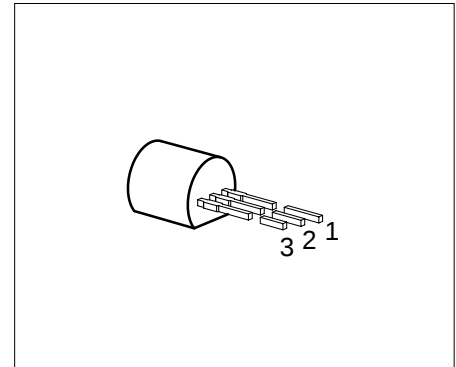


NPN Silicon High-Voltage Transistors

MPSA 42
MPSA 43

- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary types: MPSA 92
MPSA 93 (PNP)



Type	Marking	Ordering Code	Pin Configuration			Package ¹⁾
			1	2	3	
MPSA 42	MPSA 42	Q68000-A413	E	B	C	TO-92
MPSA 43	MPSA 43	Q68000-A4809				

Maximum Ratings

Parameter	Symbol	Values		Unit
		MPSA 42	MPSA 43	
Collector-emitter voltage	V_{CE0}	300	200	V
Collector-base voltage	V_{CB0}	300	200	
Emitter-base voltage	V_{EB0}	6		
Collector current	I_C	500		mA
Base current	I_B	100		
Total power dissipation, $T_C = 66\text{ }^{\circ}\text{C}$ ²⁾	P_{tot}	625		mW
Junction temperature	T_j	150		$^{\circ}\text{C}$
Storage temperature range	T_{stg}	− 65 ... + 150		

Thermal Resistance

Junction - ambient	$R_{th JA}$	≤ 200	K/W
Junction - case ²⁾	$R_{th JC}$	≤ 135	

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Mounted on Al-heat sink 15 mm × 25 mm × 0.5 mm.

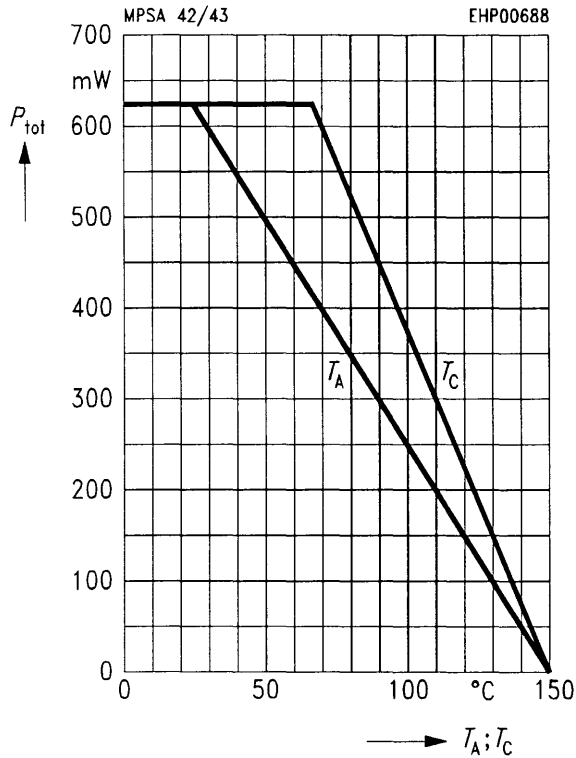
Electrical Characteristics

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

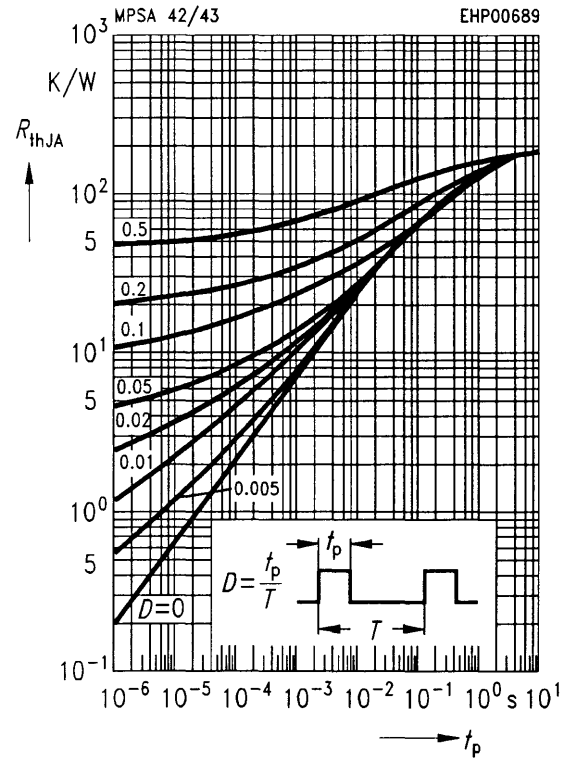
Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$ MPSA 42 MPSA 43	$V_{(BR)CE0}$	300 200	— —	— —	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_B = 0$ MPSA 42 MPSA 43	$V_{(BR)CB0}$	300 200	— —	— —	
Emitter-base breakdown voltage $I_E = 100\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EB0}$	6	—	—	
Collector-base cutoff current $V_{CB} = 200\text{ V}$ MPSA 42 $V_{CB} = 160\text{ V}$ MPSA 43 $V_{CB} = 200\text{ V}$, $T_A = 150\text{ }^\circ\text{C}$ MPSA 42 $V_{CB} = 160\text{ V}$, $T_A = 150\text{ }^\circ\text{C}$ MPSA 43	I_{CB0}	— — — —	— — — —	100 100 20 20	nA nA μA μA
Emitter-base cutoff current $V_{BE} = 3\text{ V}$, $I_C = 0$	I_{EB0}	—	—	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⁾ $I_C = 20\text{ mA}$, $I_C = 2\text{ mA}$ MPSA 42 MPSA 43	V_{CEsat}	— —	— —	0.5 0.4	V
Base-emitter saturation voltage $I_C = 20\text{ mA}$, $I_B = 2\text{ mA}$	V_{BEsat}	—	—	0.9	
AC Characteristics					
Transition frequency $I_C = 20\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$	f_T	—	70	—	MHz
Collector-base capacitance $V_{CB} = 20\text{ V}$, $f = 1\text{ MHz}$ MPSA 42 MPSA 43	C_{obo}	— —	— —	3 4	pF

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

Total power dissipation $P_{\text{tot}} = f(T_A; T_C)$

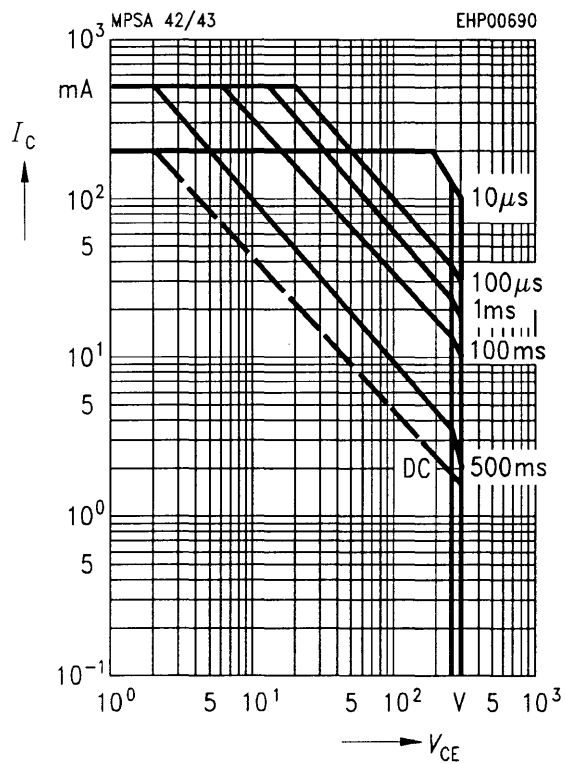


Permissible pulse load $R_{\text{thJA}} = f(t_p)$



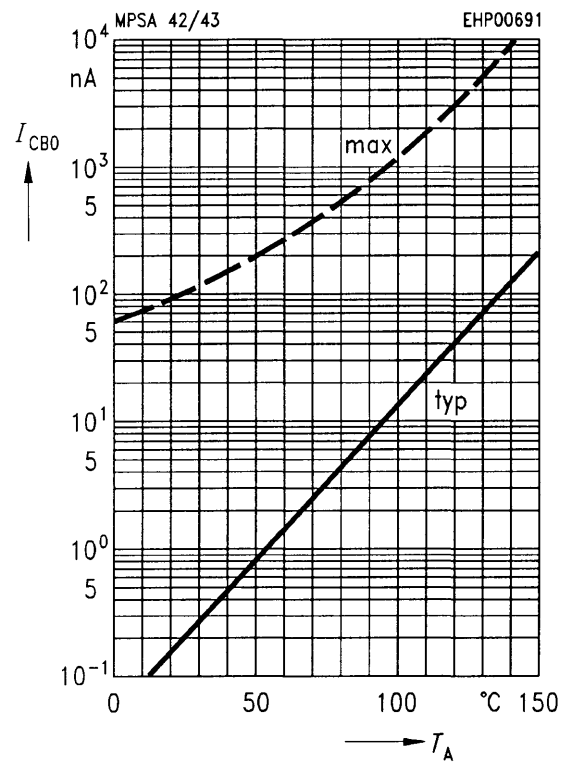
Operating range $I_C = f(V_{\text{CE}})$

$T_A = 25^\circ\text{C}$, $D = 0$

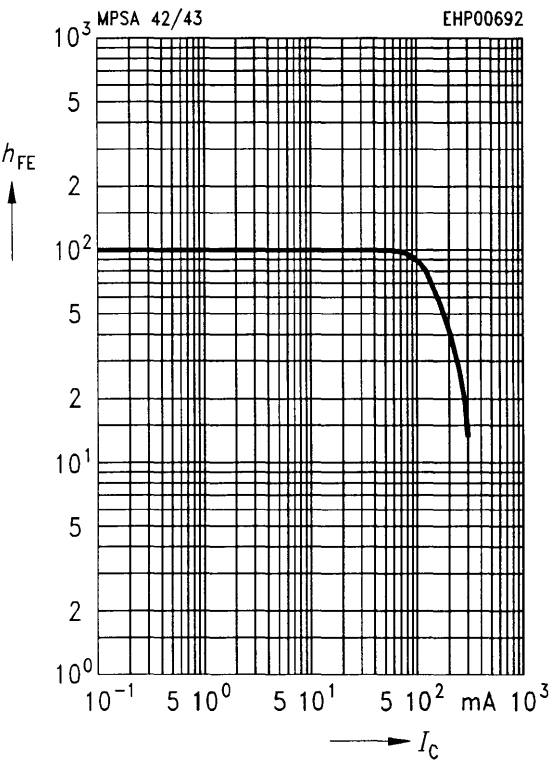


Collector cutoff current $I_{\text{CB0}} = f(T_A)$

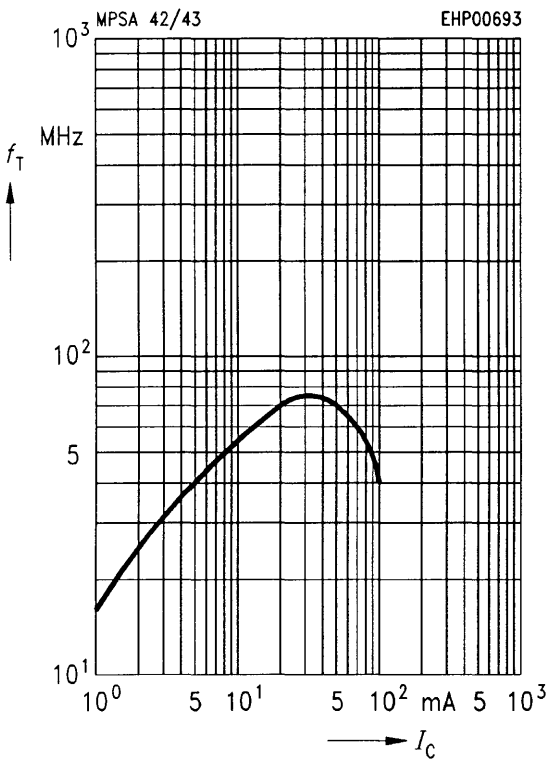
$V_{\text{CB}} = V_{\text{CBmax}}$



DC current gain $h_{FE} = f(I_C)$
 $V_{CE} = 10\text{ V}$



Transition frequency $f_T = f(I_C)$
 $V_{CE} = 20\text{ V}$, $f = 20\text{ MHz}$, $V_{CE} = 10\text{ V}$



Collector current $I_C = f(V_{BE})$
 $V_{CE} = 10\text{ V}$

