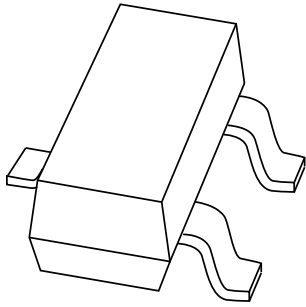


# DATA SHEET



**BF862**

**N-channel junction FET**

Product specification  
Supersedes data of 1999 Jun 29

2000 Jan 05



## N-channel junction FET

BF862

## FEATURES

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

## APPLICATIONS

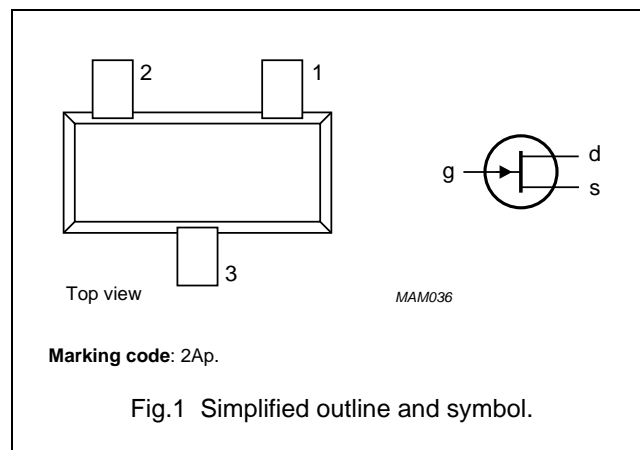
- Pre-amplifiers in AM car radios.

## 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



## 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	$T_s \leq 90\text{ °C}$	–	–	300	mW
$ y_{fs} $	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.

N-channel junction FET

BF862

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>DS</sub>	drain-source voltage		–	20	V
V <sub>DG</sub>	drain-gate voltage		–	20	V
V <sub>GS</sub>	gate-source voltage		–	–20	V
I <sub>DS</sub>	drain-source current		–	40	mA
I <sub>G</sub>	forward gate current		–	10	mA
P <sub>tot</sub>	total power dissipation	T <sub>s</sub> ≤ 90 °C; note 1	–	300	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C

**Note**

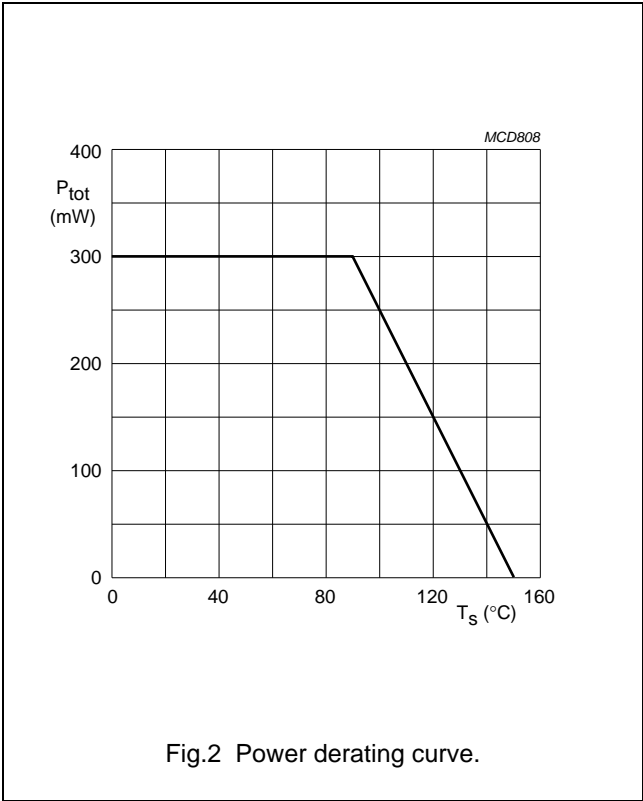
1. Main heat transfer is via the gate lead.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-s</sub>	thermal resistance from junction to soldering point	note 1	200	K/W

**Note**

1. Soldering point of the gate lead.



## N-channel junction FET

BF862

**STATIC CHARACTERISTICS** $T_j = 25\text{ }^{\circ}\text{C}$ ; unless otherwise specified.

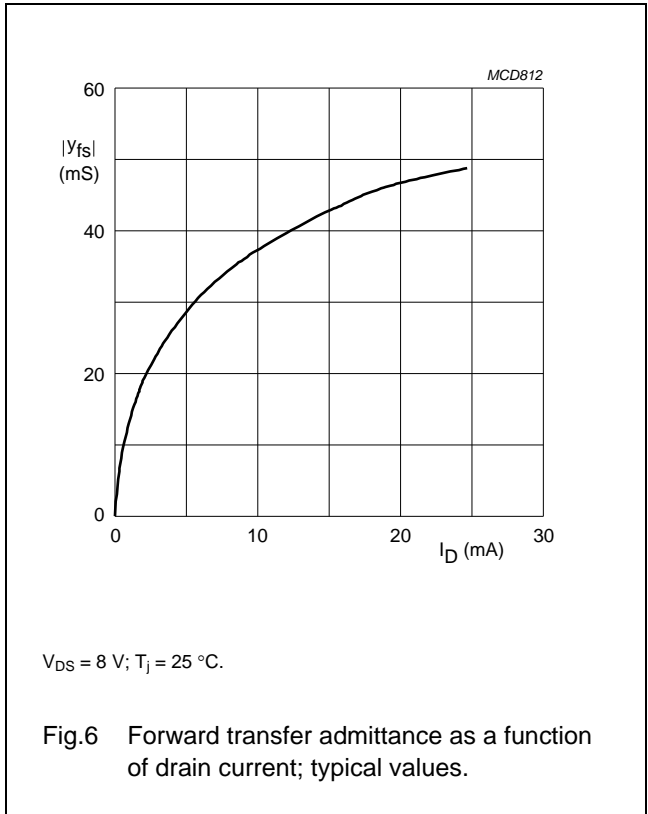
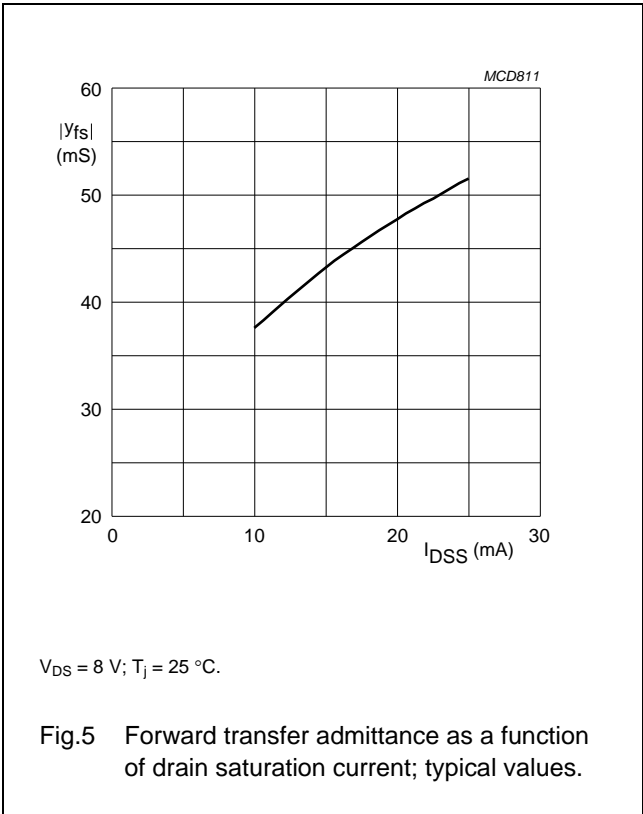
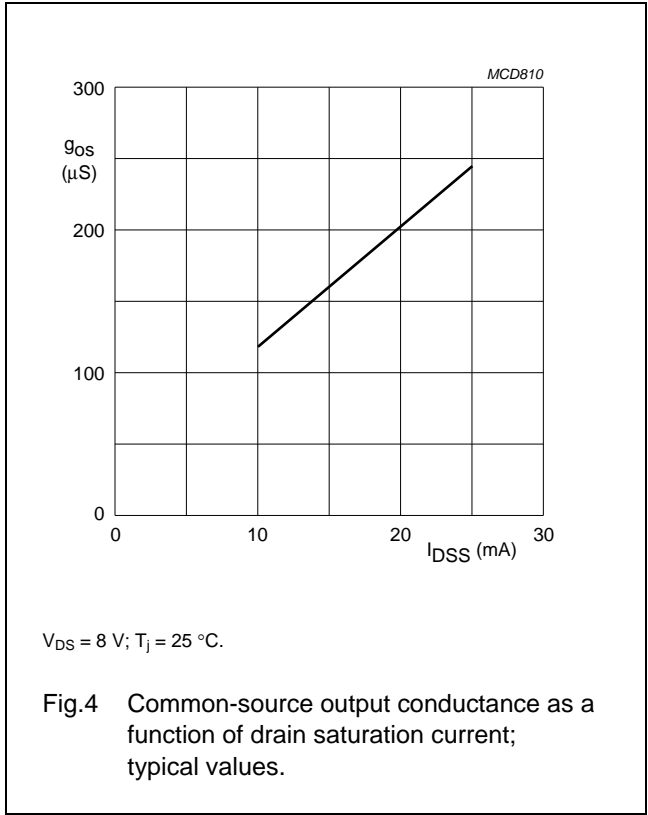
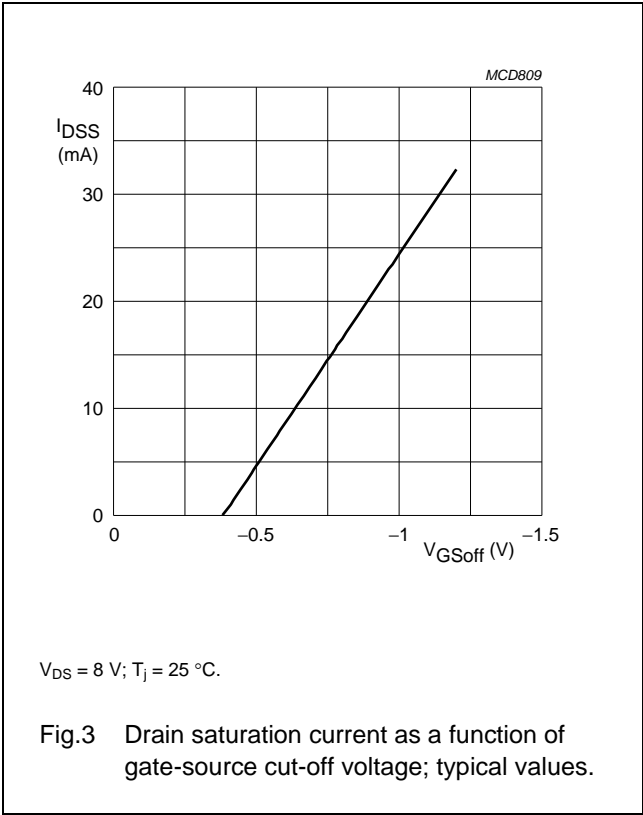
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)GSS}$	gate-source breakdown voltage	$I_{GS} = -1\text{ }\mu\text{A}$ ; $V_{DS} = 0$	-20	—	—	V
$V_{GS}$	gate-source forward voltage	$V_{DS} = 0$ ; $I_G = 1\text{ mA}$	—	—	1	V
$V_{GSoff}$	gate-source cut-off voltage	$V_{DS} = 8\text{ V}$ ; $I_D =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

**DYNAMIC CHARACTERISTICS**Common source;  $T_{amb} = 25\text{ }^{\circ}\text{C}$ ;  $V_{GS} = 0$ ;  $V_{DS} = 8\text{ V}$ ; unless otherwise specified.

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

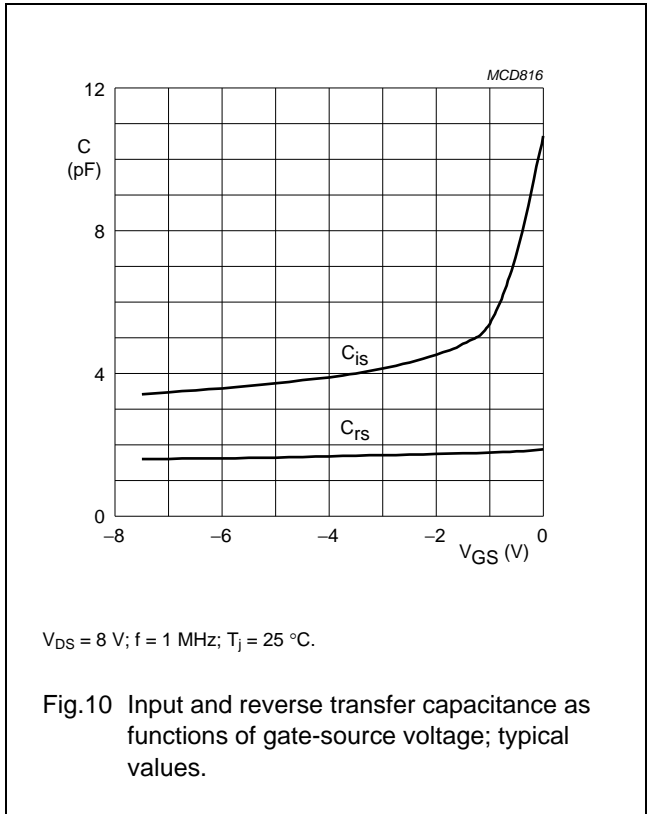
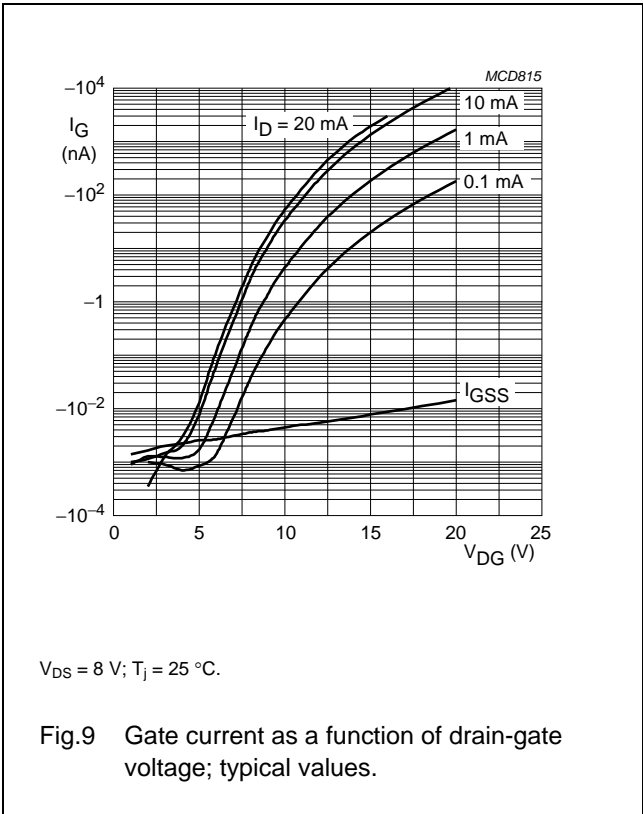
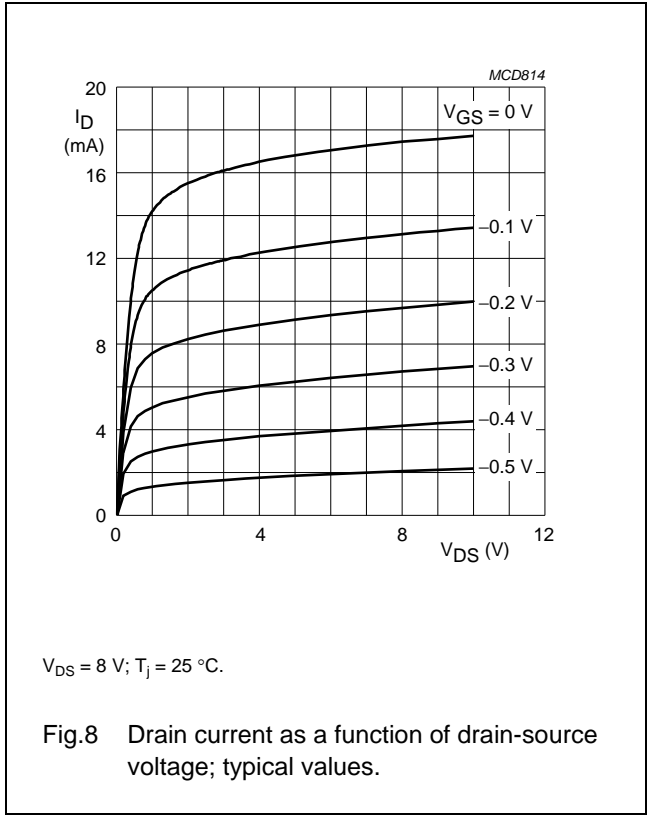
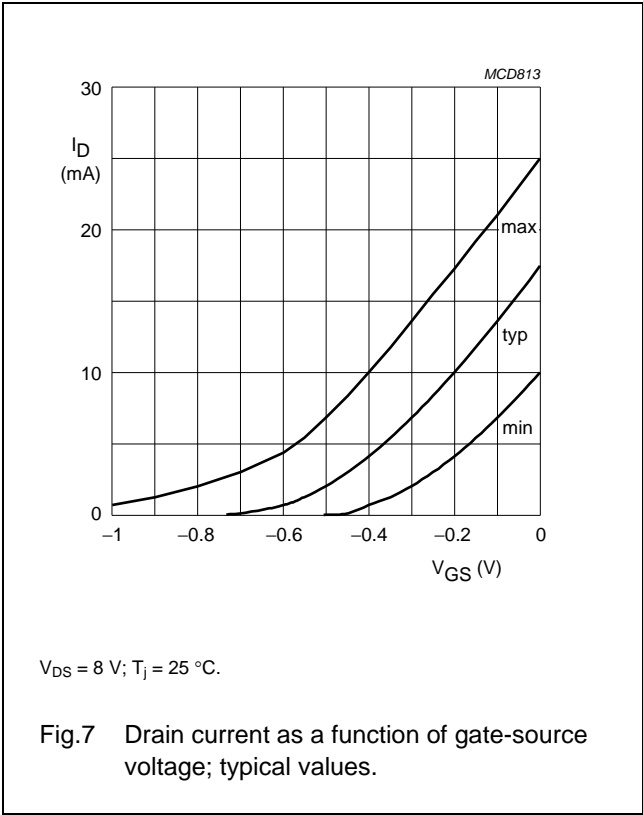
N-channel junction FET

BF862



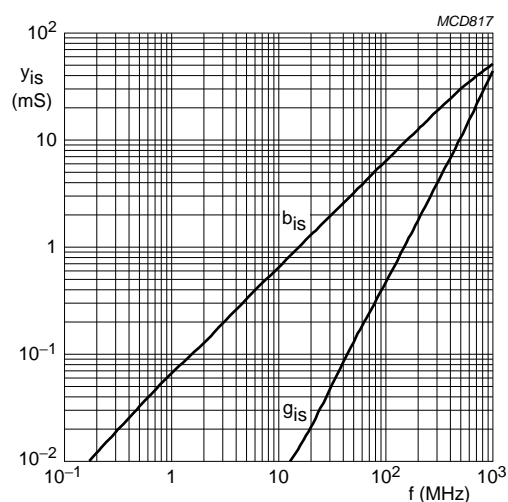
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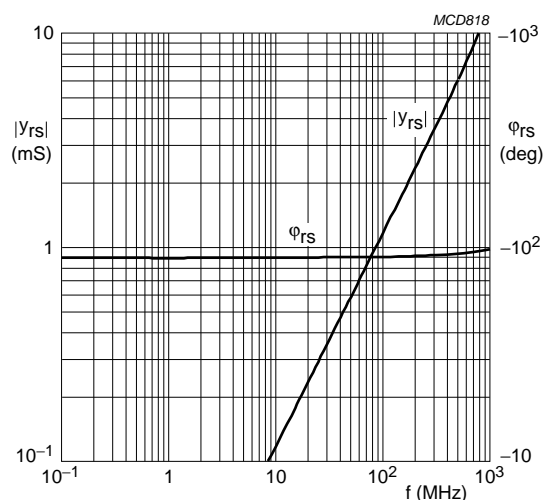
## N-channel junction FET

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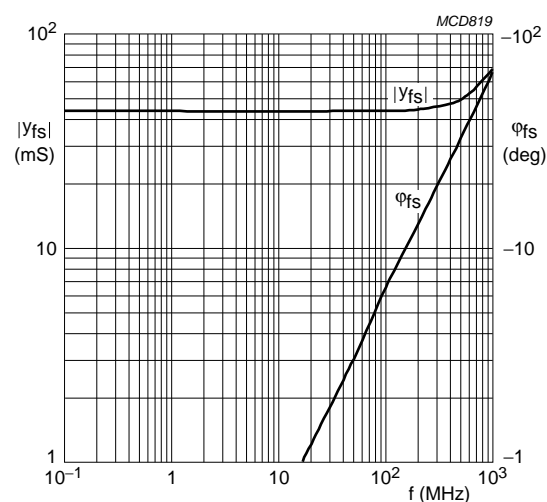
$V_{DS} = 8 \text{ V}$ ;  $V_{GS} = 0$ ;  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

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



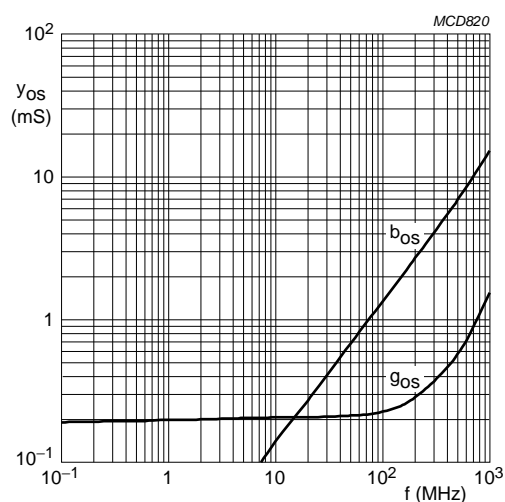
$V_{DS} = 5 \text{ V}$ ;  $V_{G2} = 4 \text{ V}$ .  
 $I_D = 15 \text{ mA}$ ;  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

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



$V_{DS} = 8 \text{ V}$ ;  $V_{GS} = 0$ ;  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

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



$V_{DS} = 8 \text{ V}$ ;  $V_{GS} = 0$ ;  $T_{amb} = 25 \text{ }^{\circ}\text{C}$ .

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

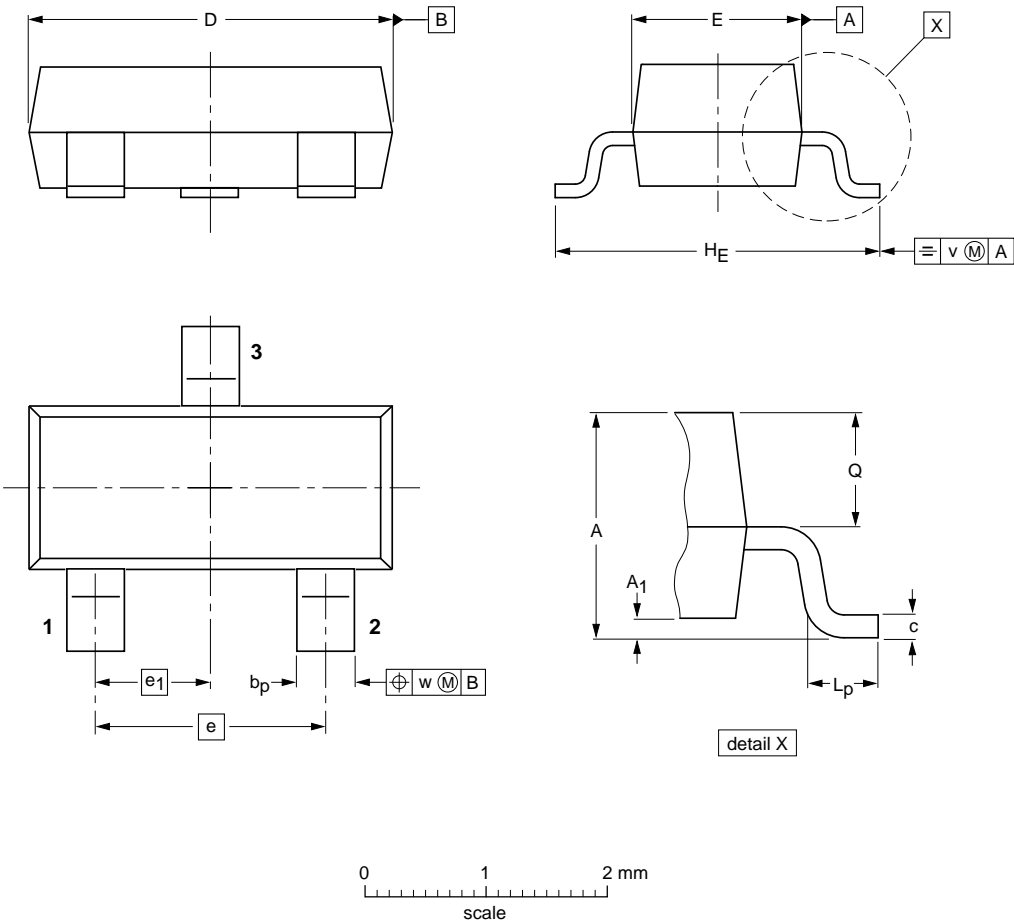
N-channel junction FET

BF862

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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	JEITA			
SOT23		TO-236AB				<del>04-11-04</del> 06-03-16



## N-channel junction FET

BF862

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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BF862

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## **Contact information**

For additional information please visit: <http://www.nxp.com>

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Printed in The Netherlands

R77/03/pp11

Date of release: 2000 Jan 05

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