

**2N5460** (SILICON)  
thru  
**2N5465**



P-channel depletion mode (Type A) junction field-effect transistors designed for use in general-purpose amplifier applications.



**MAXIMUM RATINGS**

Rating	Symbol	2N5460 2N5461 2N5462	2N5463 2N5464 2N5465	Unit
Drain-Gate Voltage	$V_{DG}$	40	60	Vdc
Reverse Gate-Source Voltage	$V_{GS(r)}$	40	60	Vdc
Forward Gate Current	$I_{G(f)}$	10		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	310 2.82		mW mW/ $^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150		$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-65 to +135		$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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**OFF CHARACTERISTICS**

Gate-Source Breakdown Voltage ( $I_G = 10 \mu\text{Adc}$ , $V_{DS} = 0$ )	2N5460, 2N5461, 2N5462 2N5463, 2N5464, 2N5465	$V_{(BR)GSS}$	40 60	- -	- -	Vdc
Gate-Source Cutoff Voltage ( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 1.0 \mu\text{Adc}$ )	2N5460, 2N5463 2N5461, 2N5464 2N5462, 2N5465	$V_{GS(off)}$	0.75 1.0 1.8	- - -	6.0 7.5 9.0	Vdc
Gate Reverse Current ( $V_{GS} = 20 \text{ Vdc}$ , $V_{DS} = 0$ )	2N5460, 2N5461, 2N5462	$I_{GSS}$	-	-	5.0	nAdc
( $V_{GS} = 30 \text{ Vdc}$ , $V_{DS} = 0$ )	2N5463, 2N5464, 2N5465		-	-	5.0	
( $V_{GS} = 20 \text{ Vdc}$ , $V_{DS} = 0$ , $T_A = 100^\circ\text{C}$ )	2N5460, 2N5461, 2N5462		-	-	1.0	$\mu\text{Adc}$
( $V_{GS} = 30 \text{ Vdc}$ , $V_{DS} = 0$ , $T_A = 100^\circ\text{C}$ )	2N5463, 2N5464, 2N5465		-	-	1.0	

**ON CHARACTERISTICS**

Zero-Gate Voltage Drain Current ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ )	2N5460, 2N5463 2N5461, 2N5464 2N5462, 2N5465	$I_{DSS}$	1.0 2.0 4.0	- - -	5.0 9.0 16	mAdc
Gate-Source Voltage ( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 0.1 \text{ mAdc}$ )	2N5460, 2N5463	$V_{GS}$	0.5	-	4.0	Vdc
( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 0.2 \text{ mAdc}$ )	2N5461, 2N5464		0.8	-	4.5	
( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 0.4 \text{ mAdc}$ )	2N5462, 2N5465		1.5	-	6.0	

**SMALL-SIGNAL CHARACTERISTICS**

Forward Transadmittance ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0 \text{ kHz}$ )	2N5460, 2N5463 2N5461, 2N5464 2N5462, 2N5465	$ y_{fs} $	1000 1500 2000	- - -	4000 5000 6000	$\mu\text{mhos}$
Output Admittance ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0 \text{ kHz}$ )		$ y_{os} $	-	-	75	$\mu\text{mhos}$
Input Capacitance ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0 \text{ MHz}$ )		$C_{iss}$	-	5.0	7.0	pF
Reverse Transfer Capacitance ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0 \text{ MHz}$ )		$C_{rss}$	-	1.0	2.0	pF
Common-Source Noise Figure ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $R_G = 1.0 \text{ Megohm}$ , $f = 100 \text{ Hz}$ , $BW = 1.0 \text{ Hz}$ )		NF	-	1.0	2.5	dB
Equivalent Short-Circuit Input Noise Voltage ( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 100 \text{ Hz}$ , $BW = 1.0 \text{ Hz}$ )		$e_n$	-	60	115	nV/ $\sqrt{\text{Hz}}$

**DRAIN CURRENT versus GATE SOURCE VOLTAGE**

FIGURE 1 – 2N5460 and 2N5463

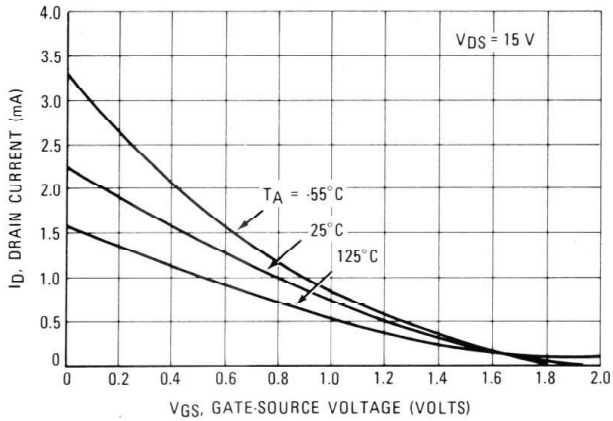


FIGURE 2 – 2N5461 and 2N5464

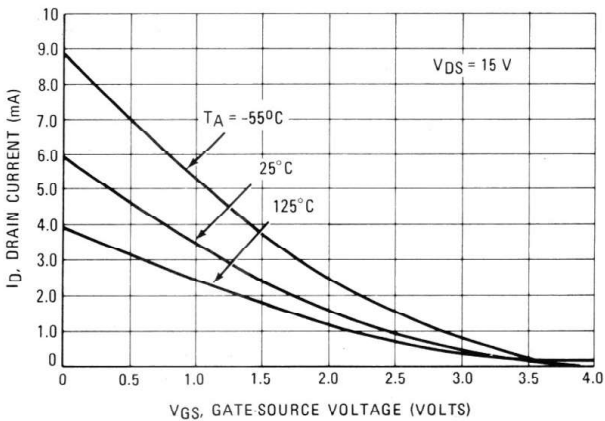
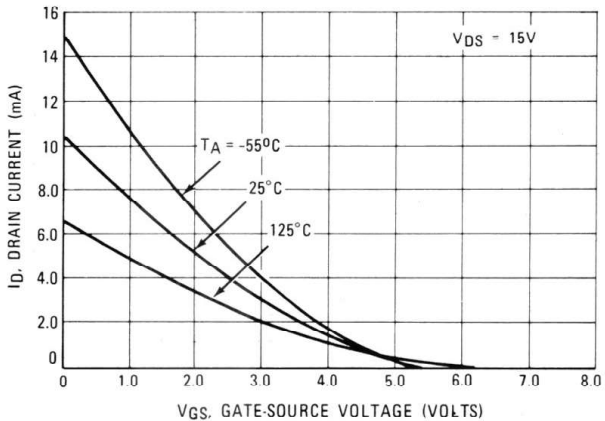


FIGURE 3 – 2N5462 and 2N5465



**FORWARD TRANSFER ADMITTANCE versus DRAIN CURRENT**

FIGURE 4 – 2N5460 and 2N5463

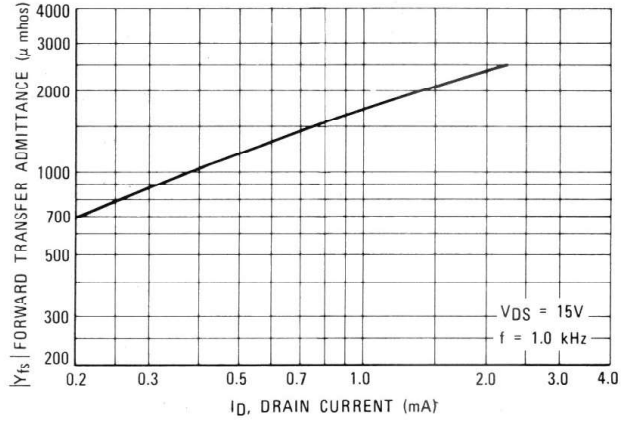


FIGURE 5 – 2N5461 and 2N5464

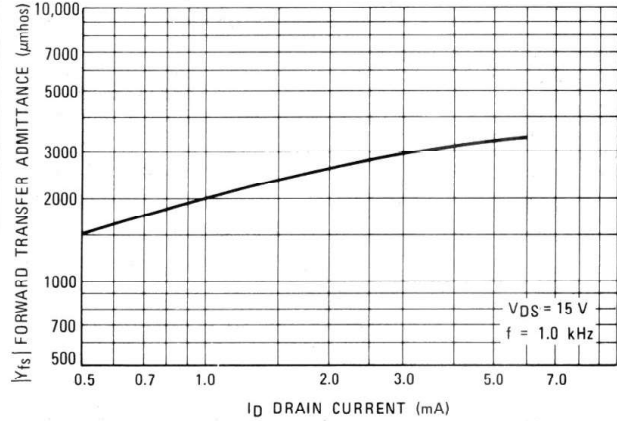


FIGURE 6 – 2N5462 and 2N5465

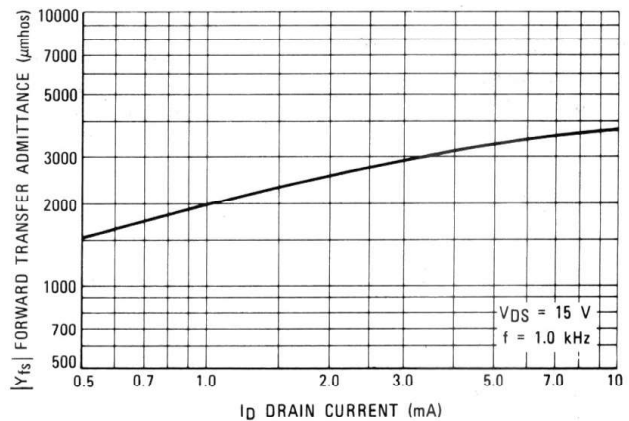


FIGURE 7 – OUTPUT RESISTANCE  
VERSUS DRAIN CURRENT

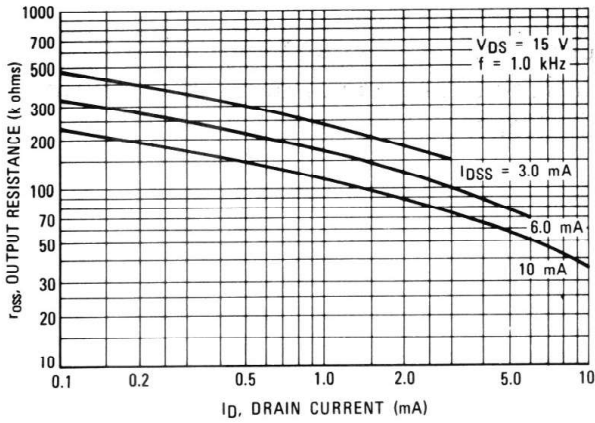


FIGURE 8 – CAPACITANCE VERSUS  
DRAIN-SOURCE VOLTAGE

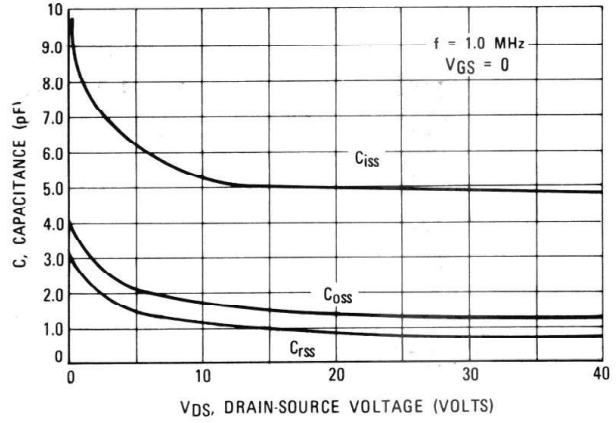


FIGURE 9 – NOISE FIGURE  
VERSUS FREQUENCY

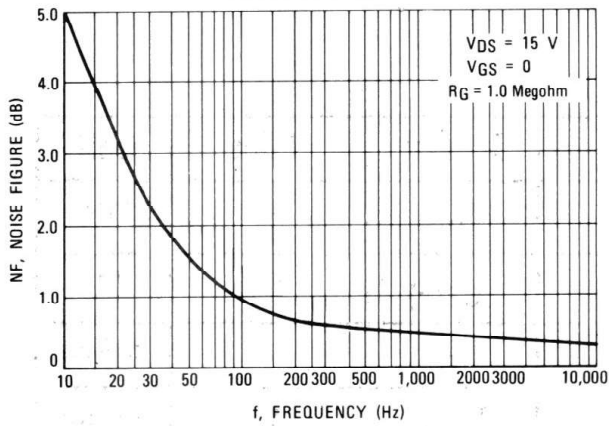


FIGURE 10 – NOISE FIGURE VERSUS  
SOURCE RESISTANCE

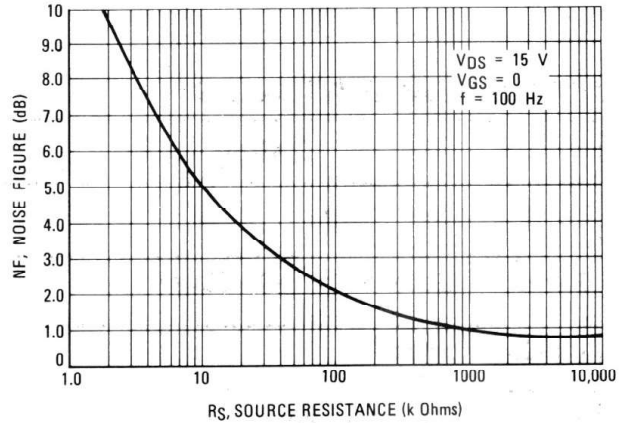
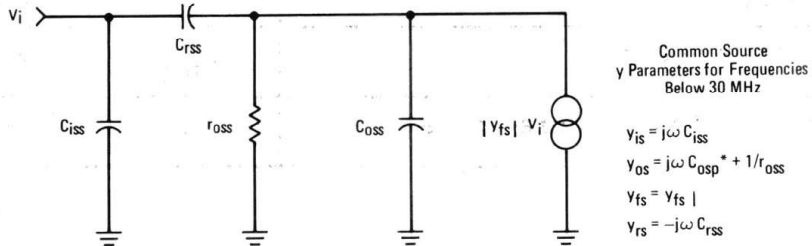


FIGURE 11 – EQUIVALENT LOW FREQUENCY CIRCUIT



Common Source  
y Parameters for Frequencies  
Below 30 MHz

$$y_{is} = j\omega C_{iss}$$

$$y_{os} = j\omega C_{osp} + 1/r_{oss}$$

$$y_{fs} = Y_{fs}$$

$$y_{rs} = -j\omega C_{rss}$$

\*C<sub>osp</sub> is C<sub>oss</sub> in parallel with Series Combination of C<sub>iss</sub> and C<sub>rss</sub>.

NOTE:

- Graphical data is presented for dc conditions. Tabular data is given for pulsed conditions (Pulse Width = 630 ms, Duty Cycle = 10%).