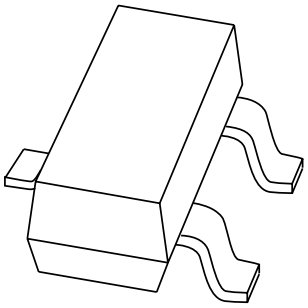
DATA SHEET



BF862
N-channel junction FET

Product specification
Supersedes data of 1999 Jun 29

2000 Jan 05

Philips
Semiconductors

PHILIPS

N-channel junction FET BF862

FEATURES

- High transition frequency for excellent sensitivity in AM car radios
- High transfer admittance.

APPLICATIONS

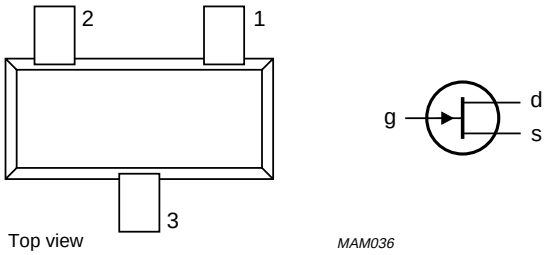
- Pre-amplifiers in AM car radios.

DESCRIPTION

Silicon N-channel symmetrical junction field-effect transistor in a SOT23 package. Drain and source are interchangeable.

PINNING SOT23

PIN	DESCRIPTION
1	source
2	drain
3	gate



Marking code: 2Ap.

Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{DS}	drain-source voltage		–	–	20	V
V_{GSoff}	gate-source cut-off voltage		–0.3	–0.8	–1.2	V
I_{DSS}	drain-source current		10	–	25	mA
P_{tot}	total power dissipation	$T_s \leq 90$ °C	–	–	300	mW
$\lvert y_{fs} \rvert$	transfer admittance		35	45	–	mS
T_j	junction temperature		–	–	150	°C

CAUTION

This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	20	V
V_{DG}	drain-gate voltage		–	20	V
V_{GS}	gate-source voltage		–	–20	V
I_{DS}	drain-source current		–	40	mA
I_G	forward gate current		–	10	mA
P_{tot}	total power dissipation	$T_s \leq 90$ °C; note 1	–	300	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Main heat transfer is via the gate lead.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	note 1	200	K/W

Note

1. Soldering point of the gate lead.

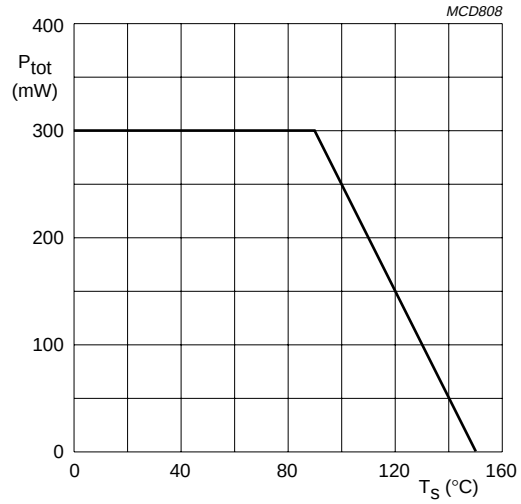


Fig.2 Power derating curve.

STATIC CHARACTERISTICS

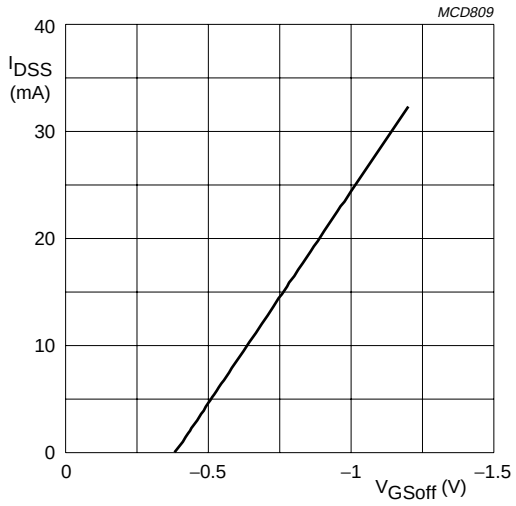
T_j = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)GSS}$	gate-source breakdown voltage	I_{GS} = –1 μA; V_{DS} = 0	–20	–	–	V
V_{GS}	gate-source forward voltage	V_{DS} = 0; I_G = 1 mA	–	–	1	V
V_{GSoff}	gate-source cut-off voltage	V_{DS} = 8 V; I_D = 1 μA	–0.3	–0.8	–1.2	V
I_{GSS}	reverse gate current	V_{GS} = –15 V; V_{DS} = 0	–	–	–1	nA
I_{DSS}	drain-source current	V_{GS} = 0; V_{DS} = 8 V	10	–	25	mA

DYNAMIC CHARACTERISTICS

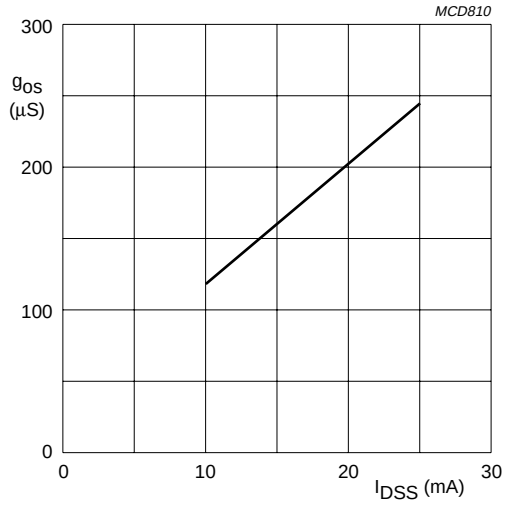
Common source; T_{amb} = 25 °C; V_{GS} = 0; V_{DS} = 8 V; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$\lvert y_{fs} \rvert$	common source forward transfer admittance	T_j = 25 °C	35	45	–	mS
g_{os}	common source output conductance	T_j = 25 °C	–	180	400	μS
C_{iss}	input capacitance	f = 1 MHz	–	10	–	pF
C_{rss}	reverse transfer capacitance	f = 1 MHz	–	1.9	–	pF
e_n	equivalent noise input voltage	f = 100 kHz	–	0.8	–	nV/√Hz
f_T	transition frequency		–	715	–	MHz



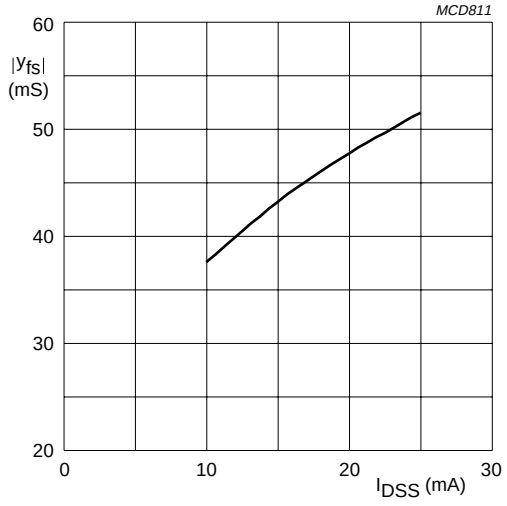
V_{DS} = 8 V; T_j = 25 °C.

Fig.3 Drain saturation current as a function of gate-source cut-off voltage; typical values.



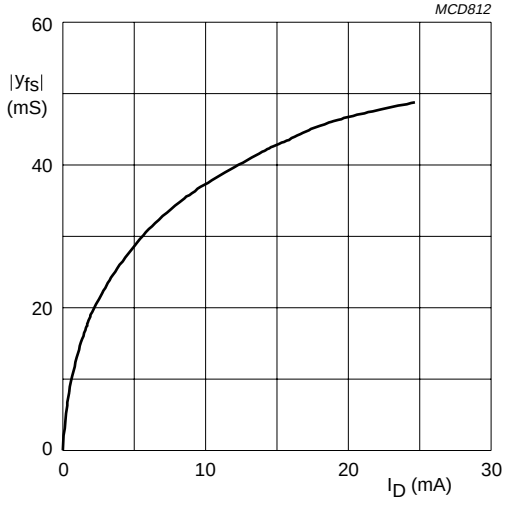
V_{DS} = 8 V; T_j = 25 °C.

Fig.4 Common-source output conductance as a function of drain saturation current; typical values.



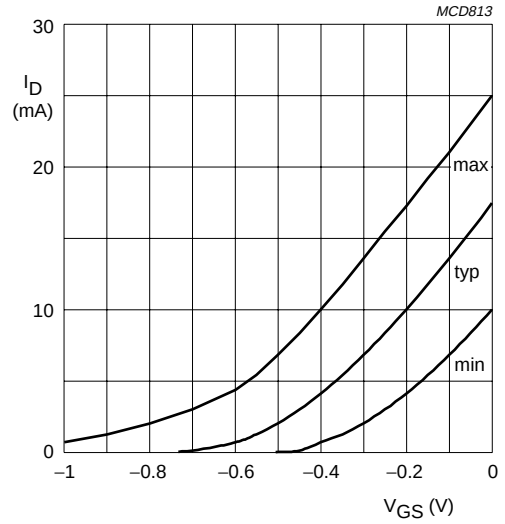
V_{DS} = 8 V; T_j = 25 °C.

Fig.5 Forward transfer admittance as a function of drain saturation current; typical values.



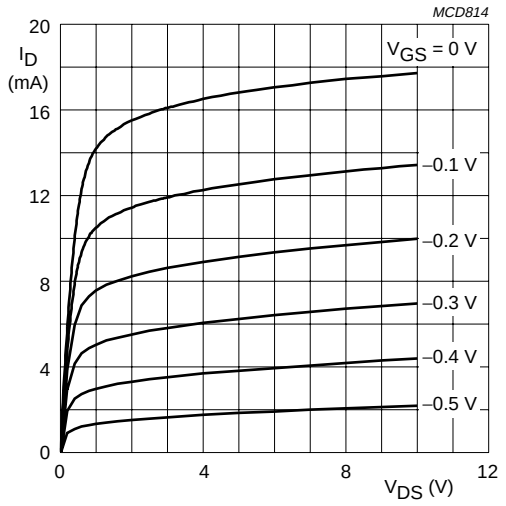
V_{DS} = 8 V; T_j = 25 °C.

Fig.6 Forward transfer admittance as a function of drain current; typical values.



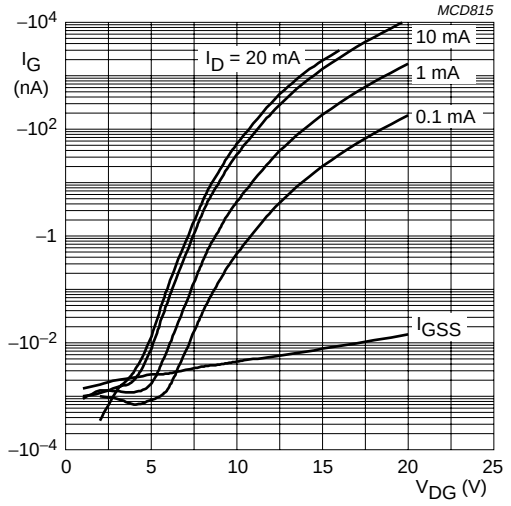
V_{DS} = 8 V; T_j = 25 °C.

Fig.7 Drain current as a function of gate-source voltage; typical values.



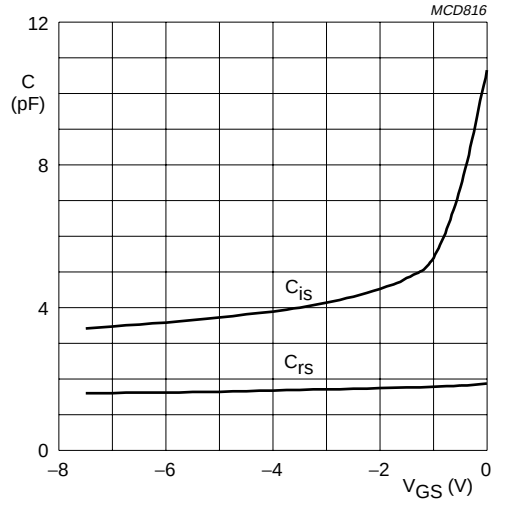
V_{DS} = 8 V; T_j = 25 °C.

Fig.8 Drain current as a function of drain-source voltage; typical values.



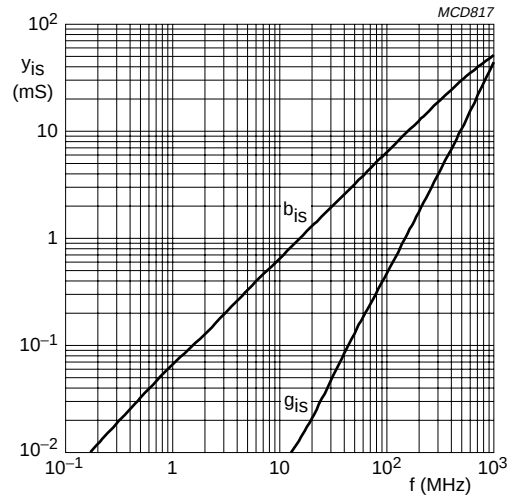
V_{DS} = 8 V; T_j = 25 °C.

Fig.9 Gate current as a function of drain-gate voltage; typical values.



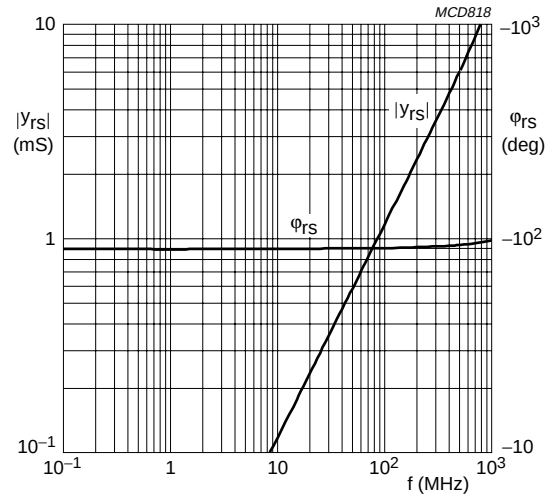
V_{DS} = 8 V; f = 1 MHz; T_j = 25 °C.

Fig.10 Input and reverse transfer capacitance as functions of gate-source voltage; typical values.



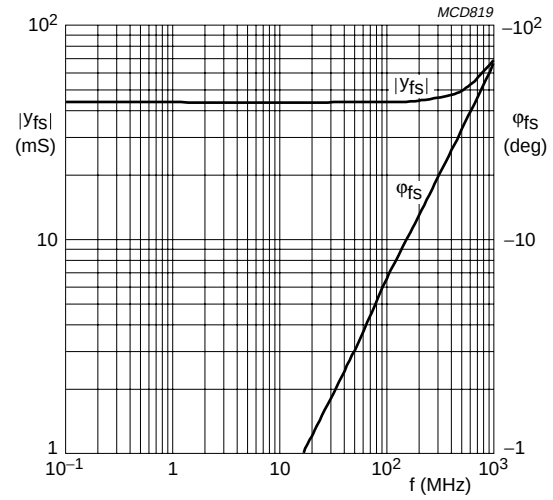
V_{DS} = 8 V; V_{GS} = 0; T_{amb} = 25 °C.

Fig.11 Common-source input admittance as a function of frequency; typical values.



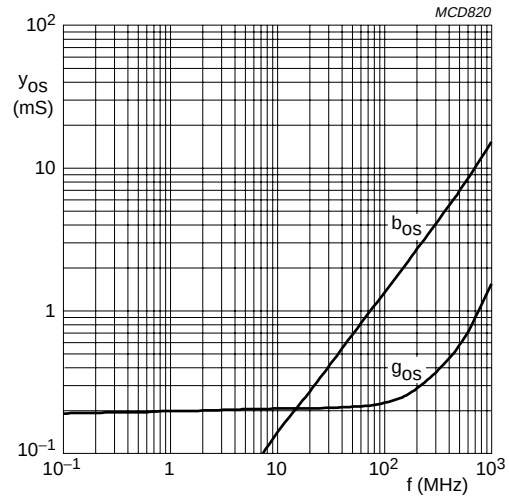
V_{DS} = 5 V; V_{G2} = 4 V.
I_D = 15 mA; T_{amb} = 25 °C.

Fig.12 Common-source reverse admittance as a function of frequency; typical values.



V_{DS} = 8 V; V_{GS} = 0; T_{amb} = 25 °C.

Fig.13 Common-source forward transfer admittance as a function of frequency; typical values.

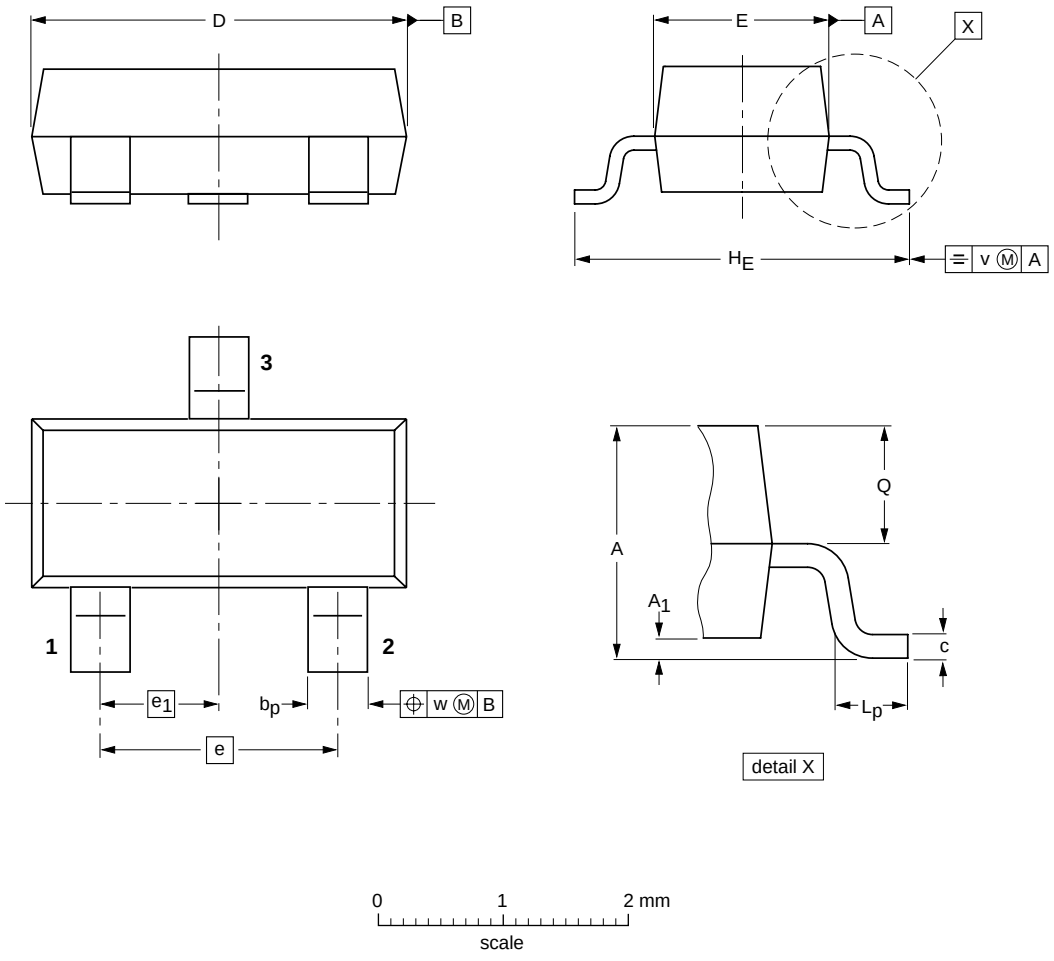


V_{DS} = 8 V; V_{GS} = 0; T_{amb} = 25 °C.

Fig.14 Common-source output admittance as a function of frequency; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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NOTES

NOTES

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