

N-channel silicon field-effect transistors

PMBFJ308; PMBFJ309; PMBFJ310

FEATURES

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

APPLICATIONS

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

DESCRIPTION

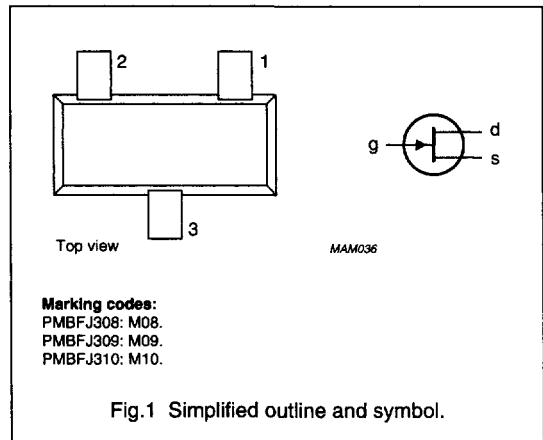
N-channel symmetrical silicon junction field-effect transistors in a SOT23 package.

CAUTION

The device is supplied in an antistatic package. The gate-source input must be protected against static discharge during transport or handling.

PINNING - SOT23

PIN	SYMBOL	DESCRIPTION
1	s	source
2	d	drain
3	g	gate



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		-	±25	V
V_{GSoff}	gate-source cut-off voltage	$V_{DS} = 10\text{ V}; I_D = 1\ \mu\text{A}$			
	PMBFJ308		-1	-6.5	V
	PMBFJ309		-1	-4	V
	PMBFJ310		-2	-6.5	V
I_{DSS}	drain current	$V_{GS} = 0; V_{DS} = 10\text{ V}$			
	PMBFJ308		12	60	mA
	PMBFJ309		12	30	mA
	PMBFJ310		24	60	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ °C}$	-	250	mW
$ y_{fs} $	forward transfer admittance	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}$	10	-	mS

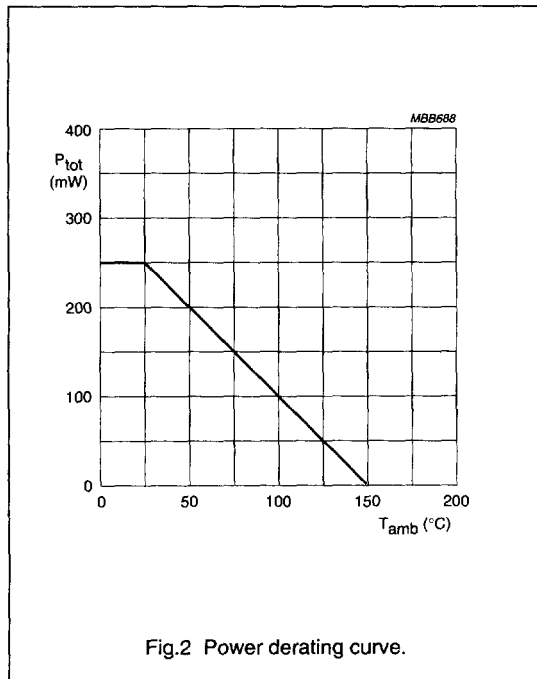
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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	drain-source voltage		-	±25	V
V_{GSO}	gate-source voltage	open drain	-	-25	V
V_{GDO}	gate-drain voltage	open source	-	-25	V
I_G	forward gate current (DC)		-	50	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ °C}$	-	250	mW
T_{stg}	storage temperature		-65	150	°C
T_j	operating junction temperature		-	150	°C



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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient; note 1	500	K/W

Note

- Device mounted on an FR4 printed-circuit board.

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	$I_G = -1\text{ }\mu\text{A}$; $V_{DS} = 0$	-25	-	-	V
V_{GSoff}	gate-source cut-off voltage	$I_D = 1\text{ }\mu\text{A}$; $V_{DS} = 10\text{ V}$				V
	PMBFJ308		-1	-	-6.5	V
	PMBFJ309		-1	-	-4	V
	PMBFJ310		-2	-	-6.5	V
V_{GSS}	gate-source forward voltage	$I_G = 1\text{ mA}$; $V_{DS} = 0$	-	-	1	V
I_{DSS}	drain current	$V_{DS} = 10\text{ V}$; $V_{GS} = 0$				mA
	PMBFJ308		12	-	60	mA
	PMBFJ309		12	-	30	mA
	PMBFJ310		24	-	60	mA
I_{GSS}	gate leakage current	$V_{GS} = -15\text{ V}$; $V_{DS} = 0$	-	-	-1	nA
R_{DSon}	drain-source on-state resistance	$V_{GS} = 0$; $V_{DS} = 100\text{ mV}$	-	50	-	Ω
$ y_{fs} $	forward transfer admittance	$I_D = 10\text{ mA}$; $V_{DS} = 10\text{ V}$	10	-	-	mS
$ y_{os} $	common source output admittance	$I_D = 10\text{ mA}$; $V_{DS} = 10\text{ V}$	-	-	250	μS

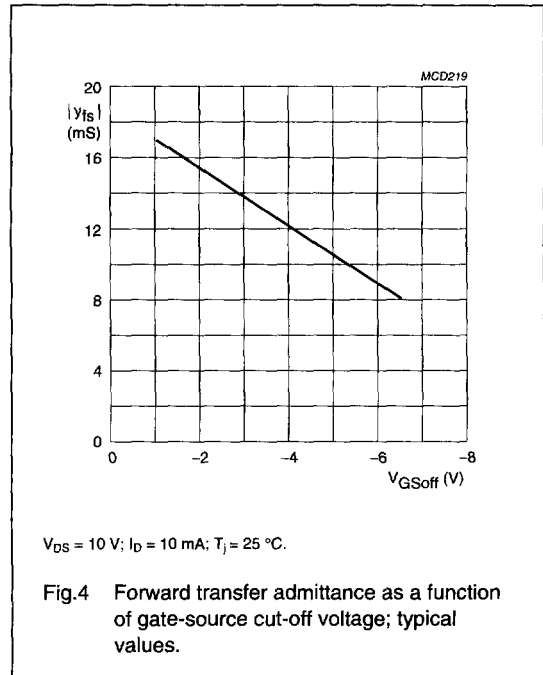
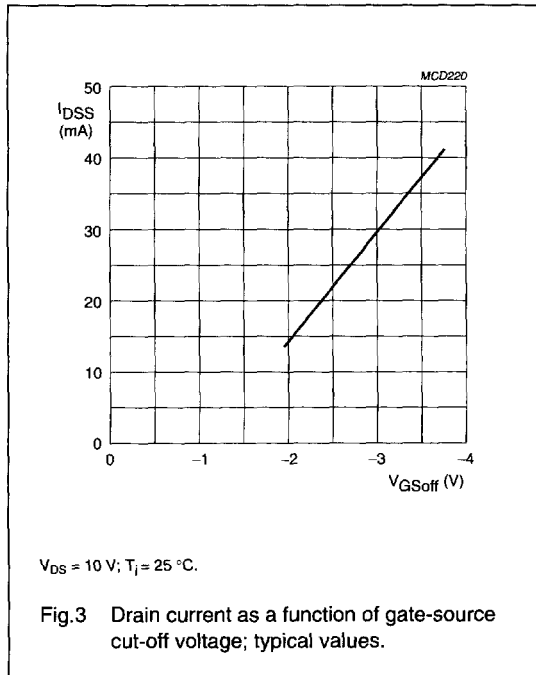
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DYNAMIC CHARACTERISTICS

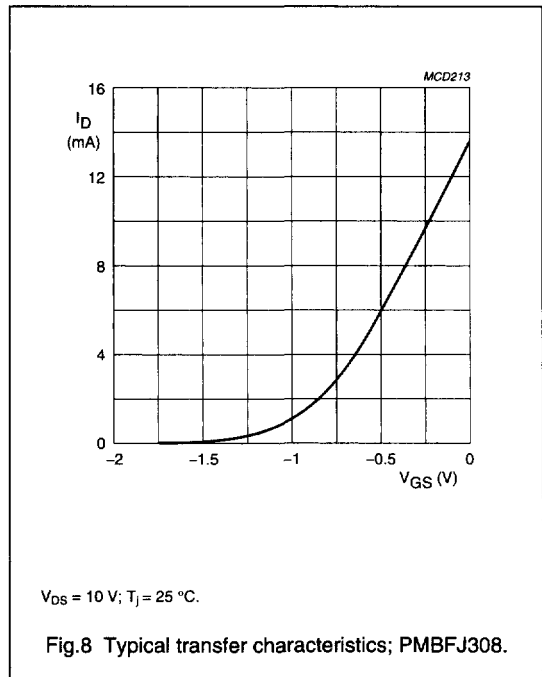
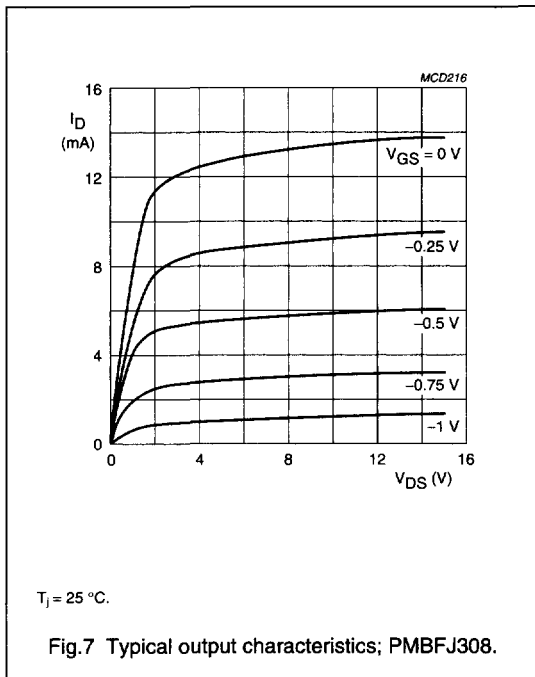
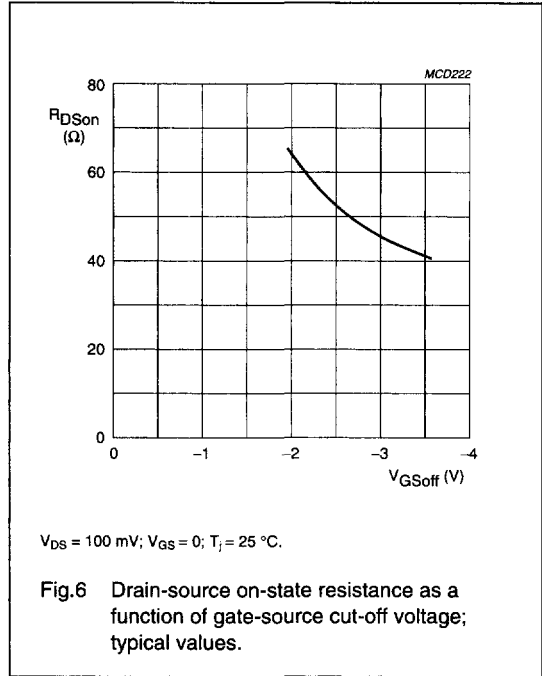
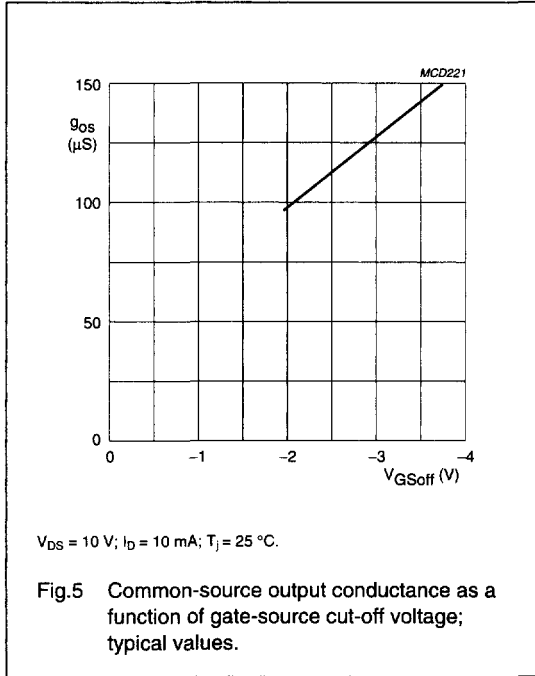
$T_j = 25\text{ }^\circ\text{C}$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
C_{is}	input capacitance	$V_{DS} = 10\text{ V}; V_{GS} = -10\text{ V}; f = 1\text{ MHz}$	3	5	pF
		$V_{DS} = 10\text{ V}; V_{GS} = 0; T_{amb} = 25\text{ }^\circ\text{C}$	6	-	pF
C_{rs}	reverse transfer capacitance	$V_{DS} = 0; V_{GS} = -10\text{ V}; f = 1\text{ MHz}$	1.3	2.5	pF
g_{is}	common source input conductance	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 100\text{ MHz}$	200	-	μS
		$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 450\text{ MHz}$	3	-	mS
g_{fs}	common source transfer conductance	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 100\text{ MHz}$	13	-	mS
		$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 450\text{ MHz}$	12	-	mS
g_{rs}	common source reverse conductance	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 100\text{ MHz}$	-30	-	μS
		$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 450\text{ MHz}$	-450	-	μS
g_{os}	common source output conductance	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 100\text{ MHz}$	150	-	μS
		$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 450\text{ MHz}$	400	-	μS
V_n	equivalent input noise voltage	$V_{DS} = 10\text{ V}; I_D = 10\text{ mA}; f = 100\text{ Hz}$	6	-	nV/ $\sqrt{\text{Hz}}$



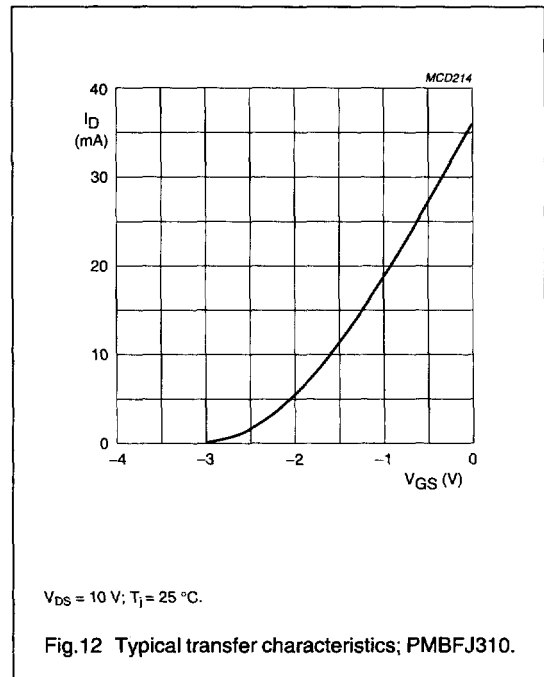
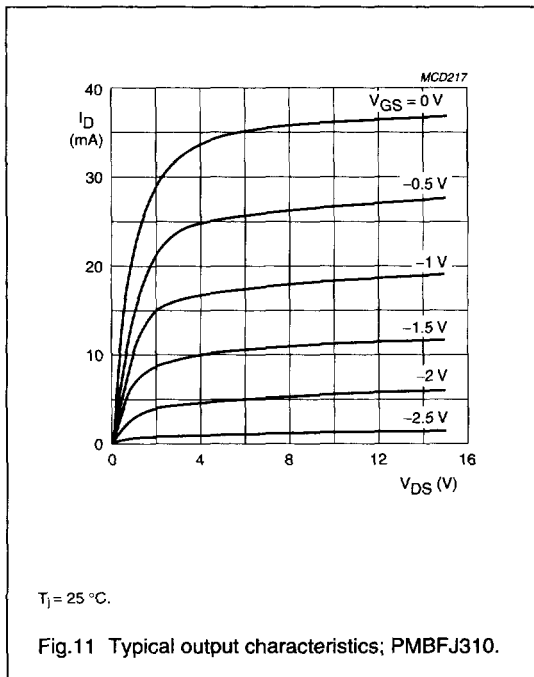
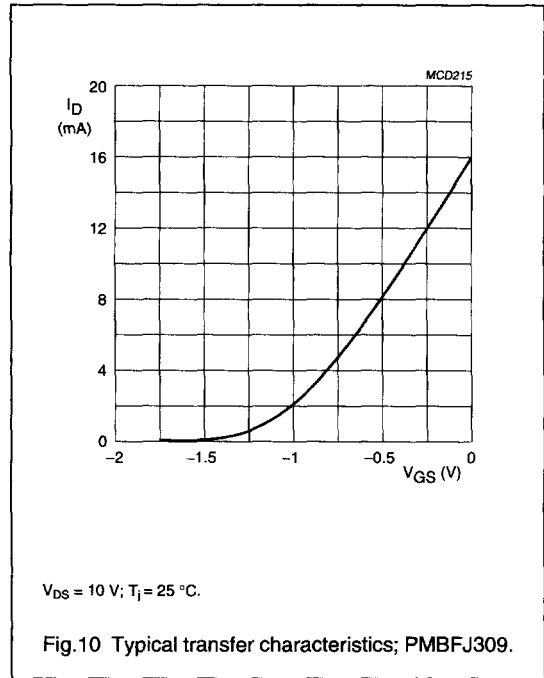
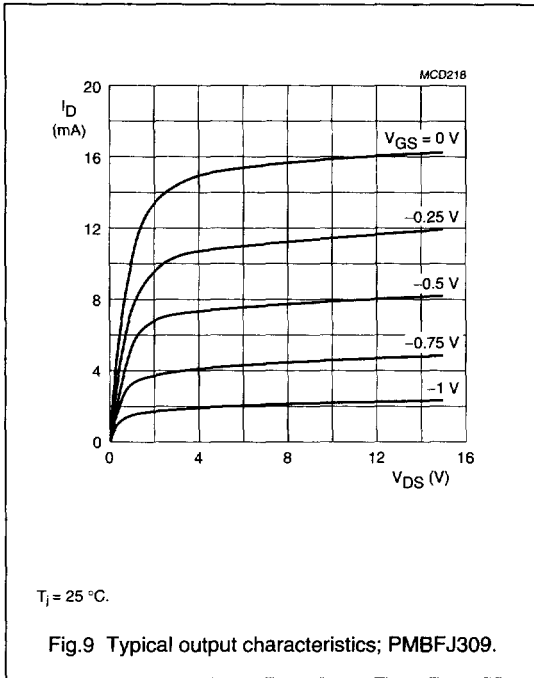
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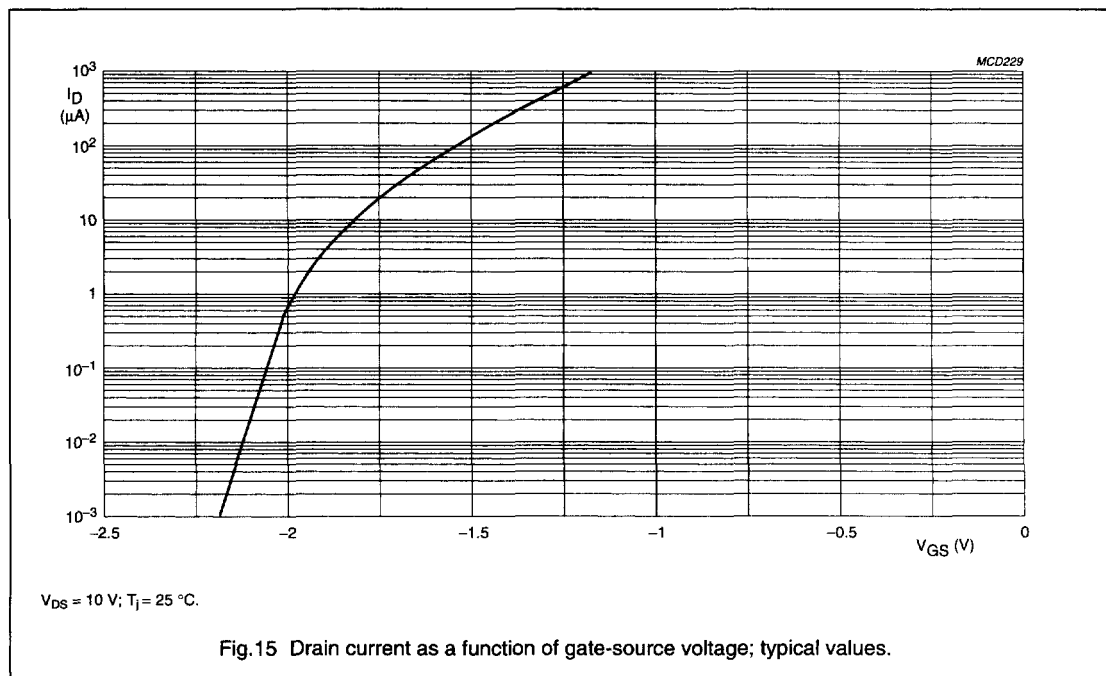
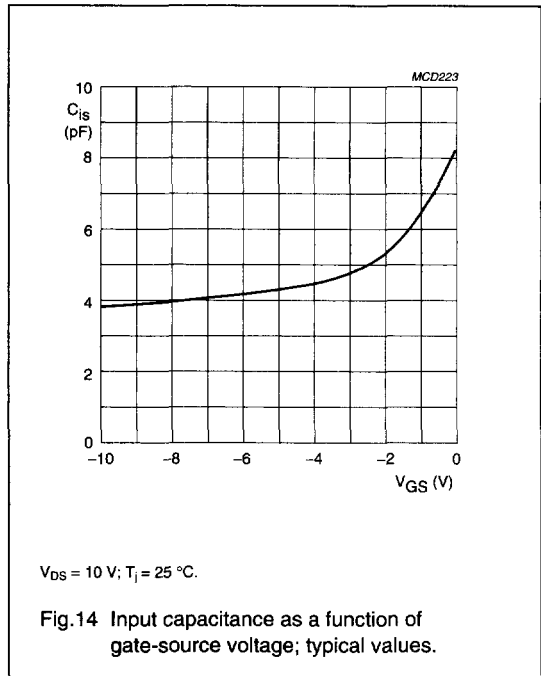
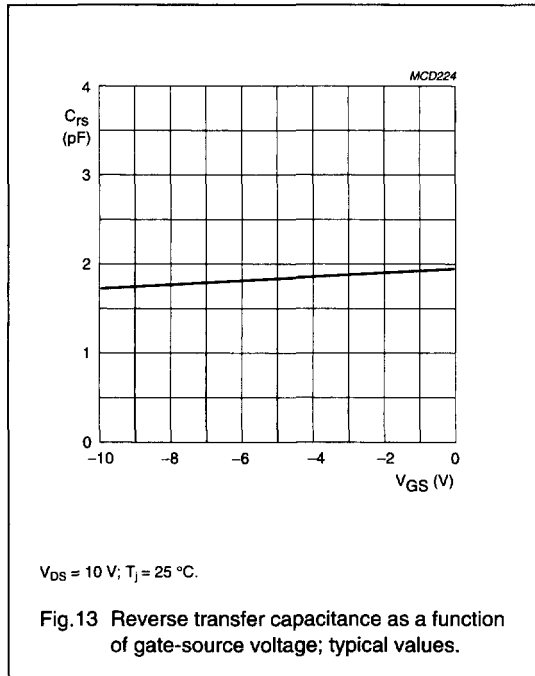
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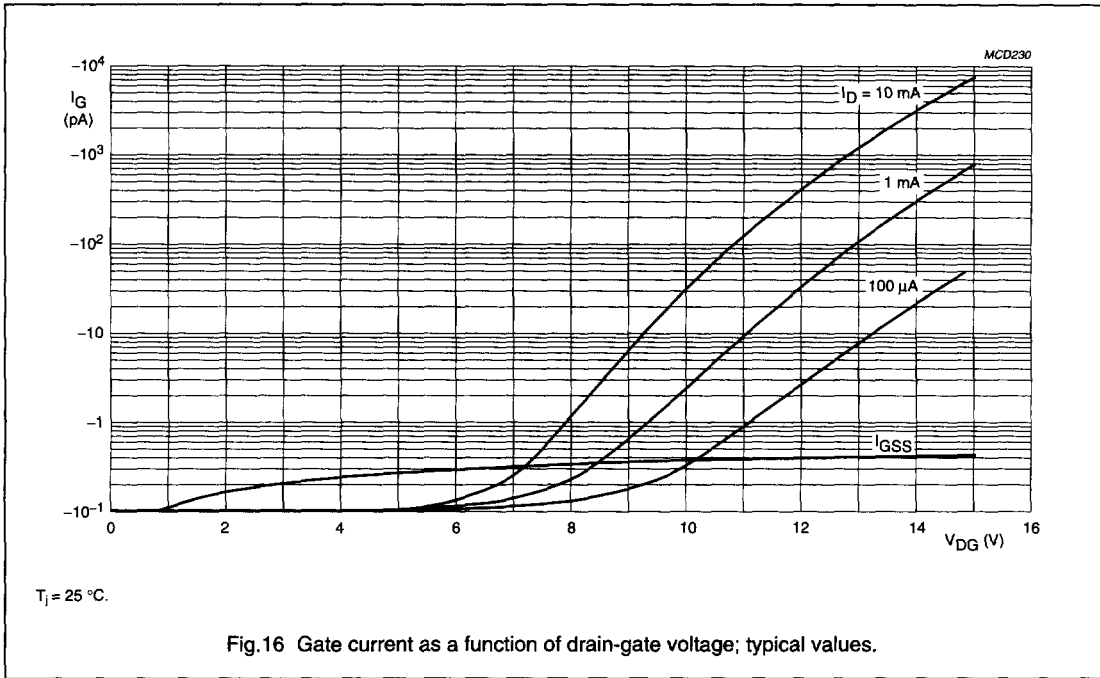


Fig.16 Gate current as a function of drain-gate voltage; typical values.

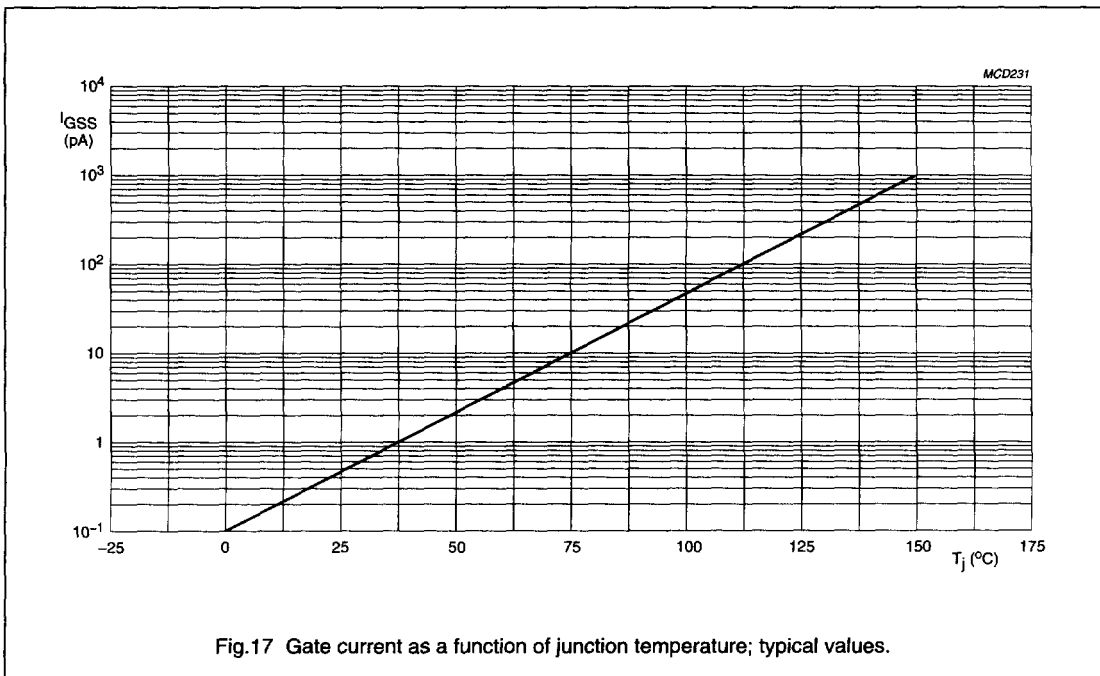


Fig.17 Gate current as a function of junction temperature; typical values.

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