector-Emitter Breakdown Voltage	V _{CEO}	45	V
Emitter-Base Breakdown Voltage	V _{EBO}	5	V
Collector Current (Continuous)	I _C	100	mA
Peak Collector Current	I _{CM}	200	mA
Peak Base Current	I _{BM}	200	mA

Thermal Characteristics

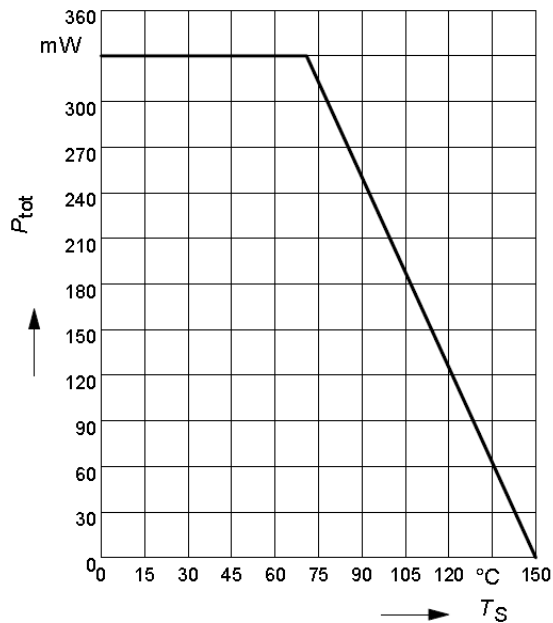
Parameter	Symbol	Value	Unit
Power Dissipation	P _D	0.33	W
Thermal Resistance Junction-to-Air	R _{θJA}	357	°C/W
Thermal Resistance Junction-to-Case	R _{θJC}	250	°C/W
Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}$, $I_E = 0$	45	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, $I_B = 0$	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\mu\text{A}$, $I_C = 0$	5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 45\text{V}$, $I_E = 0$	-	-	20	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 4\text{V}$, $I_C = 0$	-	-	20	nA
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}$, $I_C = 10\mu\text{A}$				
		TBCX70G	20			
		TBCX70H	20	-	-	-
		TBCX70J	40			
		TBCX70K	100			
		$V_{CE} = 5\text{V}$, $I_C = 2\text{mA}$				
		TBCX70G	120		220	
		TBCX70H	180	-	310	-
		TBCX70J	250		460	
		TBCX70K	380		630	
		$V_{CE} = 1\text{V}$, $I_C = 50\text{mA}$				
		TBCX70G	50			
		TBCX70H	70	-	-	-
		TBCX70J	90			
		TBCX70K	100			
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}$, $I_B = 0.25\text{mA}$	-	-	0.25	V
		$I_C = 50\text{mA}$, $I_B = 1.25\text{mA}$	-	-	0.55	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}$, $I_B = 0.25\text{mA}$	-	-	0.85	V
		$I_C = 50\text{mA}$, $I_B = 1.25\text{mA}$	-	-	1.05	V
Base-emitter Voltage	$V_{BE(ON)}$	$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$	-	-	0.75	V
Current-Gain—Bandwidth Product	f_T	$V_{CE} = 5\text{V}$, $I_C = 20\text{mA}$ $f = 100\text{MHz}$	-	250	-	MHz
Collector-base Capacitance	C_{CB}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	3	-	pF

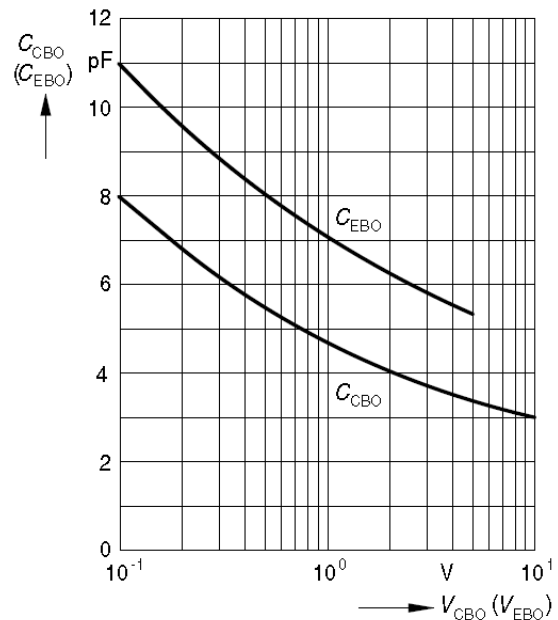
Ratings and Characteristic Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

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



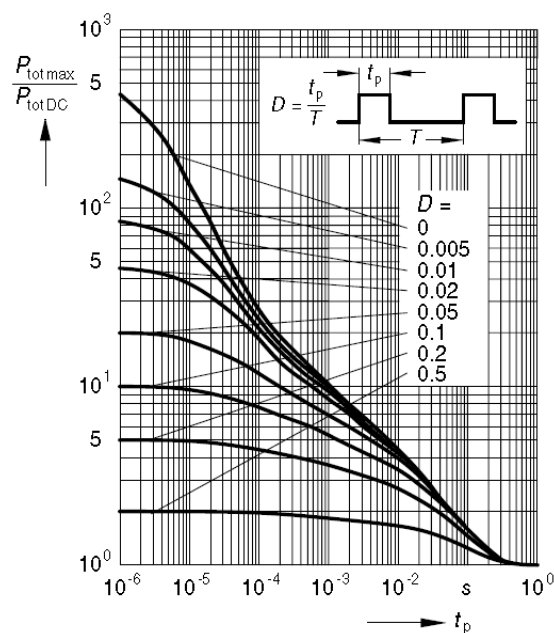
Collector-base capacitance $C_{CB} = f(V_{CBO})$

Emitter-base capacitance $C_{EB} = f(V_{EBO})$



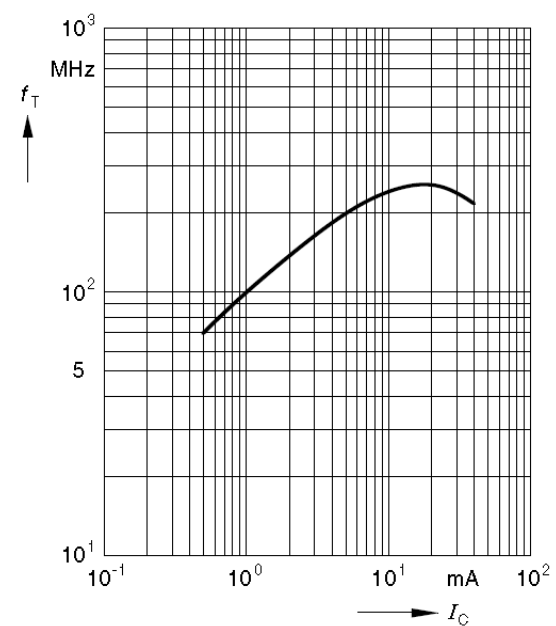
Permissible pulse load

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



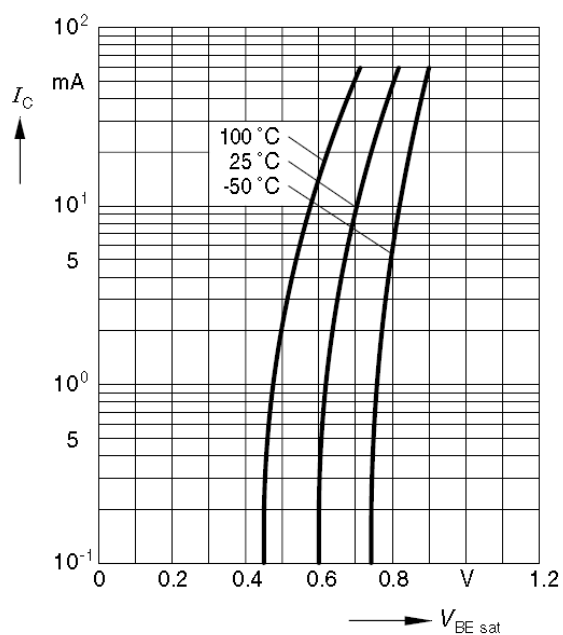
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



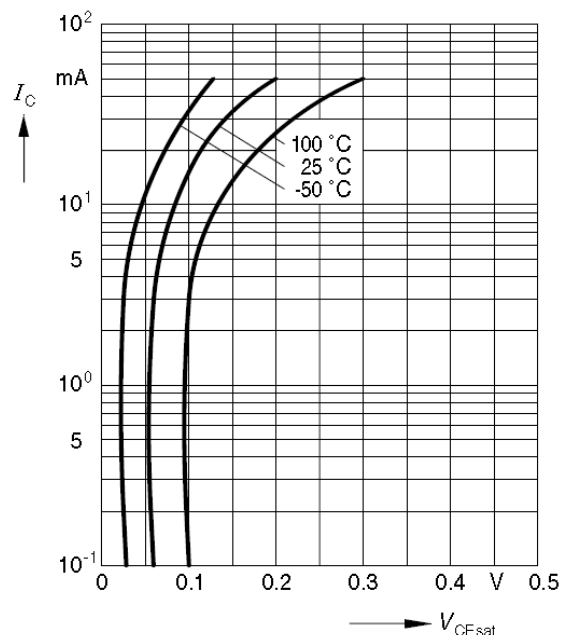
Base-emitter saturation voltage

$$I_C = f(V_{BEsat}), h_{FE} = 40$$



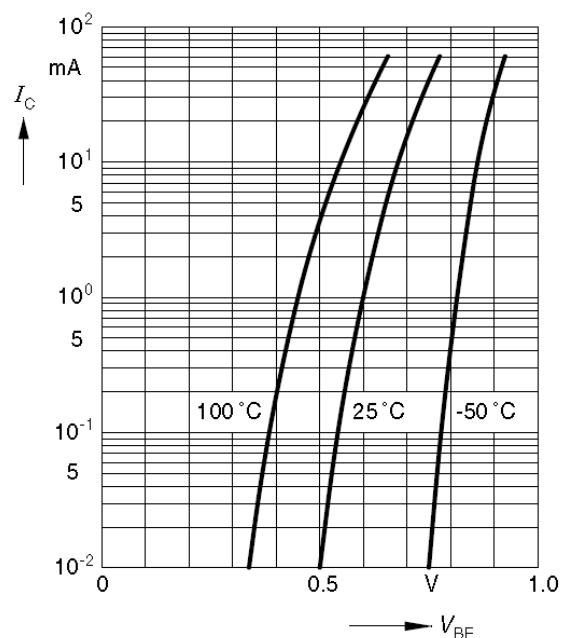
Collector-emitter saturation voltage

$$I_C = f(V_{CEsat}), h_{FE} = 40$$



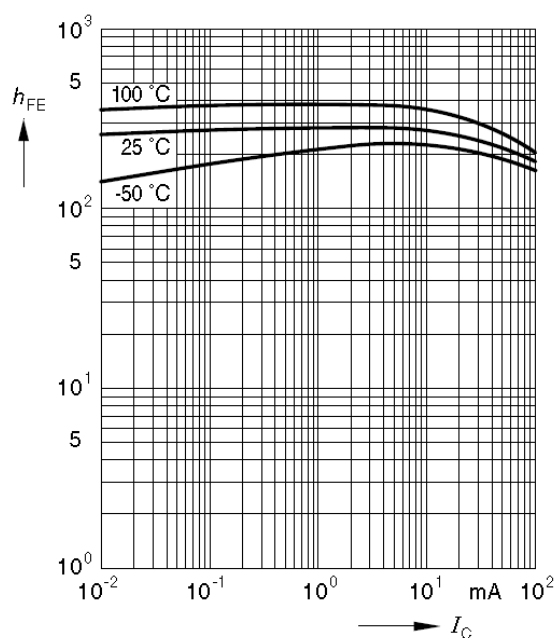
Collector current $I_C = f(V_{BE})$

$$V_{CE} = 5V$$

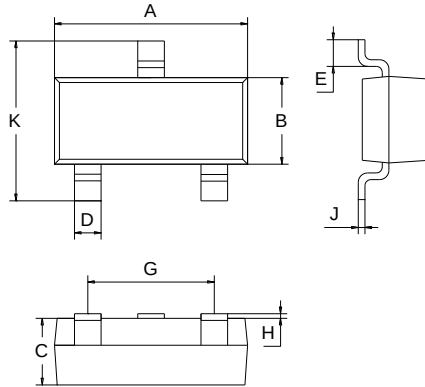


DC current gain $h_{FE} = f(I_C)$

$$V_{CE} = 5V$$



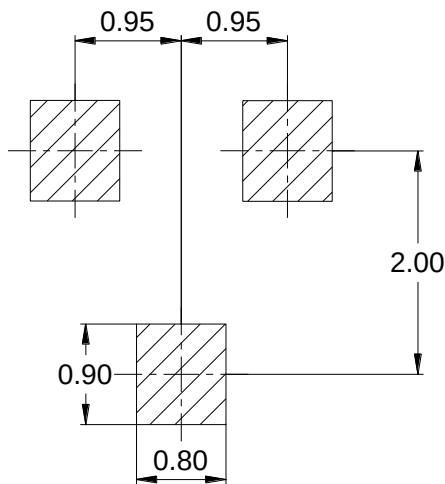
Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	Min.	Max.
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23



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