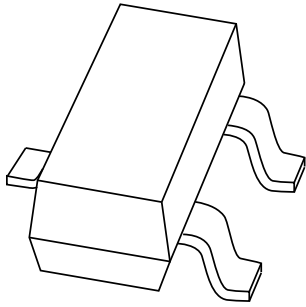


DATA SHEET



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

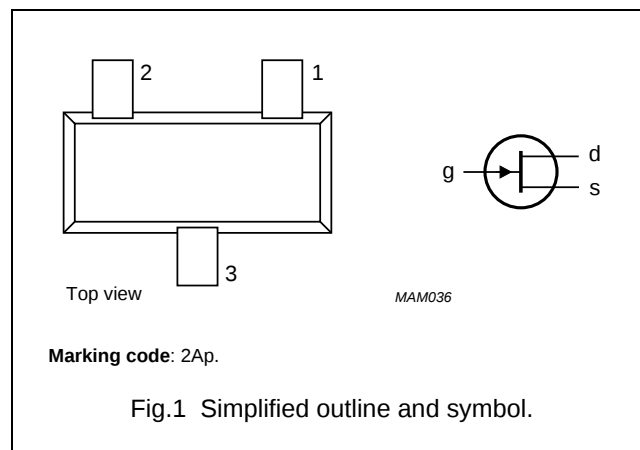
- Pre-amplifiers in AM car radios.

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.

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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	$T_s \leq 90\text{ }^{\circ}\text{C}$; note 1	–	300	mW
T_{stg}	storage temperature		–65	+150	$^{\circ}\text{C}$
T_j	junction temperature		–	150	$^{\circ}\text{C}$

Note

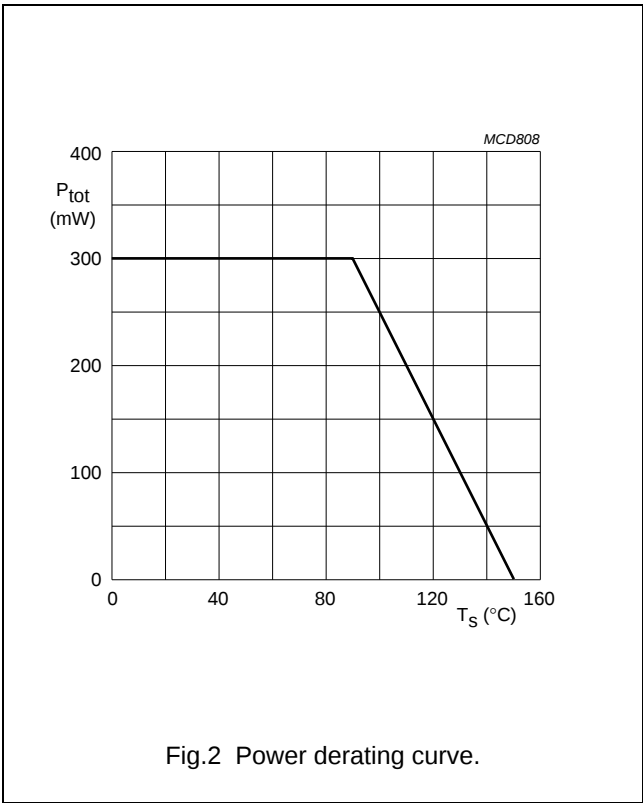
1. Main heat transfer is via the gate lead.

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.



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STATIC CHARACTERISTICS

 $T_j = 25\text{ °C}$; 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

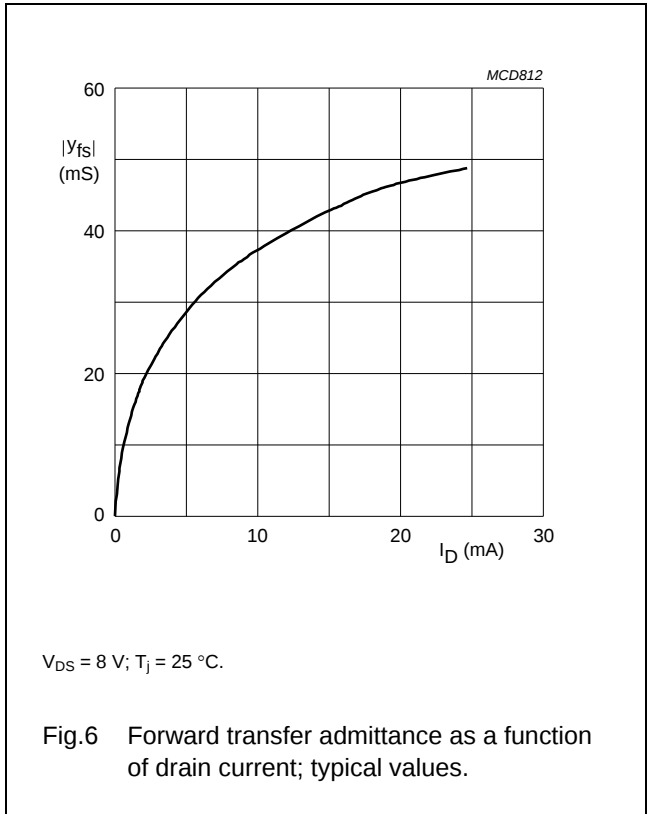
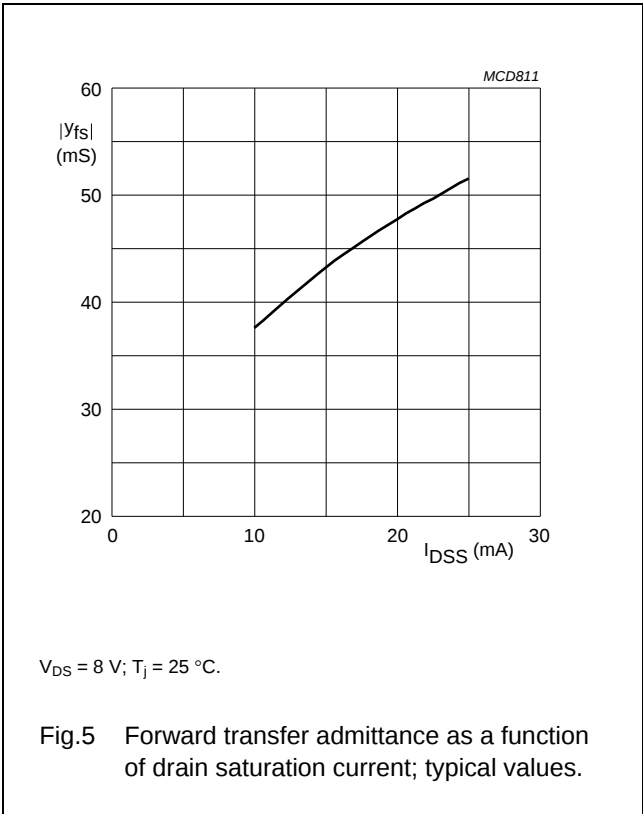
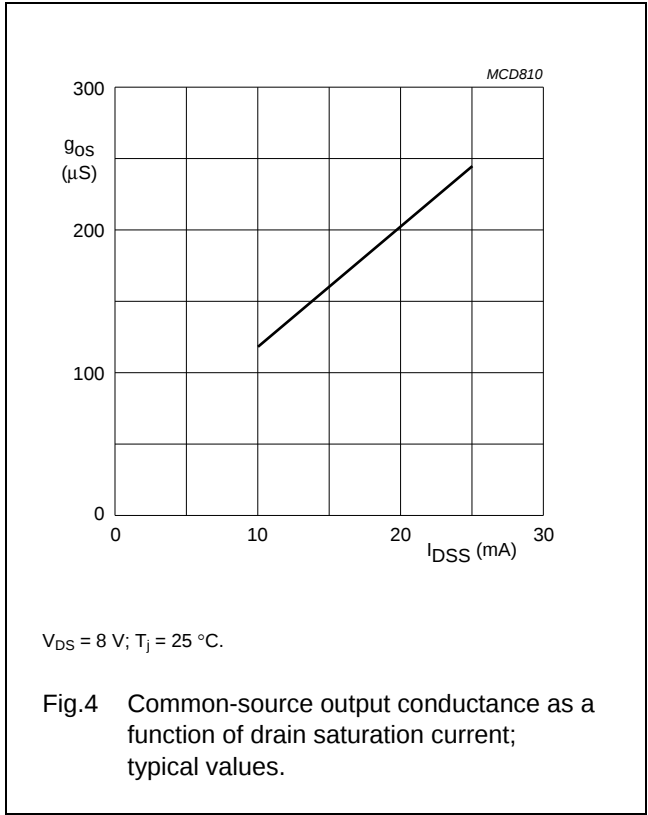
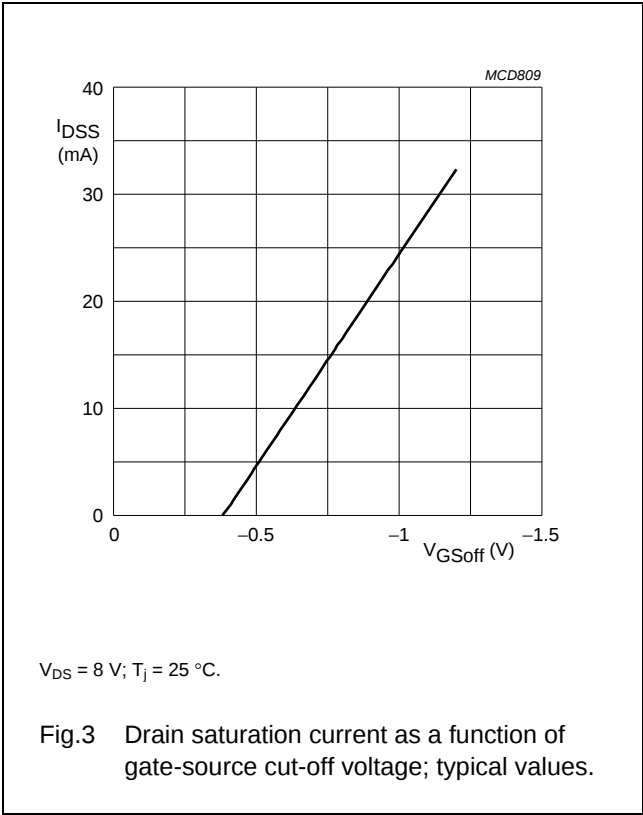
DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$ y_{fs} $	common source forward transfer admittance	$T_j = 25\text{ °C}$	35	45	—	mS
g_{os}	common source output conductance	$T_j = 25\text{ °C}$	—	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

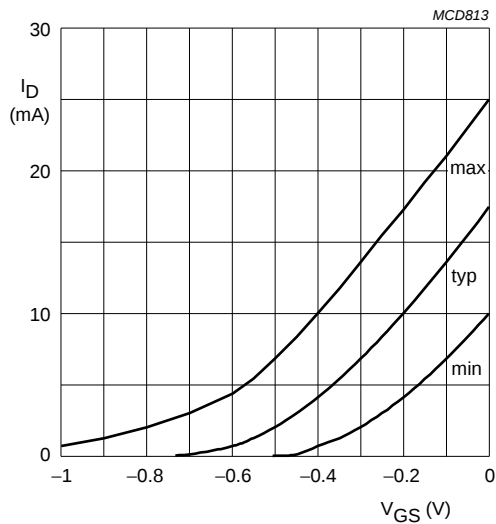
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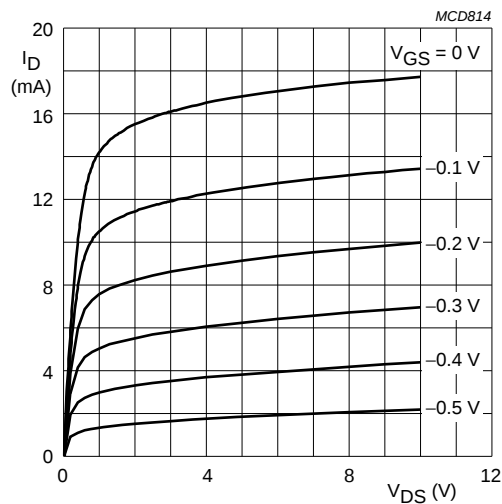
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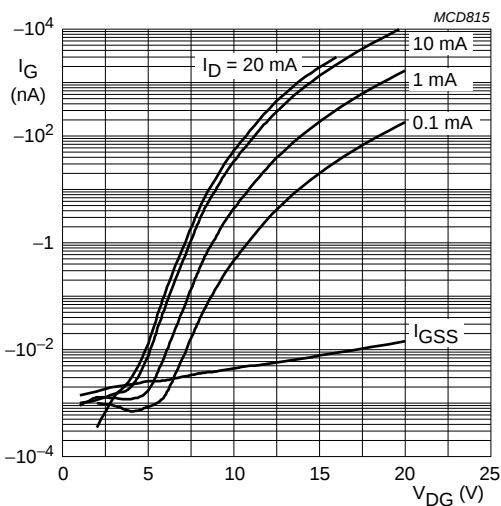
$V_{DS} = 8\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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



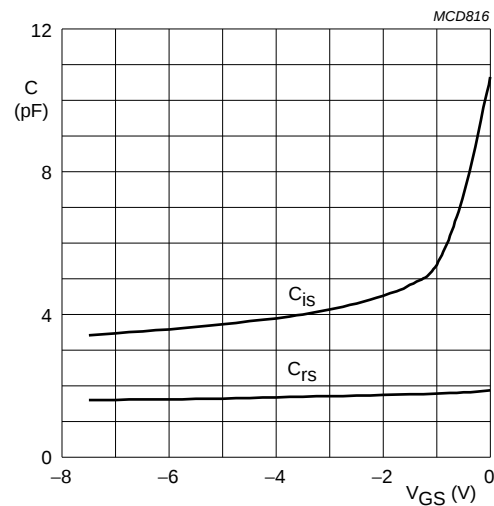
$V_{DS} = 8\text{ V}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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.

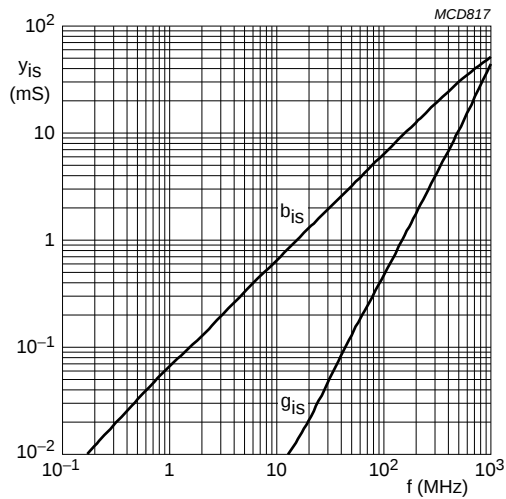


$V_{DS} = 8\text{ V}$; $f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

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

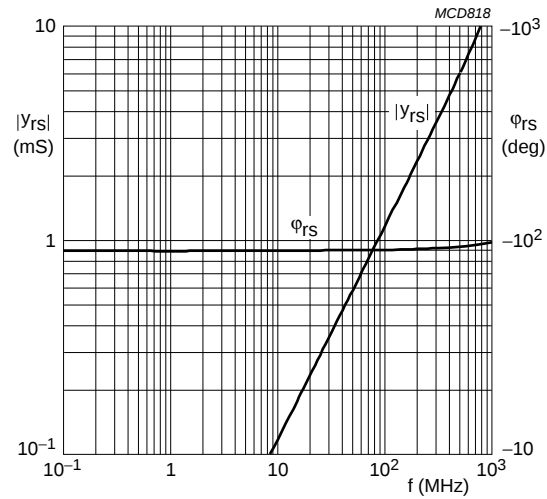
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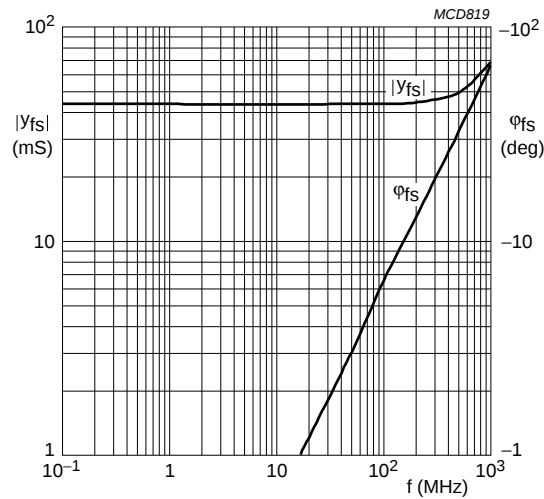
$V_{DS} = 8\text{ V}$; $V_{GS} = 0$; $T_{amb} = 25\text{ }^{\circ}\text{C}$.

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



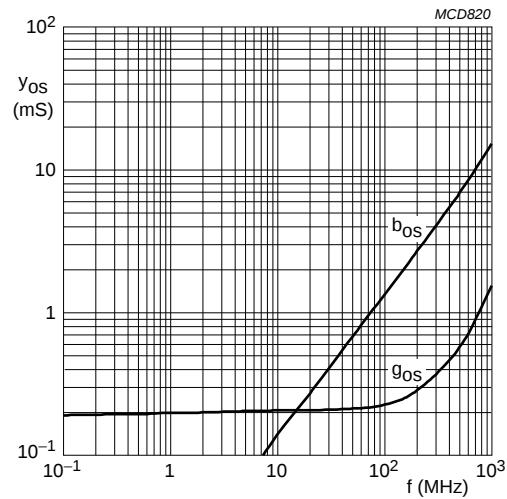
$V_{DS} = 5\text{ V}$; $V_{G2} = 4\text{ V}$.
 $I_D = 15\text{ mA}$; $T_{amb} = 25\text{ }^{\circ}\text{C}$.

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.

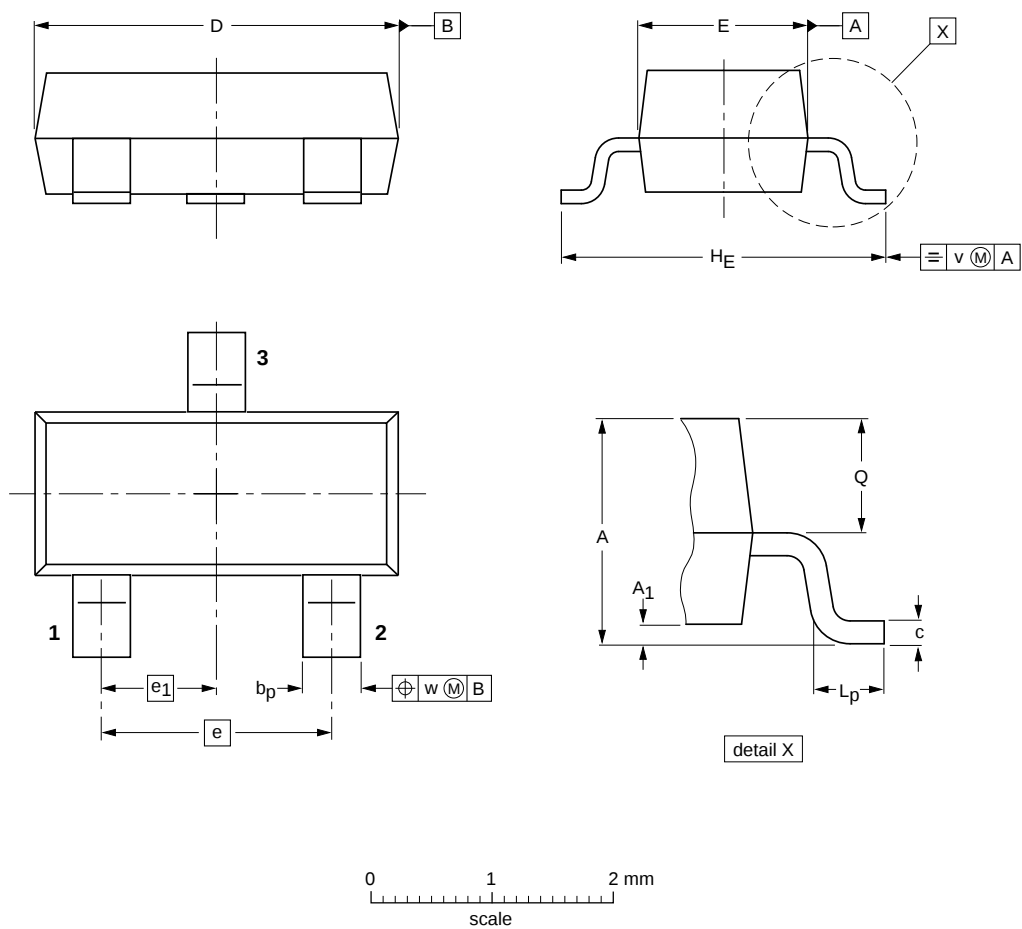
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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



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	JEITA			
SOT23		TO-236AB				04-11-04 06-03-16

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DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	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.
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