

Low-Noise N-channel Junction Field-Effect Transistor for RF Applications

SIEMENS AKTIENGESELLSCHAFT

79 D

BF 410 A

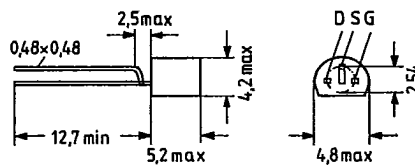
BF 410 B

BF 410 C

BF 410 D

BF 410 A, B, C, and D are asymmetric epitaxial planar N-channel junction field-effect transistors in plastic package similar to TO 92 (10 A 3 DIN 41868). They are designed for use up to the VHF range.

Type	Ordering code
BF 410	Q68000-A5440
BF 410 A	Q68000-A5172
BF 410 B	Q68000-A5173
BF 410 C	Q68000-A5174
BF 410 D	Q68000-A5175



Approx. weight 0.25 g Dimensions in mm

Maximum ratings

Drain-source voltage
Drain-gate voltage ($I_s = 0$)
Drain current
Gate current
Junction temperature
Storage temperature range
Total power dissipation ($T_{amb} \leq 75^\circ\text{C}$)

	BF 410 A, BF 410 B BF 410 C, BF 410 D	
V_{DS}	20	V
$V_{DG\ 0}$	20	V
I_D	30	mA
$\pm I_G$	10	mA
T_j	150	$^\circ\text{C}$
T_{stg}	-65 to 150	$^\circ\text{C}$
P_{tot}	300	mW

Thermal resistance

Junction to ambient air

R_{thJA}	≤ 250	K/W
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BF 410 A

BF 410 B

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Static characteristics ($T_{amb} = 25^{\circ}\text{C}$)		BF 410 A	BF 410 B	BF 410 C	BF 410 D	
Drain-source short-circuit current						
($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	I_{DSS}	0.7 to 3	—	—	—	mA
($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	I_{DSS}	—	2.5 to 7	6 to 12	10 to 18	mA
Gate-source pinch-off voltage						
($V_{DS} = 5\text{ V}$, $I_D = 10\text{ }\mu\text{A}$)	$-V_P$	0.7	—	—	—	V
($V_{DS} = 10\text{ V}$, $I_D = 10\text{ }\mu\text{A}$)	$-V_P$	—	1.5	2.2	3.2	V

Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

Small-signal short-circuit

forward transfer admittance

($f = 1\text{ kHz}$)

($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	$ Y_{21s} $	≥ 2.5	—	—	—	mS
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	$ Y_{21s} $	—	≥ 4	≥ 7	≥ 8	mS
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Output admittance ($f = 1\text{ kHz}$)

($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	g_{22s}	≤ 60	—	—	—	μS
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	g_{22s}	—	≤ 60	≤ 100	≤ 120	μS
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Input capacitance ($f = 1\text{ MHz}$)

($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	C_{11s}	≤ 5	—	—	—	pF
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	C_{11s}	—	≤ 5	≤ 5	≤ 5	pF
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Output capacitance ($f = 1\text{ MHz}$)

($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	C_{22s}	≤ 3	—	—	—	pF
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	C_{22s}	—	≤ 3	≤ 3	≤ 3	pF
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Reverse transfer capacitance

at $f = 1\text{ MHz}$

($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	C_{12s}	≤ 0.4	—	—	—	pF
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	C_{12s}	—	≤ 0.4	≤ 0.4	≤ 0.4	pF
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Noise figure ($f = 100\text{ MHz}$, $R_g = R_{g_{opt}} = 1\text{--}14\text{ mS}$)

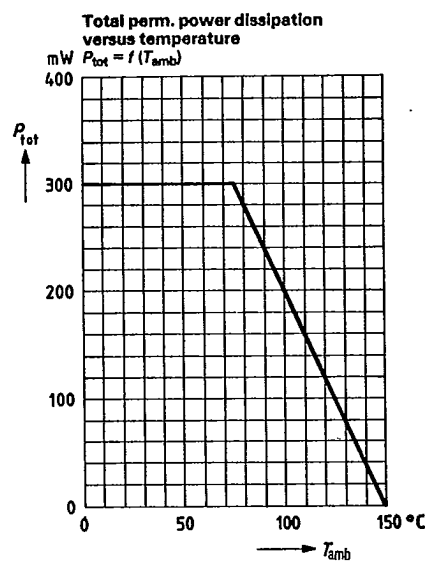
($V_{DS} = 5\text{ V}$, $V_{GS} = 0$)	NF	1.5	—	—	—	dB
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($V_{DS} = 10\text{ V}$, $V_{GS} = 0$)	NF	—	1.5	1.5	1.5	dB
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BF410 A
BF410 B
BF410 C
BF410 D

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