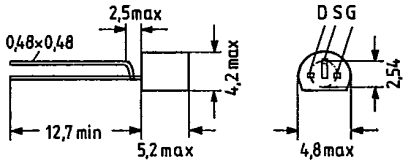
Low-Noise N-channel Junction Field-Effect Transistor for RF Applications

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		BF 410 A, BF 410 B BF 410 C, BF 410 D	
Drain-source voltage	V_{DS}	20	V
Drain-gate voltage (I_S = 0)	$V_{DG\,0}$	20	V
Drain current	I_D	30	mA
Gate current	$\pm I_G$	10	mA
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	–65 to 150	°C
Total power dissipation ($T_{amb} \leq 75$ °C)	P_{tot}	300	mW
Thermal resistance			
Junction to ambient air	R_{thJA}	≤250	K/W

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Static characteristics (T_{amb} = 25 °C)		BF 410 A	BF 410 B	BF 410 C	BF 410 D	
Drain-source short-circuit current						
(V_{DS} = 5 V, V_{GS} = 0)	I_{DSS}	0.7 to 3	–	–	–	mA
(V_{DS} = 10 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 V, I_D = 10 µA)	$-V_P$	0.7	–	–	–	V
(V_{DS} = 10 V, I_D = 10 µA)	$-V_P$	–	1.5	2.2	3.2	V

Dynamic characteristics (T_{amb} = 25 °C)						
Small-signal short-circuit forward transfer admittance (f = 1 kHz)						
(V_{DS} = 5 V, V_{GS} = 0)	$\lvert y_{21s} \rvert$	≥2.5	–	–	–	mS
(V_{DS} = 10 V, V_{GS} = 0)	$\lvert y_{21s} \rvert$	–	≥4	≥7	≥8	mS
Output admittance (f = 1 kHz)						
(V_{DS} = 5 V, V_{GS} = 0)	g_{22s}	≤60	–	–	–	µS
(V_{DS} = 10 V, V_{GS} = 0)	g_{22s}	–	≤60	≤100	≤120	µS
Input capacitance (f = 1 MHz)						
(V_{DS} = 5 V, V_{GS} = 0)	C_{11s}	≤5	–	–	–	pF
(V_{DS} = 10 V, V_{GS} = 0)	C_{11s}	–	≤5	≤5	≤5	pF
Output capacitance (f = 1 MHz)						
(V_{DS} = 5 V, V_{GS} = 0)	C_{22s}	≤3	–	–	–	pF
(V_{DS} = 10 V, V_{GS} = 0)	C_{22s}	–	≤3	≤3	≤3	pF
Reverse transfer capacitance at f = 1 MHz						
(V_{DS} = 5 V, V_{GS} = 0)	C_{12s}	≤0.4	–	–	–	pF
(V_{DS} = 10 V, V_{GS} = 0)	C_{12s}	–	≤0.4	≤0.4	≤0.4	pF
Noise figure (f = 100 MHz, $R_g = R_{g\,opt}$ = 1-14 mS)						
(V_{DS} = 5 V, V_{GS} = 0)	NF	1.5	–	–	–	dB
(V_{DS} = 10 V, V_{GS} = 0)	NF	–	1.5	1.5	1.5	dB

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Total perm. power dissipation versus temperature