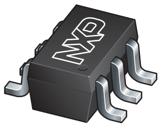


PMBFJ620

Dual N-channel field-effect transistor

Rev. 2 — 15 September 2011 **Product data sheet**

1. Product profile

1.1 General description

Two N-channel symmetrical junction field-effect transistors in a SOT363 package.

CAUTION

This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features and benefits

- Two field effect transistors in a single package
- Low noise
- Interchangeability of drain and source connections
- High gain.

1.3 Applications

- AM input stage in car radios
- VHF amplifiers
- Oscillators and mixers.

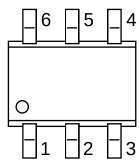
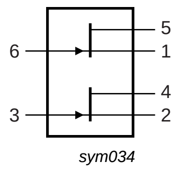
1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per FET						
V_{DS}	drain-source voltage		-	-	±25	V
V_{GSoff}	gate-source cut-off voltage	V_{DS} = 10 V; I_D = 1 μA	–2	-	–6.5	V
I_{DSS}	drain current	V_{GS} = 0 V; V_{DS} = 10 V	24	-	60	mA
P_{tot}	total power dissipation	$T_s \leq 90$ °C	-	-	190	mW
$\lvert y_{fs} \rvert$	forward transfer admittance	V_{DS} = 10 V; I_D = 10 mA	10	-	-	mS

2. Pinning information

Table 2. Discrete pinning information

Pin	Description	Simplified outline	Symbol
1	source (1)		
2	source (2)		
3	gate (2)		
4	drain (2)		
5	drain (1)		
6	gate (1)		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMBFJ620	-	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 4. Marking

Type number	Marking code[1]
PMBFJ620	A8*

[1] * = p: made in Hong Kong.
* = t: made in Malaysia.
* = W: made in China.

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

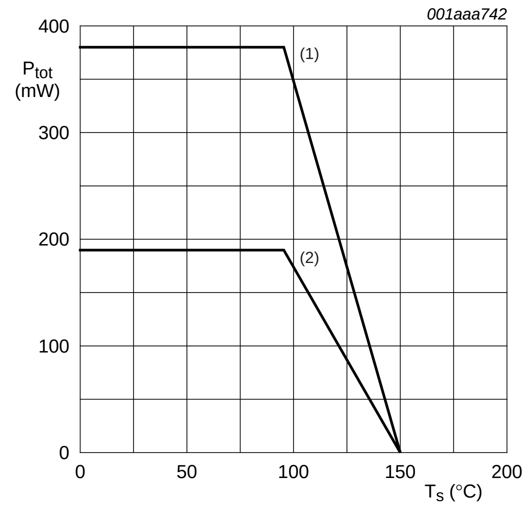
Symbol	Parameter	Conditions	Min	Max	Unit
Per FET					
V_{DS}	drain-source voltage		-	±25	V
V_{GSO}	gate-source voltage	open drain	-	−25	V
V_{GDO}	drain-gate voltage	open source	-	−25	V
I_G	forward gate current (DC)		-	50	mA
P_{tot}	total power dissipation	$T_s \leq 90$ °C	-	190	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		-	150	°C

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Typ	Unit
$R_{th(j-s)}$	thermal resistance from junction to soldering points	single loaded	[1]	315	K/W
		double loaded	[1]	160	K/W

[1] T_s is the temperature at the soldering point of the gate pins, see Figure 1.



(1) Double loaded.

(2) Single loaded.

Fig 1. Power derating curve.

7. Static characteristics

Table 7. Characteristics

T_j = 25 °C unless otherwise specified.

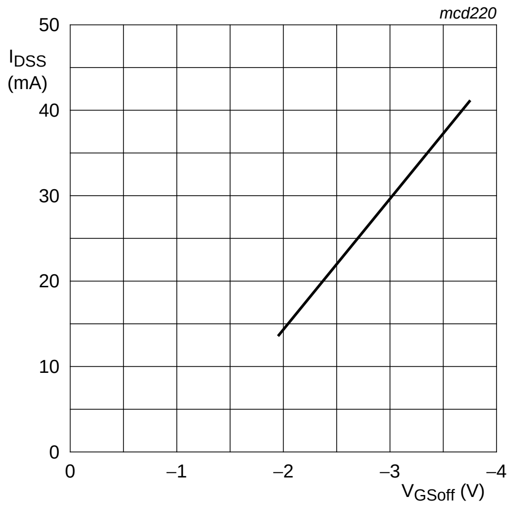
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per FET						
$V_{(BR)GSS}$	gate-source breakdown voltage	I_G = –1 µA; V_{DS} = 0 V	–25	-	-	V
V_{GSoff}	gate-source cut-off voltage	I_D = 1 µA; V_{DS} = 10 V	–2	-	–6.5	V
V_{GSS}	gate-source forward voltage	I_G = 1 mA; V_{DS} = 0 V	-	-	1	V
I_{DSS}	drain-source leakage current	V_{DS} = 10 V; V_{GS} = 0 V	24	-	60	mA
I_{GSS}	gate-source leakage current	V_{GS} = –15 V; V_{DS} = 0 V	-	-	–1	nA
R_{DSon}	drain-source on-state resistance	V_{GS} = 0 V; V_{DS} = 100 mV	-	50	-	Ω
$\lvert y_{fs} \rvert$	common source forward transfer admittance	I_D = 10 mA; V_{DS} = 10 V	10	-	-	mS
$\lvert y_{os} \rvert$	common source output admittance	I_D = 10 mA; V_{DS} = 10 V	-	-	250	µS

8. Dynamic characteristics

Table 8. Characteristics

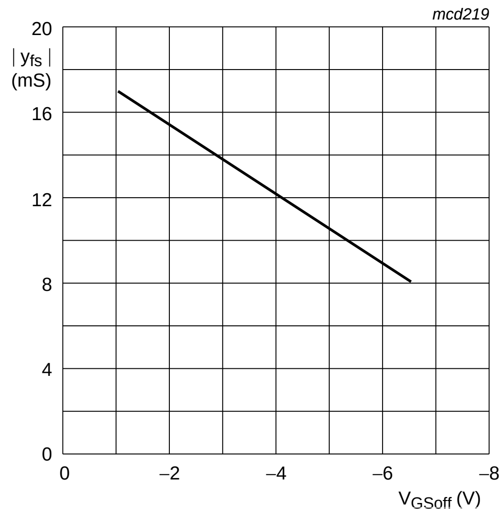
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per FET						
C_{iss}	input capacitance	V_{DS} = 10 V; V_{GS} = –10 V; f =1 MHz	-	3	5	pF
		V_{DS} = 10 V; V_{GS} = 0 V; T_{amb} = 25 °C	-	6	-	pF
C_{rss}	reverse transfer capacitance	V_{DS} = 0 V; V_{GS} = –10 V; f = 1 MHz	-	1.3	2.5	pF
g_{is}	common source input conductance	V_{DS} = 10 V; I_D = 10 mA; f = 100 MHz	-	200	-	µS
		V_{DS} = 10 V; I_D = 10 mA; f = 450 MHz	-	3	-	mS
g_{fs}	common source transfer conductance	V_{DS} = 10 V; I_D = 10 mA; f = 100 MHz	-	13	-	mS
		V_{DS} = 10 V; I_D = 10 mA; f = 450 MHz	-	12	-	mS
g_{rs}	common source reverse conductance	V_{DS} = 10 V; I_D = 10 mA; f = 100 MHz	-	–30	-	µS
		V_{DS} = 10 V; I_D = 10 mA; f = 450 MHz	-	–450	-	µS
g_{os}	common source output conductance	V_{DS} = 10 V; I_D = 10 mA; f = 100 MHz	-	150	-	µS
		V_{DS} = 10 V; I_D = 10 mA; f = 450 MHz	-	400	-	µS
V_n	equivalent input noise voltage	V_{DS} = 10 V; I_D = 10 mA; f = 100 Hz	-	6	-	nV/√Hz



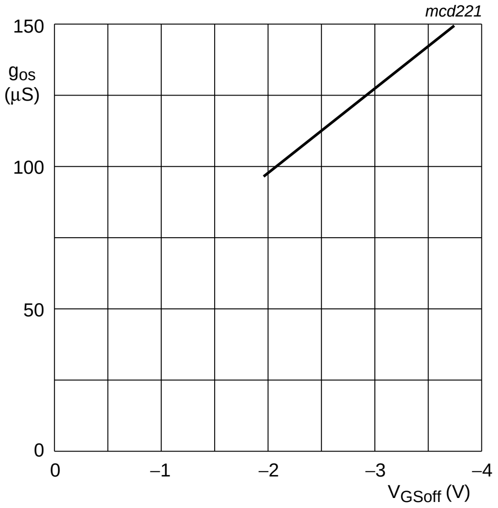
V_{DS} = 10 V; T_j = 25 °C.

Fig 2. Drain current as a function of gate-source cut-off voltage; typical values.



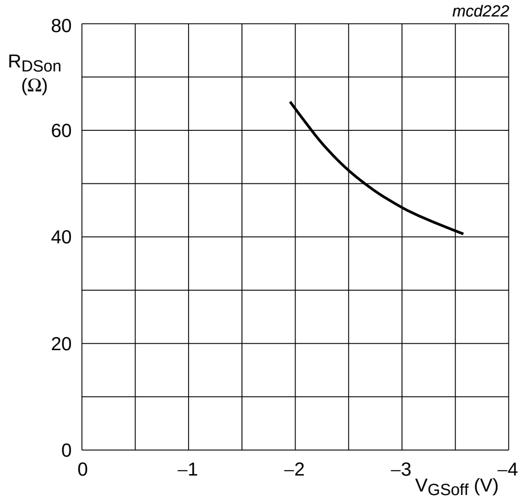
V_{DS} = 10 V; I_D = 10 mA; T_j = 25 °C.

Fig 3. Common source forward transfer admittance as a function of gate-source cut-off voltage; typical values.



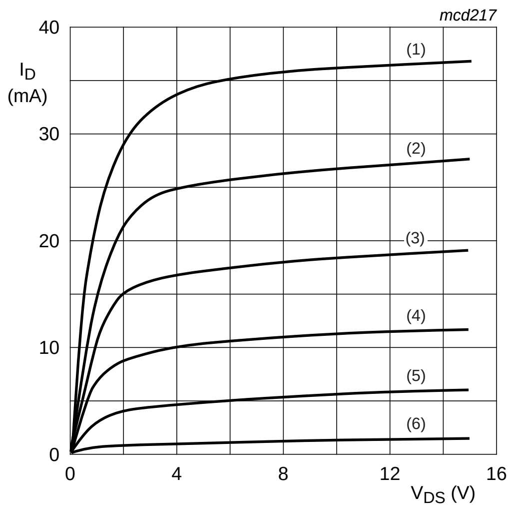
V_{DS} = 10 V; I_D = 10 mA; T_j = 25 °C.

Fig 4. Common-source output conductance as a function of gate-source cut-off voltage; typical values.



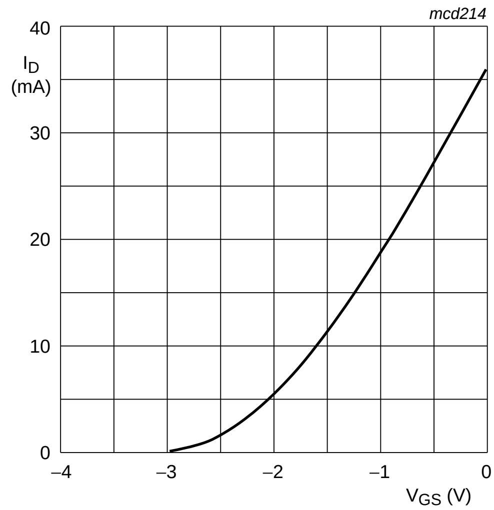
V_{DS} = 100 mV; V_{GS} = 0 V; T_j = 25 °C.

Fig 5. Drain-source on-state resistance as a function of gate-source cut-off voltage; typical values.



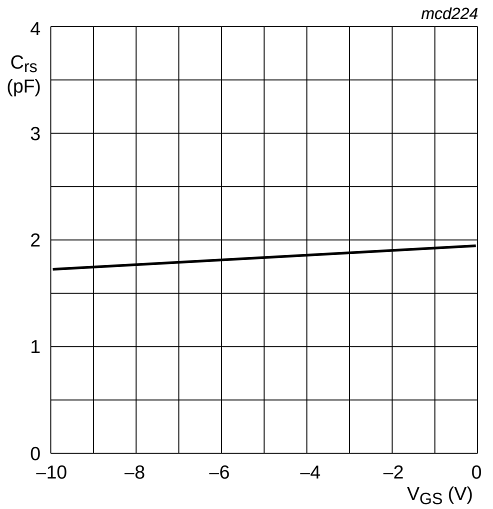
T_j = 25 °C.

Fig 6. Typical output characteristics.



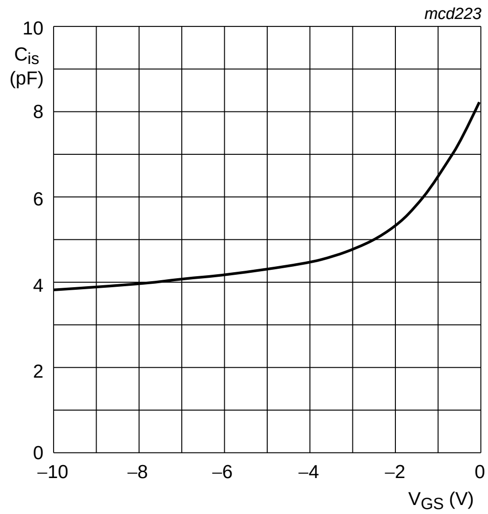
V_{DS} = 10 V; T_j = 25 °C.

Fig 7. Typical transfer characteristics.



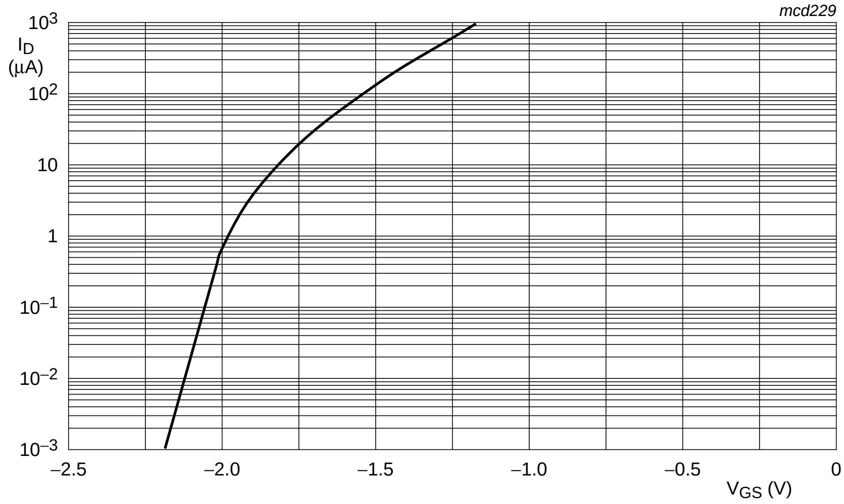
V_{DS} = 10 V; T_j = 25 °C.

Fig 8. Reverse transfer capacitance as a function of gate-source voltage; typical values.



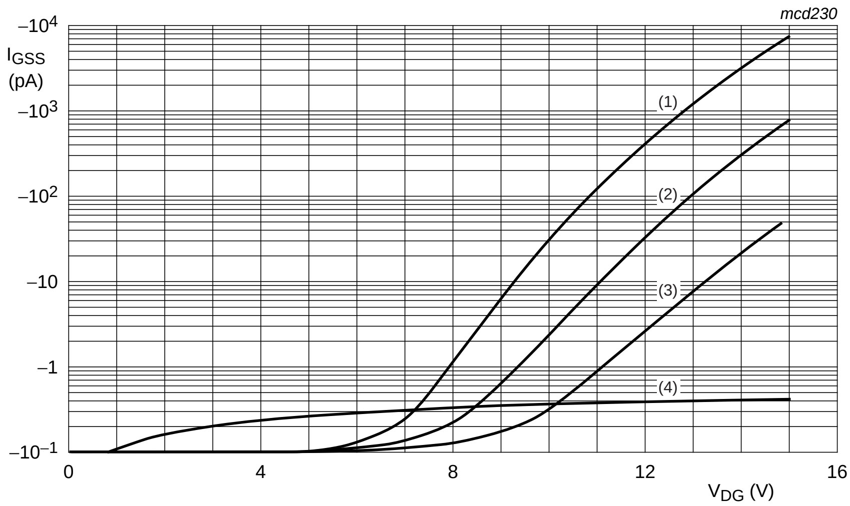
V_{DS} = 10 V; T_j = 25 °C.

Fig 9. Input capacitance as a function of gate-source voltage; typical values.



V_{DS} = 10 V; T_j = 25 °C.

Fig 10. Drain current as a function of gate-source voltage; typical values.



T_j = 25 °C.

Fig 11. Gate current as a function of drain-gate voltage; typical values.

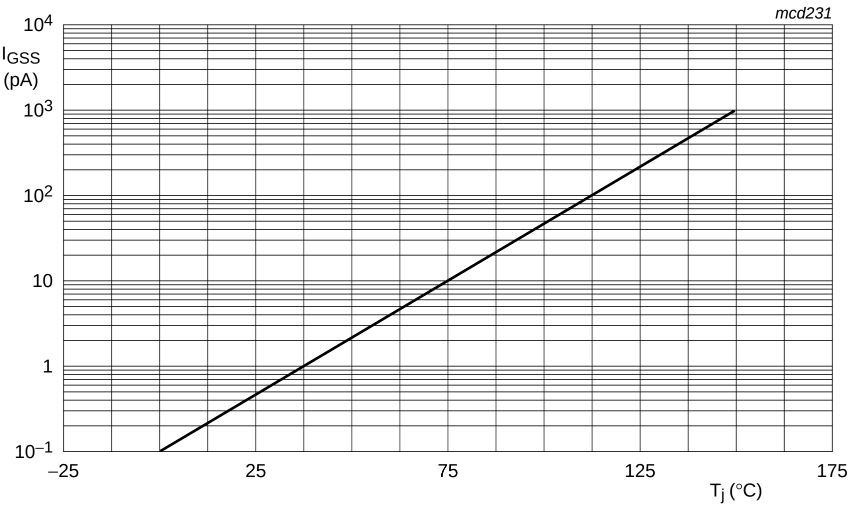
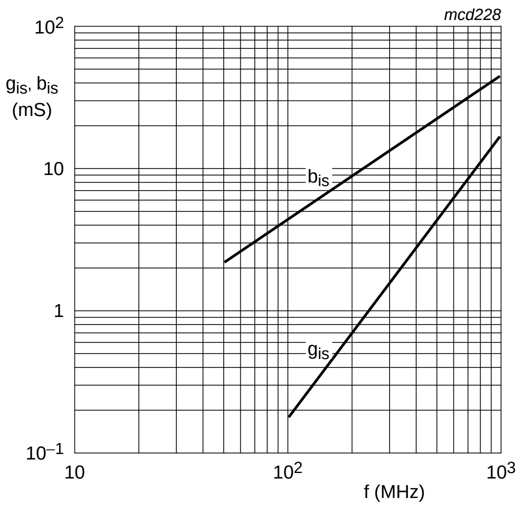
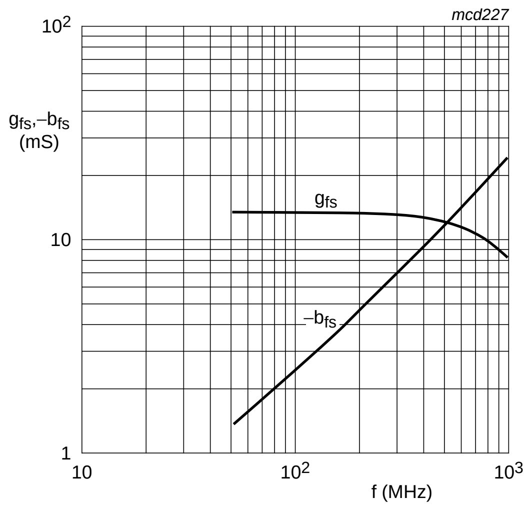


Fig 12. Gate current as a function of junction temperature; typical values.



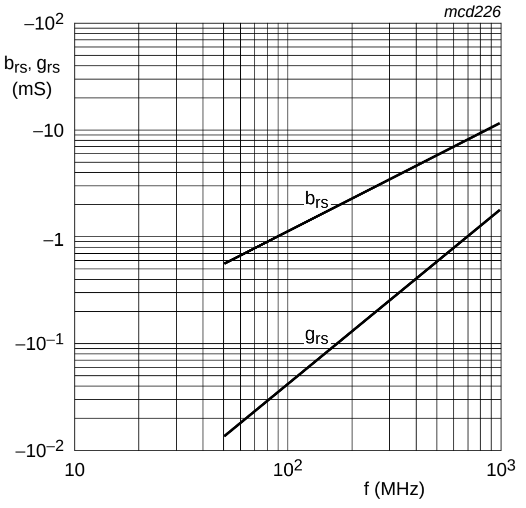
V_{DS} = 10 V; I_D = 10 mA; T_{amb} = 25 °C.

Fig 13. Input admittance as a function of frequency; typical values.



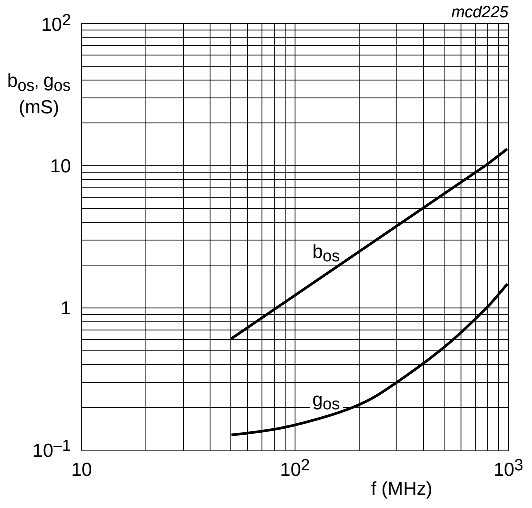
V_{DS} = 10 V; I_D = 10 mA; T_{amb} = 25 °C.

Fig 14. Forward transfer admittance as a function of frequency; typical values.



V_{DS} = 10 V; I_D = 10 mA; T_{amb} = 25 °C.

Fig 15. Reverse transfer admittance as a function of frequency; typical values.

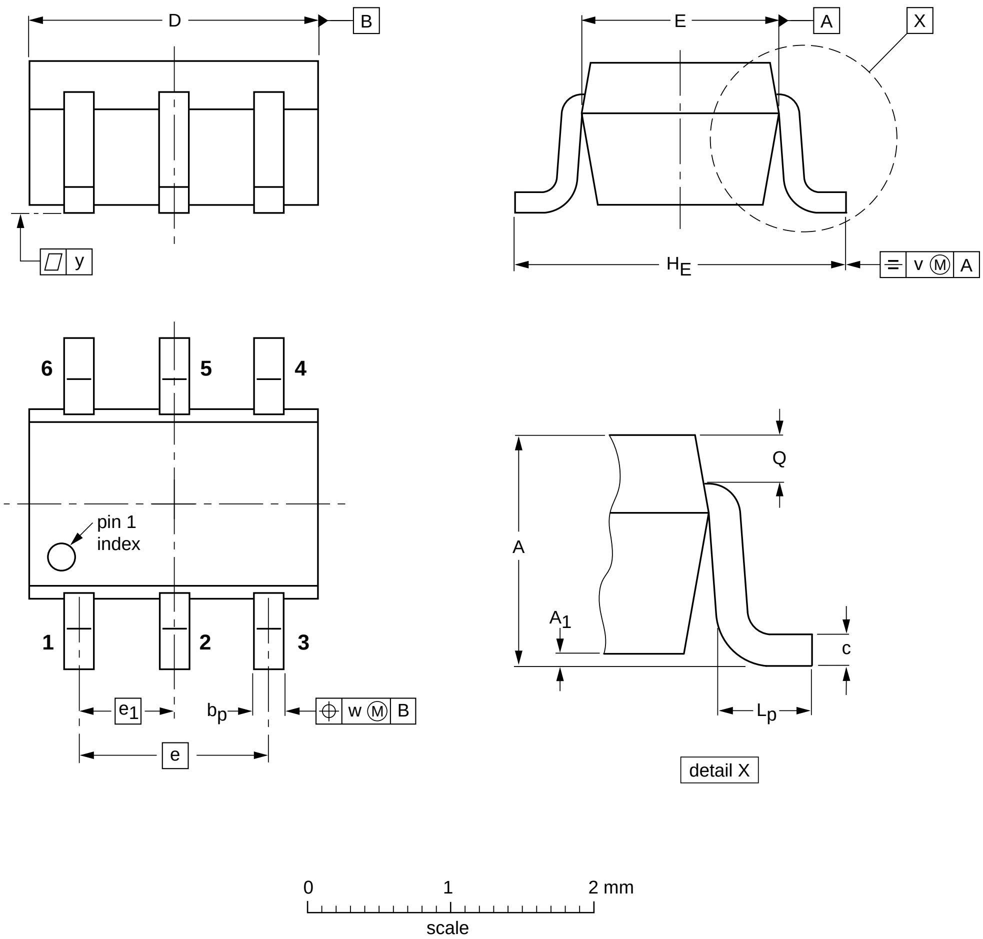


V_{DS} = 10 V; I_D = 10 mA; T_{amb} = 25 °C.

Fig 16. Output admittance as a function of frequency; typical values.

9. Package outline

Plastic surface-mounted package; 6 leads **SOT363**



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	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT363			SC-88			~~04-11-08~~ 06-03-16

Fig 17. Package outline.

10. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMBFJ620 v.2	20110915	Product data sheet	-	PMBFJ620 v.1
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Package outline drawings have been updated to the latest version.			
PMBFJ620 v.1 (9397 750 13006)	20040511	Product data sheet	-	-

11. Legal information

11.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term ‘short data sheet’ is explained in section “Definitions”.

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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12. Contact information

For more information, please visit: **http://www.nxp.com**

For sales office addresses, please send an email to: **salesaddresses@nxp.com**

13. Contents

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Date of release: 15 September 2011

Document identifier: PMBFJ620