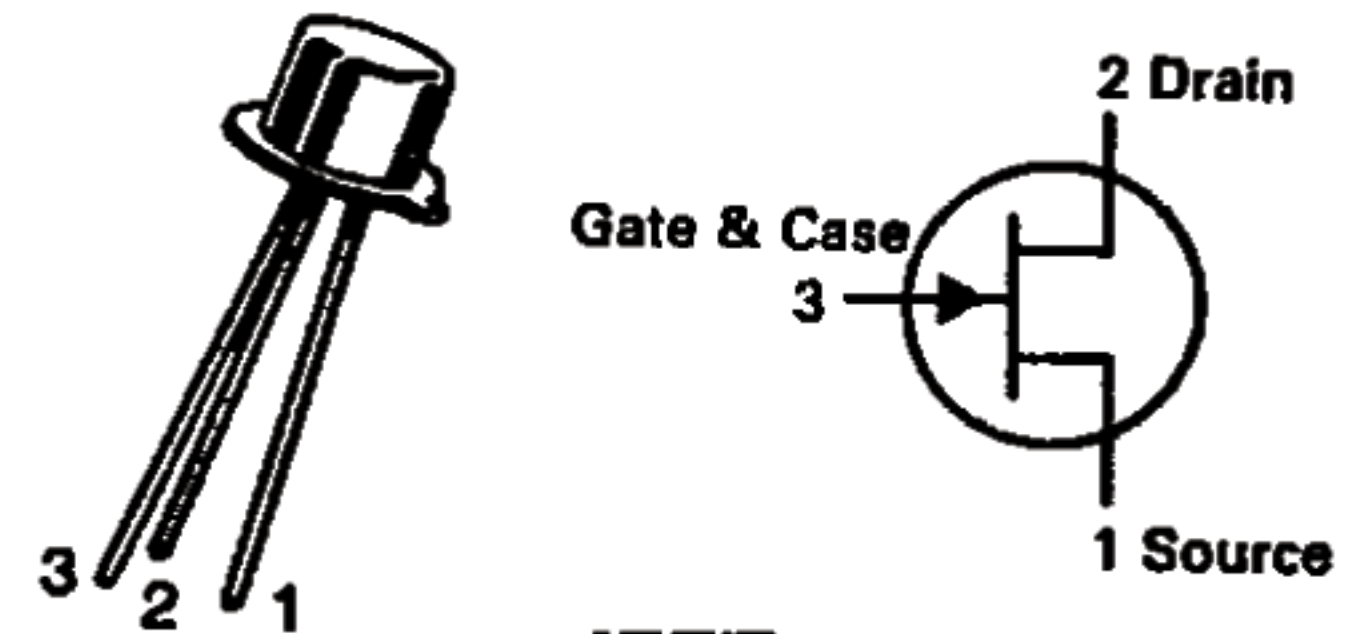


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2N4856, A thru 2N4861, A

2N4856, 2N4857, 2N4858
 JAN, JTX, JTXV AVAILABLE

CASE 22-03, STYLE 4
 TO-18 (TO-206AA)



**JFET
SWITCHING**

N-CHANNEL — DEPLETION

MAXIMUM RATINGS

Rating	Symbol	2N4856,A 2N4857,A 2N4858,A	2N4859,A 2N4860,A 2N4861,A	Unit
Drain-Source Voltage	V_{DS}	+40	+30	Vdc
Drain-Gate Voltage	V_{DG}	+40	+30	Vdc
Reverse Gate-Source Voltage	V_{GSR}	-40	-30	Vdc
Forward Gate Current	I_{GF}	50		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	360 2.4		mW mW/°C
Storage Temperature Range	T_{stg}	-65 to +175		°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Gate-Source Breakdown Voltage ($I_G = 1.0 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	-40 -30	—	Vdc
Gate Reverse Current ($V_{GS} = -20 \text{ Vdc}$, $V_{DS} = 0$) ($V_{GS} = -15 \text{ Vdc}$, $V_{DS} = 0$) ($V_{GS} = -20 \text{ Vdc}$, $V_{DS} = 0$, $T_A = 150^\circ\text{C}$) ($V_{GS} = -15 \text{ Vdc}$, $V_{DS} = 0$, $T_A = 150^\circ\text{C}$)	I_{GSS}	— — — —	0.25 0.25 0.5 0.5	nAdc μAdc
Gate Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 0.5 \text{ nAdc}$)	$V_{GS(off)}$	-4.0 -2.0 -0.8	-10 -6.0 -4.0	Vdc
Drain Cutoff Current ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = -10 \text{ Vdc}$) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = -10 \text{ Vdc}$, $T_A = 150^\circ\text{C}$)	$I_{D(off)}$	— —	0.25 0.5	nAdc μAdc
ON CHARACTERISTICS				
Zero-Gate-Voltage Drain Current(1) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$)	I_{DSS}	50 20 8.0	— 100 80	mAdc
Drain-Source On-Voltage ($I_D = 20 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 10 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 5.0 \text{ mAdc}$, $V_{GS} = 0$)	$V_{DS(on)}$	— — —	0.75 0.5 0.5	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Drain-Source "ON" Resistance ($V_{GS} = 0$, $I_D = 0$, $f = 1.0 \text{ kHz}$)	$r_{ds(on)}$	— — —	25 40 60	Ohms
Input Capacitance ($V_{DS} = 0$, $V_{GS} = -10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{iss}	— — —	18 10	pF
Reverse Transfer Capacitance ($V_{DS} = 0$, $V_{GS} = -10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{rss}	— — —	8.0 4.0 3.5	pF

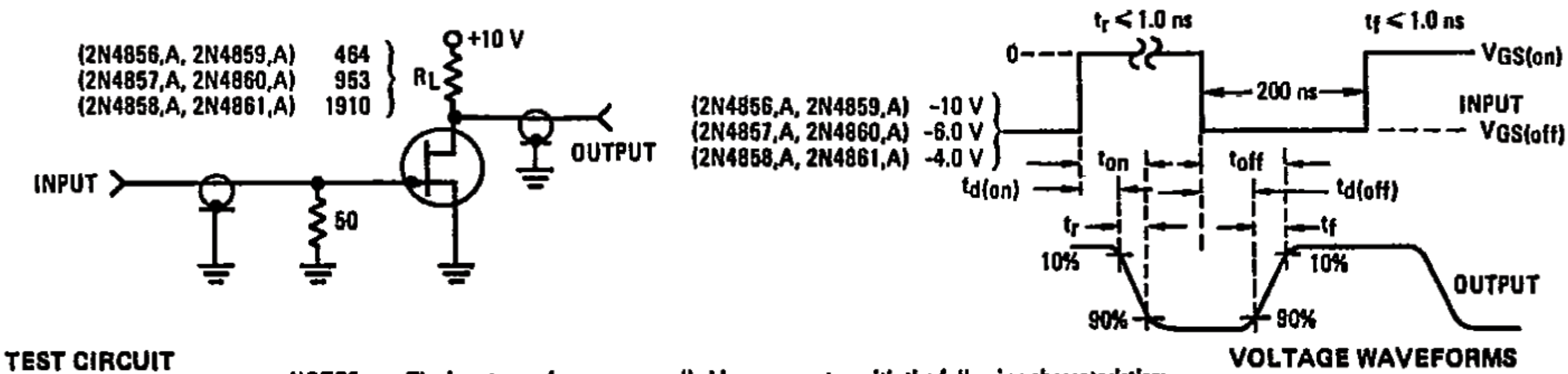
2N4856, A thru 2N4861, A

ELECTRICAL CHARACTERISTICS (continued) (TA = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SWITCHING CHARACTERISTICS (See Figure 1) (2)				
Turn-On Delay Time	$t_{d(on)}$	—	6.0	ns
Rise Time	t_r	—	3.0	ns
		—	4.0	
		—	10	
		—	8.0	
Turn-Off Time	t_{off}	—	25	ns
		—	20	
		—	50	
		—	40	
		—	100	
		—	80	

- (1) Pulse Test: Pulse Width = 100 ms, Duty Cycle ≤ 10%.
(2) The $I_{D(on)}$ values are nominal; exact values vary slightly with transistor parameters.

FIGURE 1 – SWITCHING TIMES TEST CIRCUIT



- NOTES: a. The input waveforms are supplied by a generator with the following characteristics:
 $Z_{out} = 50\text{ ohms}$, Duty Cycle $\approx 2.0\%$.
b. Waveforms are monitored on an oscilloscope with the following characteristics:
 $t_r \leq 0.75\text{ ns}$, $R_{in} > 1.0\text{ megohm}$, $C_{in} \leq 2.5\text{ pF}$.

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