

# Device Modeling Report

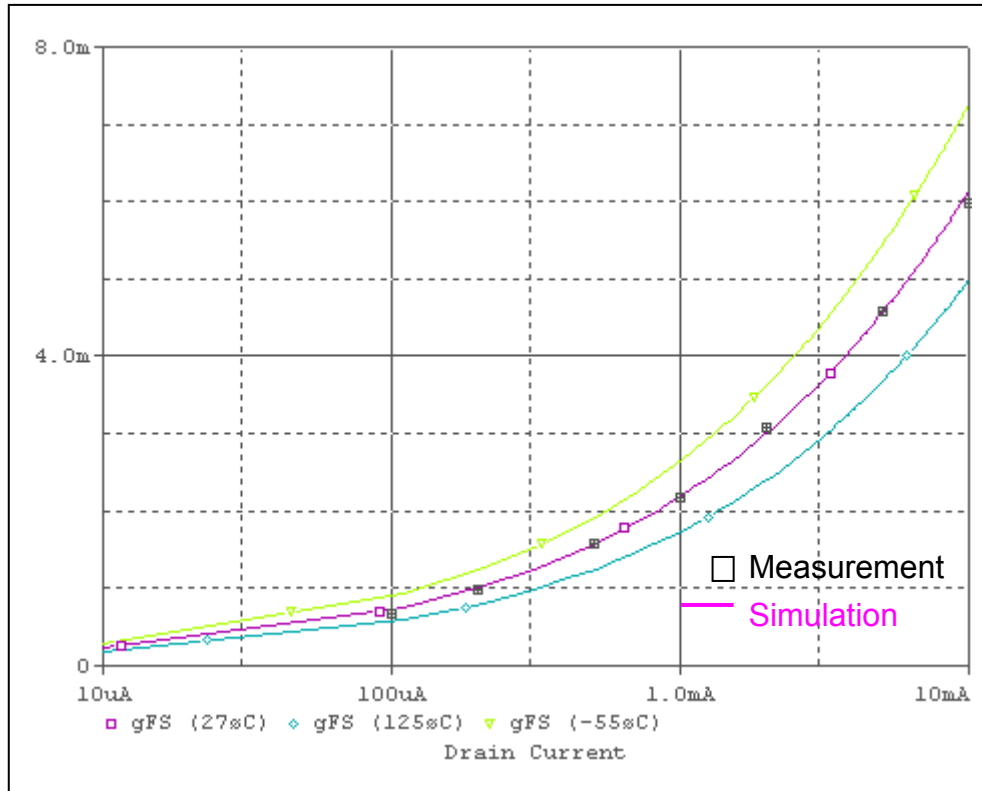
COMPONENTS: Junction Field Effect Transistor (JFET)  
PART NUMBER: 2N5485  
MANUFACTURER: Vishay Siliconix



**Bee Technologies Inc.**

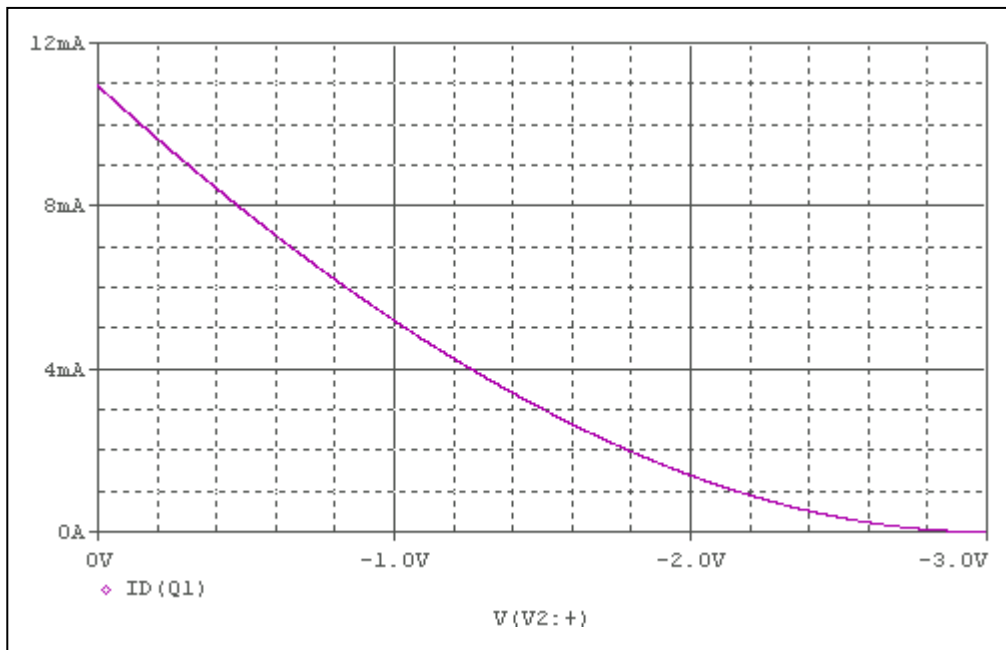
PSpice model parameter	Model description
BETA	Transconductance coefficient
RD	Drain resistance
RS	Source resistance
BETATCE	Temperature coefficient for BETA
LAMBDA	Channel-length modulation
VTO	Threshold voltage
VTOTC	Temperature coefficient for VTO
CGD	Zero-bias gate-drain capacitance
M	Junction grading factor
PB	Built-in potential
FC	Forward-bias coefficient
CGS	Zero-bias gate-source capacitance
ISR	Recombination current saturation value
NR	Recombination current emission coefficient
IS	Junction saturation current
N	Junction emission coefficient
XTI	IS temperature coefficient
ALPHA	Impact ionization coefficient
VK	Ionization "knee" voltage
KF	Flicker noise coefficient
AF	Flicker noise exponent

## Transconductance Characteristic

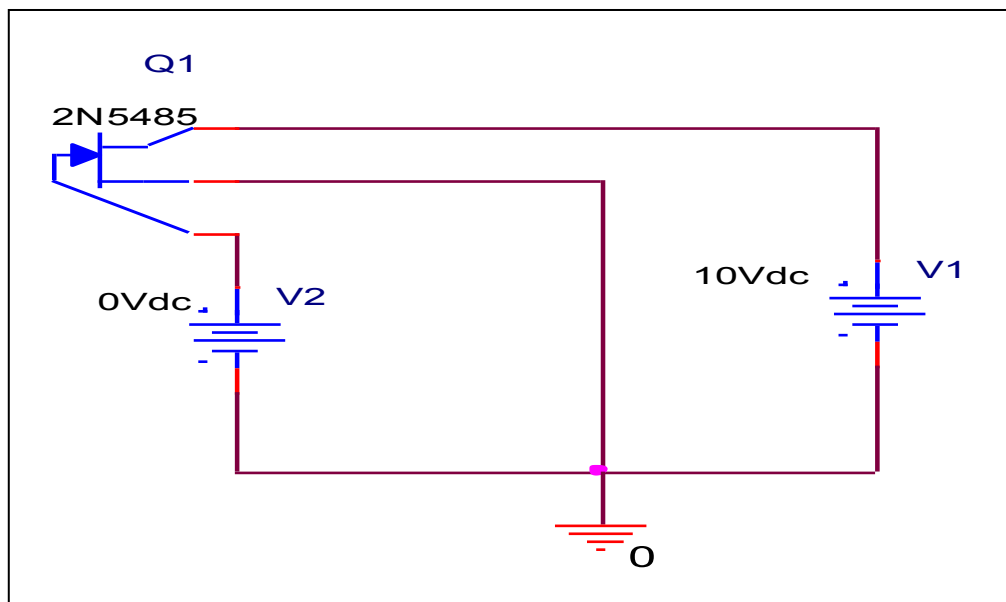


## Transfer Curve Characteristic

### Circuit Simulation Result

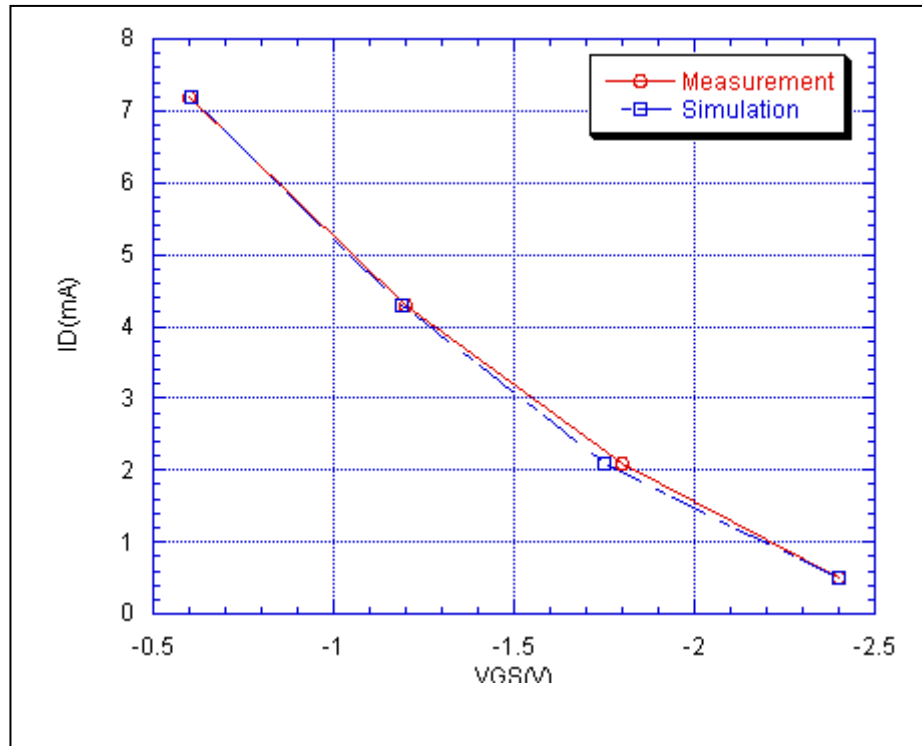


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

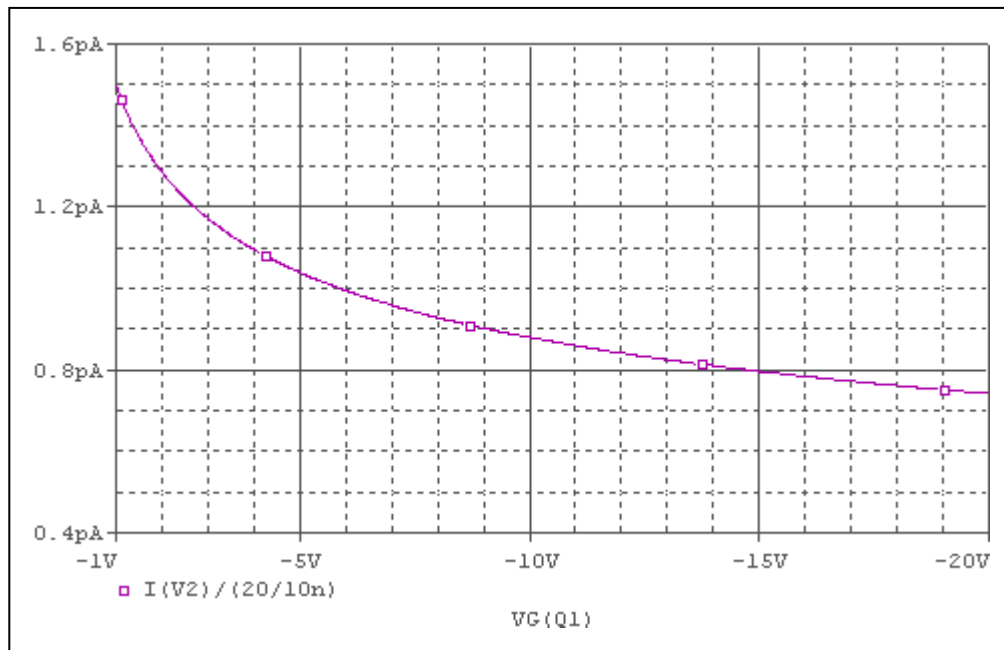


### Simulation Result

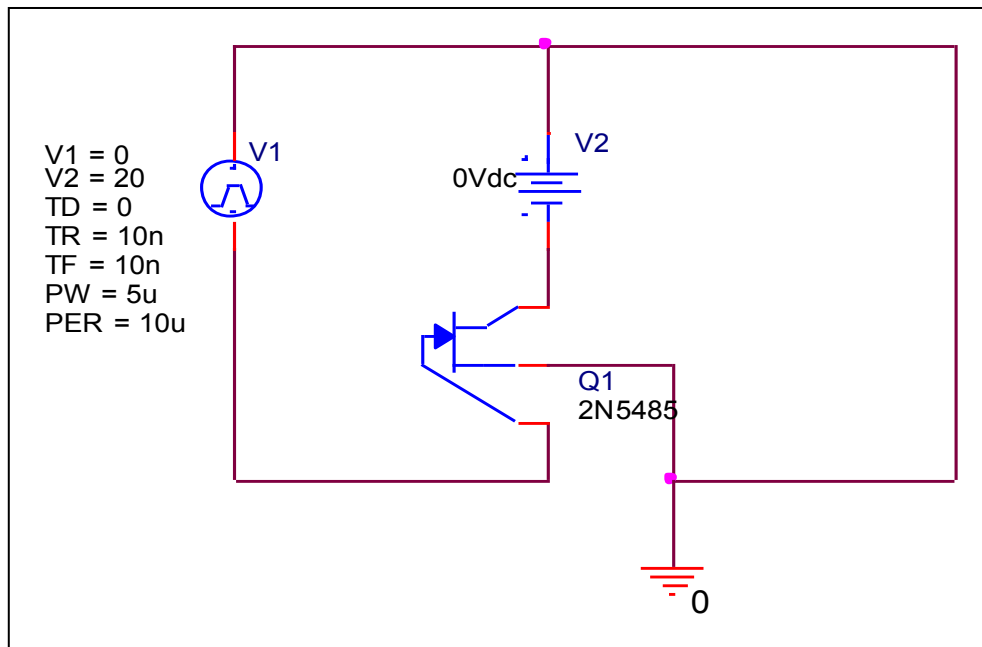
ID (mA)	VGS (V)		Error (%)
	Measurement	Simulation	
7.2	-0.6	-0.608	1.333
4.3	-1.2	-1.19	-0.833
2.1	-1.8	-1.75	-2.777
0.5	-2.4	-2.4	0

# Reverse Transfer Capacitance

## Circuit Simulation Result

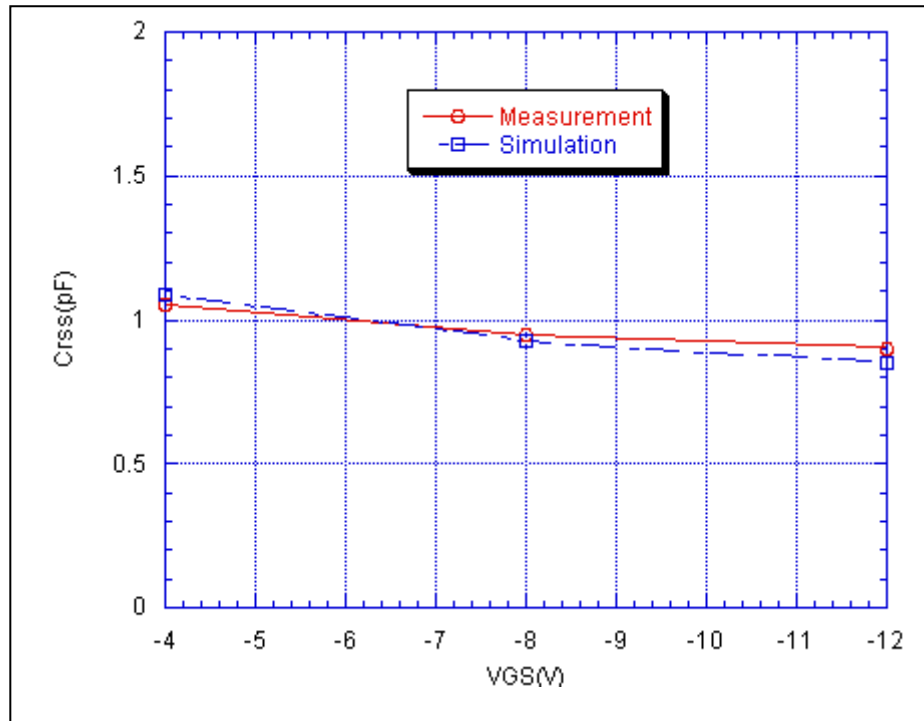


## Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

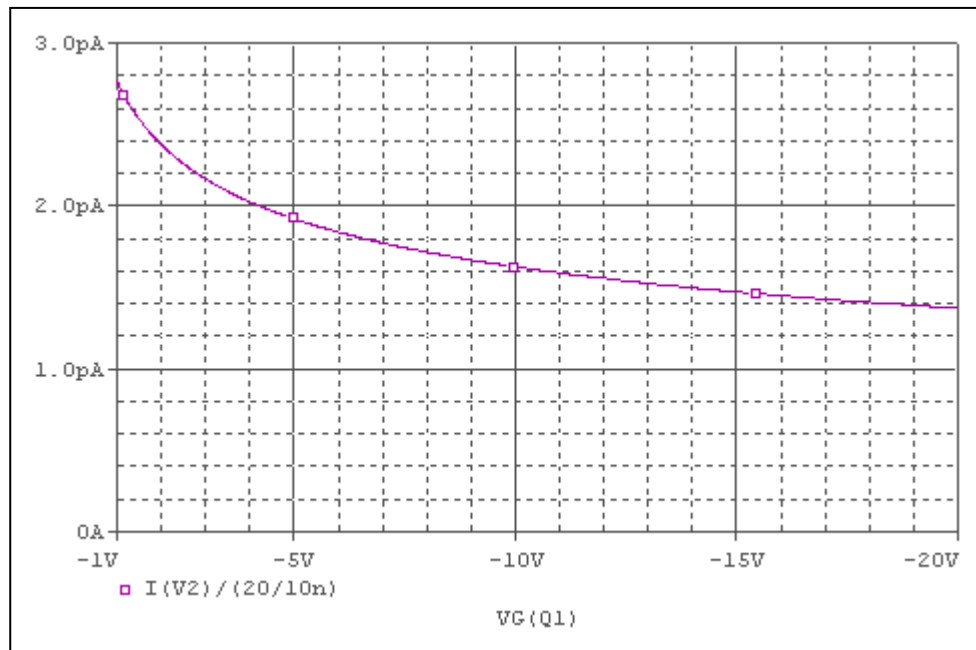


### Simulation Result

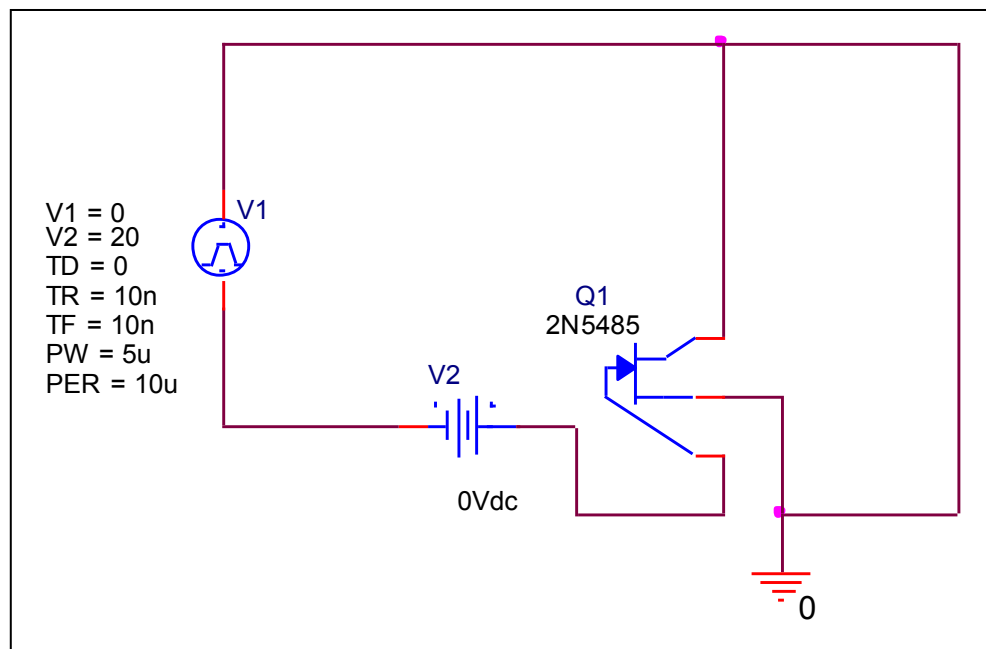
VGS (V)	Crss (pF)		Error(%)
	Measurement	Simulation	
-4	1.05	1.09	3.809
-8	0.95	0.93	-2.105
-12	0.9	0.87	-3.333

# Input Capacitance

## Circuit Simulation Result



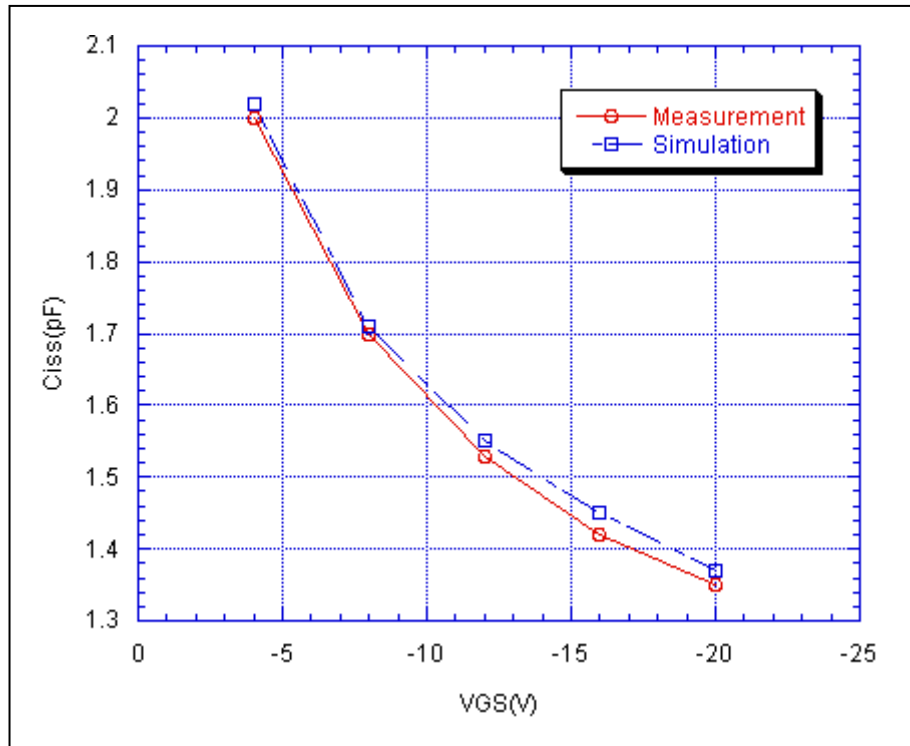
## Evaluation Circuit





## Comparison Graph

### Circuit Simulation Result

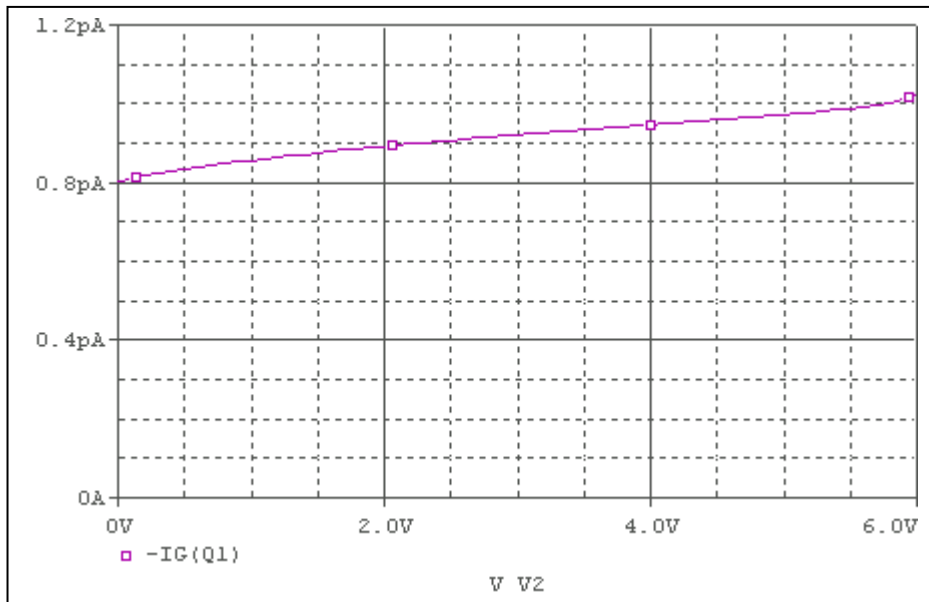


### Simulation Result

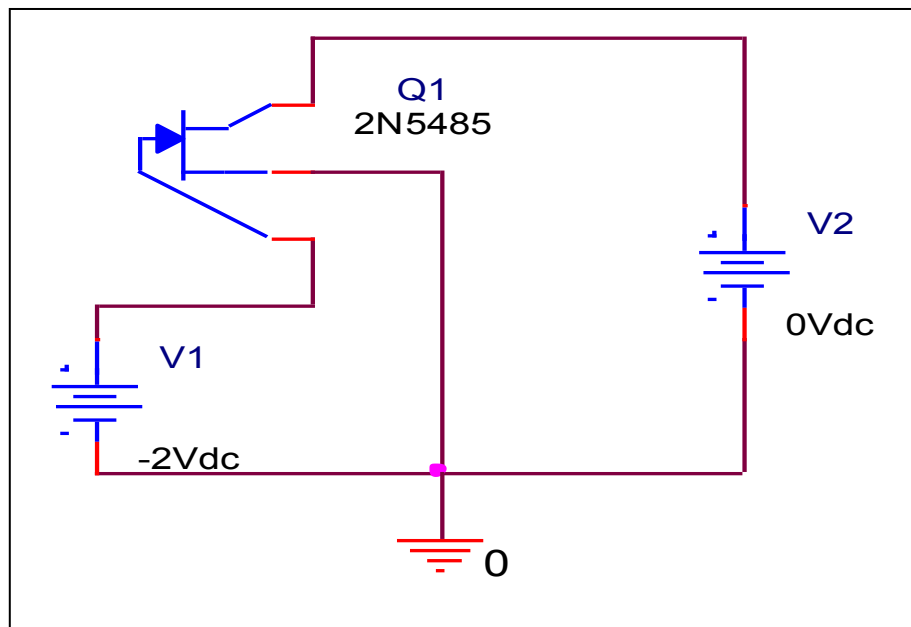
VGS (V)	Ciss (pF)		Error(%)
	Measurement	Simulation	
-4	2	2.02	1
-8	1.7	1.71	0.588
-12	1.53	1.55	1.307
-16	1.42	1.45	2.112
-20	1.35	1.37	1.481

## Passive Gate Leakage

### Circuit Simulation Result

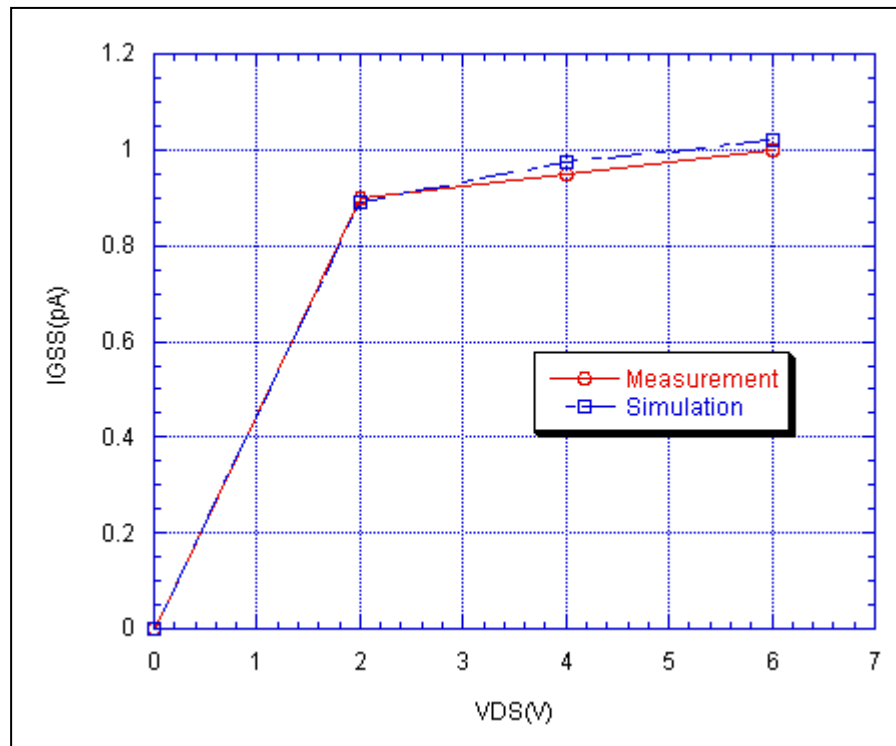


### Evaluation Circuit



## Comparison Graph

### Circuit Simulation Result

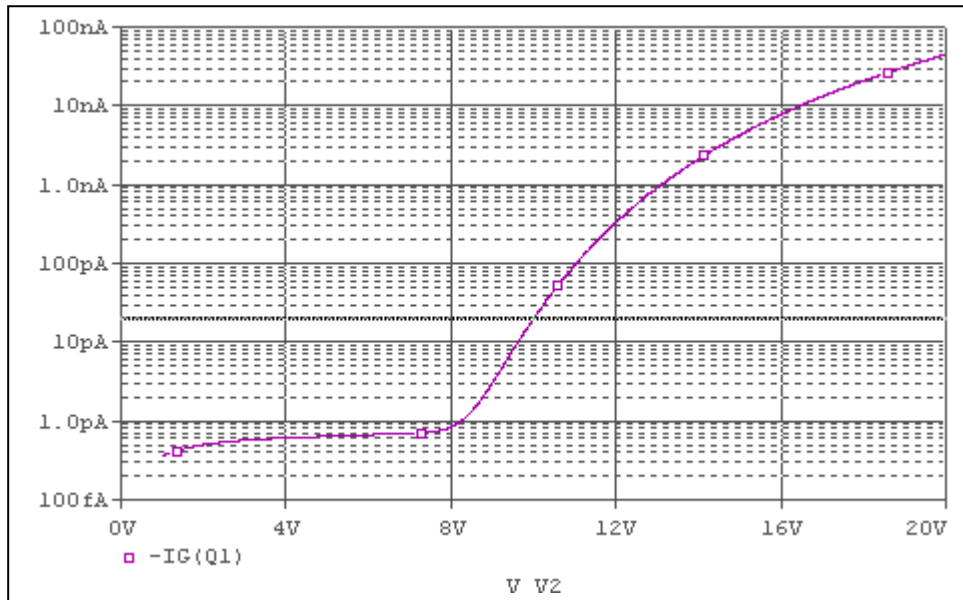


### Simulation Result

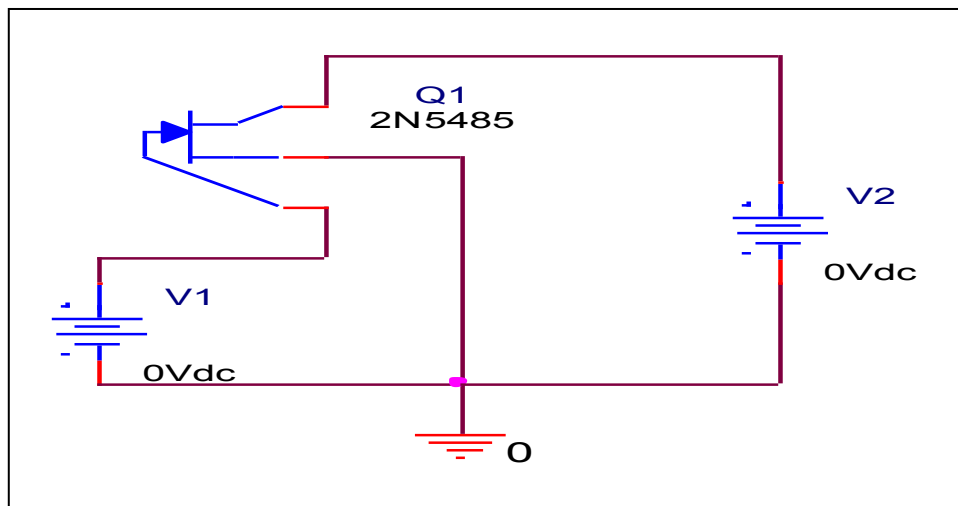
VDS (V)	I <sub>gss</sub> (pA)		Error(%)
	Measurement	Simulation	
2	0.9	0.892	-0.888
4	0.95	0.974	2.526
6	1	1.022	2.2

# Active Gate Leakage

## Circuit Simulation Result



## Evaluation Circuit



VDG=10V, ID=1mA (Test Conditions)	IG (pA)		Error(%)
	Measurement	Simulation	
Gate Operating Current(IG)	-20	-19.4	-3