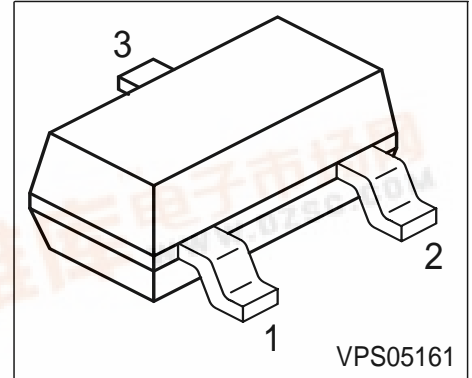




BF543

Silicon N-Channel MOSFET Triode

- For high-frequency stages up to 300 MHz preferably in FM applications
- $I_{DSS} = 4\text{mA}$, $g_{fs} = 12\text{mS}$



ESD: Electrostatic discharge sensitive device, observe handling precaution!

| Type | Marking | Pin Configuration | | | Package |
|-------|---------|-------------------|-------|-------|---------|
| BF543 | LDs | 1 = G | 2 = D | 3 = S | SOT23 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--|---------------|-------------|------------------|
| Drain-source voltage | V_{DS} | 20 | V |
| Drain current | I_D | 30 | mA |
| Gate-source peak current | $\pm I_{GSM}$ | 10 | |
| Total power dissipation, $T_S \leq 76\text{ }^\circ\text{C}$ | P_{tot} | 200 | mW |
| Storage temperature | T_{stg} | -55 ... 150 | $^\circ\text{C}$ |
| Ambient temperature range | T_A | -55 ... 150 | |
| Channel temperature | T_{ch} | 150 | |

Thermal Resistance

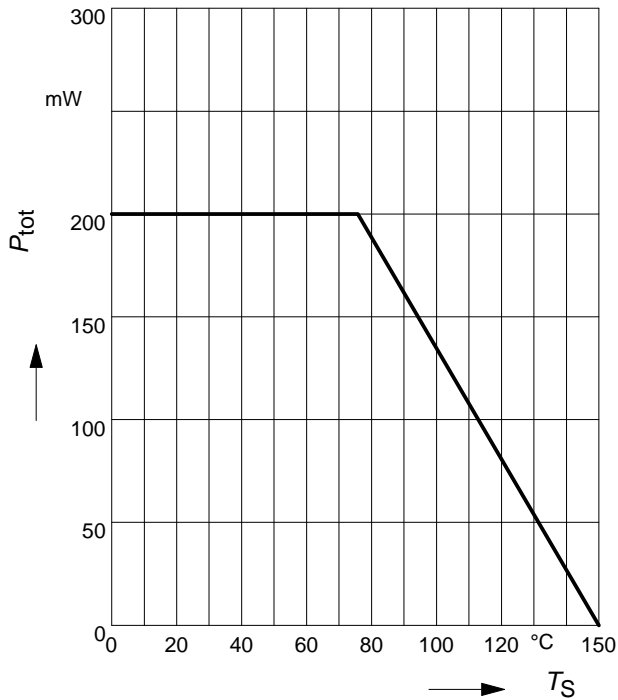
| | | | |
|---|-------------|------------|-----|
| Channel - soldering point ¹⁾ | R_{thchs} | ≤ 370 | K/W |
|---|-------------|------------|-----|

¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

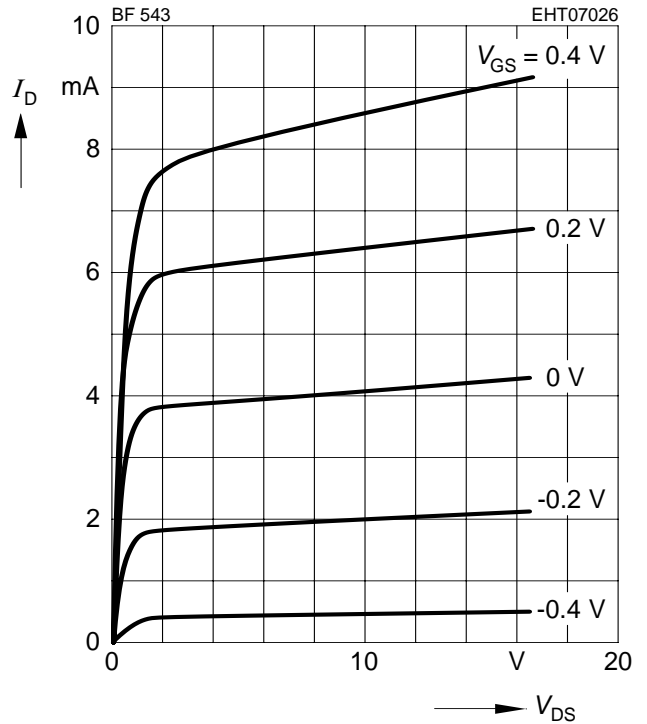
Electrical Characteristics at $T_A = 25\text{ °C}$, unless otherwise specified.

| Parameter | Symbol | Values | | | Unit |
|---|-------------------|--------|------|------|------|
| | | min. | typ. | max. | |
| DC characteristics | | | | | |
| Drain-source breakdown voltage $I_D = 10\text{ }\mu\text{A}$, $-V_{GS} = 4\text{ V}$ | $V_{(BR)DS}$ | 20 | - | - | V |
| Gate-source breakdown voltage $\pm I_{GS} = 10\text{ mA}$, $V_{DS} = 0$ | $\pm V_{(BR)GSS}$ | 7 | - | 12 | |
| Gate-source leakage current $\pm V_{GS} = 6\text{ V}$, $V_{DS} = 0$ | $\pm I_{GSS}$ | - | - | 50 | nA |
| Drain current $V_{DS} = 10\text{ V}$, $V_{GS} = 0$ | I_{DSS} | 2 | 4 | 6 | mA |
| Gate-source pinch-off voltage $V_{DS} = 10\text{ V}$, $I_D = 20\text{ }\mu\text{A}$ | $-V_{GS(p)}$ | - | 0.7 | 1.5 | V |
| AC characteristics | | | | | |
| Forward tranconductance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$ | g_{fs} | 9.5 | 12 | - | mS |
| Gate input capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$ | C_{gss} | - | 2.7 | - | pF |
| Reverse tranfer capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$ | C_{dg} | - | 18 | - | fF |
| Output capacitance $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 1\text{ MHz}$ | C_{dss} | - | 0.9 | - | pF |
| Power gain (test circuit) $G_G = 2\text{ mS}$, $G_L = 0,5\text{ mS}$ $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 200\text{ MHz}$ | G_p | - | 22 | - | dB |
| Noise figure (test circuit) $G_G = 2\text{ mS}$, $G_L = 0,5\text{ mS}$ $V_{DS} = 10\text{ V}$, $I_D = 4\text{ mA}$, $f = 200\text{ MHz}$ | F | - | 1 | - | |

Total power dissipation $P_{tot} = f(T_S)$

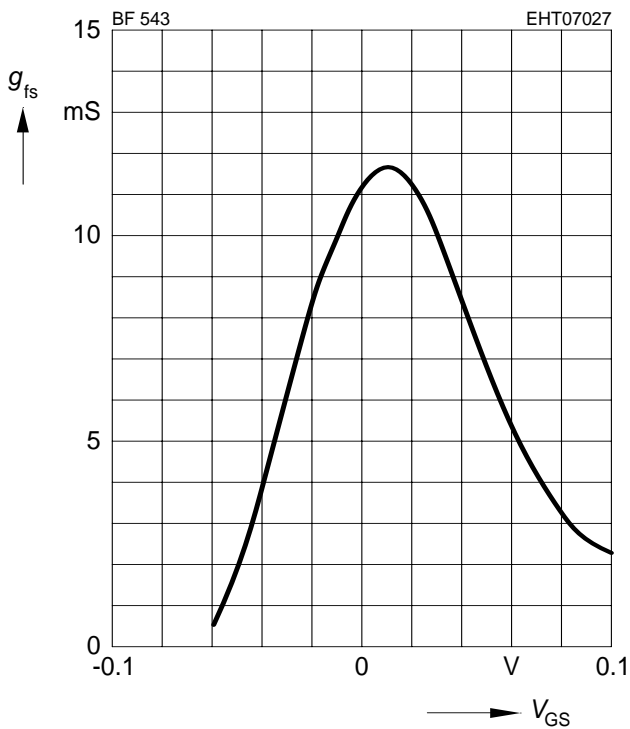


Output characteristics $I_D = f(V_{DS})$



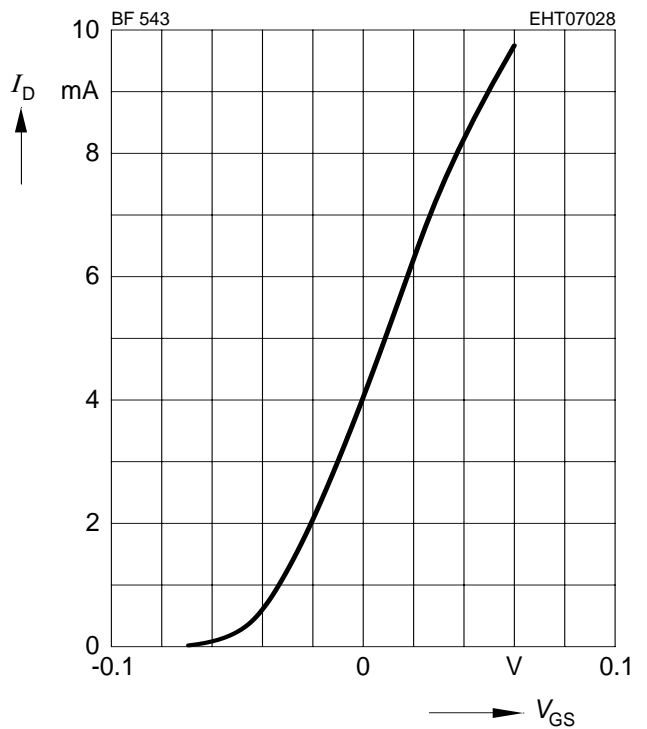
Gate transconductance $g_{fs} = f(V_{GS})$

$V_{DS} = 10V, I_{DSS} = 4mA, f = 1kHz$



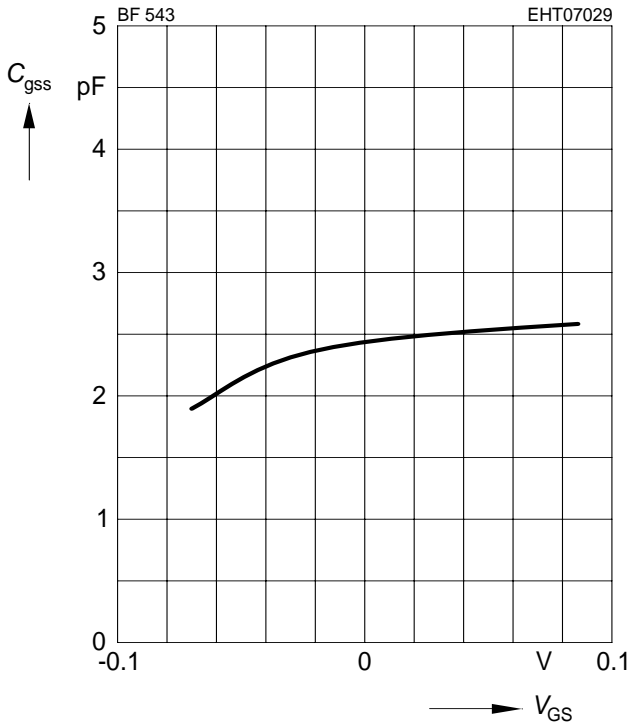
Drain current $I_D = f(V_{GS})$

$V_{DS} = 10V$



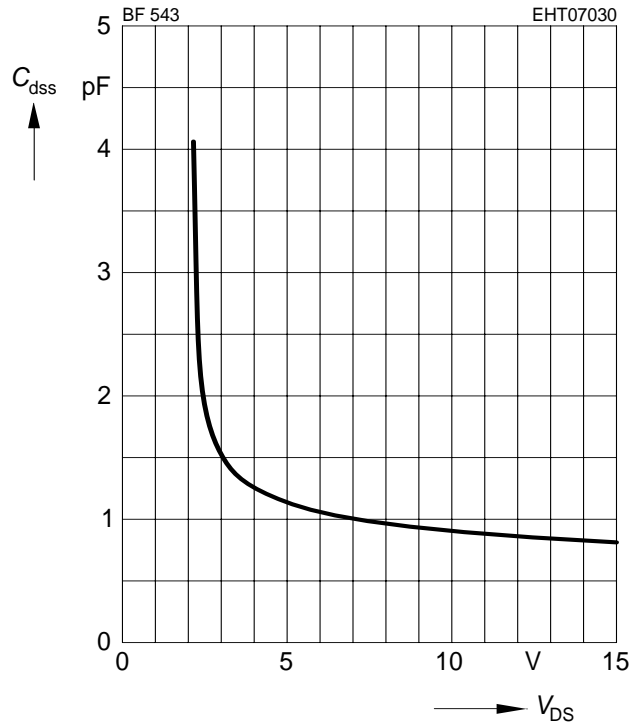
Gate input capacitance $C_{gss} = f(V_{GS})$

$V_{DS} = 10, I_{DSS} = 4mA, f = 1MHz$



Output capacitance $C_{dss} = f(V_{DS})$

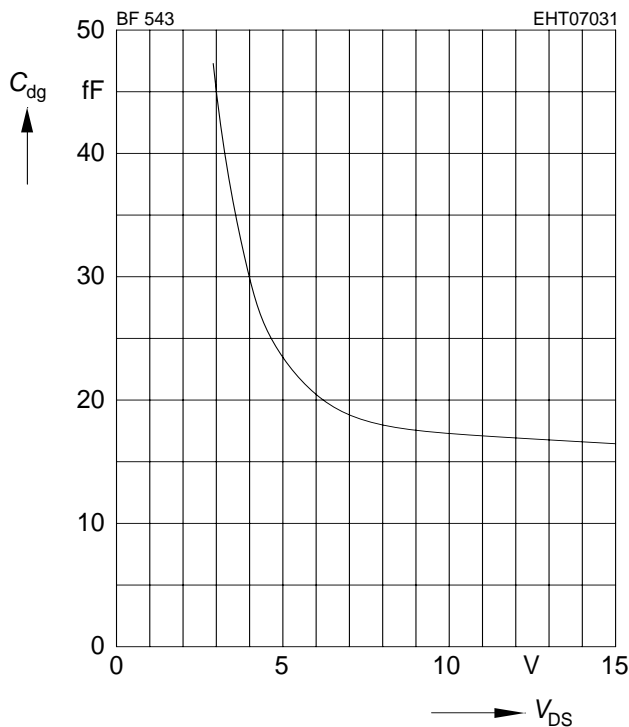
$V_{GS} = 0, I_{DSS} = 4mA, f = 1MHz$



Reverse transfer capacitance

$C_{dg} = f(V_{DS})$

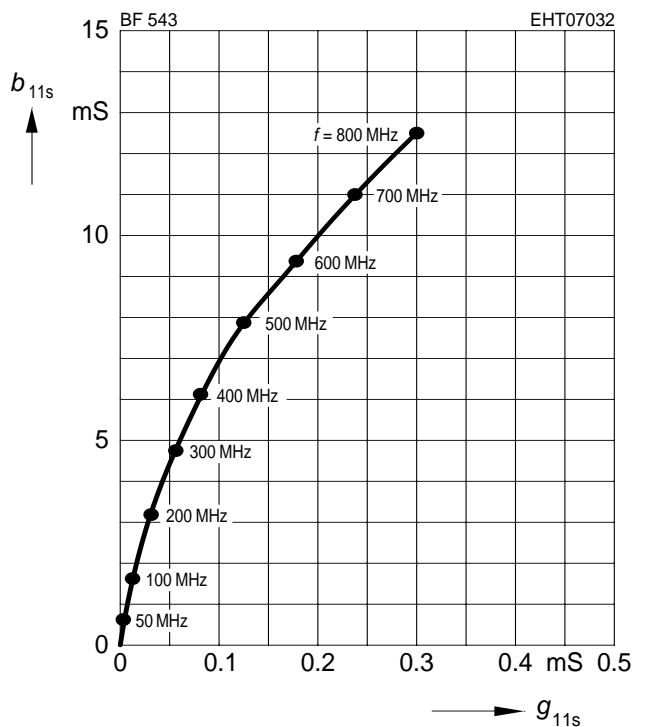
$V_{GS} = 0, I_{DSS} = 4mA, f = 1MHz$



Gate input admittance y_{11s}

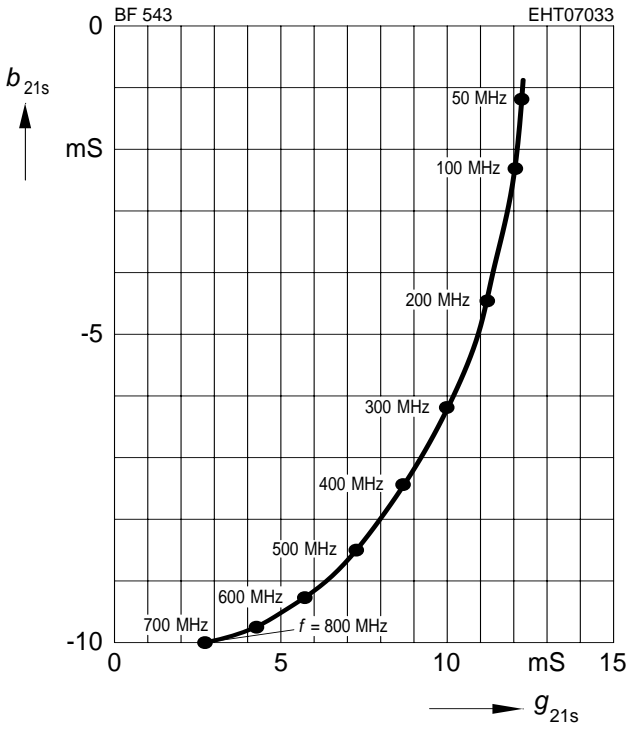
$V_{DS} = 10, I_{DSS} = 4mA, V_{GS} = 0$

(source circuit)



Gate forward transfer admittance y_{21s}

$V_{DS} = 10V, I_{DSS} = 4mA, V_{GS} = 0$
(source circuit)



Output admittance y_{22s}

$V_{DS} = 10V, I_{DSS} = 10mA, V_{GS} = 0$
(source circuit)

