N-channel field-effect transistors 2N5484; 2N5485; 2N5486

FEATURES

- Low noise
- Interchangeability of drain and source connections
- High gain.

DESCRIPTION

N-channel, symmetrical, silicon junction FETs in a SOT54 (TO-92) envelope, intended for use in VHF/UHF amplifiers, oscillators and mixers.

PINNING - SOT54 (TO-92)

PIN	DESCRIPTION
1	gate
2	source
3	drain

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	25	V
I_{DSS}	drain current	V_{DS} = 15 V; V_{GS} = 0			
	2N5484		1	5	mA
	2N5485		4	10	mA
	2N5486		8	20	mA
P_{tot}	total power dissipation	up to T_{amb} = 25 °C	–	400	mW
$V_{GS(off)}$	gate-source cut-off voltage	V_{DS} = 15 V; I_D = 1 nA			
	2N5484		−0.3	−3	V
	2N5485		−0.5	−4	V
	2N5486		−2	−6	V
$\lvert Y_{fs} \rvert$	common source transfer admittance	V_{DS} = 15 V; V_{GS} = 0; f = 1 kHz			
	2N5484		3	6	mS
	2N5485		3.5	7	mS
	2N5486		4	8	mS

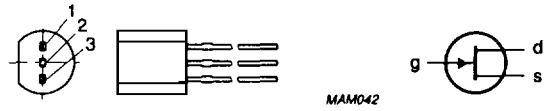


Fig.1 Simplified outline and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		–	25	V
V_{GSO}	gate-source voltage		–	−25	V
V_{GDO}	gate-drain voltage		–	−25	V
I_G	DC forward gate current		–	10	mA
P_{tot}	total power dissipation	up to T_{amb} = 25 °C (note 1)	–	400	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	THERMAL RESISTANCE
$R_{th\ j\text{-}a}$	from junction to ambient (note 1)	350 K/W

Note

1. Device mounted on a printed circuit board; maximum lead length 3 mm; mounting pad for drain lead minimum 10 mm x 10 mm.

STATIC CHARACTERISTICS

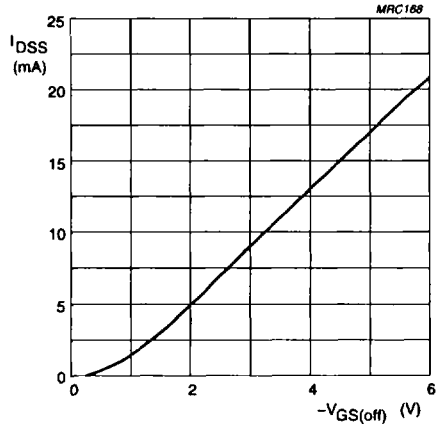
T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)GSS}$	gate-source breakdown voltage	V_{DS} = 0; I_G = −1 μA	−25	–	V
I_{DSS}	drain current	V_{DS} = 15 V; V_{GS} = 0			
	2N5484		1	5	mA
	2N5485		4	10	mA
	2N5486		8	20	mA
I_{GSS}	reverse gate leakage current	V_{DS} = 0; V_{GS} = −15 V	–	−1	nA
V_{GSS}	gate-source forward voltage	V_{DS} = 0; I_G = 1 mA	–	1	V
$V_{GS(off)}$	gate-source cut-off voltage	V_{DS} = 15 V; I_D = 1 nA			
	2N5484		−0.3	−3	V
	2N5485		−0.5	−4	V
	2N5486		−2	−6	V
$\lvert Y_{fs}\rvert$	common source transfer admittance	V_{DS} = 15 V; V_{GS} = 0			
	2N5484		3	6	mS
	2N5485		3.5	7	mS
	2N5486		4	8	mS
$\lvert Y_{os}\rvert$	common source output admittance	V_{DS} = 15 V; V_{GS} = 0			
	2N5484		–	50	μS
	2N5485		–	60	μS
	2N5486		–	75	μS

DYNAMIC CHARACTERISTICS

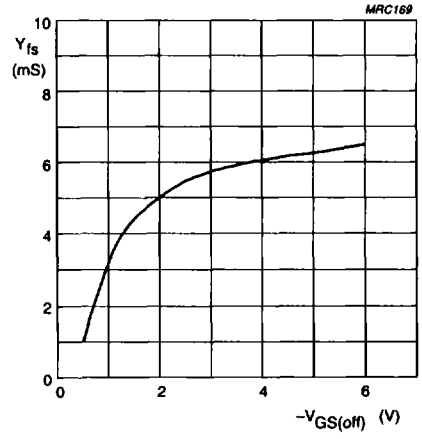
T_j = 25 °C; V_{DS} = 15 V; V_{GS} = 0

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
C_{is}	input capacitance	f = 1 MHz	–	–	5	pF
C_{os}	output capacitance	f = 1 MHz	–	–	2	pF
C_{rs}	feedback capacitance	f = 1 MHz	–	–	1	pF
g_{is}	common source input conductance					
	2N5484	f = 100 MHz	100	–	–	µS
	2N5485; 2N5486	f = 400 MHz	–	–	1	mS
g_{fs}	common source transfer conductance					
	2N5484	f = 100 MHz	2.5	–	–	mS
	2N5485	f = 400 MHz	3	–	1	mS
	2N5486	f = 400 MHz	3.5	–	1	mS
g_{os}	common source output conductance					
	2N5484	f = 100 MHz	–	–	75	µS
	2N5485; 2N5486	f = 400 MHz	–	–	100	µS
V_n	equivalent input noise voltage	f = 100 Hz	–	5	–	nV/√Hz



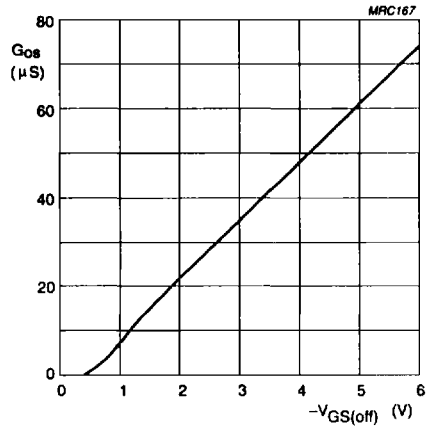
V_{DS} = 15 V; T_j = 25 °C; typical values.

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



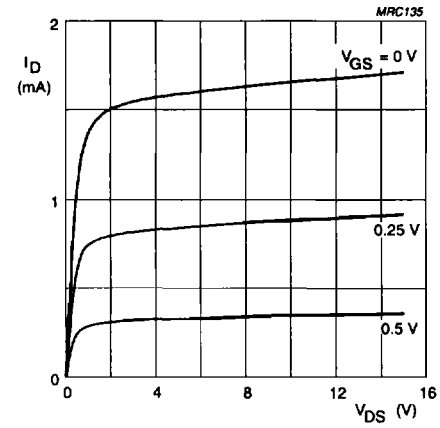
V_{DS} = 15 V; T_j = 25 °C; typical values.

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



V_{DS} = 15 V; T_j = 25 °C; typical values.

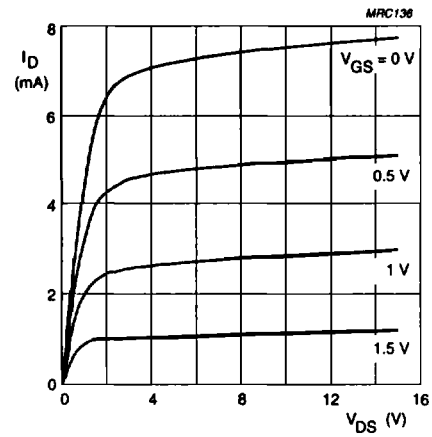
Fig.4 Common source output conductance as a function of gate-source cut-off voltage.



2N5484

T_j = 25 °C.

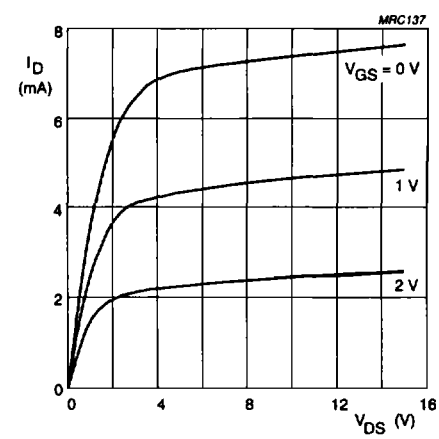
Fig.5 Typical output characteristics.



2N5485

T_j = 25 °C.

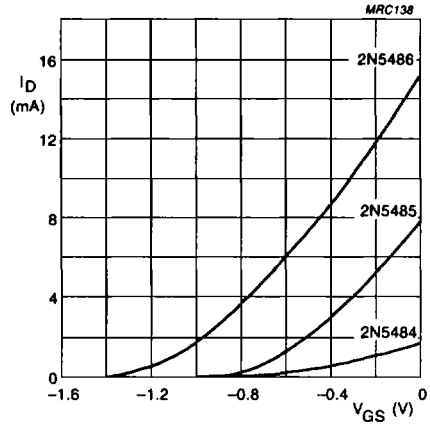
Fig.6 Typical output characteristics.



2N5486

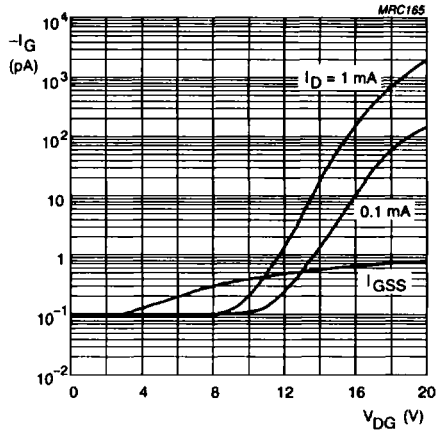
T_j = 25 °C.

Fig.7 Typical output characteristics.



V_{DS} = 15 V; T_j = 25 °C.

Fig.8 Typical input characteristics.



T_j = 25 °C.

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

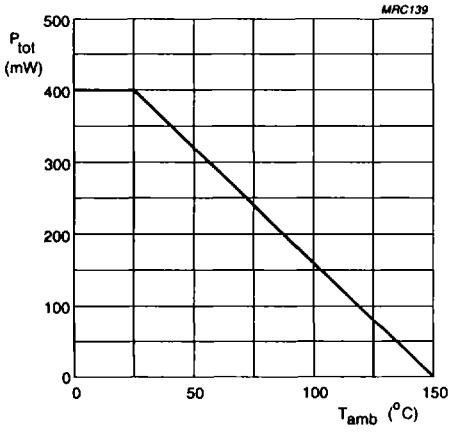
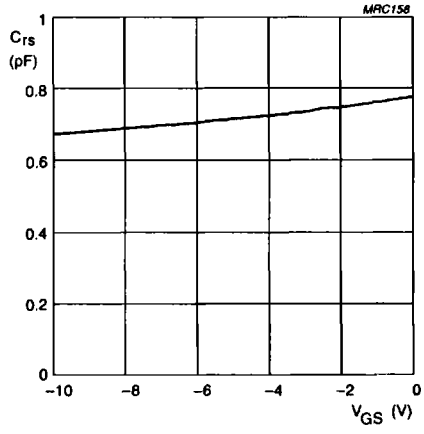
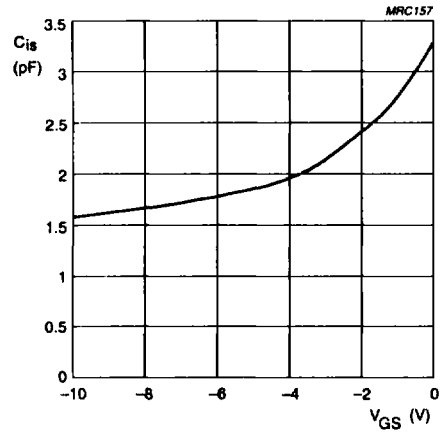


Fig.10 Power derating curve.



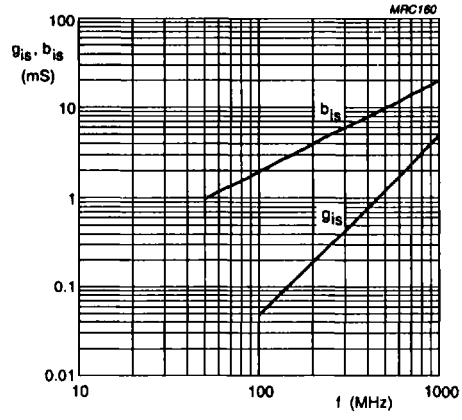
V_{DS} = 15 V; T_j = 25 °C.

Fig.11 Typical feedback capacitance.



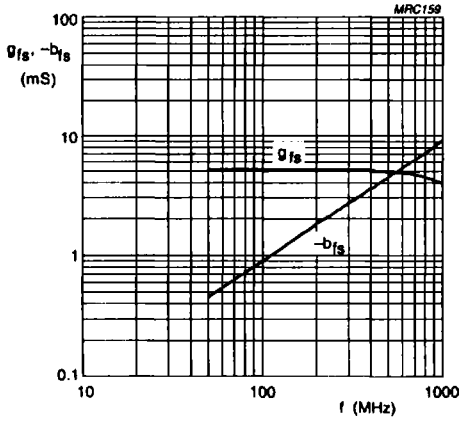
V_{DS} = 15 V; T_j = 25 °C.

Fig.12 Typical input capacitance.



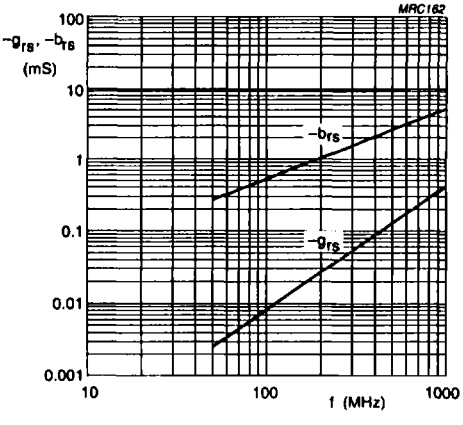
V_{DS} = 15 V; V_{GS} = 0; T_{amb} = 25 °C; typical values.

Fig.13 Common source input conductance.



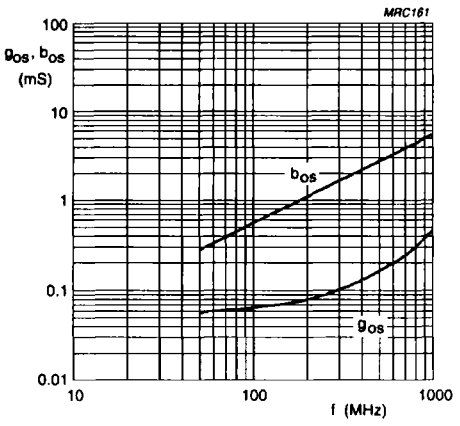
V_{DS} = 15 V; V_{GS} = 0; T_{amb} = 25 °C; typical values.

Fig.14 Common source transfer conductance.



V_{DS} = 15 V; V_{GS} = 0; T_{amb} = 25 °C; typical values.

Fig.15 Common source feedback conductance.



V_{DS} = 15 V; V_{GS} = 0; T_{amb} = 25 °C; typical values.

Fig.16 Common source output conductance.