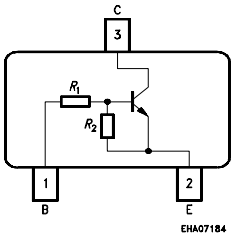
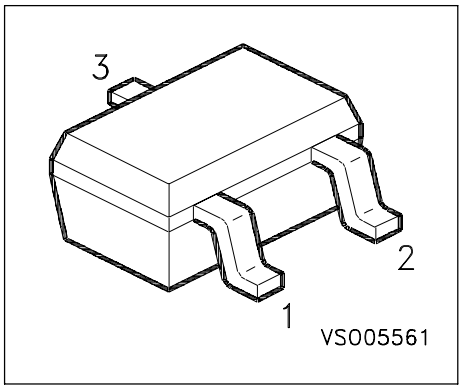
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor (R_1=4.7kΩ, R_2=47kΩ)





Type	Marking	Ordering Code	Pin Configuration			Package
BCR 116W	WGs	UPON INQUIRY	1 = B	2 = E	3 = C	SOT-323

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	50	V
Collector-base voltage	V_{CBO}	50	
Emitter-base voltage	V_{EBO}	5	
Input on Voltage	$V_{i(on)}$	15	
DC collector current	I_C	100	mA
Total power dissipation, T_S = 124°C	P_{tot}	250	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	- 65 ... + 150	

Thermal Resistance

Junction ambient [1)]	R_{thJA}	≤ 240	K/W
Junction - soldering point	R_{thJS}	≤ 105	

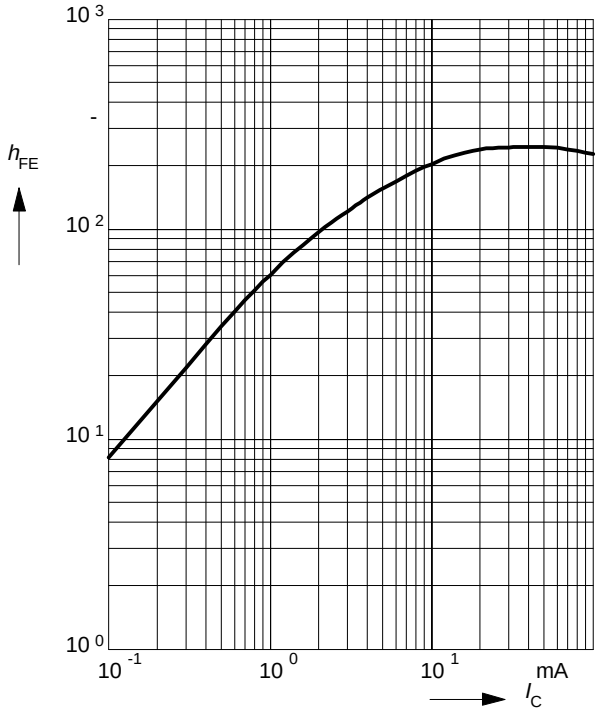
1) Package mounted on pcb 40mm x 40mm x 1.5mm / 0.5cm^2 Cu

Electrical Characteristics at T_A=25°C, unless otherwise specified

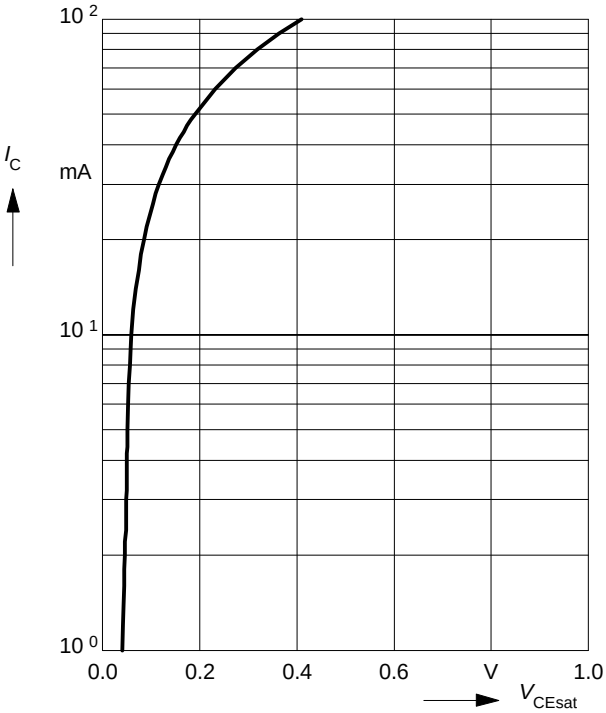
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_B = 0	$V_{(BR)CBO}$	50	-	-	
Collector cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter cutoff current V_{EB} = 5 V, I_C = 0	I_{EBO}	-	-	155	µA
DC current gain I_C = 5 mA, V_{CE} = 5 V	h_{FE}	70	-	-	-
Collector-emitter saturation voltage 1) I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.4	-	0.8	
Input on Voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	0.5	-	1.4	
Input resistor	R_1	3.2	4.7	6.2	kΩ
Resistor ratio	R_1/R_2	0.09	0.1	0.11	-
AC Characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	160	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

1) Pulse test: t < 300µs; D < 2%

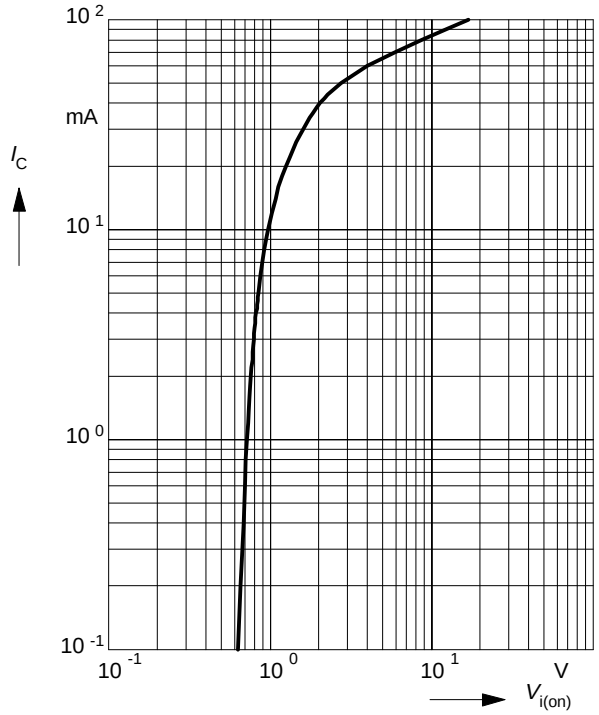
DC Current Gain $h_{FE} = f(I_C)$
V_{CE} = 5V (common emitter configuration)



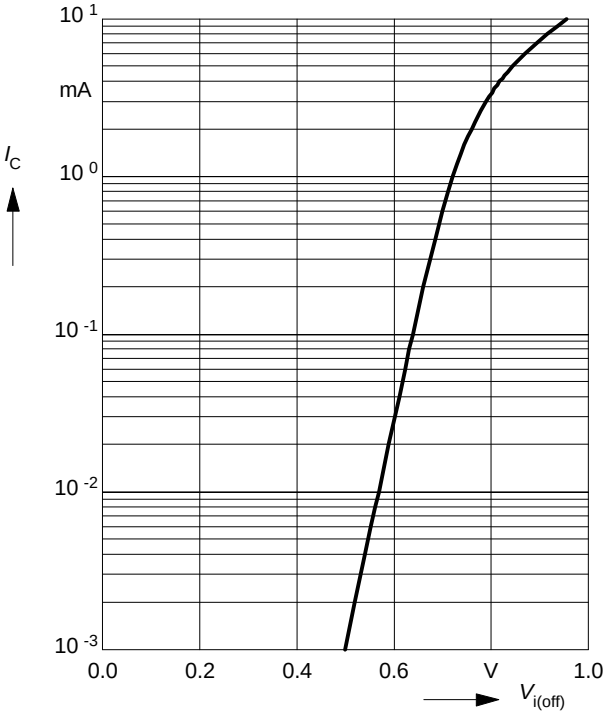
Collector-Emitter Saturation Voltage
$V_{CEsat} = f(I_C)$, h_{FE} = 20



Input on Voltage $V_{i(on)} = f(I_C)$
V_{CE} = 0.3V (common emitter configuration)

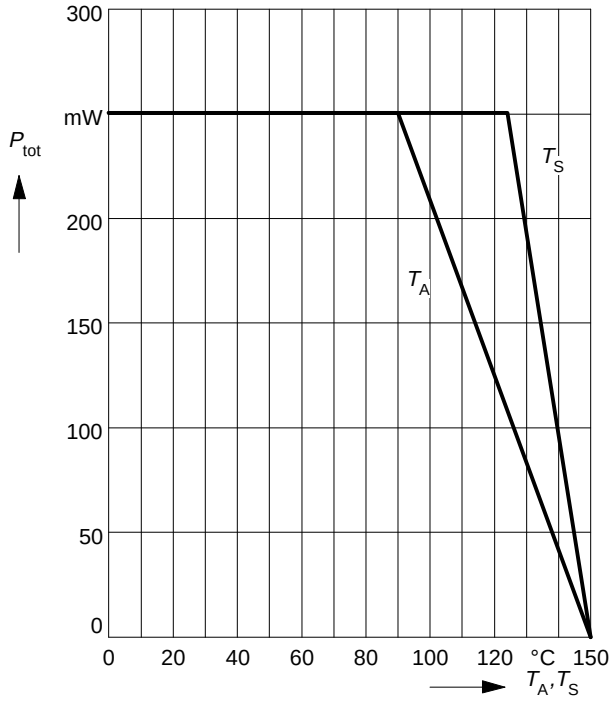


Input off voltage $V_{i(off)} = f(I_C)$
V_{CE} = 5V (common emitter configuration)

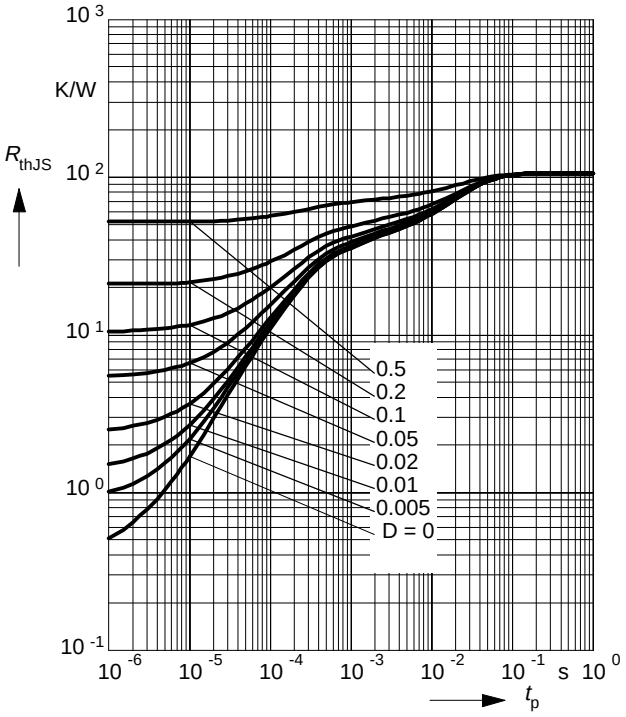


Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy



Permissible Pulse Load $R_{thJS} = f(t_p)$



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