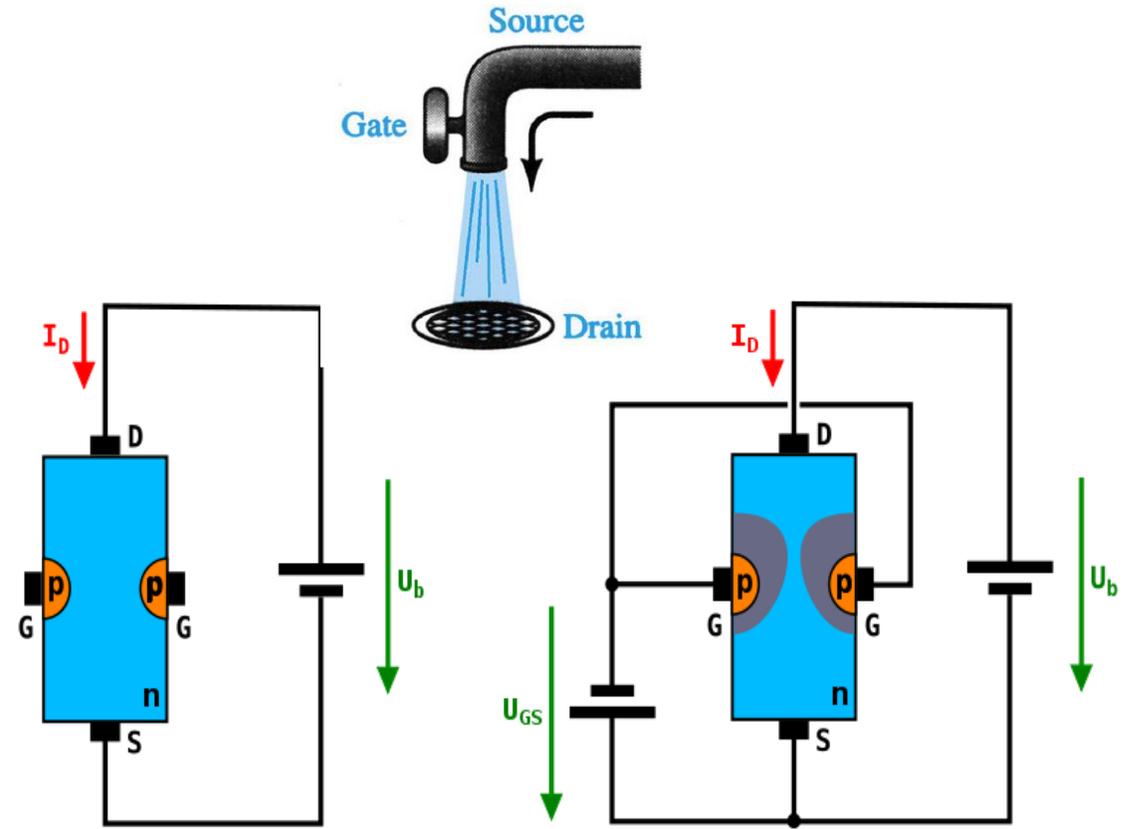
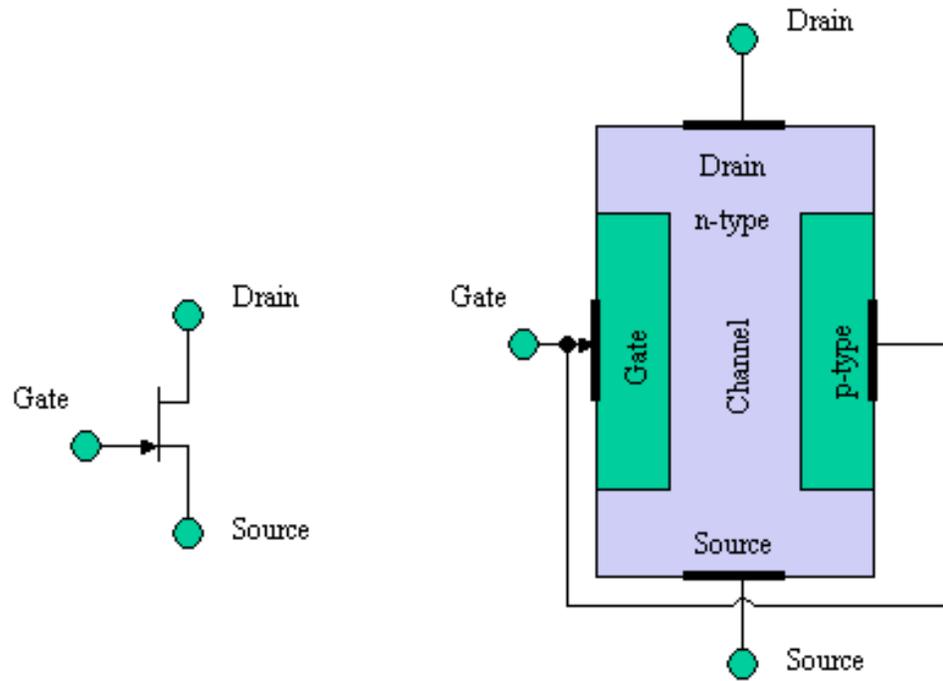


# Amplificadores usando transistores JFET

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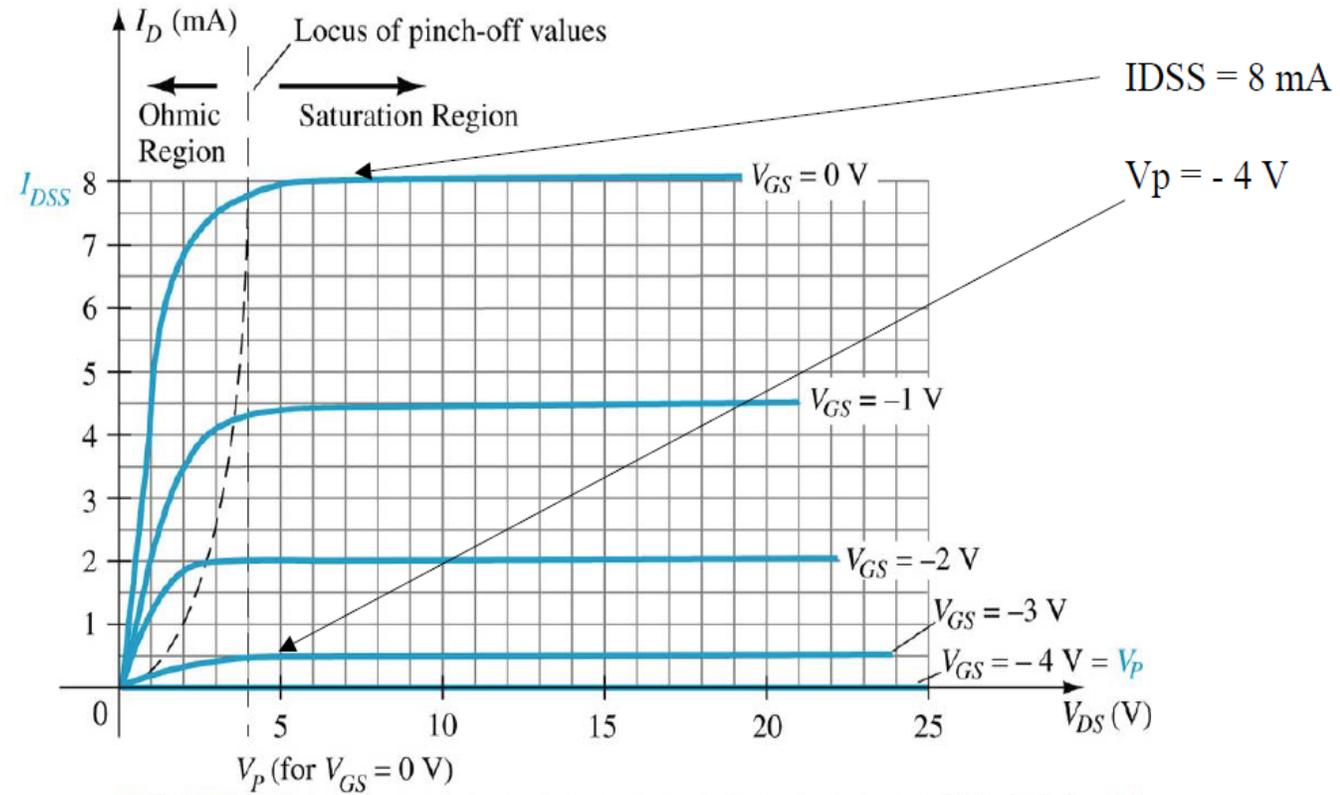
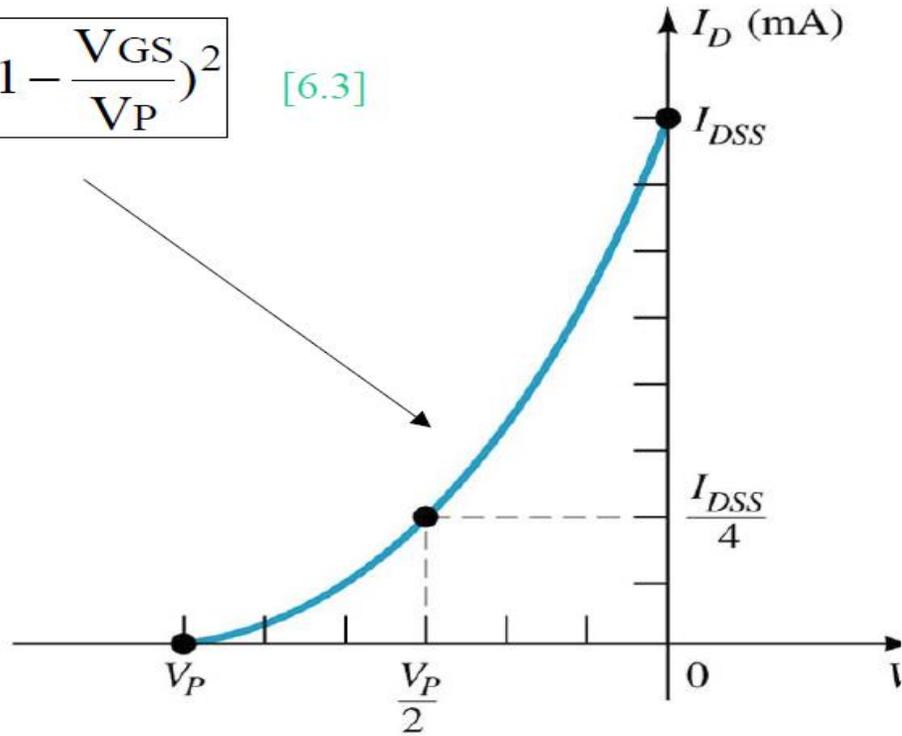
PSI3460 – LABORATÓRIO DE CIRCUITOS ELETRÔNICOS

# JFET



# Curva característica

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2 \quad [6.3]$$



# TBJ x JFET

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Características	TBJ	FET
Impedância de entrada	<	>
Sensibilidade à temperatura	>	<
Controle de corrente de saída.	>	<
Ganho de tensão	>	<
Estabilidade	<	>
Tamanho		<

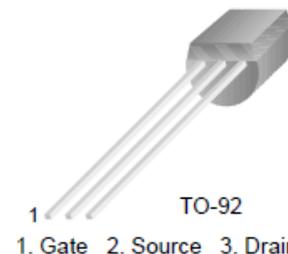
# Datasheet

SEMICONDUCTOR®

## BF245A/BF245B/BF245C

### N-Channel Amplifiers

- This device is designed for VHF/UHF amplifiers.
- Sourced from process 50.



5A/BF245B/BF245C

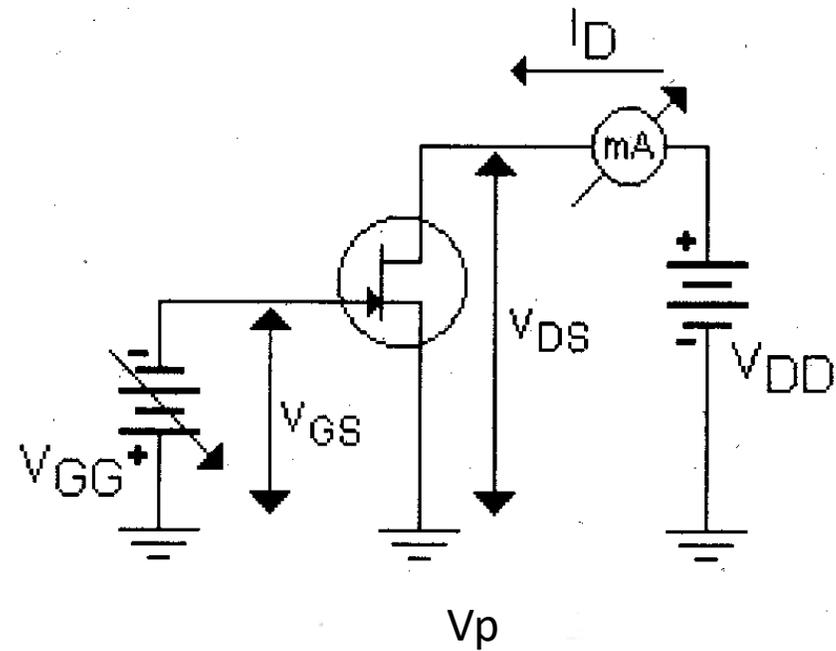
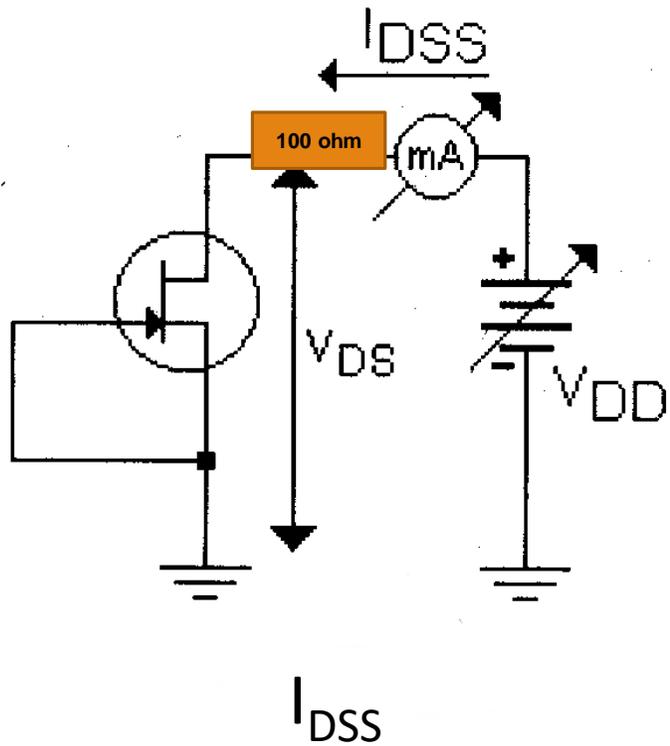
### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{DG}$	Drain-Gate Voltage	30	V
$V_{GS}$	Gate-Source Voltage	-30	V
$I_{GF}$	Forward Gate Current	10	mA
$P_D$	Total Device Dissipation @ $T_A=25^\circ\text{C}$ Derate above $25^\circ\text{C}$	350 2.8	mW mW/ $^\circ\text{C}$
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 ~ 150	$^\circ\text{C}$

### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

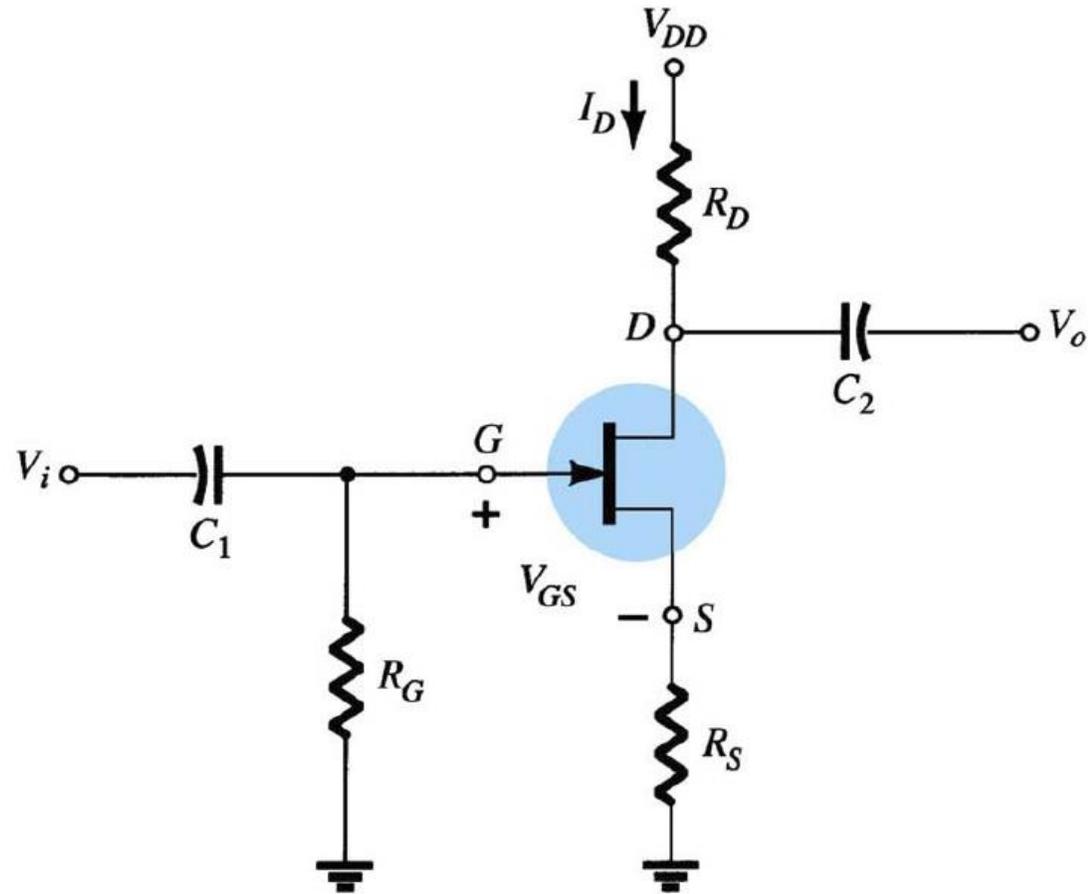
Symbol	Parameter	Test Condition	Min.	Max.	Units
<b>Off Characteristics</b>					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$V_{DS} = 0, I_G = 1\mu\text{A}$	-30		V
$V_{GS}$	Gate-Source	$V_{DS} = 15\text{V}, I_D = 200\mu\text{A}$	-0.4 -1.6 -3.2	-2.2 -3.8 -7.5	V
$V_{GS(off)}$	Gate-Source Cut-off Voltage	$V_{DS} = 15\text{V}, I_D = 10\text{nA}$	-0.5	-8	V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -20\text{V}, V_{DS} = 0$		-5	nA
<b>On Characteristics</b>					
$I_{DSS}$	Zero-Gate Voltage Drain Current	$V_{GS} = 15\text{V}, V_{GS} = 0$	2 6 12	6.5 15 25	mA
<b>On Characteristics</b>					
$g_{fs}$	Common Source Forward Transconductance	$V_{GS} = 15\text{V}, V_{GS} = 0, f = 1\text{KHz}$	3	6.5	mmhos

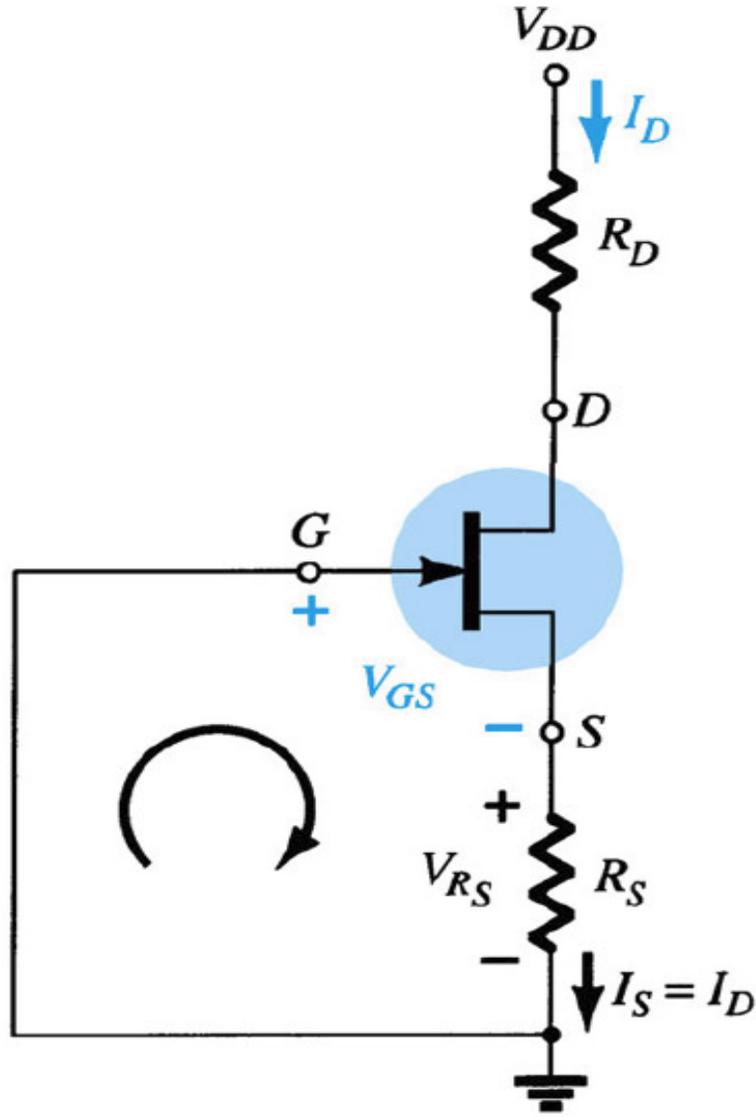
# Medida de $I_{DSS}$ e $V_p$



# AutoPolarização

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$$V_{GS} = -I_D R_S \quad [6.10]$$

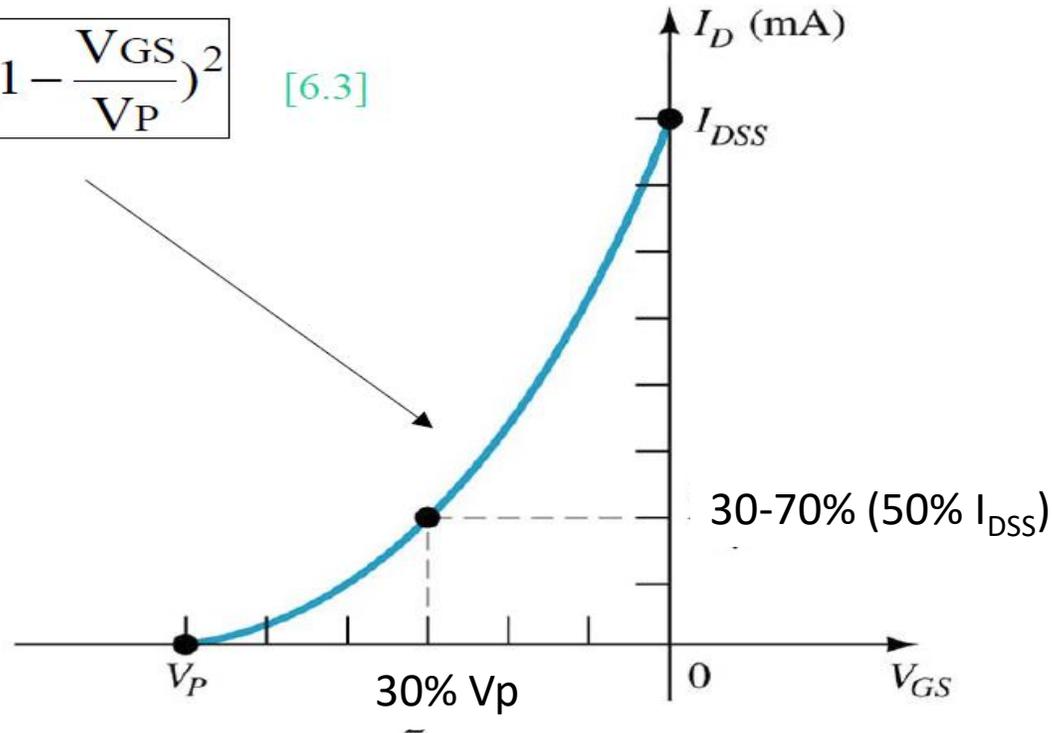
$$V_{DS} = V_{DD} - I_D (R_S + R_D) \quad [6.11]$$

$$V_S = I_D R_S \quad [6.12]$$

$$V_D = V_{DS} + V_S = V_{DD} - V_{RD} \quad [6.14]$$

# Regra prática

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2 \quad [6.3]$$



Com isto é facilmente definido o  $R_S$   
JFET produzem ganhos baixos  $\sim 5$

$$g_{m0} = 2 \frac{I_{DSS}}{V_P}$$

$$g_m = g_{m0} \left(1 - \frac{V_{GSQ}}{V_P}\right) \quad \text{No ponto quiescente}$$

$$A_v = \frac{-g_m (R_D \parallel R_L)}{1 + g_m R_S}$$