

N-CHANNEL SILICON FIELD-EFFECT TRANSISTORS

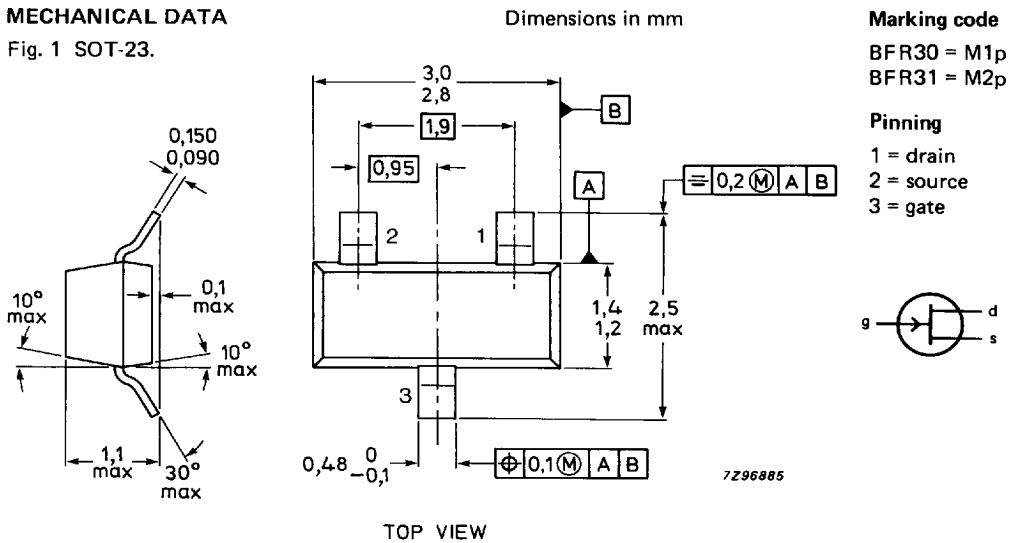
Planar epitaxial symmetrical junction field effect transistor in a microminiature plastic envelope. It is intended for low level general purpose amplifiers in thick and thin-film circuits.

QUICK REFERENCE DATA

Drain-source voltage	$\pm V_{DS}$	max.	25	V	
Gate-source voltage (open drain)	$-V_{GSO}$	max.	25	V	
Total power dissipation up to $T_{amb} = 40\text{ }^{\circ}\text{C}$	P_{tot}	max.	250	mW	
Drain current					
$V_{DS} = 10\text{ V}; V_{GS} = 0$	I_{DSS}	min.	BFR30: 4	BFR31: 1	mA
		max.	10	5	mA
Transfer admittance (common source)					
$I_D = 1\text{ mA}; V_{DS} = 10\text{ V}; f = 1\text{ kHz}$	$ y_{fs} $	min.	1.0	1.5	mS
		max.	4.0	4.5	mS

MECHANICAL DATA

Fig. 1 SOT-23.



Note: Drain and source are interchangeable.

See also *Soldering recommendations*.

RATINGS

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

Drain-source voltage	$\pm V_{DS}$	max.	25	V
Drain-gate voltage (open source)	V_{DGO}	max.	25	V
Gate-source voltage (open drain)	$-V_{GSO}$	max.	25	V
Drain current	I_D	max.	10	mA
Gate current	I_G	max.	5	mA
Total power dissipation up to $T_{amb} = 40\text{ }^\circ\text{C}^*$	P_{tot}	max.	250	mW
Storage temperature range	T_{stg}		-65 to + 150	$^\circ\text{C}$
Junction temperature	T_j	max.	150	$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient*	$R_{th\ j-a}$	=	430	K/W
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CHARACTERISTICS

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

			BFR30	BFR31	
Gate cut-off current					
$-V_{GS} = 10\text{ V}; V_{DS} = 0$	$-I_{GSS}$	max.	0.2	0.2	nA
Drain current					
$V_{DS} = 10\text{ V}; V_{GS} = 0$	I_{DSS}	min.	4	1	mA
		max.	10	5	mA
Gate-source voltage					
$I_D = 1\text{ mA}; V_{DS} = 10\text{ V}$	$-V_{GS}$	min.	0.7	0	V
		max.	3.0	1.3	V
$I_D = 50\text{ }\mu\text{A}; V_{DS} = 10\text{ V}$	$-V_{GS}$	max.	4.0	2.0	V
Gate-source cut-off voltage					
$I_D = 0,5\text{ nA}; V_{DS} = 10\text{ V}$	$-V_{(P)GS}$	max.	5	2.5	V

y parameters

Transfer admittance at $f = 1\text{ kHz}; T_{amb} = 25\text{ }^\circ\text{C}$					
$I_D = 1\text{ mA}; V_{DS} = 10\text{ V}$	$ Y_{fs} $	min.	1.0	1.5	mS
		max.	4.0	4.5	mS
$I_D = 200\text{ }\mu\text{A}; V_{DS} = 10\text{ V}$	$ Y_{fs} $	min.	0.5	0.75	mS
Output admittance at $f = 1\text{ kHz}$					
$I_D = 1\text{ mA}; V_{DS} = 10\text{ V}$	$ Y_{os} $	max.	40	25	μS
$I_D = 200\text{ }\mu\text{A}; V_{DS} = 10\text{ V}$	$ Y_{os} $	max.	20	15	μS

* Mounted on a ceramic substrate of 8 mm x 10 mm x 0.7 mm.

y parameters (continued)

Input capacitance at $f = 1 \text{ MHz}$

$I_D = 1 \text{ mA}; V_{DS} = 10 \text{ V}$

$I_D = 200 \mu\text{A}; V_{DS} = 10 \text{ V}$

Feedback capacitance at $f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$

$I_D = 1 \text{ mA}; V_{DS} = 10 \text{ V}$

$I_D = 200 \mu\text{A}; V_{DS} = 10 \text{ V}$

Equivalent noise voltage

$I_D = 200 \mu\text{A}; V_{DS} = 10 \text{ V}$

$B = 0.6 \text{ to } 100 \text{ Hz}$

		BFR30	BFR31	
C_{is}	max.	4	4	pF
C_{is}	max.	4	4	pF
C_{rs}	max.	1.5	1.5	pF
C_{rs}	max.	1.5	1.5	pF
V_n	max.	0.5	0.5	μV

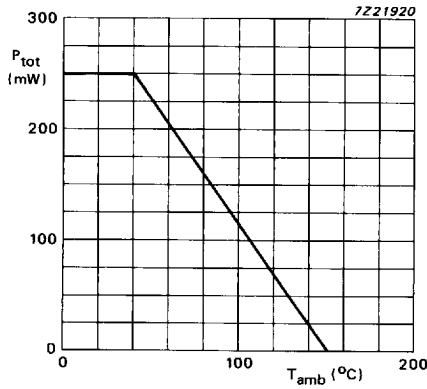


Fig.2 Power derating curve.

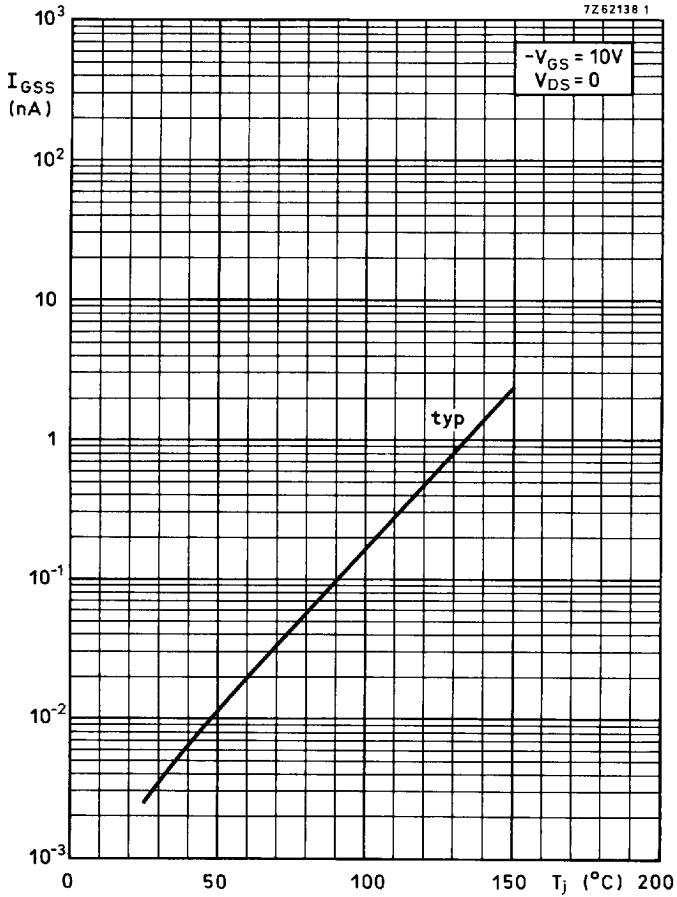


Fig.3.

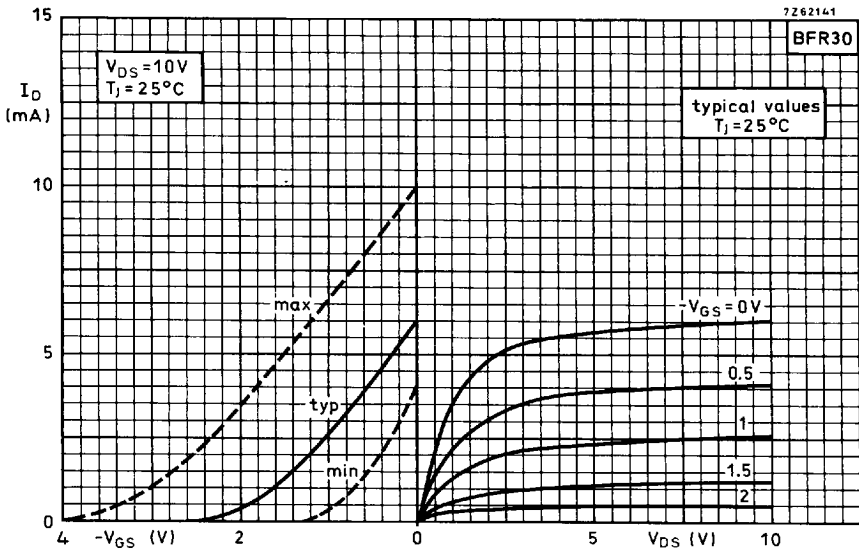


Fig.4.

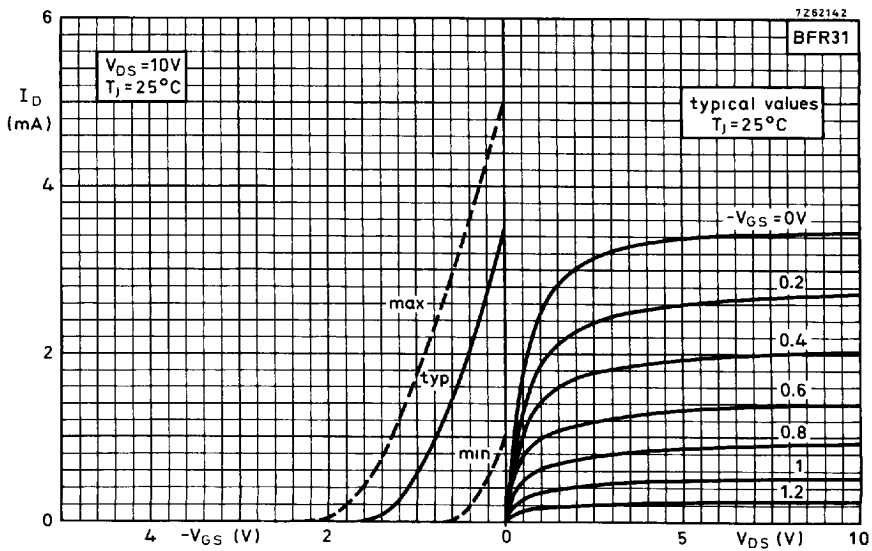


Fig.5.

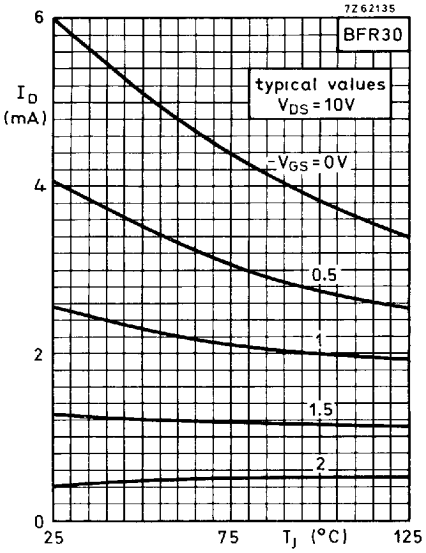


Fig.6.

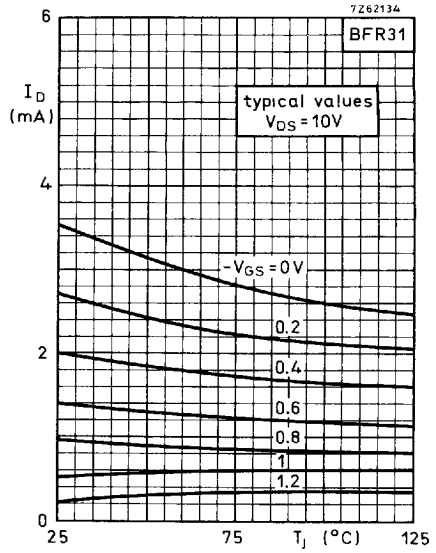


Fig.7.

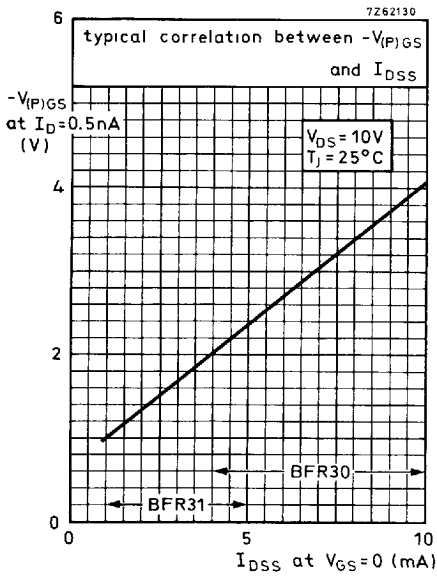


Fig.8.

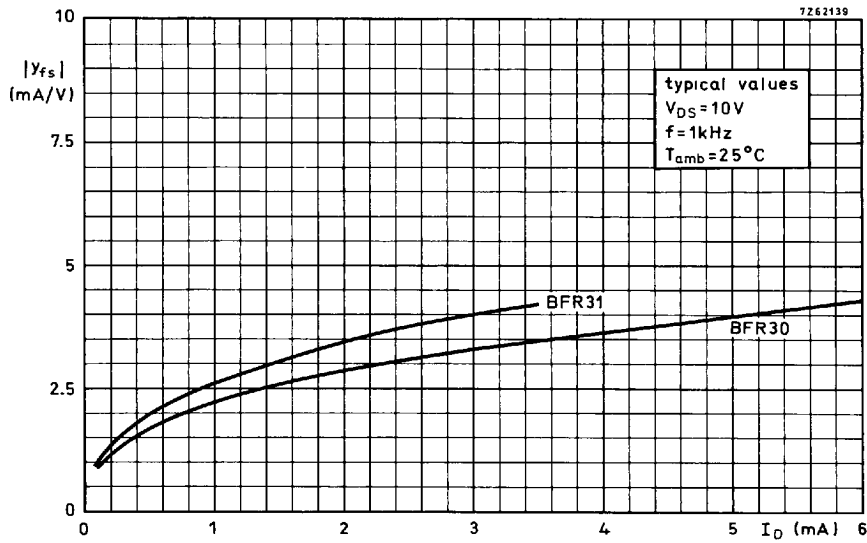


Fig.9.

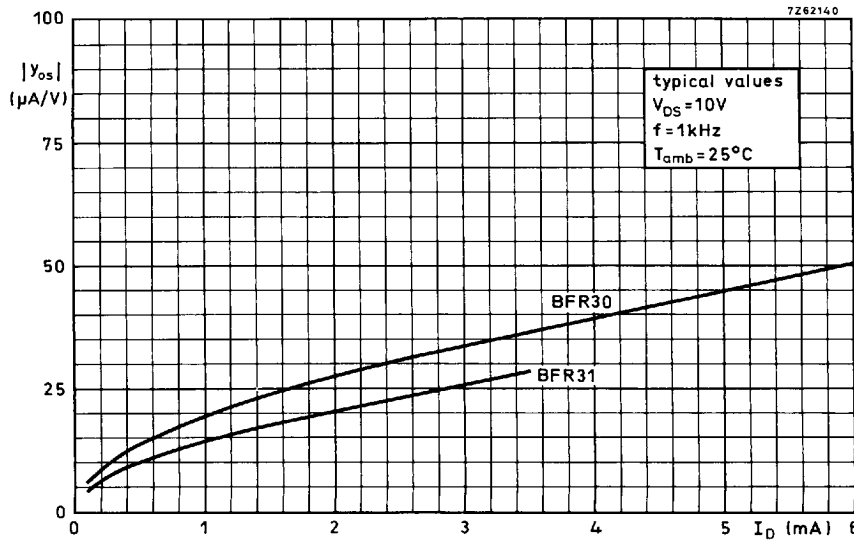


Fig.10.

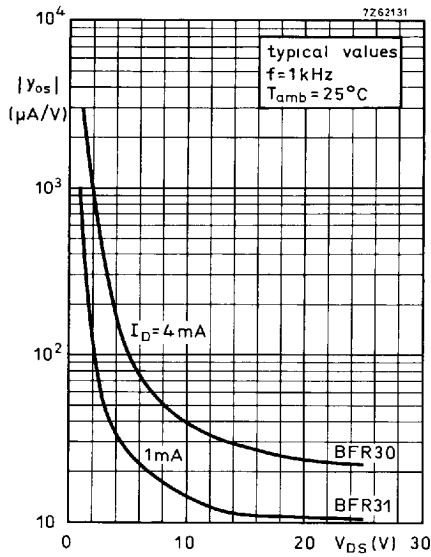


Fig.11.

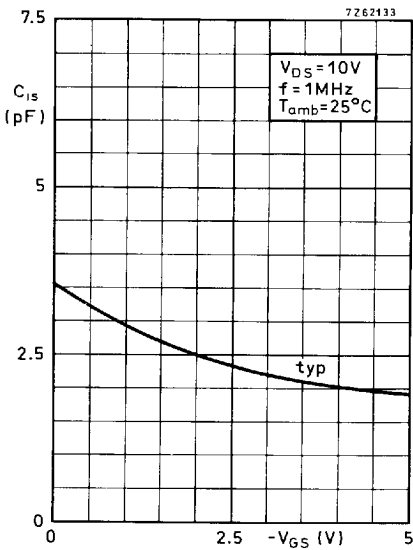


Fig.12.

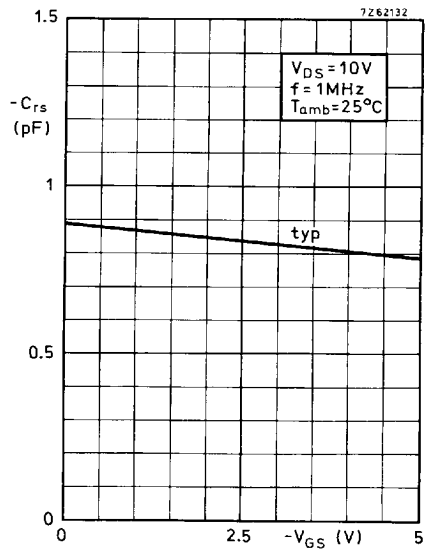


Fig.13.

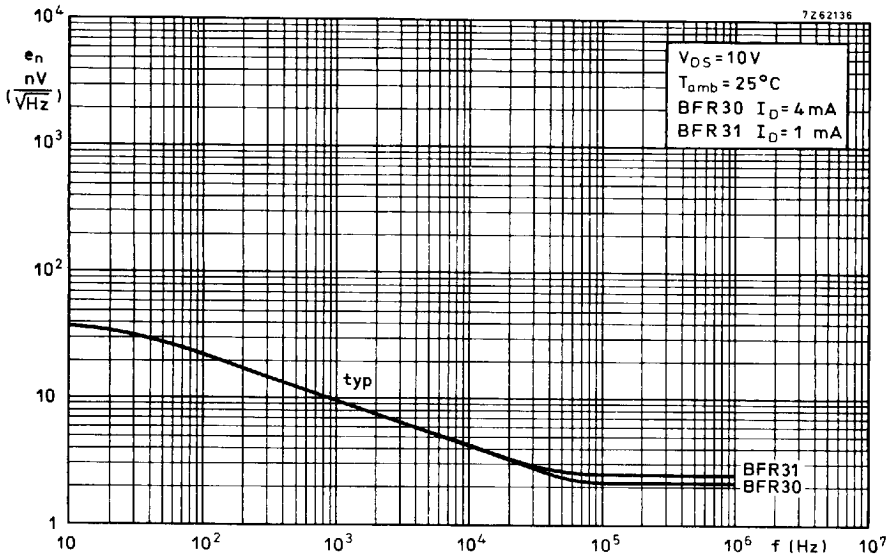


Fig.14.

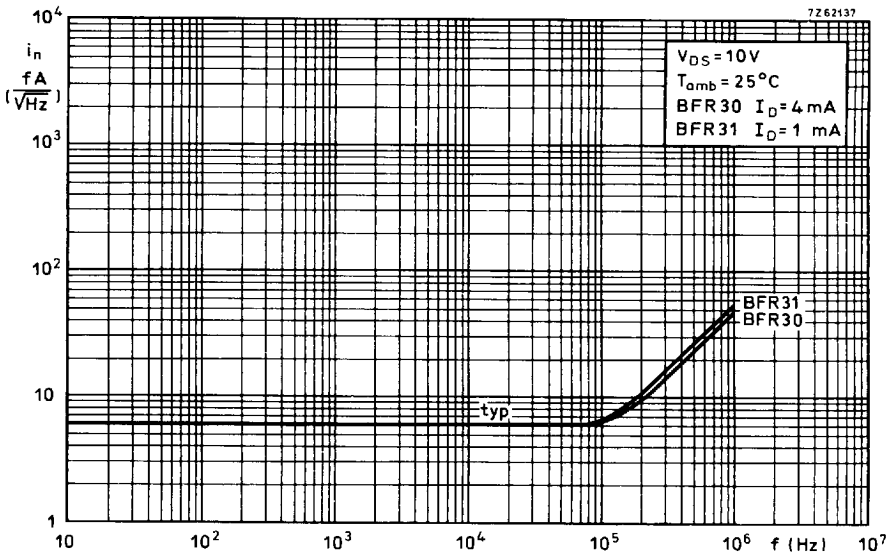


Fig.15.