N-Channel JFET

2N4391
2N4392
2N4393

SOLID STATE INC.
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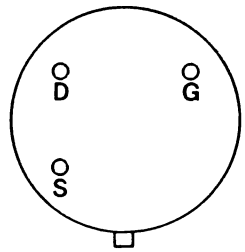
BLOOMFIELD, NEW JERSEY 07003 www.solidstateinc.com

Common Uses
Analog switches
Commutators
Choppers

Features
Low on resistance
High off resistance
High isolation from drives

Absolute Maximum Ratings (25 °C)

Gate-source	−40 V
Gate-drain	−40 V
Drain-source	±40 V
Gate current	10 mA
Device dissipation (at or below 25 °C free air temp.)	300 mW
Storage range	−65° to +200 °C



TO18
Bottom View

Electrical Characteristics (25 °C unless specified)

DC

	Characteristic	Symbol	Test Conditions		2N4391 Min	2N4391 Max	2N4392 Min	2N4392 Max	2N4393 Min	2N4393 Max	Units
1.	Gate reverse current	I_{GSS}	V_{DS} = 0, V_{GS} = −20 V			−0.1		−0.1		−0.1	nA
2.				T_A = 150 °C		−0.2		−0.2		−0.2	μA
3.	Gate-channel breakdown voltage	BV_{GSS}	V_{DS} = 0, I_G = −1 μA		−40		−40		−40		V
4.	Gate-source cut off voltage	$V_{GS\ (off)}$	V_{DS} = 20 V, I_D = 1 nA		−4	−10	−2	−5	−0.5	−3	
5.	Drain-source on voltage	$V_{DS\ (on)}$	V_{DS} = V	I_D = 3 mA						0.4	
6.				I_D = 6 mA				0.4			
7.				I_D = 12 mA		0.4					
8.	Saturation drain current (Note 1)	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0		50	150	25	75	5	30	mA
9.	Drain cut off current	$I_{D\ (off)}$	V_{DS} = 20 V, V_{GS} = −12 V (2N4391)			0.1		0.1		0.1	nA
10.			V_{GS} = −7 V (2N4392) V_{GS} = −5 V (2N4393)	T_A = 150°		0.2		0.2		0.2	μA
11.	Drain source on resistance	$R_{DS\ (on)}$	V_{GS} = 0, I_D = 1 mA			30		60		100	ohms
12.	Gate source forward voltage	$V_{GS\ (f)}$	V_{DS} = 0, I_G = 1 mA			1		1		1	V

AC

13.	Input capacitance	C_{iss}	V_{DS} = 20 V, V_{GS} = 0	f = 1 MHz		14		14		14	pF
14.	Feedback capacitance	C_{rss}	V_{DS} = 0 V_{GS} = −12 V (2N4391) V_{GS} = −7 V (2N4392) V_{GS} = −5 V (2N4393)			3.5		3.5		3.5	
15.	Drain source on resistance	$r_{ds\ (on)}$	V_{DS} = 0, I_D = 0	f = 1 kHz		30		60		100	ohms

Switching

				V_{DD} = 10 V, $V_{GS\ (on)}$ = 0									
				$I_{D\ (on)}$	$V_{GS\ (off)}$	R_L							
16.	Turn-on delay time	$t_{d\ (on)}$						15		15		15	ns
17.	Rise time	t_r	2N4391	12 mA	−12 V	800 Ω		5		5		5	
18.	Turn-off delay time	$t_{d\ (off)}$	2N4392	6 mA	−7 V	1.6 KΩ		20		35		50	
19.	Fall time	t_f	2N4393	3 mA	−5	3.2 KΩ		15		20		30	

Notes: 1. Pulse test required, pulse width = 300μs, duty cycle ≤3%.

N-Channel JFET

FOR

Analog switches
Chopper
Commutators

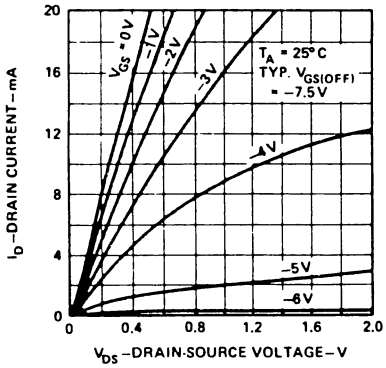
PACKAGES:

TO18

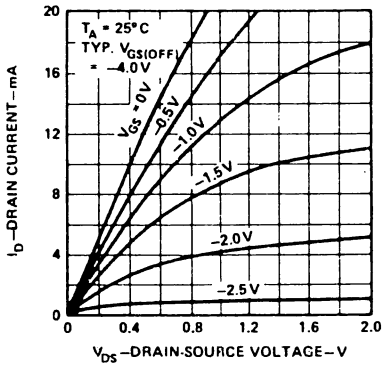
2N4391-3

Typical Characteristics (25°C unless otherwise noted)

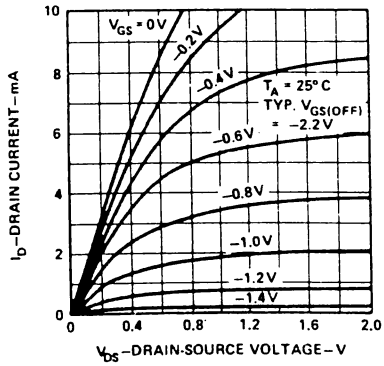
COMMON DRAIN - SOURCE CHARACTERISTICS



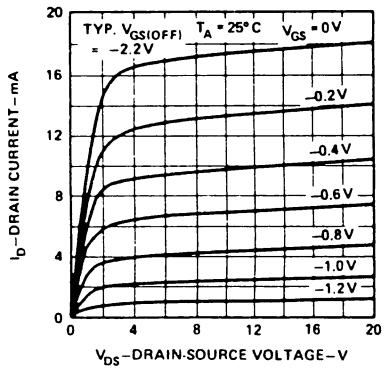
COMMON DRAIN - SOURCE CHARACTERISTICS



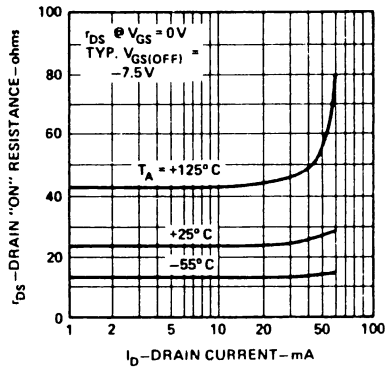
COMMON DRAIN - SOURCE CHARACTERISTICS



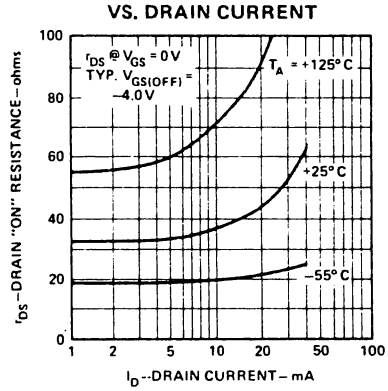
COMMON DRAIN - SOURCE CHARACTERISTICS



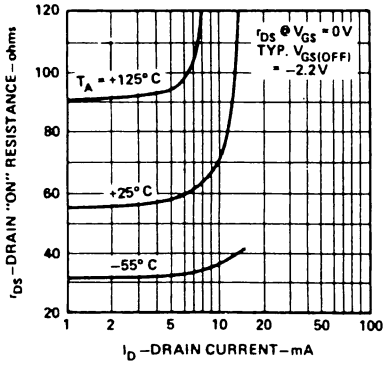
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



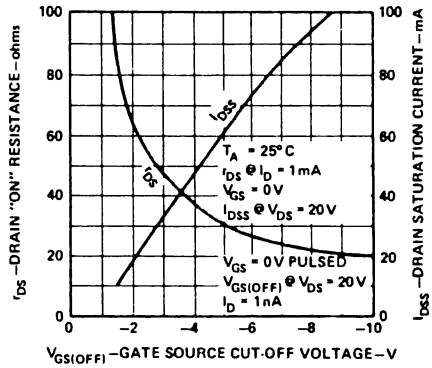
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



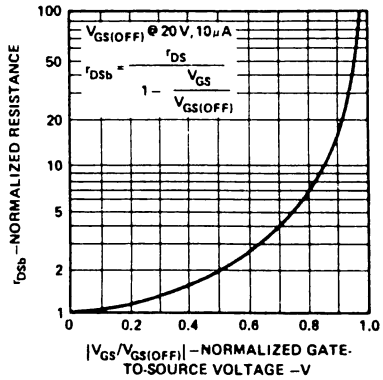
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



"ON" RESISTANCE/DRAIN CURRENT VS. CUT-OFF VOLTAGE

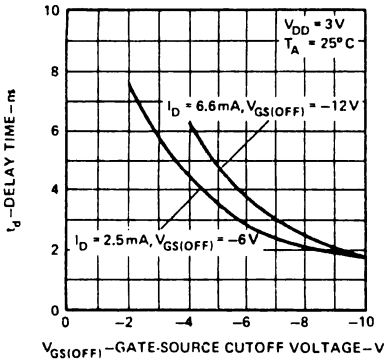


NORMALIZED DRAIN - SOURCE RESISTANCE VS. GATE - SOURCE VOLTAGE

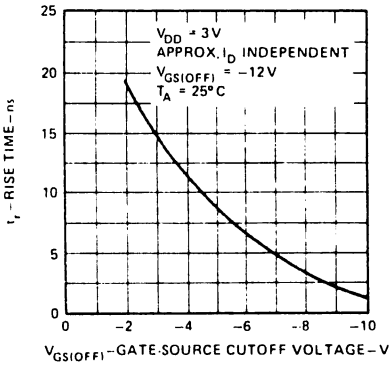


Typical Characteristics (cont.)

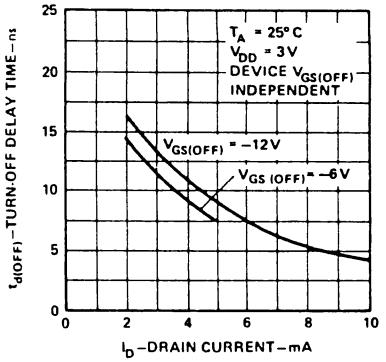
SWITCHING DELAY TIME VS. GATE - SOURCE CUT-OFF VOLTAGE



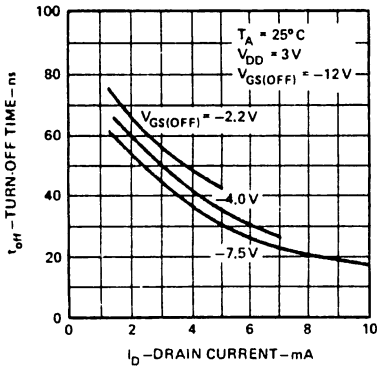
SWITCHING RISE TIME VS. GATE - SOURCE CUT-OFF VOLTAGE



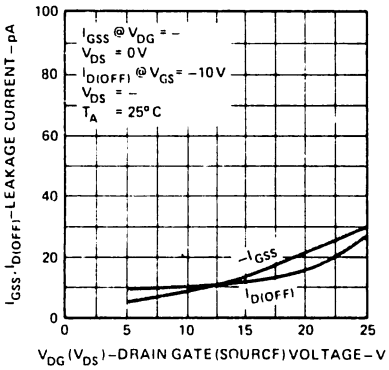
SWITCHING TURN-OFF DELAY TIME VS. DRAIN CURRENT



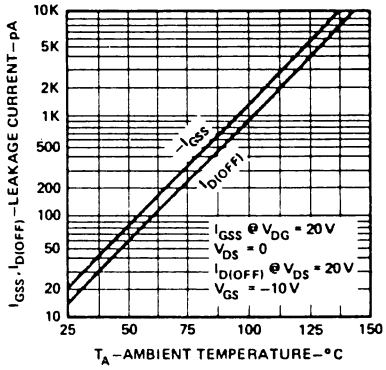
SWITCHING TURN-OFF TIME VS. DRAIN CURRENT



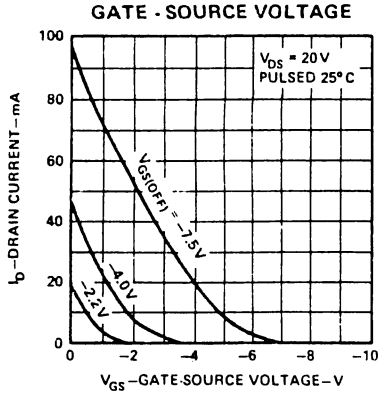
GATE REVERSE/DRAIN CUT-OFF CURRENT VS. DRAIN - SOURCE VOLTAGE



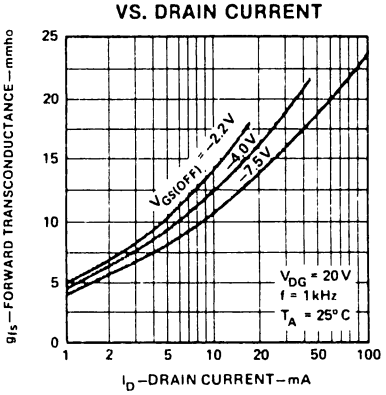
LEAKAGE CURRENT VS. AMBIENT TEMPERATURE



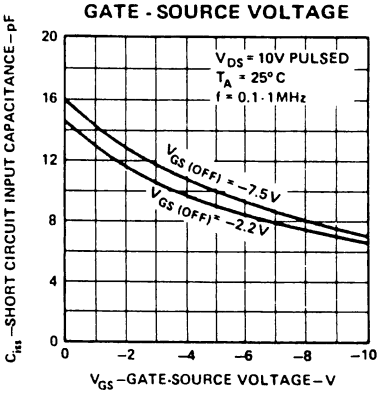
DRAIN CURRENT VS. GATE - SOURCE VOLTAGE



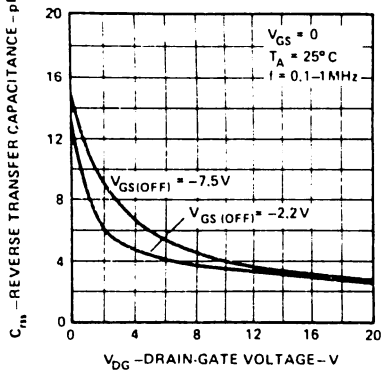
FORWARD TRANSCONDUCTANCE VS. DRAIN CURRENT



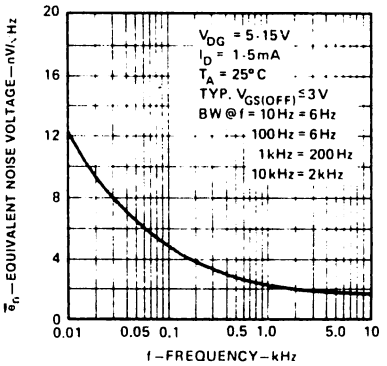
INPUT CAPACITANCE VS. GATE - SOURCE VOLTAGE



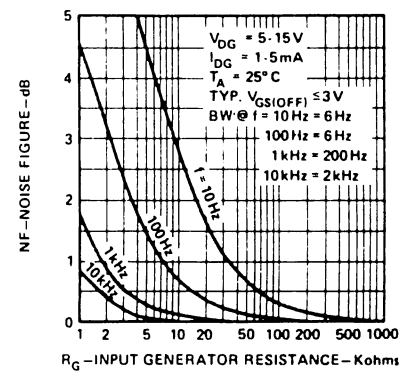
REVERSE TRANSFER CAPACITANCE VS. DRAIN - GATE VOLTAGE



EQUIVALENT NOISE VOLTAGE VS. FREQUENCY



NOISE FIGURE VS. INPUT GENERATOR RESISTANCE



Packaging Information

TO-18