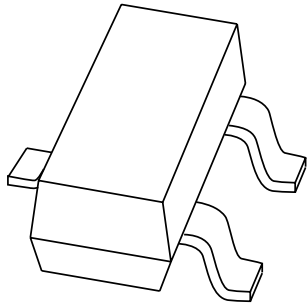


DATA SHEET



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

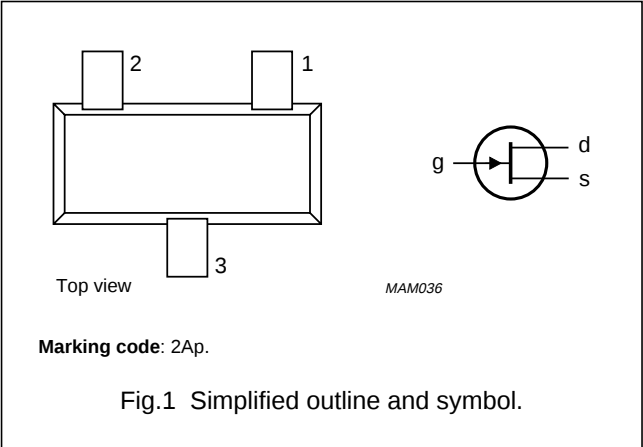
- Pre-amplifiers in AM car radios.

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	$T_s \leq 90\text{ }^{\circ}\text{C}$	–	–	300	mW
$ y_{fs} $	transfer admittance		35	45	–	mS
T_j	junction temperature		–	–	150	$^{\circ}\text{C}$

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.

N-channel junction FET

BF862

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 ≤ 90 °C; note 1	–	300	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C

Note

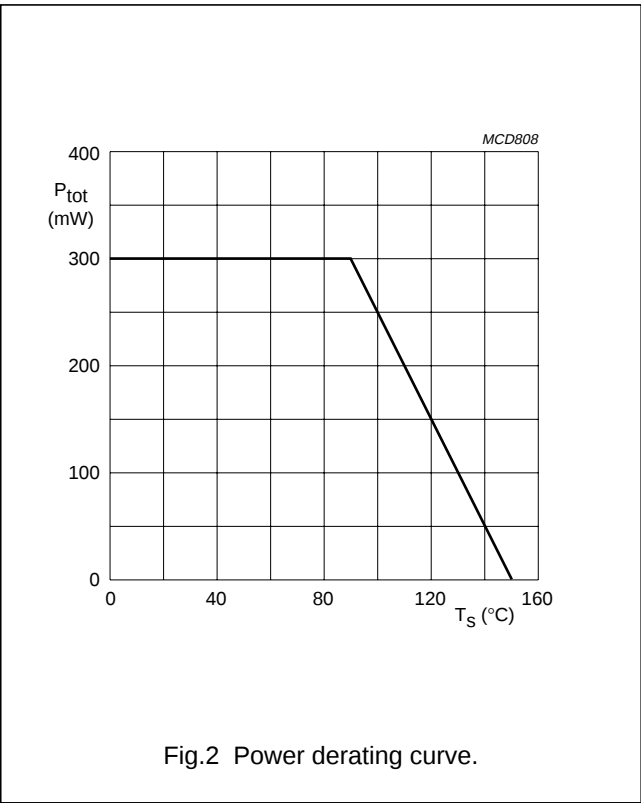
1. Main heat transfer is via the gate lead.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-s}	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

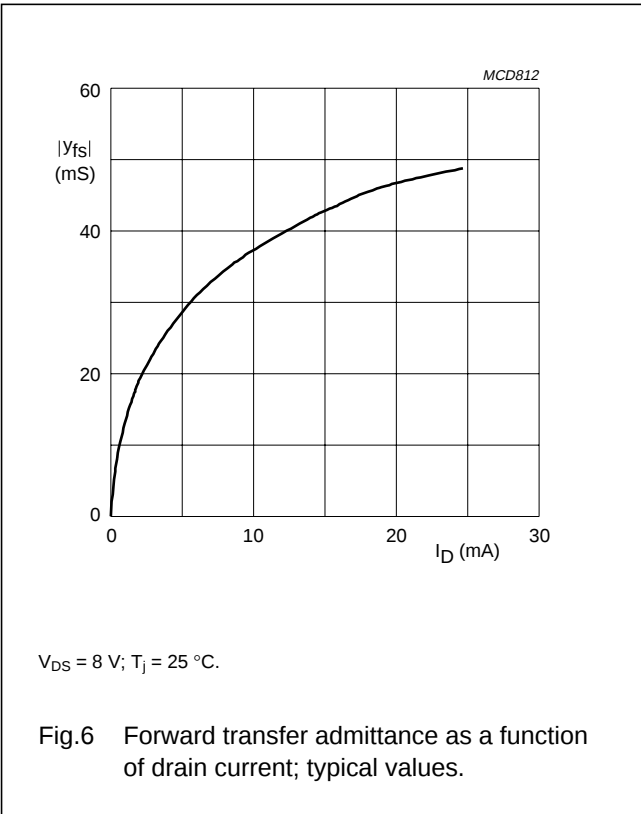
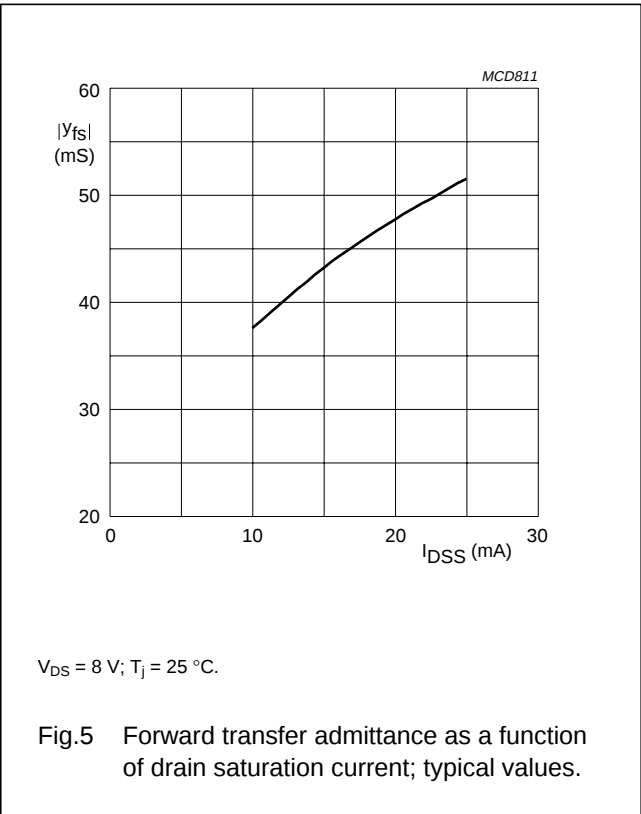
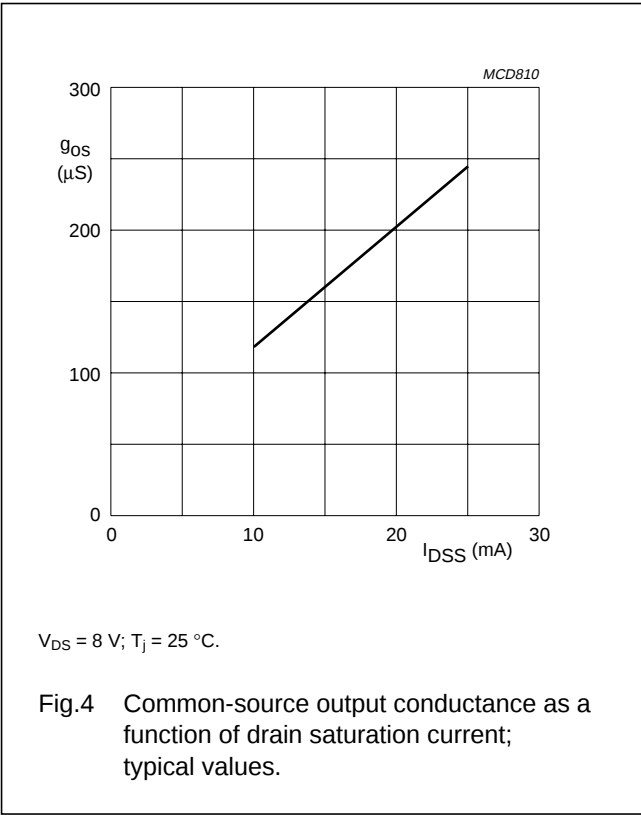
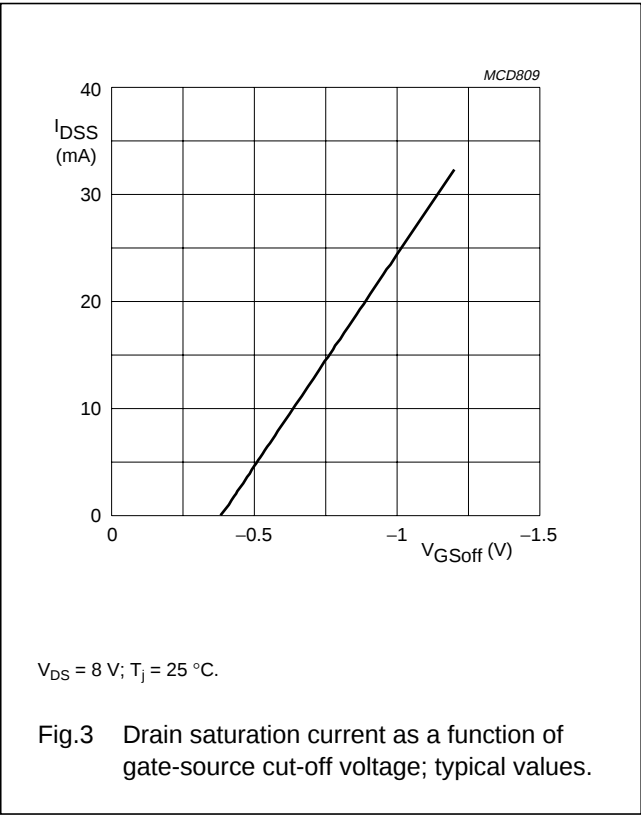
DYNAMIC CHARACTERISTICS

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	μS
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

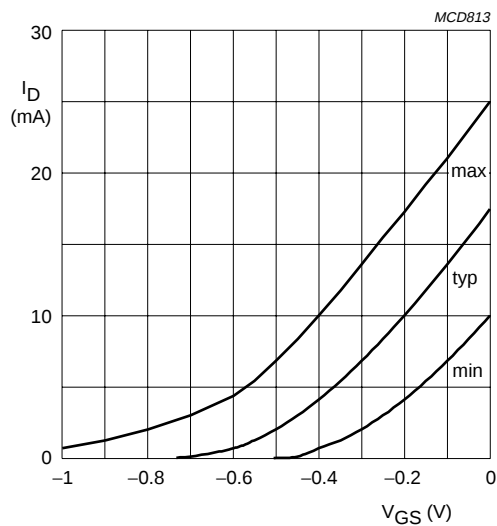
N-channel junction FET

BF862



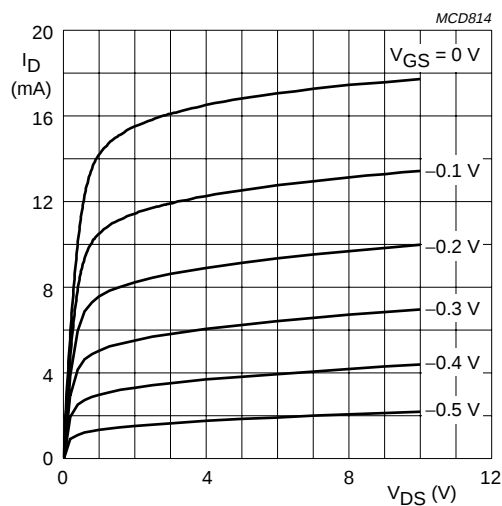
N-channel junction FET

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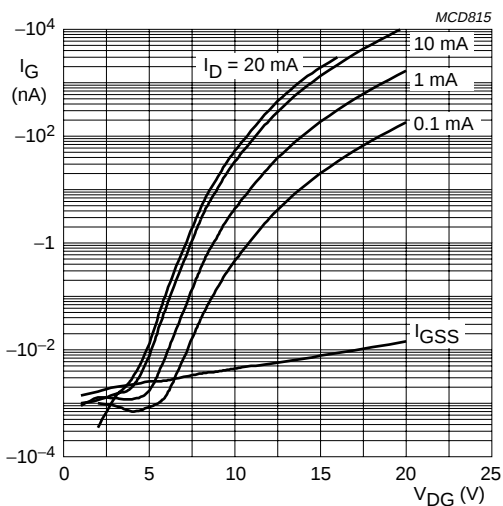
$V_{DS} = 8\text{ V}; T_j = 25\text{ }^{\circ}\text{C}.$

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



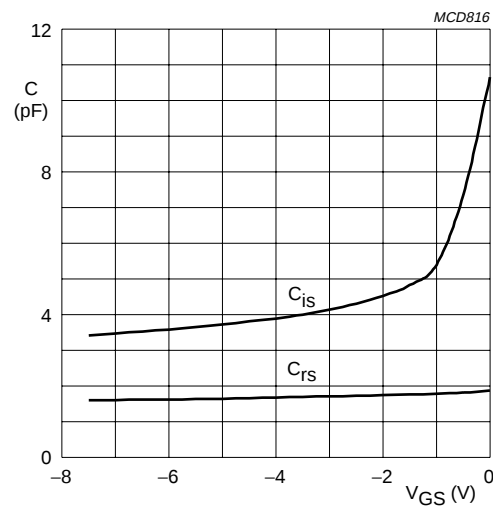
$V_{DS} = 8\text{ V}; T_j = 25\text{ }^{\circ}\text{C}.$

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



$V_{DS} = 8\text{ V}; T_j = 25\text{ }^{\circ}\text{C}.$

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

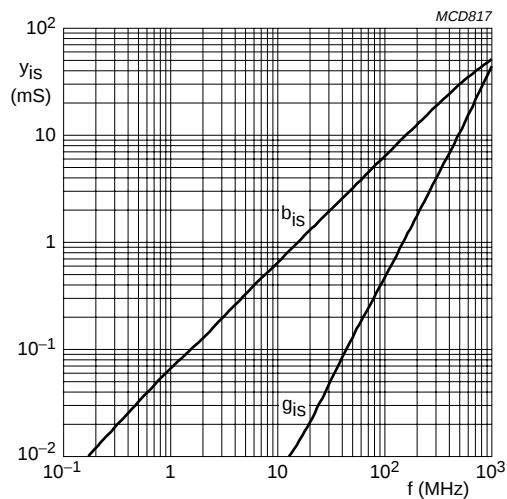


$V_{DS} = 8\text{ V}; f = 1\text{ MHz}; T_j = 25\text{ }^{\circ}\text{C}.$

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

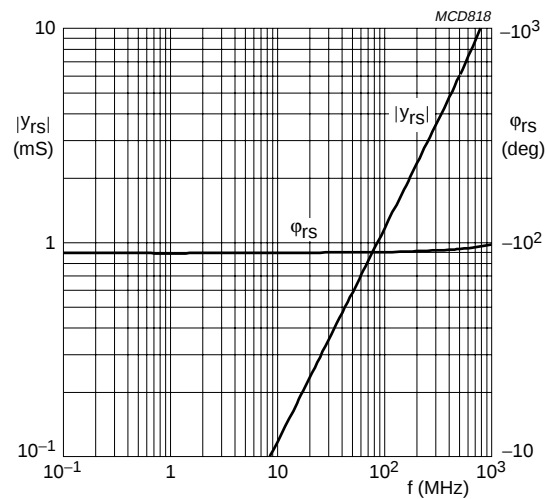
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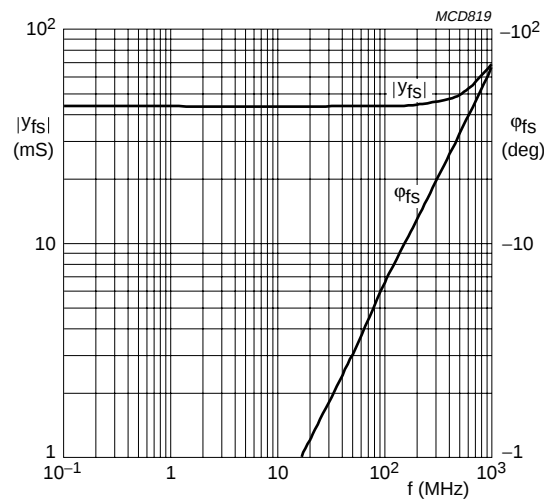
$V_{DS} = 8\text{ V}$; $V_{GS} = 0$; $T_{amb} = 25\text{ }^{\circ}\text{C}$.

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



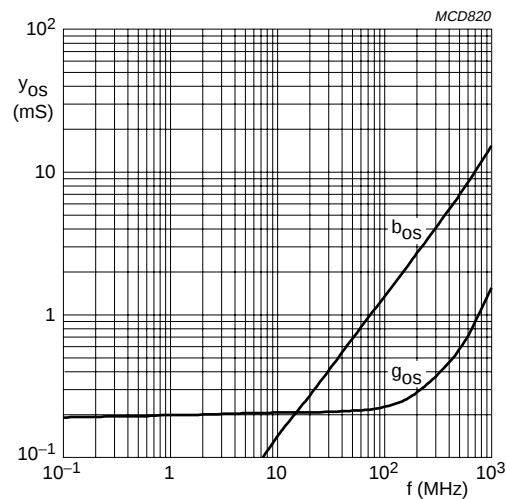
$V_{DS} = 5\text{ V}$; $V_{G2} = 4\text{ V}$.
 $I_D = 15\text{ mA}$; $T_{amb} = 25\text{ }^{\circ}\text{C}$.

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.

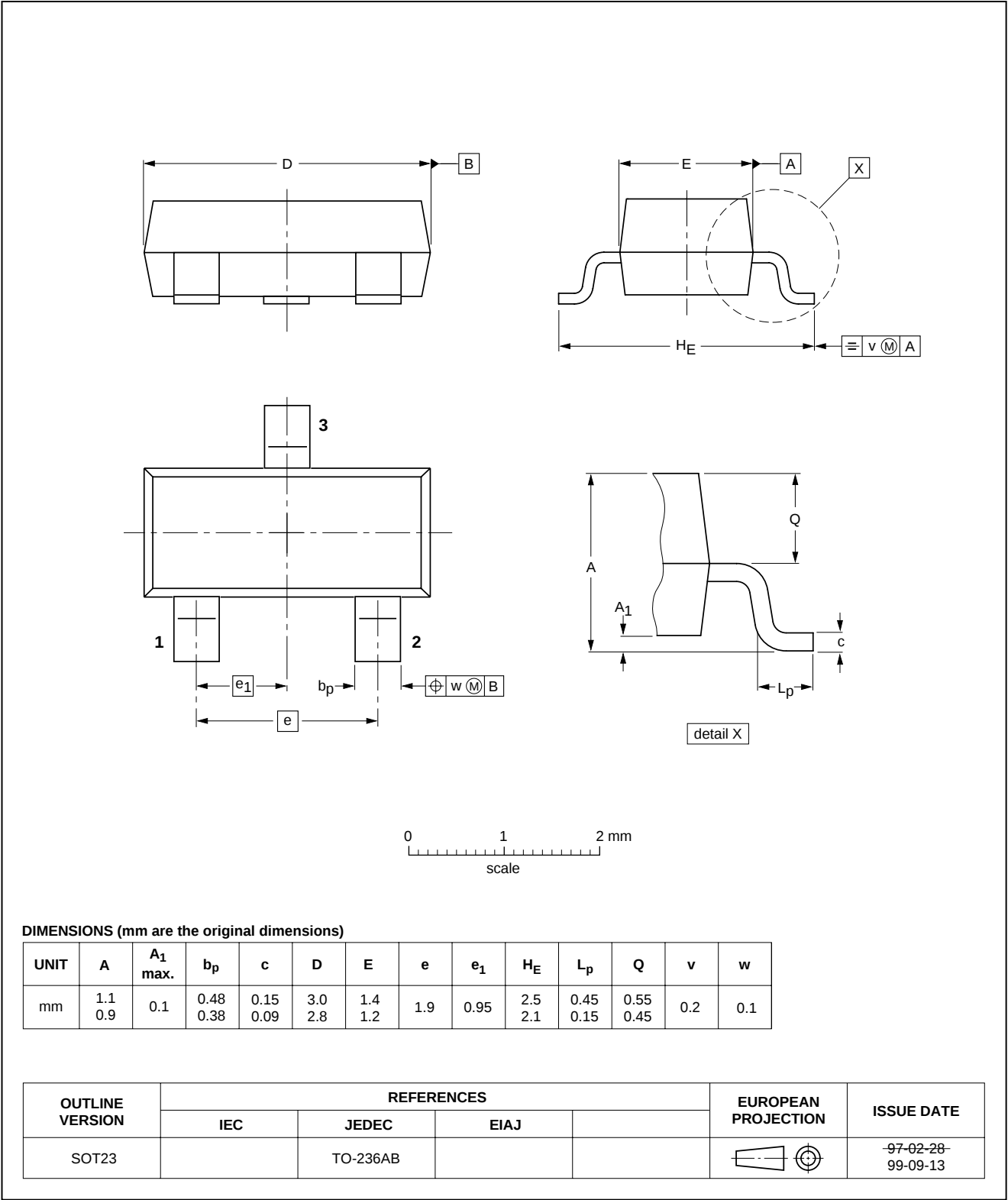
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



N-channel junction FET

BF862

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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N-channel junction FET

BF862

NOTES

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NOTES

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