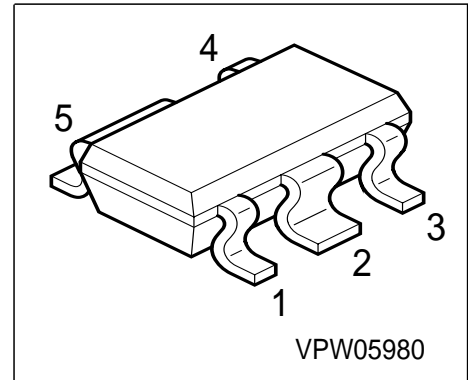


NPN Silicon High-Voltage Transistor

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: SMBTA92M (PNP)



Type	Marking	Pin Configuration					Package
SMBTA42M	s1D	1 = B	2 = C	3 = E	4=n.c.	5 = C	SCT595

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	300	V
Collector-base voltage	V_{CBO}	300	
Emitter-base voltage	V_{EBO}	6	
DC collector current	I_C	500	mA
Base current	I_B	100	
Total power dissipation, $T_S \leq 83 \text{ }^\circ\text{C}$	P_{tot}	1.5	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 45	K/W
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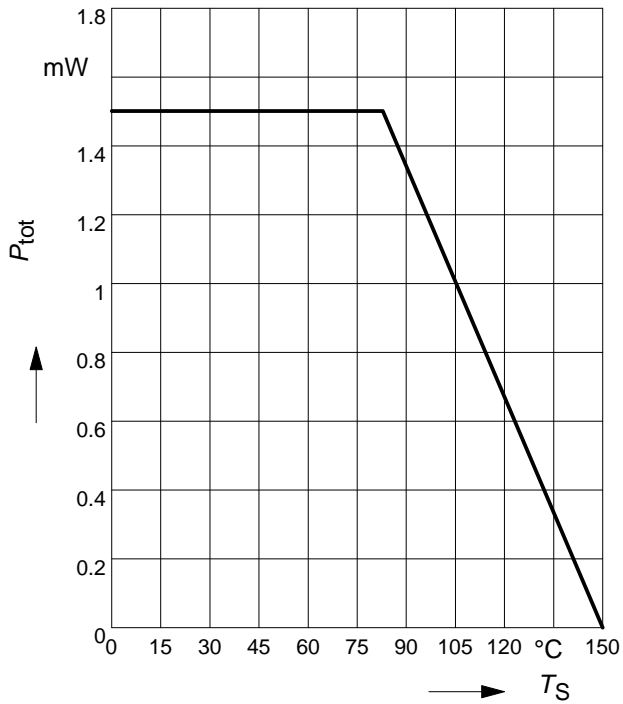
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(BR)CEO}$	300	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	300	-	-	
Emitter-base breakdown voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	6	-	-	
Collector cutoff current $V_{CB} = 200 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Collector-base cutoff current $V_{CB} = 200 \text{ V}, T_A = 150^\circ\text{C}$	I_{CBO}	-	-	20	μA
Emitter cutoff current $V_{EB} = 3 \text{ V}, I_C = 0$	I_{EBO}	-	-	100	nA
DC current gain 1) $I_C = 1 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 30 \text{ mA}, V_{CE} = 10 \text{ V}$	h_{FE}	25 40 40	- - -	- - -	-
Collector-emitter saturation voltage 1) $I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$	V_{CEsat}	-	-	0.5	V
Base-emitter saturation voltage 1) $I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$	V_{BEsat}	-	-	0.9	
AC Characteristics					
Transition frequency $I_C = 10 \text{ mA}, V_{CE} = 20 \text{ V}, f = 100 \text{ MHz}$	f_T	50	-	-	MHz
Collector-base capacitance $V_{CB} = 20 \text{ V}, f = 1 \text{ MHz}$	C_{cb}	-	-	3	pF

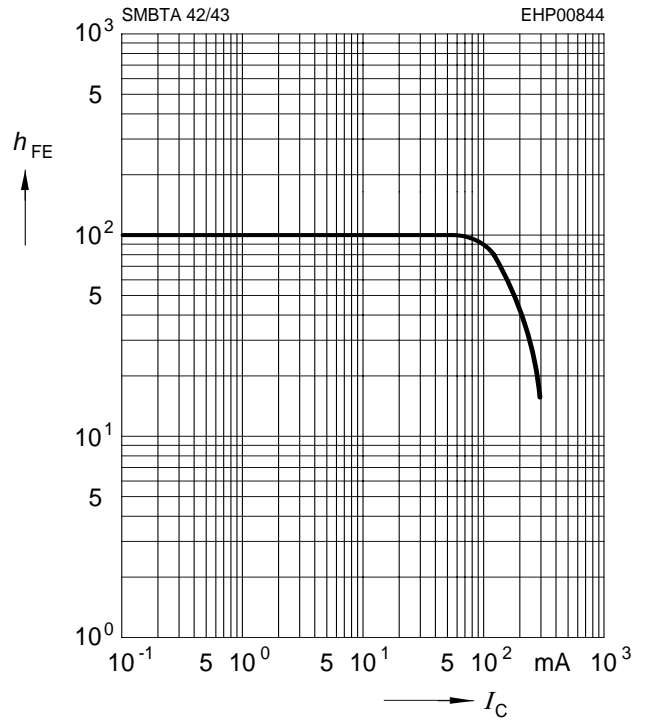
1) Pulse test: $t < 300 \mu\text{s}$; $D < 2\%$

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

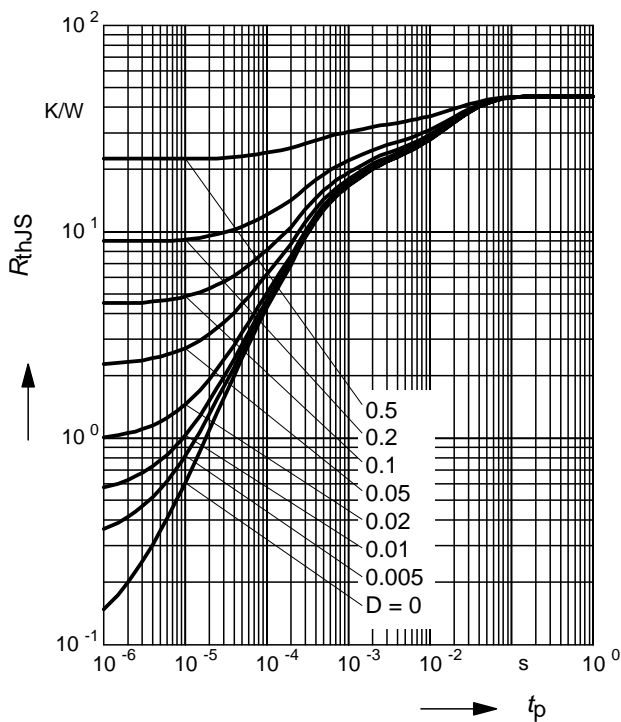


DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 10V$

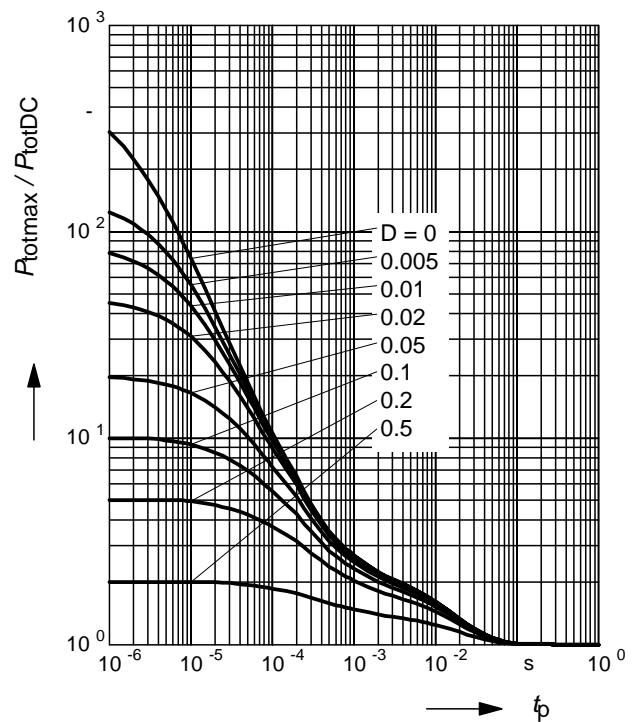


Permissible Pulse Load $R_{thJS} = f(t_p)$



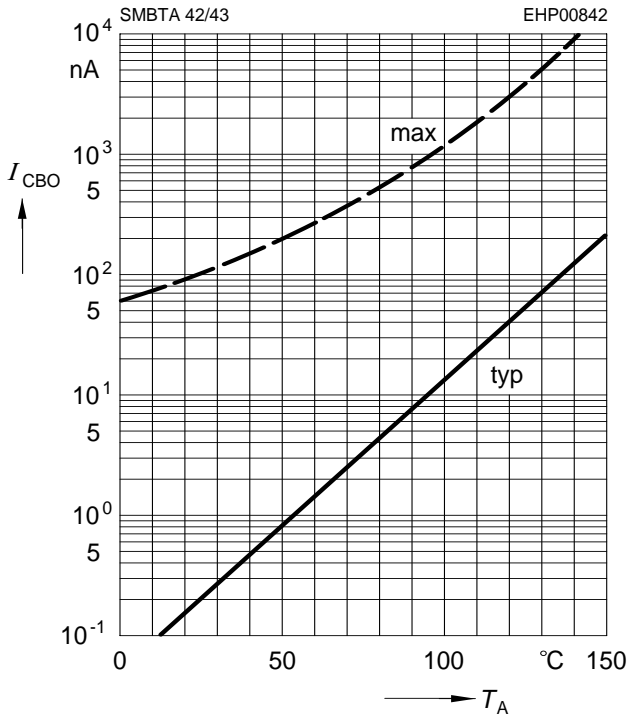
Permissible Pulse Load

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



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

$V_{CB} = 160V$



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

$V_{CE} = 10V$

