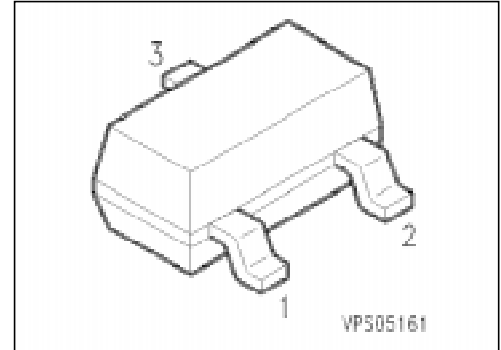


## PNP Silicon Transistor

SMBTA 70

- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage



Type	Marking	Ordering Code (tape and reel)	Pin Configuration			Package <sup>1)</sup>
			1	2	3	
SMBTA 70	s2C	Q62702-M0003	B	E	C	SOT-23

### Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	$V_{CE0}$	40	V
Emitter-base voltage	$V_{EB0}$	4	
Collector current	$I_C$	100	mA
Peak collector current	$I_{CM}$	200	
Peak base current	$I_{BM}$	100	
Total power dissipation, $T_s = 71\text{ °C}$	$P_{tot}$	330	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	- 65 ... + 150	

### Thermal Resistance

Junction - ambient <sup>2)</sup>	$R_{th JA}$	≤ 310	K/W
Junction - soldering point	$R_{th JS}$	≤ 240	

<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm<sup>2</sup> Cu.

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**DC characteristics**

Collector-emitter breakdown voltage $I_C = 1\text{ mA}$	$V_{(BR)CE0}$	40	–	–	V
Emitter-base breakdown voltage $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EB0}$	4	–	–	
Collector-base cutoff current $V_{CB} = 30\text{ V}$ , $I_E = 0$ $V_{CB} = 30\text{ V}$ , $I_E = 0$ , $T_A = 150\text{ °C}$	$I_{CB0}$	–	–	100 20	nA $\mu\text{A}$
Emitter-base cutoff current $V_{EB} = 4\text{ V}$ , $I_C = 0$	$I_{EB0}$	–	–	20	nA
DC current gain $I_C = 5\text{ mA}$ , $V_{CE} = 10\text{ V}$	$h_{FE}$	40	–	400	–
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$	$V_{CEsat}$	–	–	0.25	V

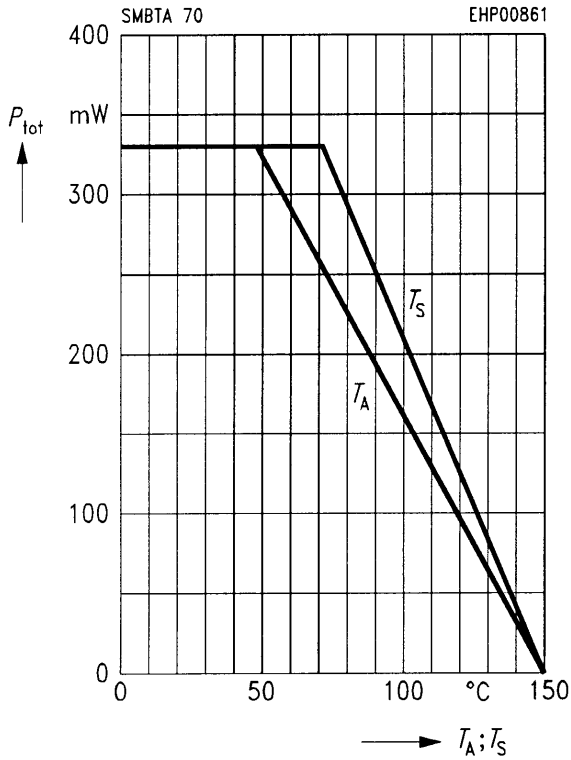
**AC characteristics**

Transition frequency $I_C = 5\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 100\text{ MHz}$	$f_t$	125	–	–	MHz
Output capacitance $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{obo}$	–	–	4	pF

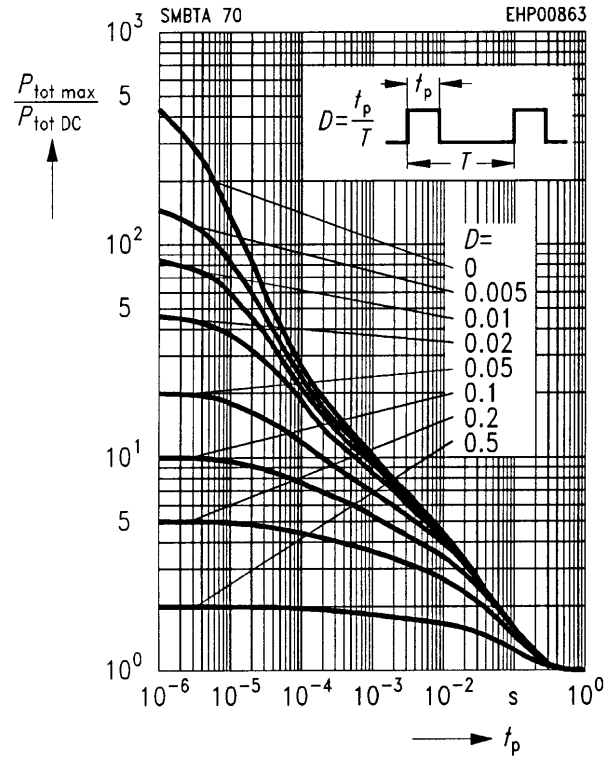
<sup>1)</sup> Pulse test conditions:  $t \leq 300\text{ }\mu\text{s}$ ,  $D \leq 2\%$ .

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

\* Package mounted on epoxy

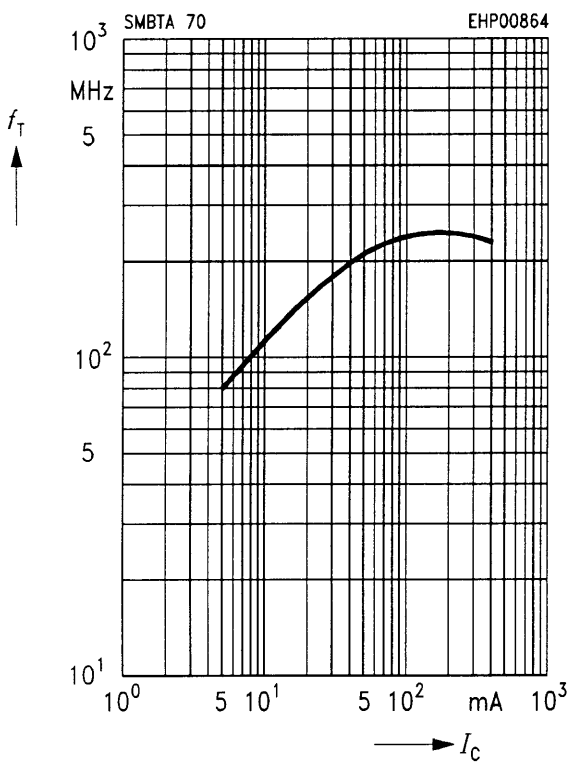


**Permissible pulse load  $P_{tot max}/P_{tot DC} = f(t_p)$**



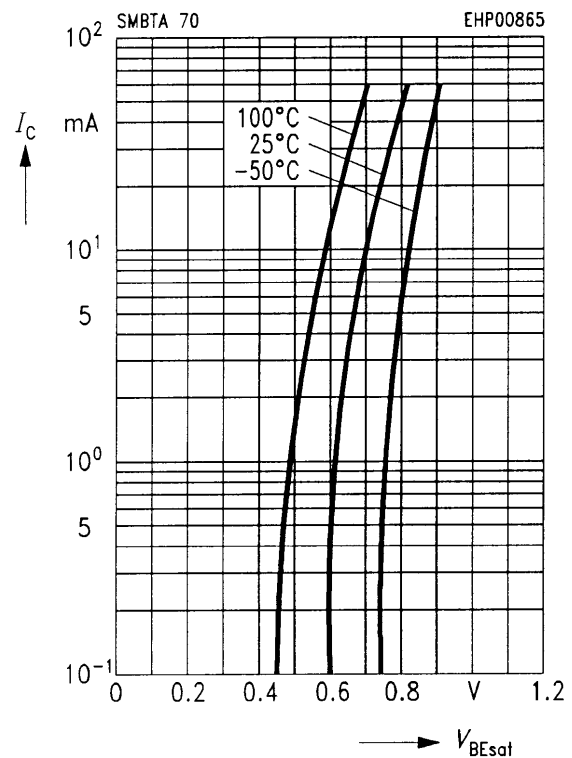
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5 V$



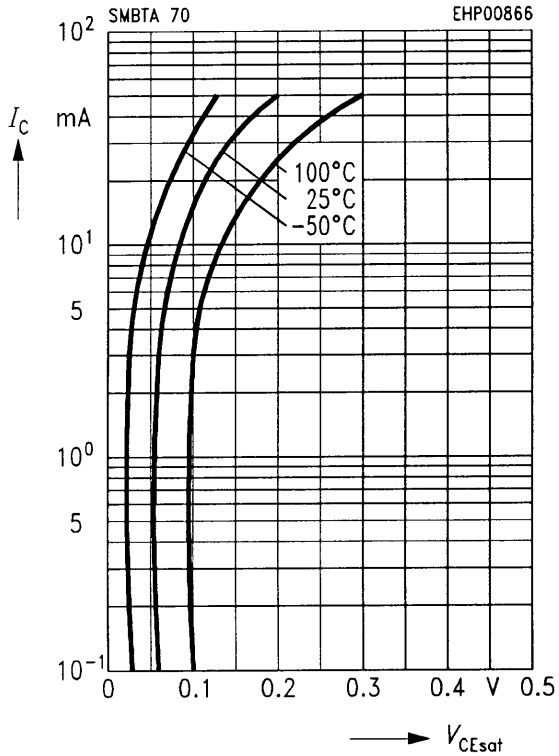
**Base-emitter saturation voltage**

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



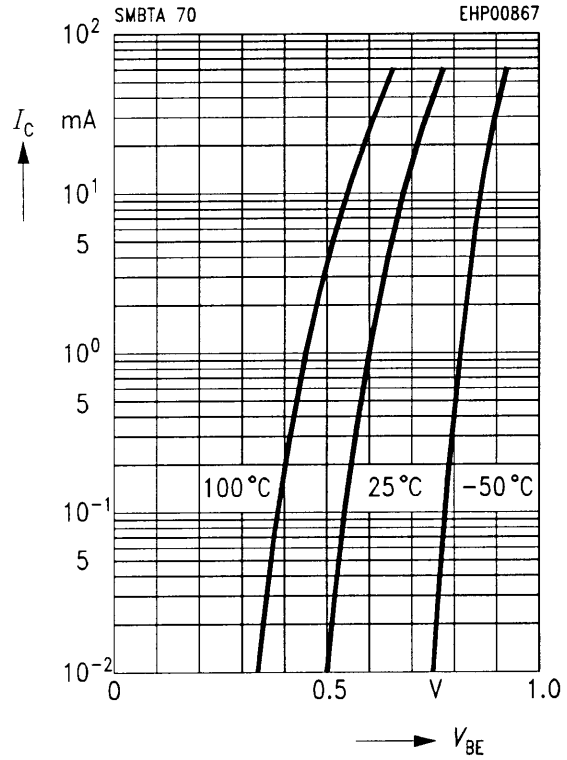
**Collector-emitter saturation voltage**

$I_C = f(V_{CE\ sat}), h_{FE} = 40$



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

$V_{CE} = 1\ V$



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

$V_{CE} = 1\ V$

