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BFQ43
BFQ43S

V.H.F. POWER TRANSISTORS

N-P-N silicon planar epitaxial transistors intended for use in class-A, B or C operated mobile transmitters with a nominal supply voltage of 13,5 V. The transistors are resistance stabilized and guaranteed to withstand severe load mismatch conditions with a supply over-voltage to 16,5 V. The BFQ43 and BFQ43S are especially suited as driver transistors for the BLW31 in a two-stage wideband or semi-wideband v.h.f. amplifier delivering 28 W output power.

The BFQ43 and BFQ43S have a TO-39 metal envelope with the emitter connected to the case which enables excellent heatsinking and emitter grounding.

QUICK REFERENCE DATA

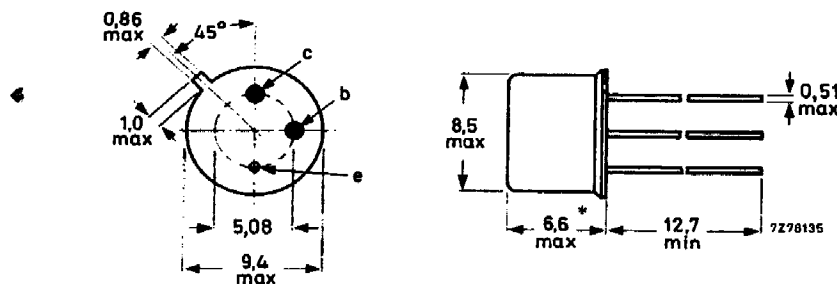
R.F. performance up to $T_h = 25^\circ\text{C}$

mode of operation	V_{CE} V	f MHz	P_L W	G_p dB	η %	$\bar{z}_i$ Ω	$\bar{Y}_L$ mS
c.w. class-B	13,5	175	4	> 12	> 55	$3,2 + j0,03$	$53 - j29$
c.w. class-B	12,5	175	4	typ. 12	typ. 60	—	—

MECHANICAL DATA

Dimensions in mm

Fig.1 TO-39/3; emitter connected to case.



Maximum lead diameter is guaranteed only for 12,7 mm.

* Max. 4,9 for BFQ43S.

BFQ43 BFQ43S

RATINGS

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

Collector-emitter voltage ($V_{BE} = 0$)
peak value

V_{CESM} max. 36 V

Collector-emitter voltage (open base)

V_{CEO} max. 18 V

Emitter-base voltage (open collector)

V_{EBO} max. 4 V

Collector current (average)

$I_{C(AV)}$ max. 1,25 A

Collector current (peak value); $f > 1$ MHz

I_{CM} max. 3,75 A

Total power dissipation up to $T_{mb} = 25$ °C

P_{tot} max. 12 W

Storage temperature

T_{stg} -65 to + 175 °C

Operating junction temperature

T_j max. 200 °C

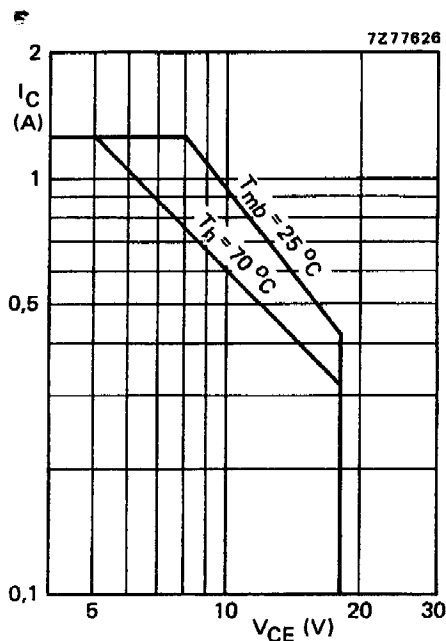
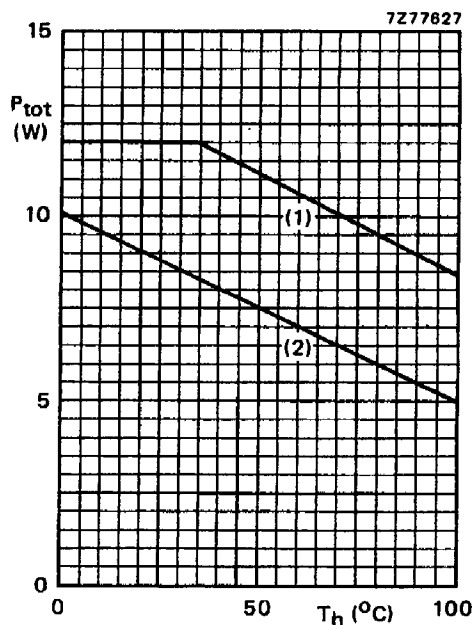


Fig. 2 D.C. SOAR.



- (1) Short-time r.f. operation during mismatch;
 $f > 1$ MHz.
(2) Continuous d.c. and r.f. operation; derate
by 0,05 W/K.

Fig. 3 Total power dissipation; $V_{CE} \leq 16,5$ V.

THERMAL RESISTANCE (dissipation = 4 W; $T_{mb} = 82$ °C, i.e. $T_h = 70$ °C)

From junction to mounting base

$R_{th j-mb}$ = 18 K/W

From mounting base to heatsink

$R_{th mb-h}$ = 3 K/W

CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$

Collector-emitter breakdown voltage

 $V_{BE} = 0; I_C = 5\text{ mA}$ $V_{(BR)CES} > 36\text{ V}$

Collector-emitter breakdown voltage

open base; $I_C = 50\text{ mA}$ $V_{(BR)CEO} > 18\text{ V}$

Emitter-base breakdown voltage

open collector; $I_E = 2\text{ mA}$ $V_{(BR)EBO} > 4\text{ V}$

Collector cut-off current

 $V_{BE} = 0; V_{CE} = 18\text{ V}$ $I_{CES} < 2\text{ mA}$ Second breakdown energy; $L = 25\text{ mH}; f = 50\text{ Hz}$

open base

 $E_{SBO} > 0,5\text{ mJ}$ $R_{BE} = 10\text{ }\Omega$ $E_{SBR} > 0,5\text{ mJ}$

D.C. current gain *

 $I_C = 0,5\text{ A}; V_{CE} = 5\text{ V}$ h_{FE} typ. 40
10 to 80

Collector-emitter saturation voltage *

 $I_C = 1,5\text{ A}; I_B = 0,3\text{ A}$ V_{CEsat} typ. 0,9 VTransition frequency at $f = 100\text{ MHz}$ * $-I_E = 0,5\text{ A}; V_{CB} = 13,5\text{ V}$ f_T typ. 750 MHz $-I_E = 1,5\text{ A}; V_{CB} = 13,5\text{ V}$ f_T typ. 625 MHzCollector capacitance at $f = 1\text{ MHz}$ $I_E = I_B = 0; V_{CB} = 13,5\text{ V}$ C_C typ. 15 pFFeedback capacitance at $f = 1\text{ MHz}$ $I_C = 20\text{ mA}; V_{CE} = 13,5\text{ V}$ C_{re} typ. 7,3 pF