

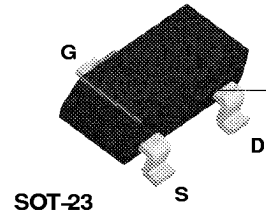
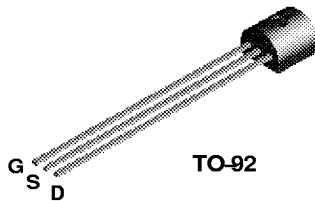
N

Discrete **POWER & Signal**
Technologies

J105 / J106 / J107 / NDSJ105

J105
J106
J107

NDSJ105



N-Channel Switch

This device is designed for analog or digital switching applications where very low On Resistance is mandatory. Sourced from Process 59.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{DG}	Drain-Gate Voltage	25	V
V _{GS}	Gate-Source Voltage	-25	V
I _{GF}	Forward Gate Current	10	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		J105 / J106 / J107	
P _D	Total Device Dissipation Derate above 25°C	350	mW
		2.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	357	°C/W

N-Channel Switch
(continued)

Electrical Characteristics

TA = 25 °C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units	
OFF CHARACTERISTICS						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -10 \mu A, V_{DS} = 0$	-25		V	
I_{GSS}	Gate Reverse Current	$V_{GS} = -15 V, V_{DS} = 0$ $V_{GS} = -15 V, V_{DS} = 0, T_A = 100^\circ C$		-3.0 -200	nA nA	
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15 V, I_D = 10 nA$	J105 J106 J107	-4.5 -2.0 -0.5	-10 -6.0 -4.5	V V V

ON CHARACTERISTICS

I_{DSS}	Zero-Gate Voltage Drain Current*	$V_{DS} = 15 V, I_{GS} = 0$	J105 J106 J107	500 200 100		mA mA mA
$r_{DS(on)}$	Drain-Source On Resistance	$V_{DS} \leq 0.1 V, V_{GS} = 0$	J105 J106 J107		3.0 6.0 8.0	Ω Ω Ω

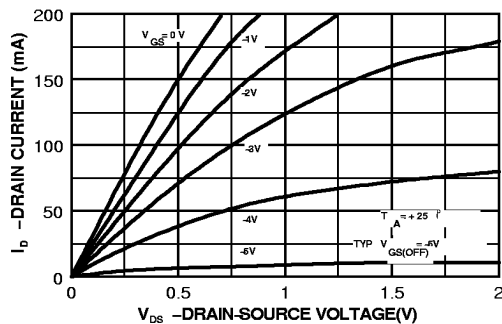
SMALL SIGNAL CHARACTERISTICS

$C_{dg(on)}$ $C_{sg(on)}$	Drain Gate & Source Gate On Capacitance	$V_{DS} = 0, V_{GS} = 10 V, f = 1.0 MHz$		160	pF
$C_{dg(off)}$	Drain-Gate Off Capacitance	$V_{DS} = 0, V_{GS} = 10 V, f = 1.0 MHz$		35	pF
$C_{sg(off)}$	Source-Gate Off Capacitance	$V_{DS} = 0, V_{GS} = 10 V, f = 1.0 MHz$		35	pF

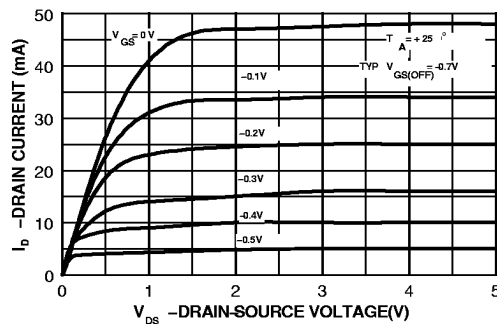
*Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$

Typical Characteristics

Common Drain-Source Characteristics

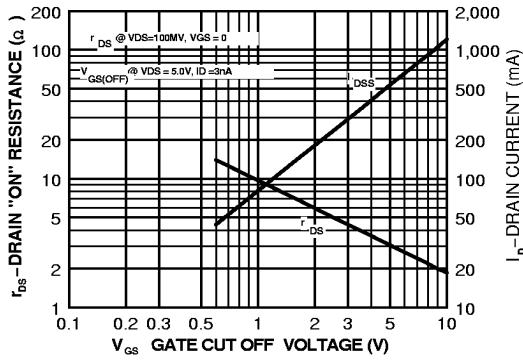


Common Drain-Source Characteristics

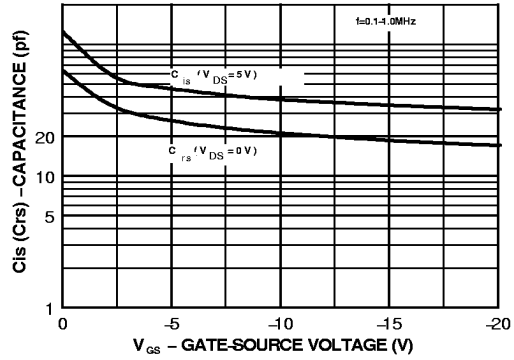


Typical Characteristics (continued)

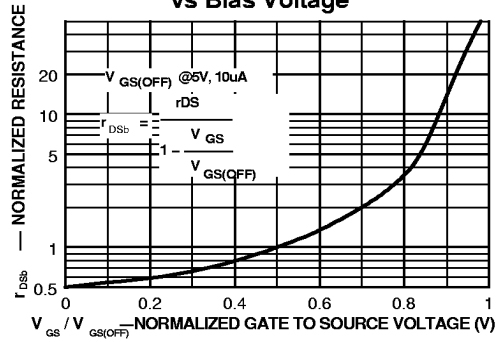
Parameter Interactions



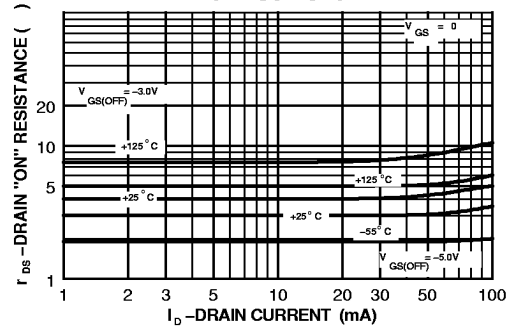
Capacitance vs Voltage



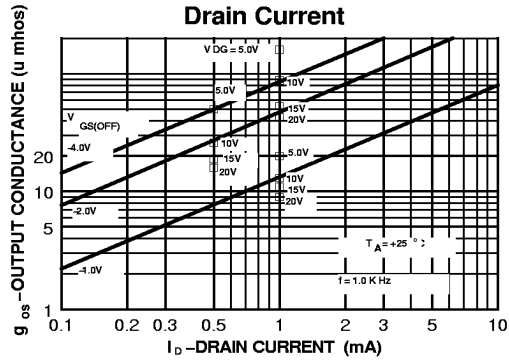
Normalized Drain Resistance vs Bias Voltage



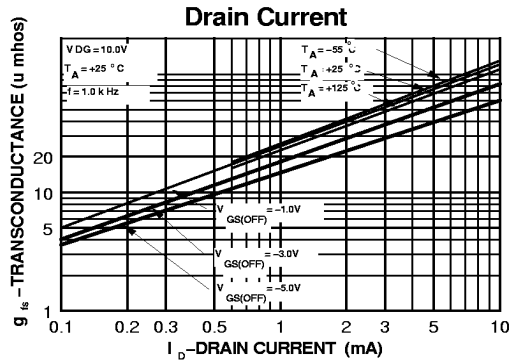
On Resistance vs Drain Current



Output Conductance vs Drain Current

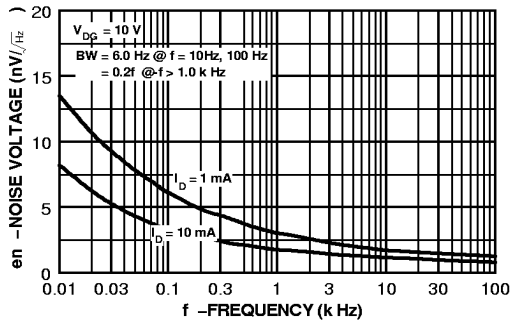


Transconductance vs Drain Current



Typical Characteristics (continued)

Noise Voltage vs Frequency



Power Dissipation vs Ambient Temperature

