

## N-Channel JFETs

<b>PRODUCT SUMMARY</b>				
Part Number	$V_{GS(off)}$ (V)	$r_{DS(on)}$ Max ( $\Omega$ )	$I_{D(off)}$ Typ ( $\mu A$ )	$t_{ON}$ Typ (ns)
2N5432	-4 to -10	5	10	2.5
2N5433	-3 to -9	7	10	2.5
2N5434	-1 to -4	10	10	2.5

### FEATURES

- Low On-Resistance: 2N5432 <5  $\Omega$
- Fast Switching— $t_{ON}$ : 2.5 ns
- High Off-Isolation— $I_{D(off)}$ : 10  $\mu A$
- Low Capacitance: 11 pF
- Low Insertion Loss

### BENEFITS

- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible "Off-Error," Excellent Accuracy
- Good Frequency Response
- Eliminates Additional Buffering

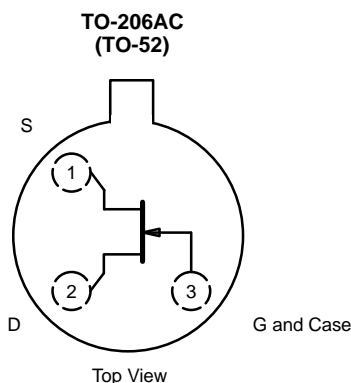
### APPLICATIONS

- Analog Switches
- Choppers
- Sample-and-Hold
- Normally "On" Switches
- Current Limiters

### DESCRIPTION

The 2N5432/5433/5434 are suitable for high-performance analog switching and amplifier applications. Breakdown voltage characteristics, low on-resistance, and very fast switching make these devices ideal for a wide range of applications.

The hermetically-sealed TO-206AC (TO-52) package is suitable for processing per MIL-S-19500 (see Military Information). For similar products in TO-236 (SOT-23) or TO-226AA (TO-92) packages, see the J/SST108 series data sheet.



### ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage ..... -25 V  
 Gate Current ..... 100 mA  
 Lead Temperature ( $1/16$ " from case for 10 sec.) ..... 300°C  
 Storage Temperature ..... -65 to 200°C

Operating Junction Temperature ..... -55 to 150°C  
 Power Dissipation<sup>a</sup> ..... 300 mW

Notes  
 a. Derate 2.4 mW/°C above 25°C



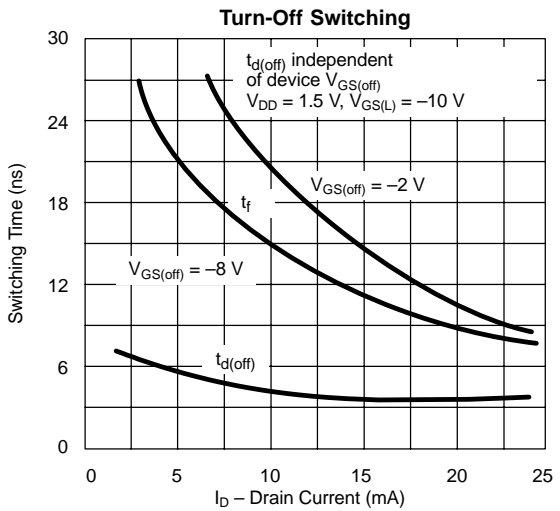
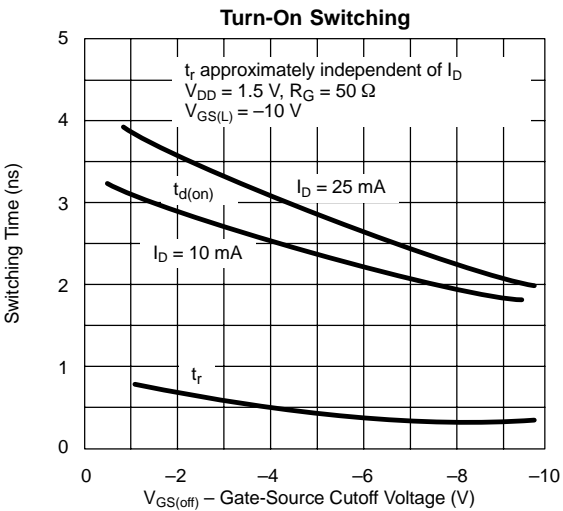
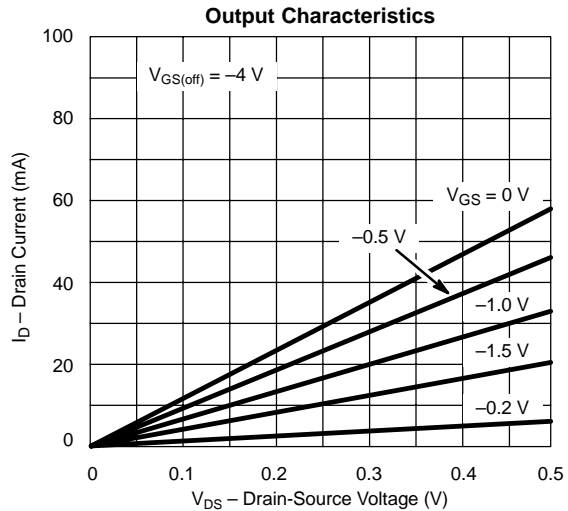
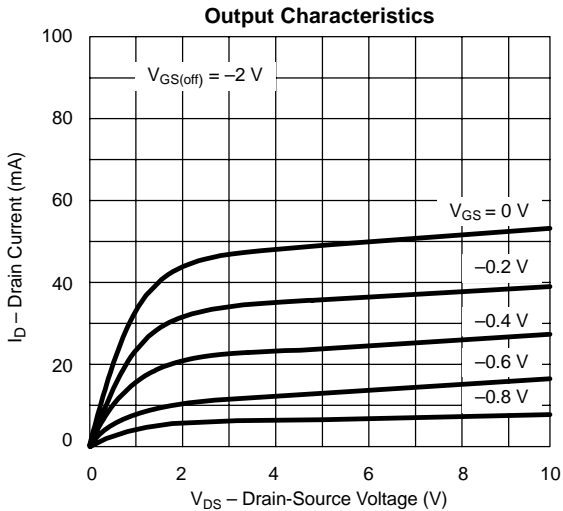
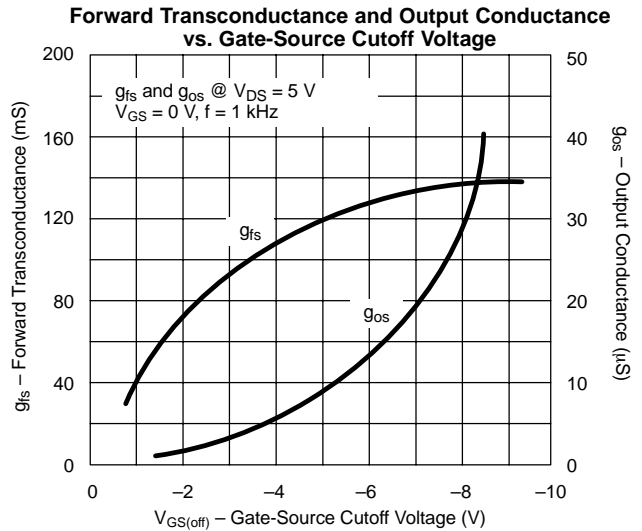
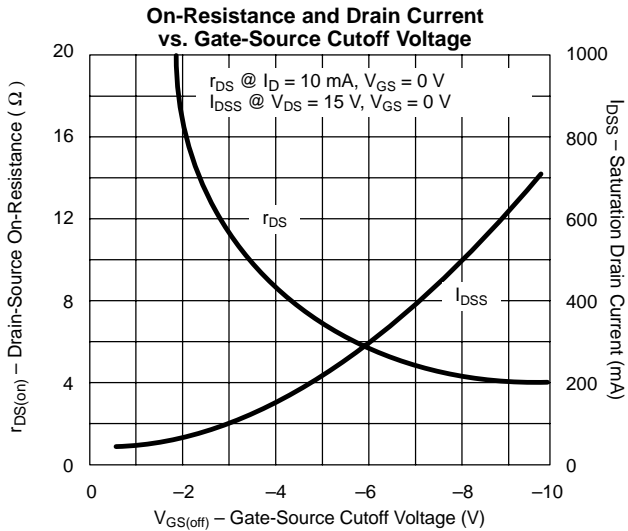
SPECIFICATIONS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)										
Parameter	Symbol	Test Conditions	Typ <sup>a</sup>	Limits						Unit
				2N5432		2N5433		2N5434		
				Min	Max	Min	Max	Min	Max	
<b>Static</b>										
Gate-Source Breakdown Voltage	V <sub>(BR)GSS</sub>	I <sub>G</sub> = -1 μA, V <sub>DS</sub> = 0 V	-32	-25		-25		-25		V
Gate-Source Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 3 nA		-4	-10	-3	-9	-1	-4	
Saturation Drain Current <sup>b</sup>	I <sub>DSS</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V		150		100		30		mA
Gate Reverse Current	I <sub>GSS</sub>	V <sub>GS</sub> = -15 V, V <sub>DS</sub> = 0 V T <sub>A</sub> = 150 °C	-5		-200		-200		-200	pA
			-10		-200		-200		-200	nA
Gate Operating Current <sup>c</sup>	I <sub>G</sub>	V <sub>DG</sub> = 10 V, I <sub>D</sub> = 10 mA	-10							pA
Drain Cutoff Current	I <sub>D(off)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = -10 V T <sub>A</sub> = 150 °C	10		200		200		200	
			20		200		200		200	nA
Drain-Source On-Voltage	V <sub>DS(on)</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 10 mA			50		70		100	mV
Drain-Source On-Resistance	r <sub>DS(on)</sub>			2	5		7		10	Ω
Gate-Source Forward Voltage <sup>c</sup>	V <sub>GS(F)</sub>	I <sub>G</sub> = 1 mA, V <sub>DS</sub> = 0 V	0.7							V
<b>Dynamic</b>										
Common-Source Forward Transconductance <sup>c</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 10 mA f = 1 kHz	17							mS
			600							μS
Common-Source Output Conductance <sup>c</sup>	g <sub>os</sub>									
Drain-Source On-Resistance	r <sub>ds(on)</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 0 mA f = 1 kHz			5		7		10	Ω
Common-Source Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = -10 V f = 1 MHz	20		30		30		30	pF
Common-Source Reverse Transfer Capacitance	C <sub>rss</sub>		11		15		15		15	
Equivalent Input Noise Voltage <sup>c</sup>	e <sub>n</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 10 mA f = 1 kHz	3.5							nV/ √Hz
<b>Switching</b>										
Turn-On Time <sup>b</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 1.5 V, V <sub>GS(H)</sub> = 0 V See Switching Circuit	2		4		4		4	ns
	t <sub>r</sub>		0.5		1		1		1	
Turn-Off Time <sup>b</sup>	t <sub>d(off)</sub>		4		6		6		6	
	t <sub>f</sub>		18		30		30		30	

Notes  
 a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.  
 b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.  
 c. This parameter not registered with JEDEC.

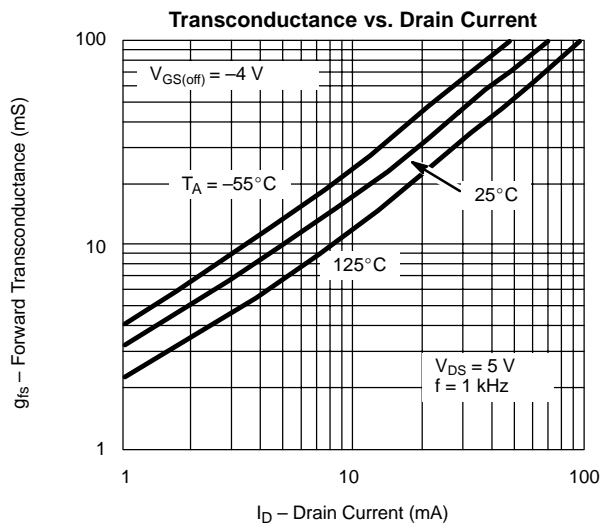
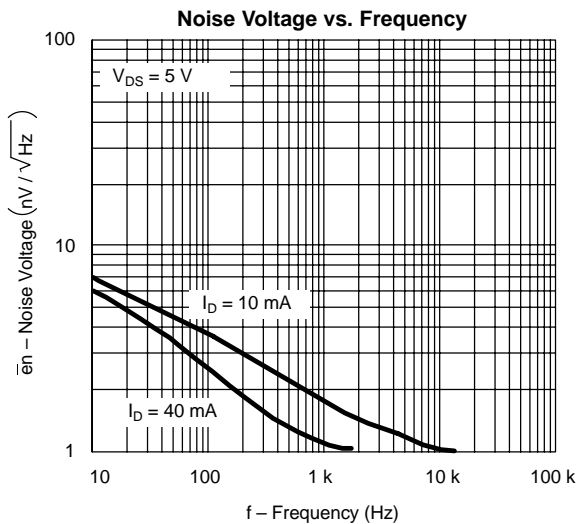
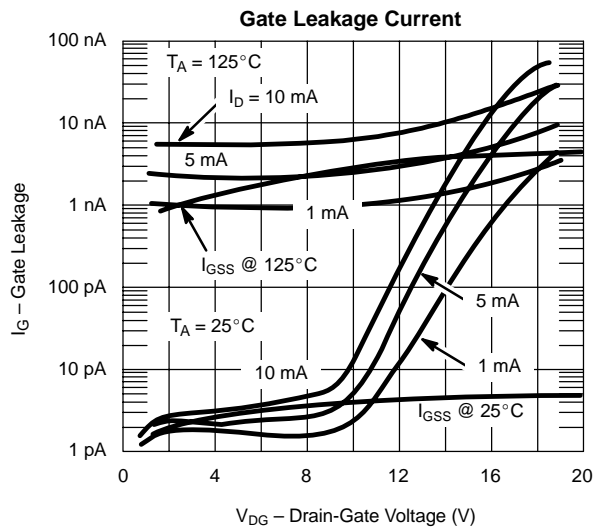
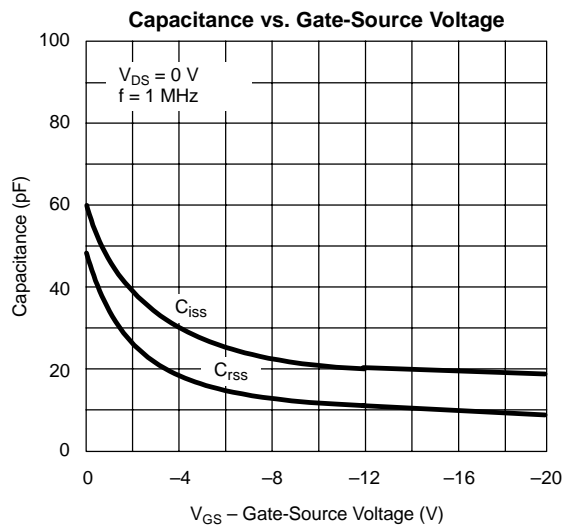
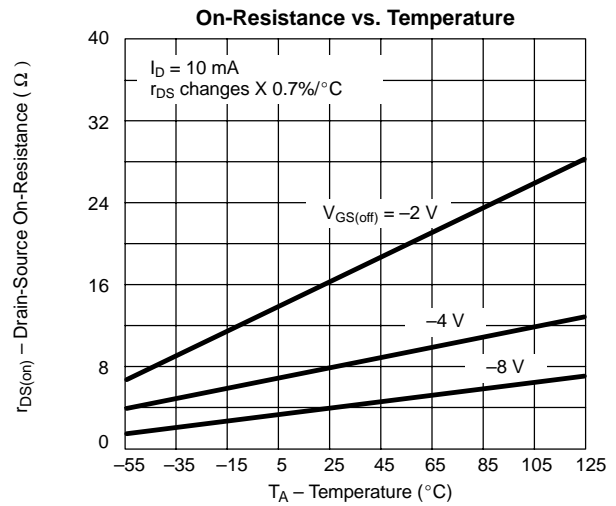
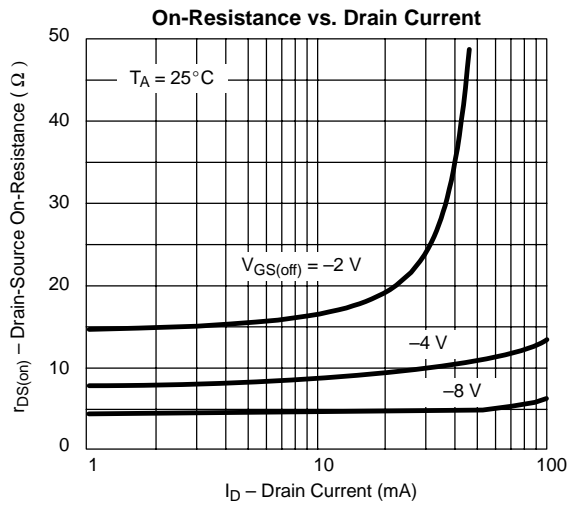
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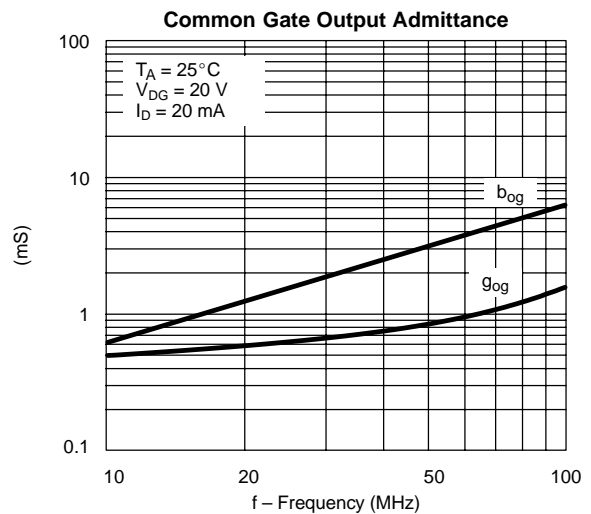
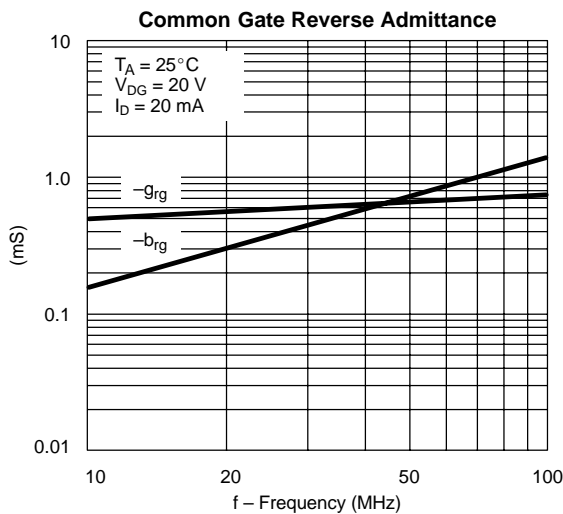
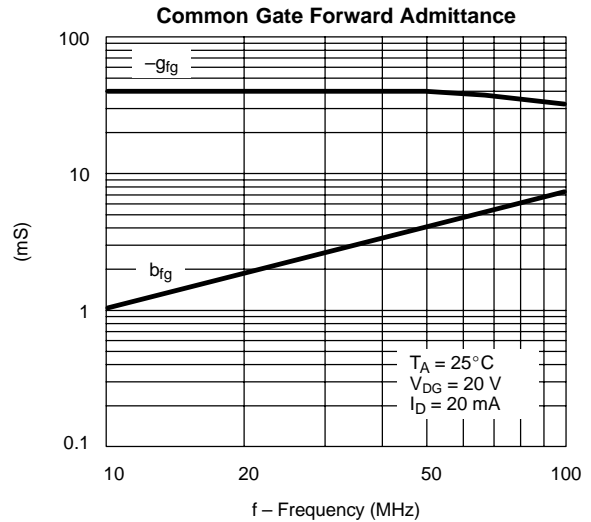
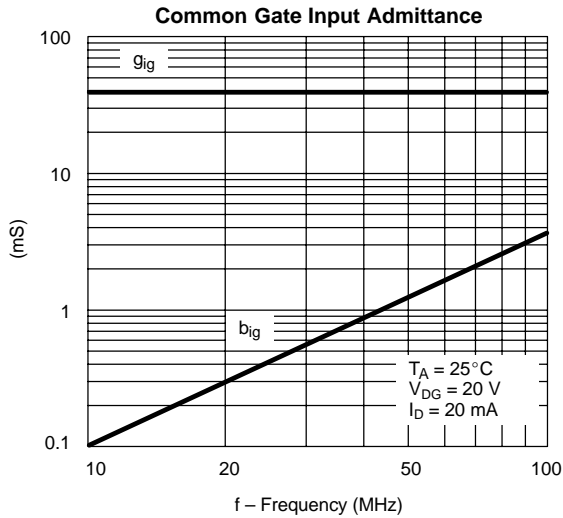
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



<b>SWITCHING TIME TEST CIRCUIT</b>			
	2N5432	2N5433	2N5434
$V_{GS(L)}$	-12 V	-12 V	-12 V
$R_L^*$	145 $\Omega$	143 $\Omega$	140 $\Omega$
$I_{D(on)}$	10 mA	10 mA	10 mA

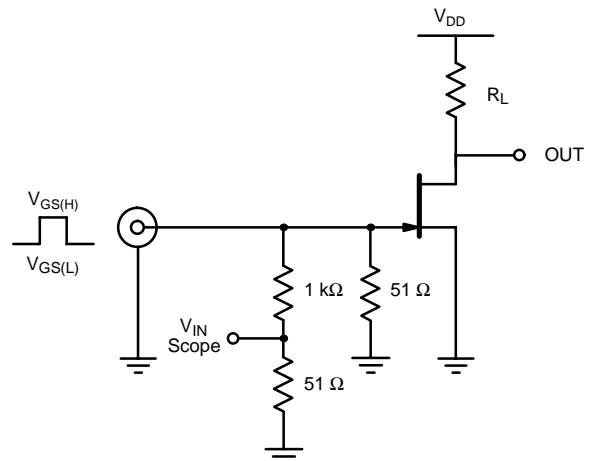
\*Non-inductive

**INPUT PULSE**

Rise Time < 1 ns  
 Fall Time < 1 ns  
 Pulse Width 100 ns  
 PRF 1 MHz

**SAMPLING SCOPE**

Rise Time 0.4 ns  
 Input Resistance 10 M $\Omega$   
 Input Capacitance 1.5 pF





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