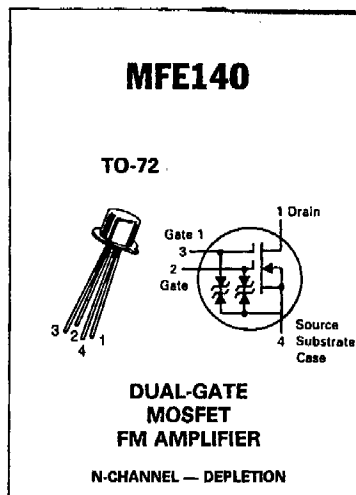


New Jersey Semi-Conductor Products, Inc.

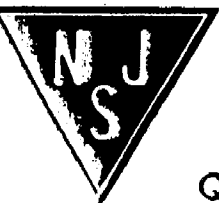
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

MAXIMUM RATINGS				
Rating	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	25	Vdc	
Gate-Source Voltage	V_{GS}	± 7.0	Vdc	
Drain Current	I_D	30	mAdc	
Gate Current	I_G	10	mAdc	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300	mW	
Operating and Storage Channel Temperature Range	T_{channel} T_{stg}	-65 to $+175$	$^\circ\text{C}$	



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)						
Characteristic	Symbol	Min	Typ	Max	Unit	
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage ($I_D = 10 \mu\text{Adc}$, $V_S = 0$, $V_{G1} = -4.0 \text{ Vdc}$, $V_{G2} = +4.0 \text{ Vdc}$)	$V_{(BR)DSX}$	25	—	—	Vdc	
Gate 1-Source Breakdown Voltage ($I_{G1} = \pm 10 \mu\text{Adc}$, $V_{G2S} = 0$)	$V_{(BR)G1SO}$	± 7.0	—	± 20	Vdc	
Gate 2-Source Breakdown Voltage ($I_{G2} = \pm 10 \mu\text{Adc}$, $V_{G1S} = 0$)	$V_{(BR)G2SO}$	± 7.0	—	± 20	Vdc	
Gate 1 Leakage Current ($V_{G1S} = \pm 6.0 \text{ Vdc}$, $V_{G2S} = 0$, $V_{DS} = 0$)	I_{G1SS}	—	—	20	nAdc	
Gate 2 Leakage Current ($V_{G2S} = \pm 6.0 \text{ Vdc}$, $V_{G1S} = 0$, $V_{DS} = 0$)	I_{G2SS}	—	—	20	nAdc	
Gate 1 to Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}$, $V_{G2S} = 4.0 \text{ Vdc}$, $I_D = 200 \mu\text{Adc}$)	$V_{G1S(\text{off})}$	—	—	-4.0	Vdc	
Gate 2 to Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}$, $V_{G1S} = 0$, $I_D = 200 \mu\text{Adc}$)	$V_{G2S(\text{off})}$	—	—	-4.0	Vdc	
ON CHARACTERISTICS						
Zero-Gate-Voltage Drain Current ($V_{DS} = 15 \text{ Vdc}$, $V_{G1S} = 0$, $V_{G2S} = 4.0 \text{ Vdc}$)	I_{DSS}	3.0	10	30	mAdc	
SMALL-SIGNAL CHARACTERISTICS						
Forward Transfer Admittance (Gate 1 connected to Drain) ($V_{DS} = 15 \text{ Vdc}$, $V_{G2S} = 4.0 \text{ Vdc}$, $I_D = 10 \text{ mAdc}$, $f = 1.0 \text{ kHz}$)	$ y_{fs} $	10	—	20	mmhos	
Input Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{G2S} = 4.0 \text{ Vdc}$, $I_D = I_{DSS}$, $f = 1.0 \text{ MHz}$)	C_{iss}	—	4.5	7.0	pF	
Reverse Transfer Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{G2S} = 4.0 \text{ Vdc}$, $I_D = I_{DSS}$, $f = 1.0 \text{ MHz}$)	C_{rss}	—	0.023	0.05	pF	
Output Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{G2S} = 4.0 \text{ Vdc}$, $I_D = I_{DSS}$, $f = 1.0 \text{ MHz}$)	C_{oss}	—	2.5	4.0	pF	
FUNCTIONAL CHARACTERISTICS						
Noise Figure (Figure 8) (See Test Circuit in Figure 11)	NF	—	2.5	3.5	dB	
Common Source Power Gain (Figure 7) (See Test Circuit in Figure 11)	G_{ps}	20	23	—	dB	
Level of Unwanted Signal for 1.0% Cross Modulation (Figure 10) (See Test Circuit in Figure 11)	—	—	45	—	mV	



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

MFE140

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

Characteristic	Symbol	Min	Typ	Max	Unit
Common-Source Conversion Power Gain (Gate 1 or Gate 2 Injection, Figure 12) (See Test Circuit In Figure 13) (Signal Frequency = 100 MHz, Local Oscillator Frequency = 110.7 MHz)	G_c	15	18.5	—	dB
1/2 I.F. Rejection (See Test Circuit in Figure 13)	1/2 I/FREJ	—	50	—	dB

COMMON-SOURCE ADMITTANCE PARAMETERS

($V_{DS} = 15\text{ Vdc}$, $V_{G2S} = 4.0\text{ Vdc}$, $I_D = 6.0\text{ mAdc}$)

FIGURE 1 – INPUT ADMITTANCE

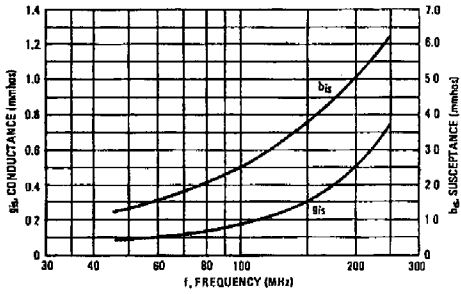


FIGURE 2 – REVERSE TRANSFER ADMITTANCE

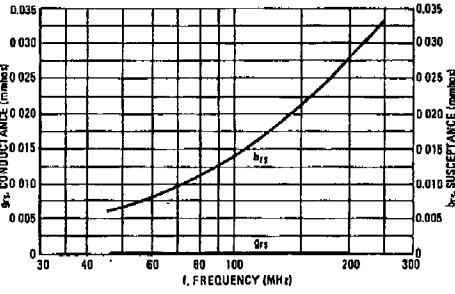


FIGURE 3 – FORWARD TRANSFER ADMITTANCE

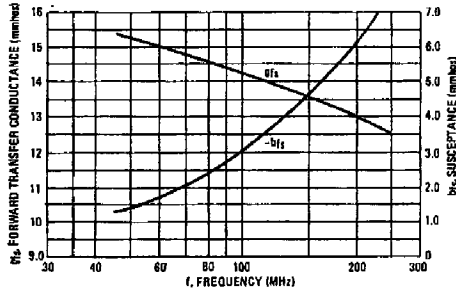
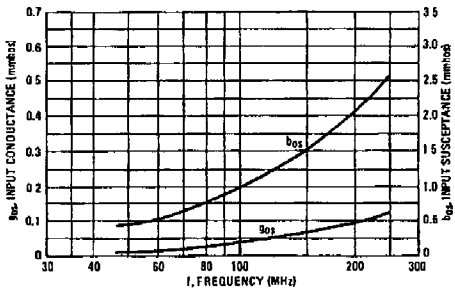


FIGURE 4 – OUTPUT ADMITTANCE



FORWARD TRANSFER ADMITTANCE

($V_{DS} = 15\text{ Vdc}$, $f = 1.0\text{ kHz}$)

FIGURE 5 – GATE 1

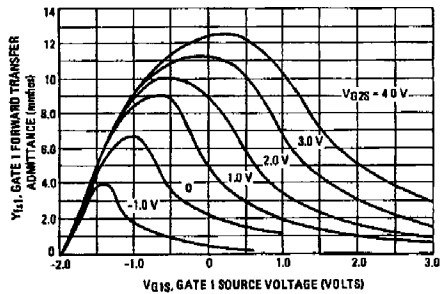


FIGURE 6 – GATE 2

