

SILICON PLANAR EPITAXIAL POWER TRANSISTORS

P-N-P silicon transistors, in a plastic TO-202 envelope, recommended for use in television circuits and audio applications.

N-P-N complements are BD839, BD841 and BD843.

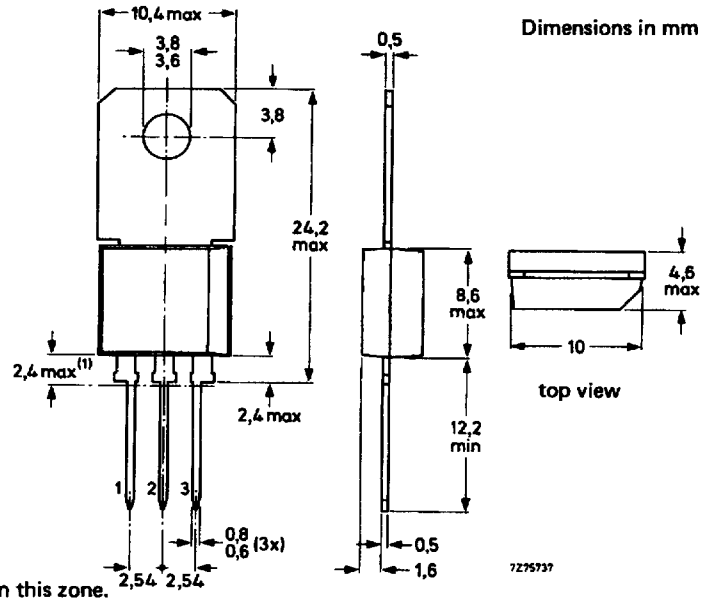
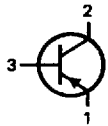
QUICK REFERENCE DATA

		BD840	BD842	BD844	
Collector-base voltage	$-V_{CBO}$	max. 45	60	100	V
Collector-emitter voltage	$-V_{CEO}$	max. 45	60	80	V
Collector-emitter voltage ($R_{BE} = 1 \text{ k}\Omega$)	$-V_{CER}$	max. 45	60	100	V
Emitter-base voltage	$-V_{EBO}$	max. 5	5	5	V
Collector current (peak value)	$-I_{CM}$	max.	3	A	
Total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$ (free air)	P_{tot}	max. 2	W	
	$T_{mb} = 25 \text{ }^\circ\text{C}$	P_{tot}	max. 10	W	
Junction temperature	T_j	max.	150	$^\circ\text{C}$	
D.C. current gain	h_{FE}	>	25		
Transition frequency at $f = 35 \text{ MHz}$	f_T	typ.	50	MHz	

MECHANICAL DATA

Fig. 1 TO-202.

Collector connected to mounting base.



RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

		BD840	BD842	BD844	
Collector-base voltage (open emitter)	-V _{CBO}	max. 45	60	100	V
Collector-emitter voltage (open base)	-V _{CEO}	max. 45	60	80	V
Collector-emitter voltage (R _{BE} = 1 kΩ)	-V _{CER}	max. 45	60	100	V
Emitter-base voltage (open collector)	-V _{EBO}	max. 5	5	5	V
Collector current (d.c.)	-I _C	max.	1,5		A
Collector current (peak value)	-I _{CM}	max.	3		A
Total power dissipation					
T _{amb} = 25 °C (free air)	P _{tot}	max.	2		W
T _{mb} = 25 °C	P _{tot}	max.	10		W
Storage temperature	T _{stg}		-65 to + 150		°C
Junction temperature	T _j	max.	150		°C

THERMAL RESISTANCE

From junction to ambient in free air	R _{th j-a}	=	62,5	K/W
From junction to mounting base	R _{th j-mb}	=	12,5	K/W

CHARACTERISTICS $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Collector cut-off current

 $I_E = 0; -V_{CB} = 30\text{ V}$ $-I_{CBO} < 100\text{ nA}$ $I_E = 0; -V_{CB} = 30\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $-I_{CBO} < 10\text{ }\mu\text{A}$

Emitter cut-off current

 $I_C = 0; -V_{EB} = 5\text{ V}$ $-I_{EBO} < 10\text{ }\mu\text{A}$

Base-emitter voltage*

 $-I_C = 1\text{ A}; -V_{CE} = 2\text{ V}$ $-V_{BE} < 1,3\text{ V}$

Collector-emitter saturation voltage

 $-I_C = 1\text{ A}; -I_B = 0,1\text{ A}$ $-V_{CEsat} < 0,8\text{ V}$

D.C. current gain

 $-I_C = 5\text{ mA}; -V_{CE} = 2\text{ V}$ $h_{FE} > 25$ $-I_C = 150\text{ mA}; -V_{CE} = 2\text{ V}$ $h_{FE} > 40\text{ to }250$ $-I_C = 1\text{ A}; -V_{CE} = 2\text{ V}$ $h_{FE} > 25$ Transition frequency at $f = 35\text{ MHz}$ $-I_C = 50\text{ mA}; -V_{CE} = 5\text{ V}$ $f_T \text{ typ. } 50\text{ MHz}$

D.C. current gain ratio

of BD839/BD840, BD841/BD842, BD843/BD844

 $|I_C| = 150\text{ mA}; |V_{CE}| = 2\text{ V}$ $h_{FE1}/h_{FE2} \text{ typ. } 1,3$ $< 1,6$ * V_{BE} decreases by about 2,3 mV/K with increasing temperature.

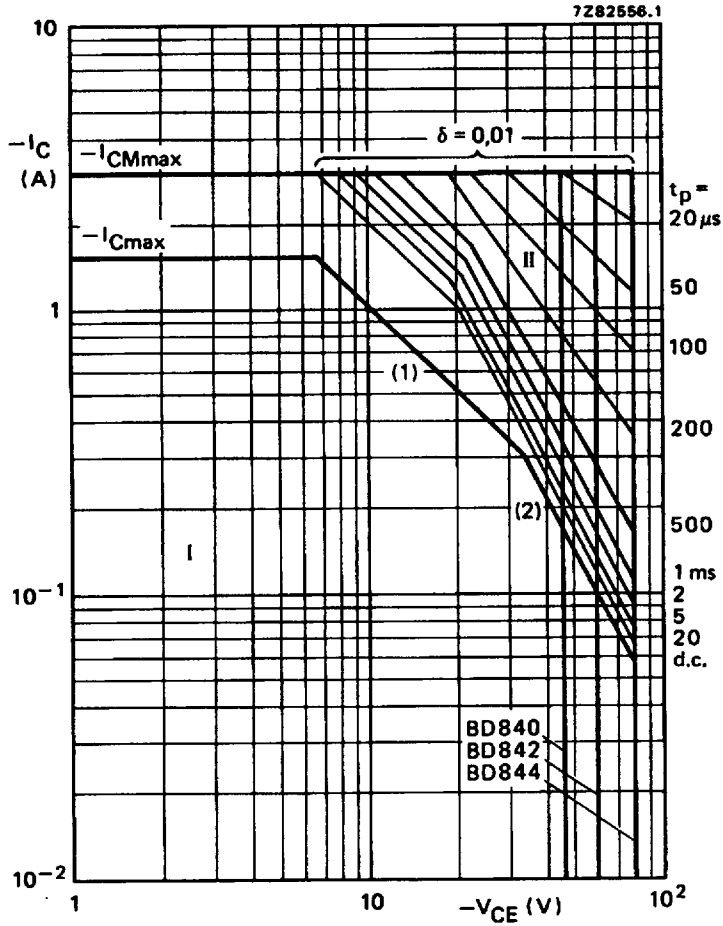


Fig. 2 Safe Operating Area, $T_{mb} \leq 25^\circ\text{C}$.
 I Region of permissible d.c. operation.
 II Permissible extension for repetitive pulse operation.
 (1) P_{tot} max and P_{peak} max lines.
 (2) Second-breakdown limits.

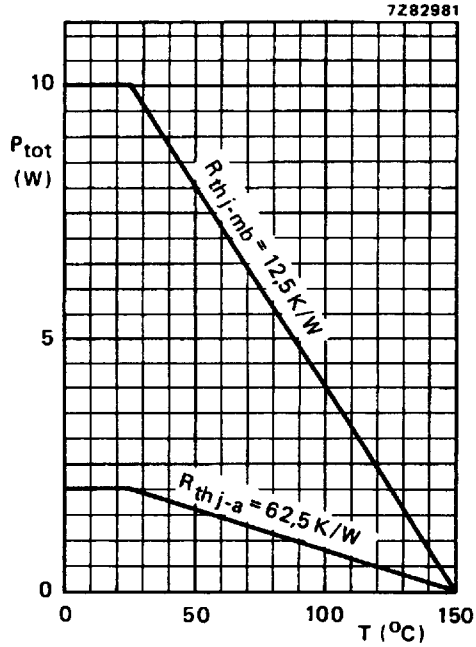


Fig. 3 Power derating curve.

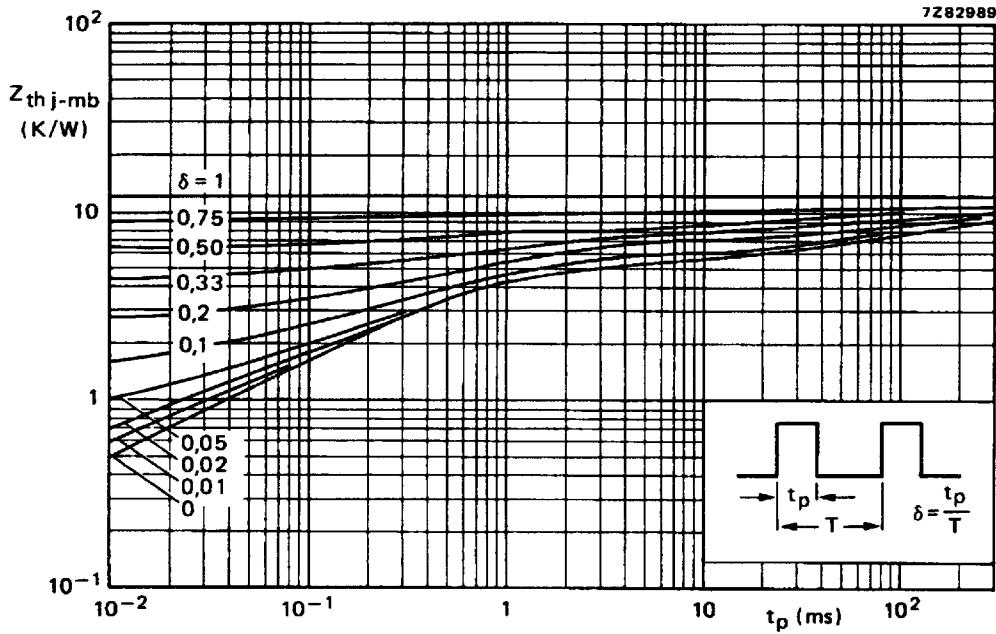


Fig. 4 Pulse power rating chart.

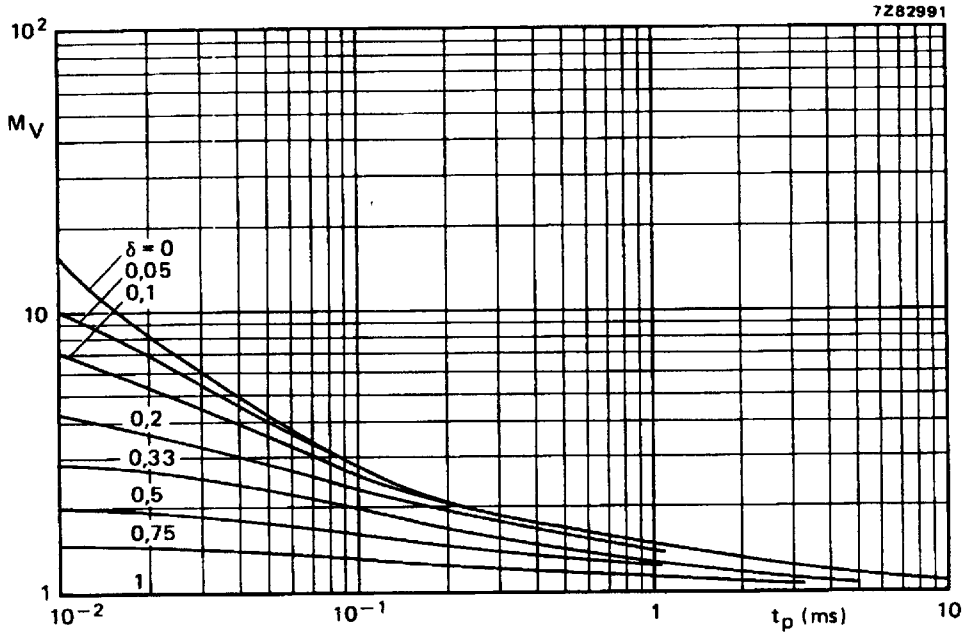


Fig. 5 S.B. voltage multiplying factor at the I_{Cmax} level.

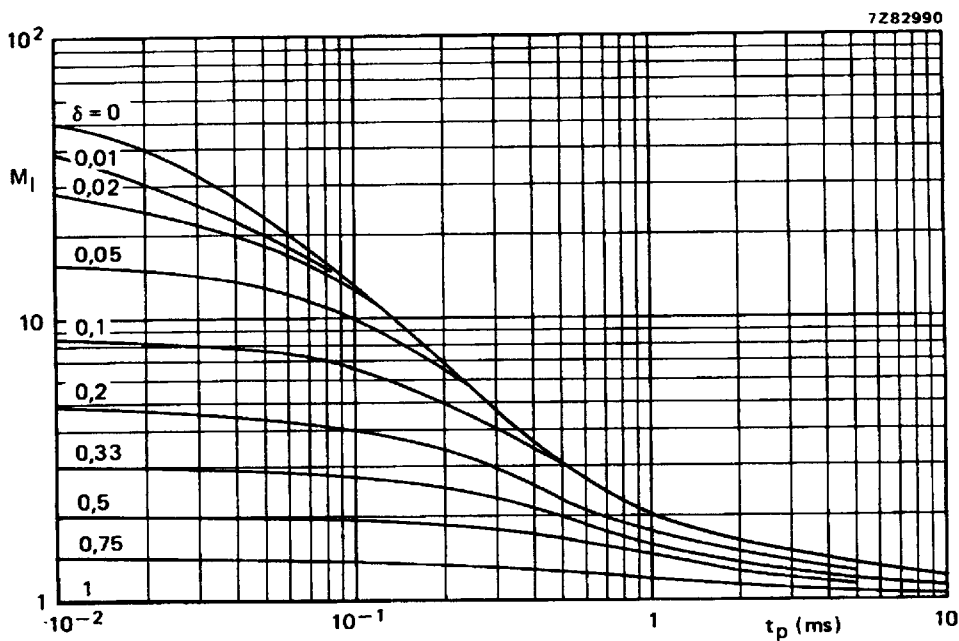


Fig. 6 S.B. current multiplying factor at the V_{CE0max} level.

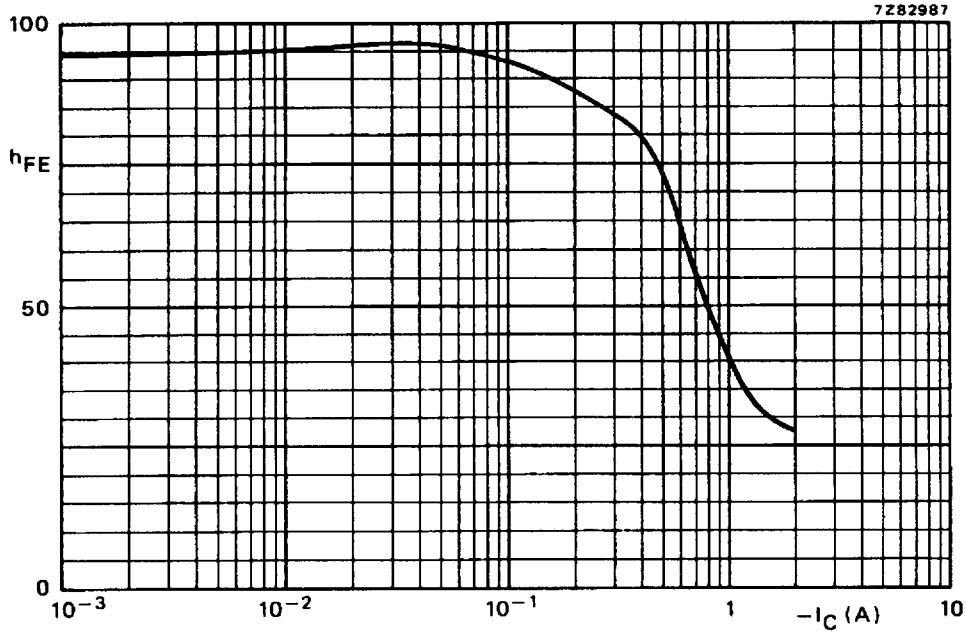


Fig. 7 Typical values d.c. current gain. $-V_{CE} = 2$ V; $T_{amb} = 25$ °C.

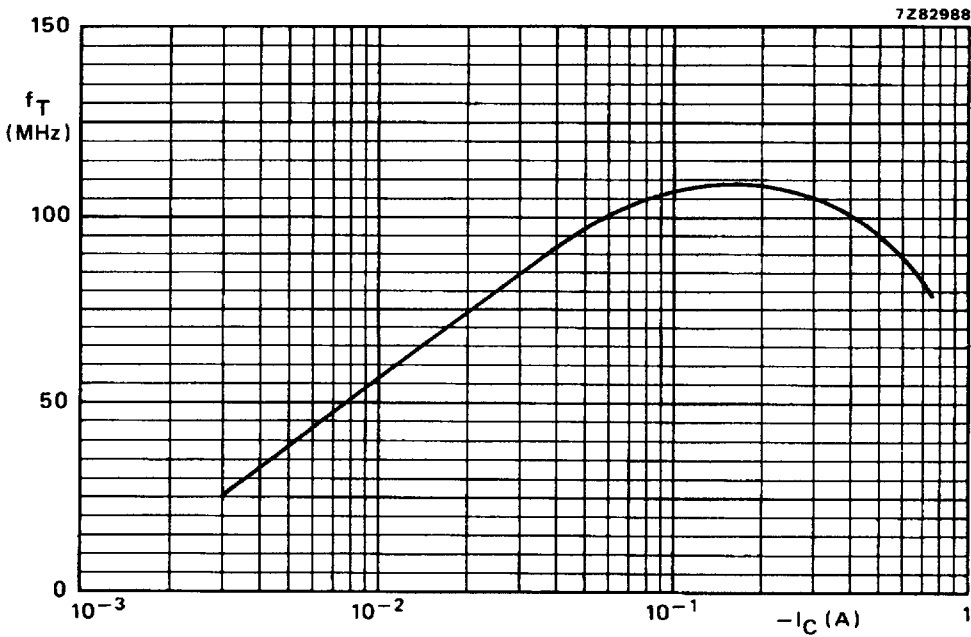


Fig. 8 Typical values transition frequency. $-V_{CE} = 5$ V; $f = 35$ MHz; $T_{amb} = 25$ °C.

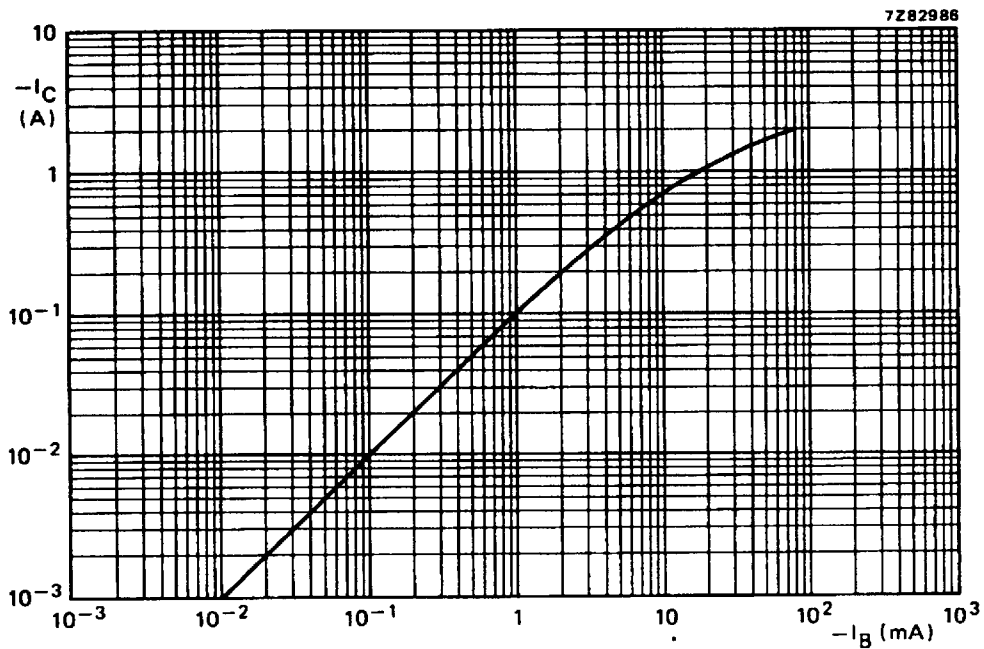


Fig. 9 Typical values at $-V_{CE} = 2$ V; $T_{amb} = 25$ °C.

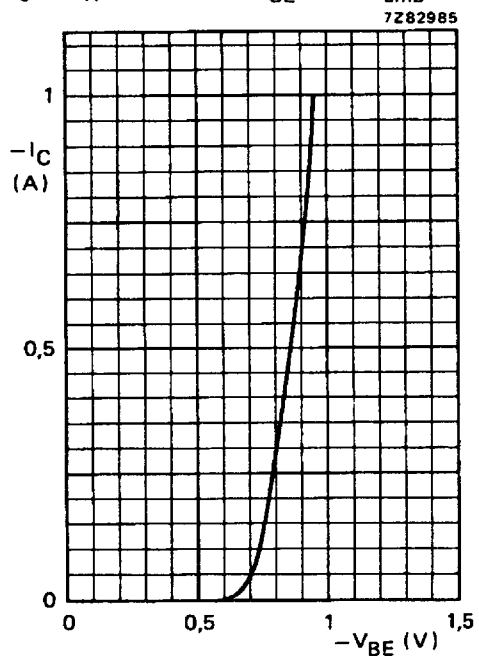


Fig. 10 Typical values. $-V_{CE} = 2$ V; $T_{amb} = 25$ °C.