RCA MOS FIELD-EFFECT TRANSISTORS

For FM and AM/FM RF-Amplifier and Mixer Applications

40468
40559

RCA-40468 and 40559† are silicon insulated-gate field-effect transistors of the N-channel depletion type utilizing the MOS* construction. They are intended primarily for use as the RF amplifier and mixer, respectively, in FM receivers covering the 88 to 108 MHz band, but can be used for general amplifier applications at frequencies up to 125 MHz. For circuit design and typical performance data for "An FM Tuner Using Single-Gate MOS Field-Effect Transistors as RF Amplifier and Mixer" refer to RCA Application Note AN3535.

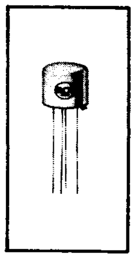
The wide dynamic range of these transistors reduces cross-modulation effects in AM receivers and minimizes the generation of spurious responses in FM receivers.

Operating as a neutralized amplifier at 100 MHz, the 40468 can provide a power gain of 17 dB (typ.). A power gain of 14 dB (typ.) can be realized without neutralization.

† Formerly Dev. Nos. TA7119 and TA7307, respectively.
* Metal-Oxide-Semiconductor.

SILICON INSULATED-GATE FIELD-EFFECT TRANSISTORS

N-Channel Depletion Types



TO-104

For RF Amplifier and Mixer Applications In FM and AM/FM Receivers

Maximum Ratings, Absolute-Maximum Values:

DRAIN-TO-SOURCE VOLTAGE, V_{DS}	+20 max.	V
GATE-TO-SOURCE VOLTAGE, V_{GS}:		
Continuous	0 to −8 max.	V
Instantaneous	±15 max.	V
DRAIN CURRENT, I_D	20 max.	mA
TRANSISTOR DISSIPATION, P_T:		
At ambient temperatures up to 100°C	100 max.	mW
At ambient temperatures above 100°C	Derate at 4mW/°C	
AMBIENT TEMPERATURE RANGE:		
Storage	−65 to +125	°C
Operating	−65 to +125	°C
LEAD TEMPERATURE (During Soldering):		
At distances ≥ 1/32" from seating surface for 10 seconds max.	265 max.	°C

Features

- reduced spurious responses in FM tuners
- reduced cross-modulation effects in AM receivers
- high forward transadmittance — 7500μmho typ. at 100 MHz
- low feedback capacitance — 0.2pF max.
- high useful power gains — neutralized: 17dB typ.; unneutralized: 14dB typ. } at 100MHz for 40468
- hermetically sealed TO-104 metal package

ELECTRICAL CHARACTERISTICS, at T_A = 25° C With Bulk (Substrate) Connected to Source

CHARACTERISTICS	SYMBOLS	TEST CONDITIONS			LIMITS						UNITS
		FREQUENCY f	DC DRAIN-TO-SOURCE V_{DS}	DC DRAIN CURRENT I_D	RCA-40468 RF AMPLIFIER			RCA-40559 MIXER			
		MHz	V	mA	Min.	Typ.	Max.	Min.	Typ.	Max.	
Gate-to-Source Cutoff Voltage	$V_{GS}(off)$	—	20	0.05	—	−4	−6	—	−4	−6	V
Gate Reverse Current	I_{GSS}	—	0	$V_{GS} = -8$	—	—	0.2	—	—	1	nA
Zero-Gate-Voltage Drain Current	I_{DSS}	—	15	$V_{GS} = 0$	5	20	50	5	20	50	mA
Small-Signal, Short-Circuit Reverse-Transfer Capacitance (Drain-to-Gate)	C_{rss}	1	15	5	0.1	0.12	0.2	0.1	0.12	0.2	pF
Input Resistance	r_{is}	100 100	15 15	5 2	2 —	4.5 —	— —	— —	4.5 5	— —	KΩ KΩ
Output Resistance	r_{os}	100 10.7	15 15	5 5	2.25 —	4.2 —	— —	— —	4.2 —	— 18	KΩ KΩ
Input Capacitance	C_{iss}	100	15	5	—	5.5	10	—	5.5	—	pF
Output Capacitance	C_{oss}	100 10.7	15 15	5 2	— —	1.4 —	— —	— —	— 1.4	— —	pF pF
Magnitude of Forward Transadmittance	$\lvert y_{fs} \rvert$	100	15	5	—	7.5	—	—	—	—	mmho
Forward Conversion Conductance	g_c	100	15	2	—	—	—	—	—	1.3	mmho
Maximum Available Power-Gain	MAG	100	15	5	—	24	—	—	—	—	dB
Maximum Usable Power Gain (Unneutralized)	MUG	100	15	5	—	14	—	—	—	—	dB
Maximum Usable Power Gain (Neutralized)	MUG	100	15	5	14	17	—	—	—	—	dB
Maximum Available Conversion Gain	MAG_c	$f_{IN} = 100$ $f_{OUT} = 10.7$	15	2	—	—	—	—	25.8	—	dB
Noise-Figure	NF	100	15	5	—	4	5	—	—	—	dB

OPERATING CONSIDERATIONS

The flexible leads of the 40468 and 40559 are usually soldered to the circuit elements. As in the case of any high-frequency semiconductor device, the tips of soldering irons should be grounded, and appropriate precautions should be taken to protect the devices against high electric fields.

These devices should not be connected into, or disconnected from, circuits with the power on because high transient voltages may cause permanent damage to the devices.

TYPICAL y PARAMETER CHARACTERISTICS

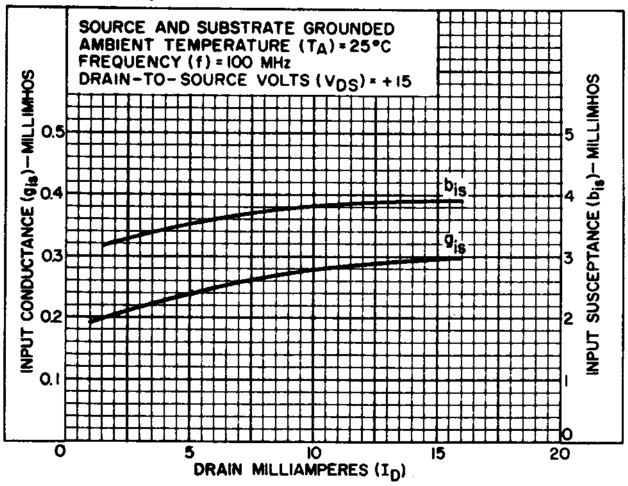


Fig. 1 – Input Admittance (y_{is}) vs Drain Current (I_D)

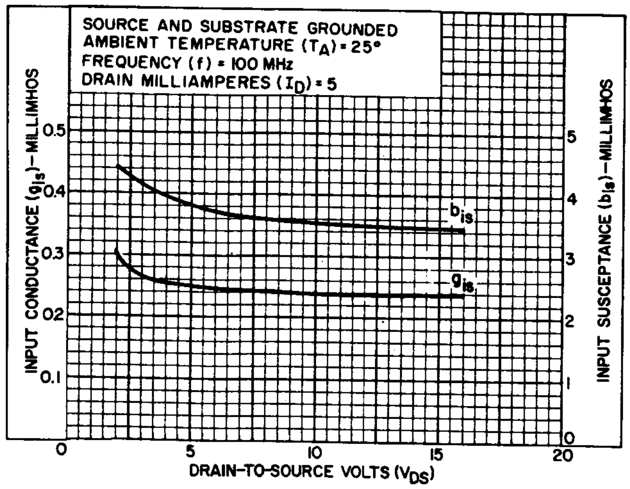


Fig. 2 – Input Admittance (y_{is}) vs Drain-to-Source Voltage (V_{DS})

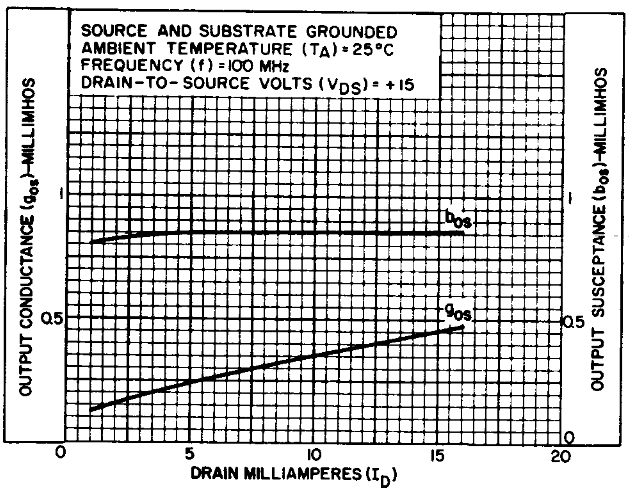


Fig. 3 – Output Admittance (y_{os}) vs Drain Current (I_D)

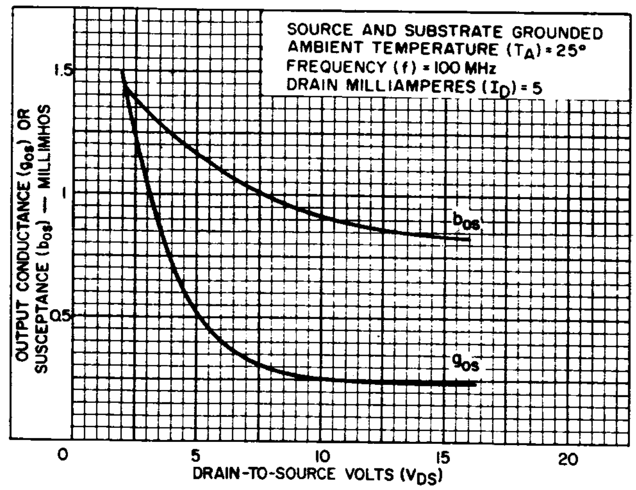


Fig. 4 – Output Admittance (y_{os}) vs Drain-to-Source Voltage (V_{DS})

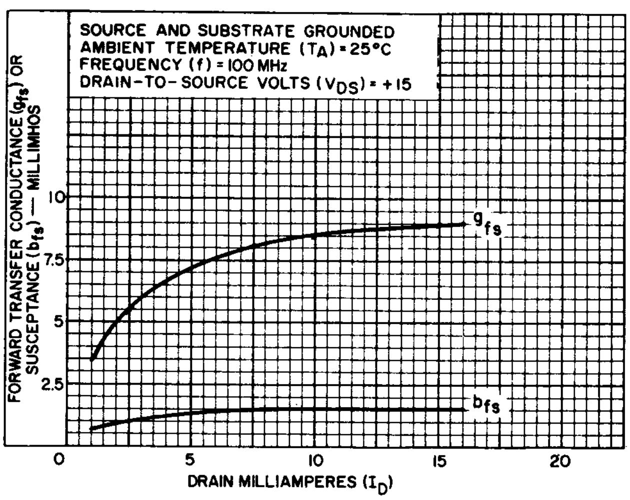


Fig. 5 – Forward Transadmittance (y_{fs}) vs Drain Current (I_D)

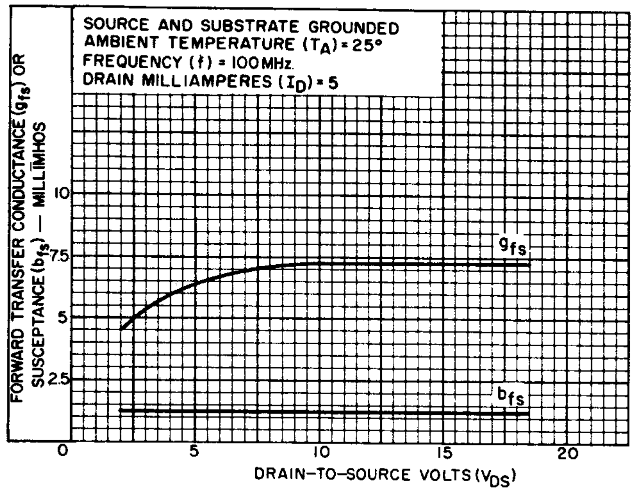


Fig. 6 – Forward Transadmittance (y_{fs}) vs Drain-to-Source Voltage (V_{DS})

TYPICAL y PARAMETER CHARACTERISTICS

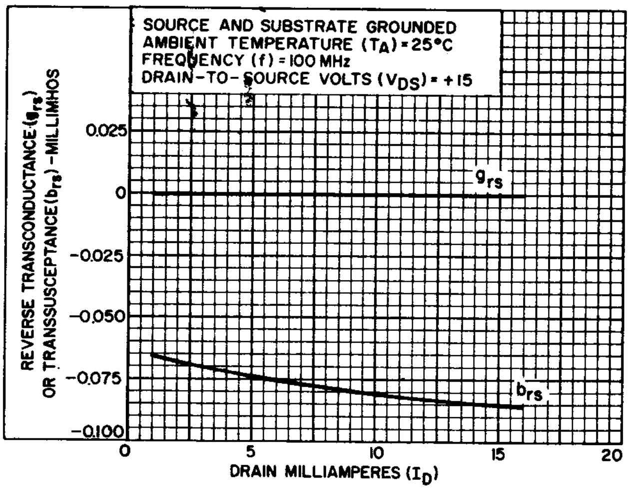


Fig. 7 – Reverse Transadmittance (y_{rs}) vs Drain Current (I_D)

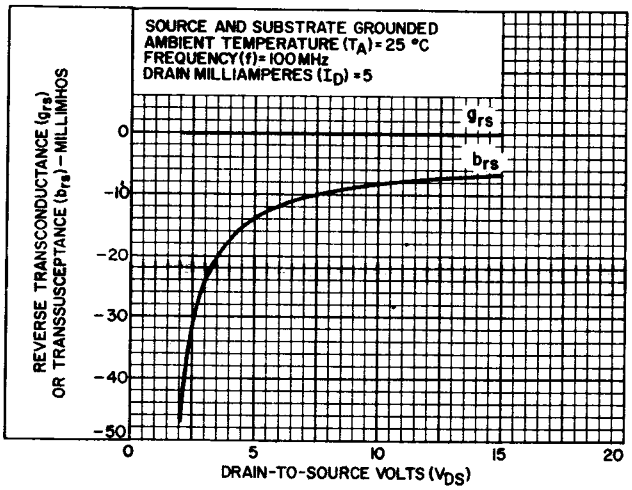


Fig. 8 – Reverse Transadmittance (y_{rs}) vs Drain-to-Source Voltage (V_{DS})

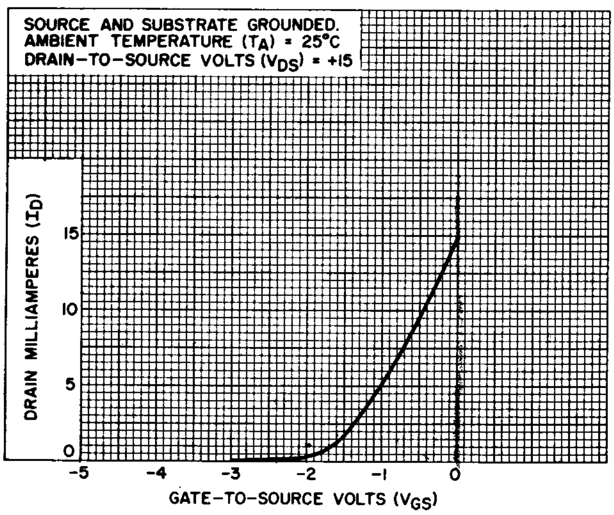
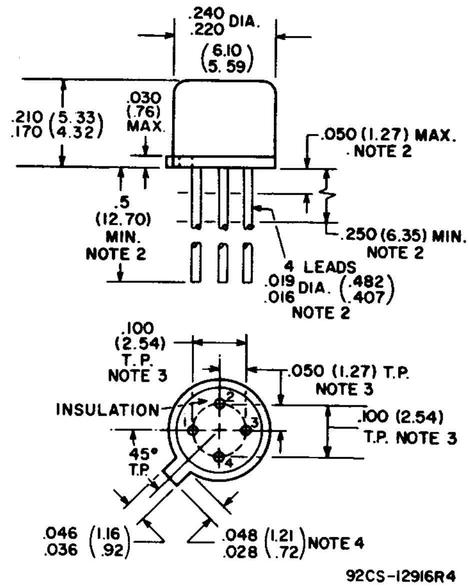


Fig. 9 – Typical Characteristic of Drain Current (I_D) vs Gate-to-Source Voltage (V_{GS})

DIMENSIONAL OUTLINE
TO-104



DIMENSIONS IN INCHES AND MILLIMETERS

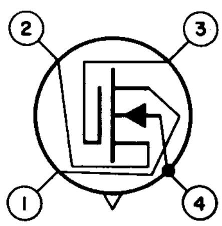
Note 1: *Dimensions in parentheses are in millimeters and are derived from the basic inch dimensions as indicated.*

Note 2: The specified lead diameter applies in the zone between 0.050" (1.27 mm) and 0.250" (6.35 mm) from the seating plane. From 0.250" (6.35 mm) to the end of the lead a maximum diameter of 0.021" (0.533 mm) is held. Outside of these zones, the lead diameter is not controlled.

Note 3: Leads having a maximum diameter of 0.019" (0.482 mm) at a gauging plane of 0.054" (1.372 mm) + 0.001" (0.025 mm) -0.000" (0.000 mm) below seating plane shall be within 0.007" (0.177 mm) of their true position (location) relative to a maximum width of tab.

Note 4: Measured from actual maximum diameter.

TERMINAL DIAGRAM



LEAD 1 - DRAIN
LEAD 2 - SOURCE
LEAD 3 - INSULATED GATE
LEAD 4 - BULK (SUBSTRATE) AND CASE

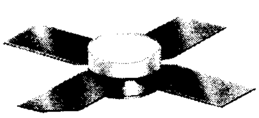
RCA

Solid State

RF Power Transistors

41008
41009
41010

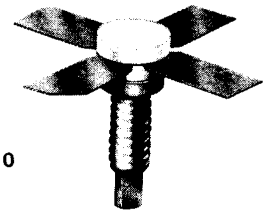
File No. 616



41008
41009

HF-47

H-1789



41010

HF-41

H-1788

0.5-W, 2-W, and 5-W, 470-MHz, 9-V Silicon N-P-N Overlay Transistors

For Low-Voltage Handheld UHF Broadband Amplifier Service

Features:

- **All devices tested at infinite VSWR with rated power input and V_{CC} = 9 V**
- **Devices capable of rated power output at elevated heat-sink temperatures**

RCA-41008, 41009, and 41010● are epitaxial silicon n-p-n planar transistors with overlay emitter-electrode construction. They are especially intended for handheld broadband uhf class C amplifier service in low-voltage-supply applications.

●Formerly RCA Dev. Nos. TA8719, TA8720, and TA8721, respectively.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

		41008	41009	41010	
COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	36	36	36	V
COLLECTOR-TO-EMITTER VOLTAGE:					
With base open	V_{CEO}	14	14	14	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	3.5	3.5	3.5	V
TEMPERATURE RANGE:					
Storage and operating (Junction)		← −65 to +200 →			°C
LEAD TEMPERATURE (During soldering):					
At distances ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max...		← 200 →			°C

ELECTRICAL CHARACTERISTICS, *At Case Temperature (T_C) = 25°C*

STATIC

CHARACTERISTIC	SYMBOL	TEST CONDITIONS: VOLTAGE V dc V_{CE}	V_{EB}	CURRENT mA dc I_E	I_B	I_C	LIMITS 41008 MIN.	41008 MAX.	41009 MIN.	41009 MAX.	41010 MIN.	41010 MAX.	UNITS
Collector Cutoff Current: Base connected to emitter	I_{CES}	9	0				–	0.5	–	1	–	5	mA
Collector-to-Emitter Sustaining Voltage: With base open	$V_{CEO}(sus)$				0	5[a]	14	–	–	–	–	–	V
					0	25[a]	–	–	14	–	–	–	
					0	75[a]	–	–	–	–	14	–	
With base connected to emitter	$V_{CES}(sus)$		0			5[a]	36	–	–	–	–	–	
			0			25[a]	–	–	36	–	–	–	
			0			75[a]	–	–	–	–	36	–	
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$			0.5		0	3.5	–	–	–	–	–	V
				1		0	–	–	3.5	–	–	–	
				5		0	–	–	–	–	3.5	–	
Thermal Resistance: (Junction-to-Case)	$R_{\theta JC}$						–	50	–	15	–	10	°C/W

[a] Pulsed through a 25-mH inductor; duty factor = 50%

DYNAMIC

CHARACTERISTIC	SYMBOL	TEST CONDITIONS: DC COLLECTOR SUPPLY VOLTAGE (V_{CC}) – V	FREQUENCY (f) – MHz	LIMITS 41008 MIN.	41008 MAX.	41009 MIN.	41009 MAX.	41010 MIN.	41010 MAX.	UNITS
Power Output: P_{IE} = 0.15 W (41008) 0.5 W (41009) 2 W (41010)	P_{OE}	9	470	0.5	–	2	–	5	–	W
Collector Efficiency: P_{OE} = 0.5 W (41008) 2 W (41009) 5 W (41010)	η_C	9	470	60	–	60	–	60	–	%
Collector-to-Base Output Capacitance	C_{obo}	9 (V_{CB})	1	–	4	–	6	–	25	pF

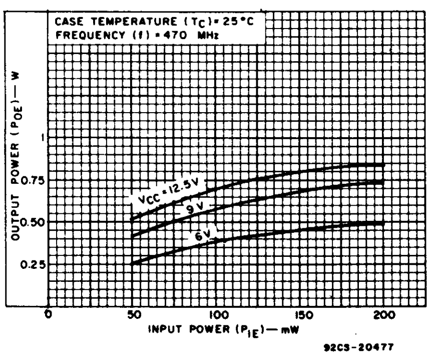


Fig. 1—Typical power output vs. power input at 470 MHz for 41008.

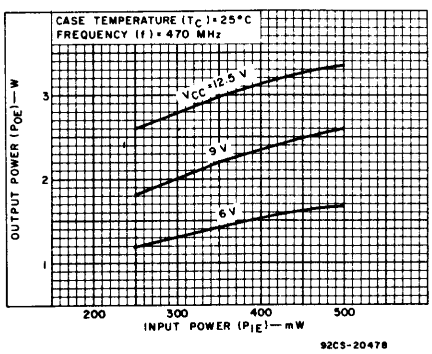


Fig. 2—Typical power output vs. power input at 470 MHz for 41009.

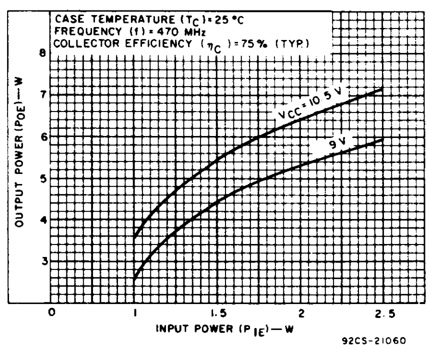


Fig. 3—Typical power output vs. power input at 470 MHz for 41010.

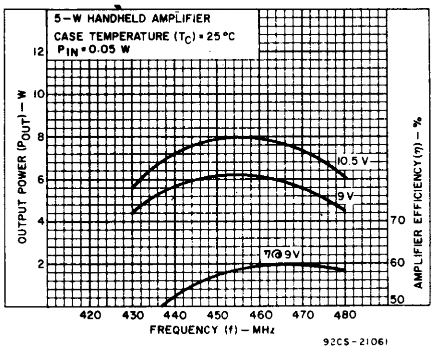


Fig. 4—Typical power output vs. frequency for 41008, 41009, and 41010 amplifier chain with supply voltages of 9 and 10.5 volts.

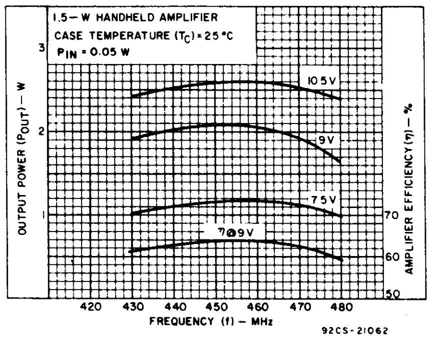
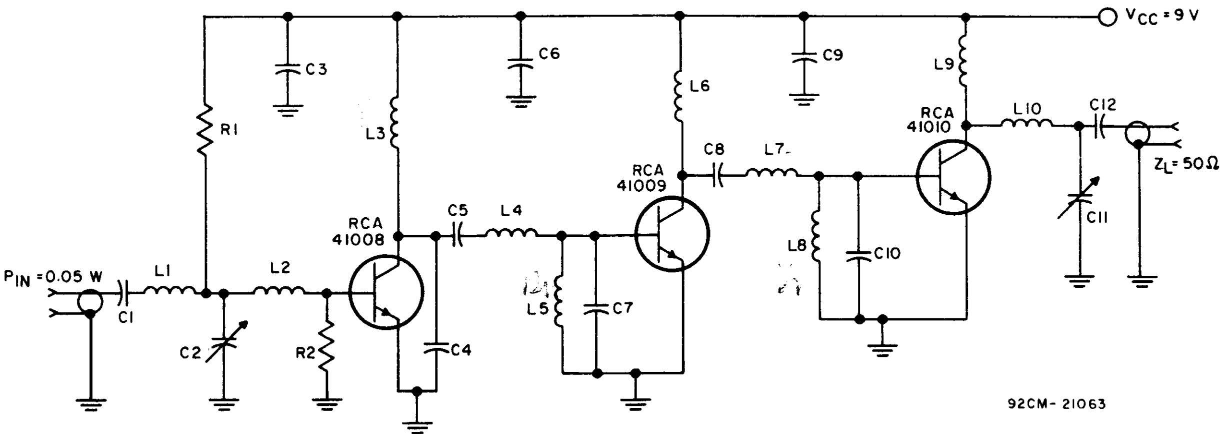


Fig. 5—Typical power output vs. frequency for 41008 and 41009 amplifier chain with supply voltages of 7.5, 9, and 10.5 volts.



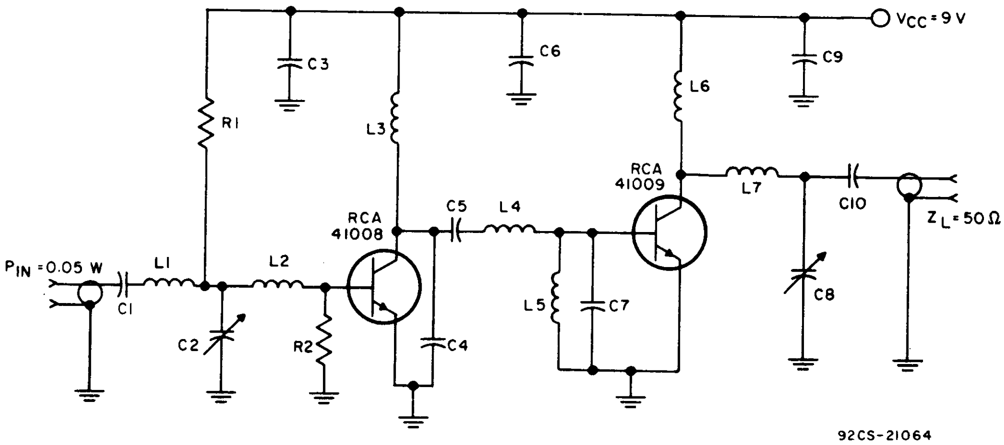
Z_{IN} = (4 + j 5.5) Ω
Z_{CL} = (20 + j 52.5) Ω

Z_{IN} = (4.2 + j 5.5) Ω
Z_{CL} = (16 + j 7.5) Ω

Z_{IN} = (2.3 + j 5.0) Ω
Z_{CL} = (9 + j 6.5) Ω

C_1: 10 pF disc ceramic
C_2, C_{11}: 2-18 pF Amperex HT10KA/218, or equivalent
C_3, C_9: 0.01 μF ceramic
C_4: 2 pF disc ceramic
C_5: 470 pF disc ceramic
C_6: 0.1 pF ceramic
C_7, C_{10}, C_{12}: 33 pF disc ceramic
C_8: 10 pF disc ceramic
R_1: 1.2 kΩ, 1/4 W carbon
R_2: 68 Ω, 1/4 W carbon
L_1: Single loop No. 20 wire 0.375 in. (9.52 mm) long, 0.0625 in. (1.58 mm) ID
L_2: Single loop No. 20 wire 0.25 in. (6.35 mm) long
L_3, L_5, L_8: 0.22 μH Nytronics Deci-Ductor, or equivalent
L_4, L_{10}: Single loop No. 20 wire 0.0625 in. (1.58 mm) long, 0.187 in. (4.76 mm) ID
L_6, L_9: 5 turns No. 20 wire 0.375 in. (9.52 mm) long, 0.125 in. (3.17 mm) ID
L_7: Single loop No. 20 wire 0.75 in (19.05 mm) long, 0.185 in. (4.70 mm) ID

Fig. 6—5-W, 9-volt amplifier with impedance data.



$Z_{IN} = (4 + j\,5.5)\ \Omega$ $Z_{IN} = (4.2 + j\,5.5)\ \Omega$

$Z_{CL} = (20 + j\,52.5)\ \Omega$ $Z_{CL} = (16 + j\,7.5)\ \Omega$

C_1: 10 pF disc ceramic
C_2: 2-18 pF Amperex HT10KA/218, or equivalent
C_3, C_9: 0.01 μF ceramic
C_4: 2 pF disc ceramic
C_5: 470 pF disc ceramic
C_6: 0.1 pF ceramic
C_7, C_{10}: 33 pF disc ceramic
C_8: 10 pF disc ceramic
R_1: 1.2 kΩ, 1/4 W carbon
R_2: 68 Ω, 1/4 W carbon
L_1: Single loop No. 20 wire 0.375 in. (9.52 mm) long, 0.0625 in. (1.58 mm) ID
L_2: Single loop No. 20 wire 0.25 in. (6.35 mm) long
L_3, L_5: 0.22 μH Nytronics Deci-Ductor, or equivalent
L_4: Single loop No. 20 wire 0.0625 in. (1.58 mm) long, 0.187 in. (4.76 mm) ID
L_6: 5 turns No. 20 wire 0.375 in. (9.52 mm) long, 0.125 in. (3.17 mm) ID
L_7: Single loop No. 20 wire 0.75 in. (19.05 mm) long, 0.185 in. (4.70 mm) ID

Fig. 7—1.5-W, 9-volt amplifier with impedance data.

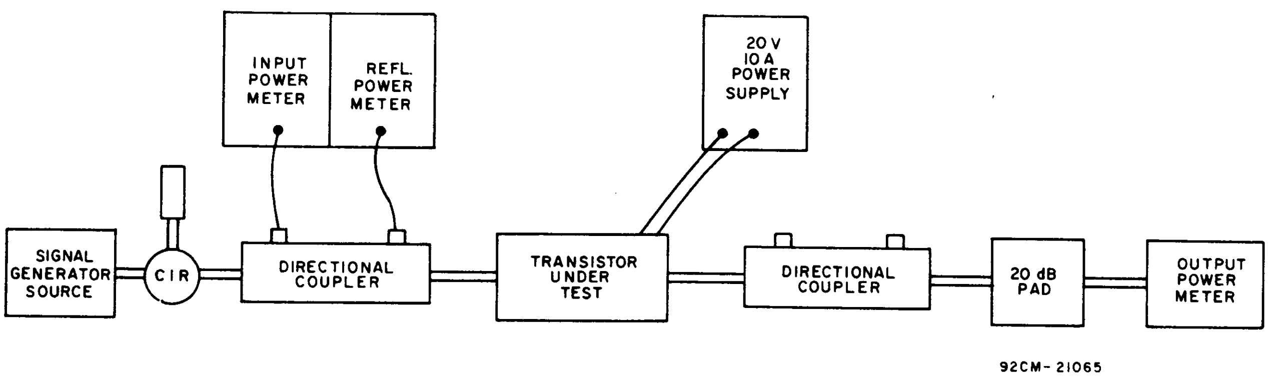
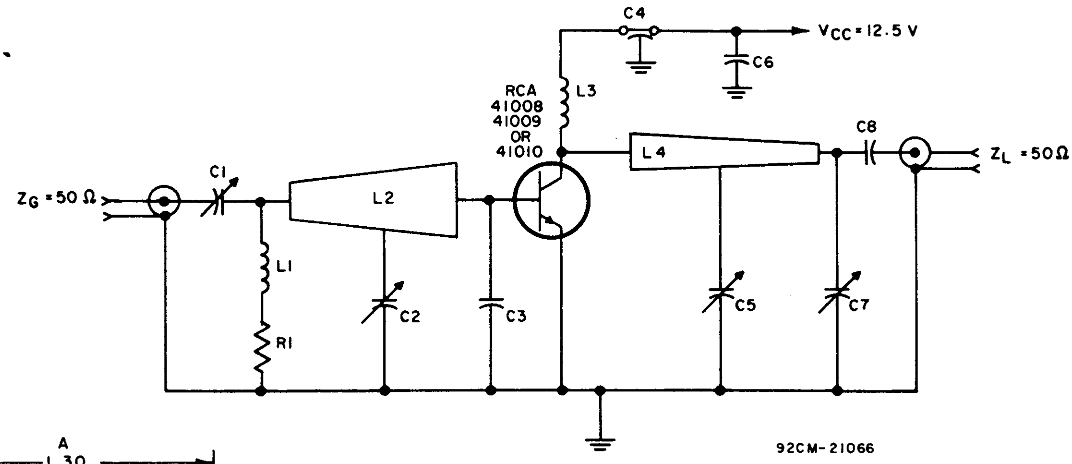
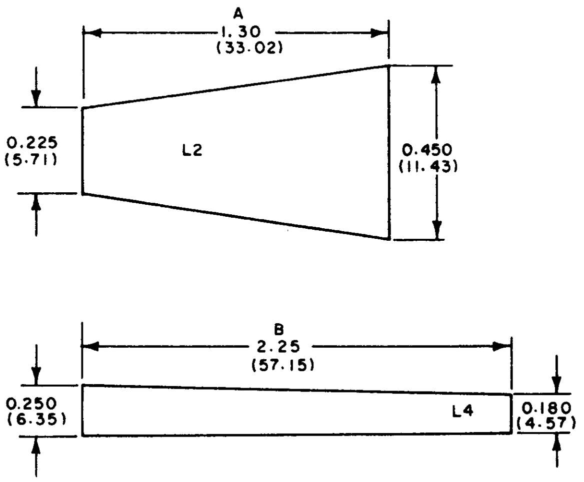


Fig. 8—470-MHz power output test set-up.





C_1, C_2, C_5, C_7: 2-18 pF Amperex HT10KA/218*
C_3: 15 pF American Technical Ceramics, ATC-100*
C_4: 1000 pF feedthrough
C_6: 0.01 μF disc ceramic
C_8: 300 pF American Technical Ceramics, ATC-100*
L_1: 0.22 μH choke
L_2: See A
L_3: 10 turns No. 18 wire 0.125 in. (3.17 mm) ID, 1 in. (25.4 mm) long
L_4: See B
R_1: 0.47 Ω, 1 W

Notes: C_3 placement as close to base lead as possible.
C_2 tapped 0.60 in. (15.24 mm) from base.
C_5 tapped 0.70 in. (17.78 mm) from collector.

*Or equivalent

Note 1: Dimensions in parentheses are in millimeters and are derived from the basic inch dimensions as indicated.

Note 2: Produced by removing upper layer of double-clad, Teflon board, Budd Co. Polychem Div. Grade 108T 1 oz. 0.0625 in. (1.52 mm) thick, (ϵ = 2.6), or equivalent.

Fig. 9—470-MHz amplifier test circuit for measurement of power output for all types.

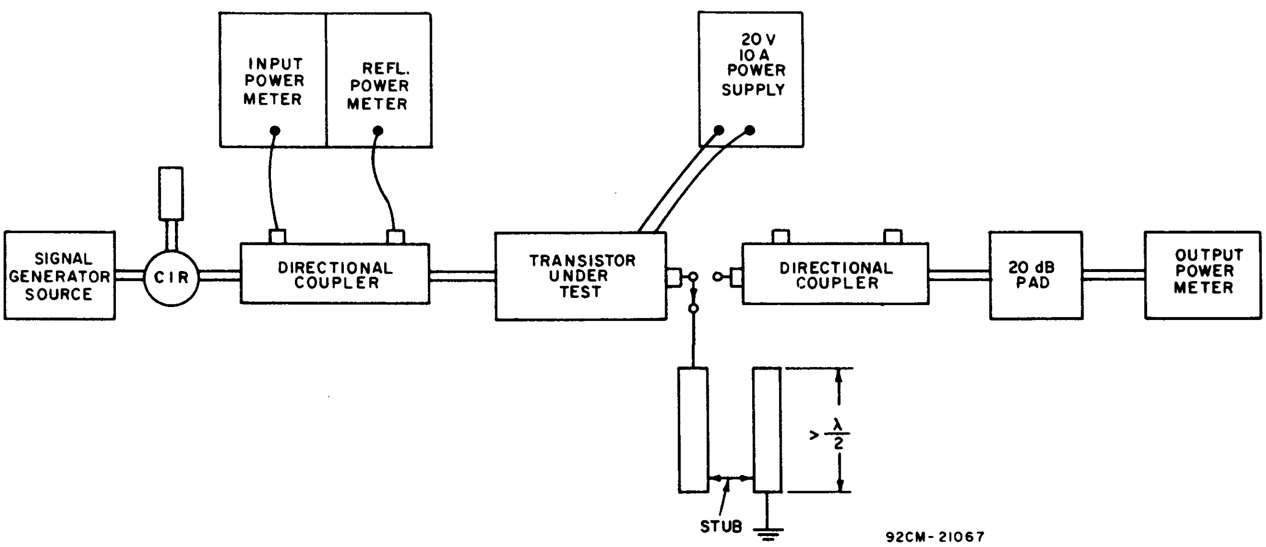
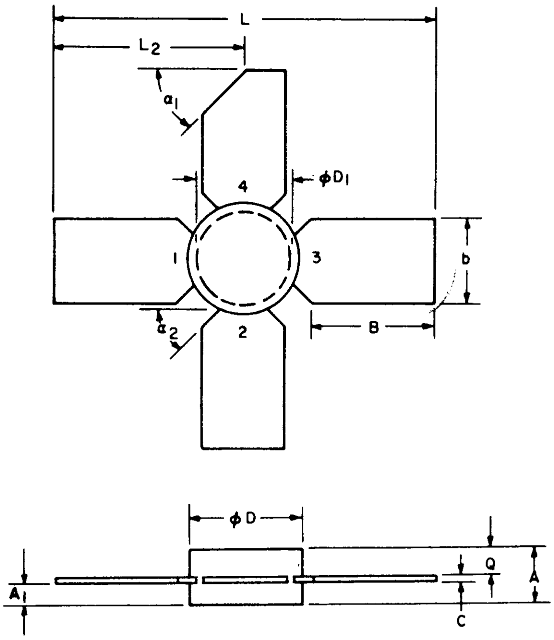


Fig. 10—Load-mismatch-capability test set-up for all types.

DIMENSIONAL OUTLINE FOR 41008 and 41009
RCA HF-47



92CS-21068

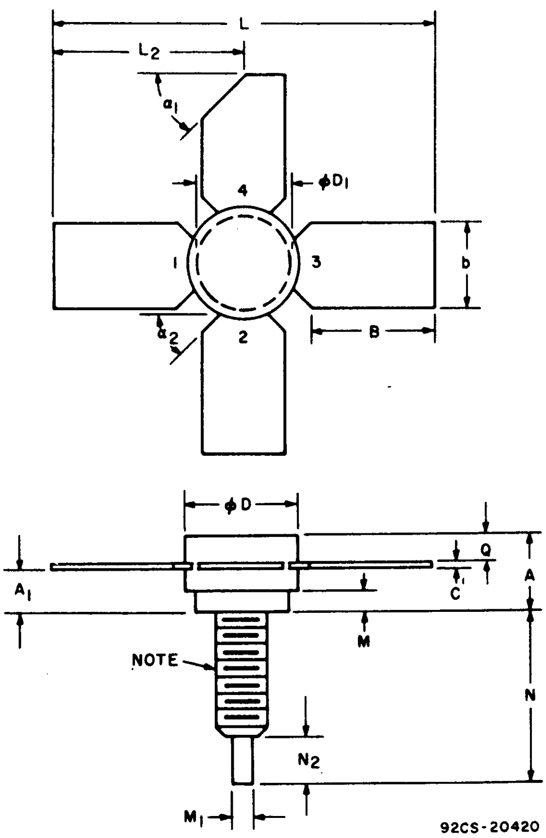
SYMBOL	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.127	0.153	3.23	3.89
A_1	0.056	0.060	1.43	1.53
B	0.380	0.390	9.66	9.90
b	0.220	0.230	5.58	5.84
c	0.002	0.008	0.05	0.20
ϕD	0.270	0.290	6.86	7.38
ϕD_1	0.245	0.255	6.22	6.48
L	1.040	1.060	26.42	26.93
L_2	0.520	0.530	13.20	13.45
Q	0.070	0.090	1.78	2.28
α_1	45° NOM.		45° NOM.	
α_2	45° NOM.		45° NOM.	

MILLIMETER DIMENSIONS ARE DERIVED FROM ORIGINAL INCH DIMENSIONS

TERMINAL CONNECTIONS

TERMINALS 1 & 3 – EMITTER
TERMINAL 2 – BASE
TERMINAL 4 – COLLECTOR

DIMENSIONAL OUTLINE FOR 41010
RCA HF-41



92CS-20420

SYMBOL	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.185	0.215	4.70	5.46
A_1	0.114	0.122	2.90	3.10
B	0.380	0.390	9.66	9.90
b	0.220	0.230	5.58	5.84
c	0.002	0.008	0.05	0.20
ϕD	0.270	0.290	6.86	7.38
ϕD_1	0.245	0.255	6.22	6.48
L	1.040	1.060	26.42	26.93
L_2	0.520	0.530	13.20	13.45
M	0.058	0.062	1.47	1.57
M_1	0.056	0.064	1.42	1.62
N	0.445	0.455	11.29	11.55
N_2	0.125	0.135	3.18	3.43
Q	0.070	0.090	1.78	2.28
α_1	45° NOM.		45° NOM.	
α_2	45° NOM.		45° NOM.	

MILLIMETER DIMENSIONS ARE DERIVED FROM ORIGINAL INCH DIMENSIONS

NOTE: PITCH DIA. OF 8-32 UNF-2A COATED THREAD (ASA B1. 1-1960)

TERMINAL CONNECTIONS

TERMINALS 1 & 3 – EMITTER
TERMINAL 2 – BASE
TERMINAL 4 – COLLECTOR

When incorporating RCA Solid State Devices in equipment, it is recommended that the designer refer to "Operating Considerations for RCA Solid State Devices", Form No. 1CE-402, available on request

WARNING: The bodies of these types contain beryllium oxide. Do not crush, grind, or abrade that portion because the dust resulting from such action may be hazardous if inhaled. Disposal should be by burial.

MOS FIELD-EFFECT TRANSISTORS
SILICON DUAL INSULATED-GATE TYPES
For FM Tuner Applications

40603
40604

RCA
DEVELOPMENTAL TYPE
TA7150
TA7151

RCA Developmental Types TA7150 and TA7151 are N-channel, silicon, depletion-type, dual insulated-gate, field-effect transistors utilizing the MOS* construction. These devices have characteristics which make them exceptionally desirable for rf-amplifier (TA7150) and mixer (TA7151) applications in FM tuners and other commercial equipment operating at frequencies up to approximately 150 MHz.

Both devices feature two independent insulated gates arranged in series on a single channel. This configuration offers significant advantages. For amplifier applications the TA7150 with its wide dynamic range provides substantially better cross-modulation performance than is obtainable with bipolar or single-gate field-effect transistors. In mixer applications the TA7151 provides excellent isolation between gates which virtually eliminates oscillator pulling with strong signals. Because the dual-insulated-gate device does not require use of a non-linear region of its operating characteristic for mixing action△, spurious responses are greatly reduced. When the TA7151 is used as shown under "Electrical Characteristics", its performance closely approximates that of an ideal "square-law" mixer.

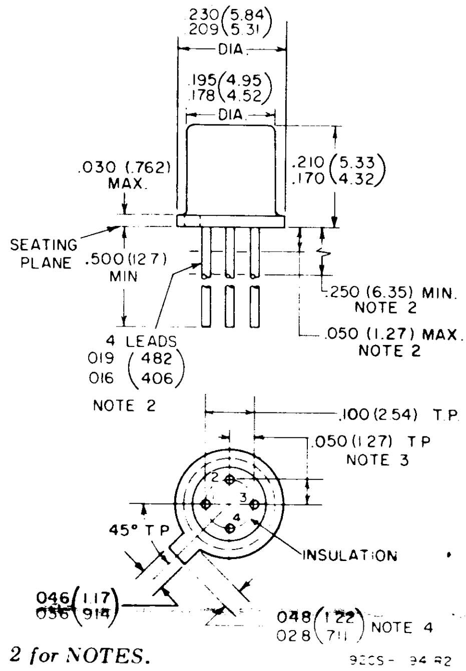
Provision of two insulated gates also results in extremely low feedback capacitance (0.02 pF typ.), a feature which enables the TA7150 to provide a power gain of 24 dB (typ.) at 100 MHz in an unneutralized amplifier circuit. The gain of the rf stage can be controlled by applying AGC voltage to gate No.2. Virtually no AGC power is required for full gain reduction.

The TA7150 and TA7151 are hermetically sealed in metal JEDEC TO-104 packages.

*Metal-Oxide Semiconductor.

△See RCA Publication ST3486 "Application of Dual-Gate MOS Field-Effect Transistors in Practical Radio Receivers" by H. M. Kleinman.

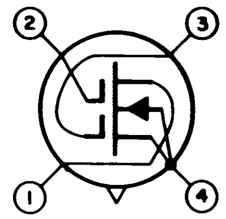
DIMENSIONAL OUTLINE
JEDEC TO-72



See Page 2 for NOTES.

DIMENSIONS IN INCHES AND MILLIMETERS

TERMINAL DIAGRAM



Lead 1 — Drain
Lead 2 — Gate No. 2
Lead 3 — Gate No. 1
Lead 4 — Source, Substrate and Case

Maximum Ratings, Absolute-Maximum Values:

In No Case Should the Voltage Between the Drain and Either Gate Exceed 20 Volts

DRAIN-TO-SOURCE VOLTAGE; V_{DS}	0 to +20 max.	V
GATE NO. 1-TO-SOURCE VOLTAGE, V_{G1S}:		
Continuous (dc)	+1 to −8 max.	V
Peak ac	+20 to −8 max.	V
GATE NO. 2-TO-SOURCE VOLTAGE, V_{G2S}:		
Continuous (dc)	−8 to 40% of V_{DS} max.	V
Peak ac	−8 to +20 max.	V
DRAIN CURRENT, I_D	Limited by Dissipation	
TRANSISTOR DISSIPATION, P_T:		
At ambient temperatures up to 65°C	220 max.	mW
At ambient temperatures above 65°C	Derate linearly at 2mW/°C	
AMBIENT TEMPERATURE RANGE:		
Storage and Operating	−65 to +175	°C
LEAD TEMPERATURE (During soldering):		
At distances ≥ 1/32" from seating surface for 10 seconds max.	265 max.	°C

1107 - 3.68

ELECTRICAL CHARACTERISTICS, at T_A = °C

CHARACTERISTICS	SYMBOLS	TEST CONDITIONS	LIMITS Dev. No. TA7150 RF AMPLIFIER Typ.	Max.	Dev. No. TA7151 MIXER Typ.	Max.	UNITS
Gate No.1-to-Source Cutoff Voltage	$V_{G1S}(off)$	V_{DS} = +15 V, I_D = 200 µA V_{G2S} = +4 V	-3	--	-3	--	V
Gate No.2-to-Source Cutoff Voltage	$V_{G2S}(off)$	V_{DS} = +15 V, I_D = 200 µA V_{G1S} = 0	-3	--	-3	--	V
Gate No.1 Leakage Current	I_{G1SS}	V_{G1S} = -20 V, V_{G2S} = 0, V_{DS} = 0	--	1	--	1	nA
Gate No.2 Leakage Current	I_{G2SS}	V_{G2S} = -20 V, V_{G1S} = 0, V_{DS} = 0	--	1	--	1	nA
Zero-Gate-Voltage Drain Current	I_{DSS}	V_{G2S} = +4 V, V_{G1S} = 0, V_{DS} = +13 V	18	--	18	--	mA
Small-Signal, Short-Circuit Reverse-Transfer Capacitance (Drain-to-Gate-No.1)	C_{rss}	V_{DS} = +13 V, I_D = 10 mA, f = 1 MHz V_{G2S} = +4 V	0.02	0.03	0.02	0.03	pF
Input Capacitance	C_{iss}	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V, f = 1 MHz	4.8	--	4.5	--	pF
Output Capacitance	C_{oss}	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V, f = 100 MHz	2.1	--	2.3	--	pF
Input Resistance	r_{is}	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V, f = 100 MHz	3.2	--	3.2	--	kΩ
Output Resistance	r_{os}	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V, f = 100 MHz	3.9	--	20	--	kΩ
Forward Transconductance	g_{fs}	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V, f = 1 kHz	10,000	--	10,000*	--	µmho
Maximum Available Power Gain	MAG	V_{DS} = +13 V, I_D = 10 mA V_{G2S} = +4 V f = 100 MHz, f_{out} for TA7151 (mixer) = 10.7 MHz	26	--	21	--	dB
Maximum Usable Power Gain (Unneutralized)	MUG		24▲	--	--	--	dB
Noise Figure	NF		3	4	--	--	dB

* conversion transadmittance

▲or limited by practical design considerations

NOTES FOR DIMENSIONAL OUTLINE

Note 1: *Dimensions in parentheses are in millimeters and are derived from the basic inch dimensions as indicated.*

Note 2: The specified lead diameter applies in the zone between 0.050" (1.27 mm) and 0.250" (6.35 mm) from the seating plane. From 0.250" (6.35 mm) to the end of the lead a maximum diameter of 0.021" (0.533 mm) is held. Outside of these zones, the lead diameter is not controlled.

Note 3: Leads having a maximum diameter of 0.019" (0.482 mm) at a gauging plane of 0.054" (1.372 mm) + 0.001" (0.025 mm) - 0.000" (0.000 mm) below seating plane shall be within 0.007" (0.177 mm) of their true position (location) relative to a maximum width of tab.

Note 4: Measured from actual maximum diameter.

TYPICAL y PARAMETER CHARACTERISTICS at 100MHz

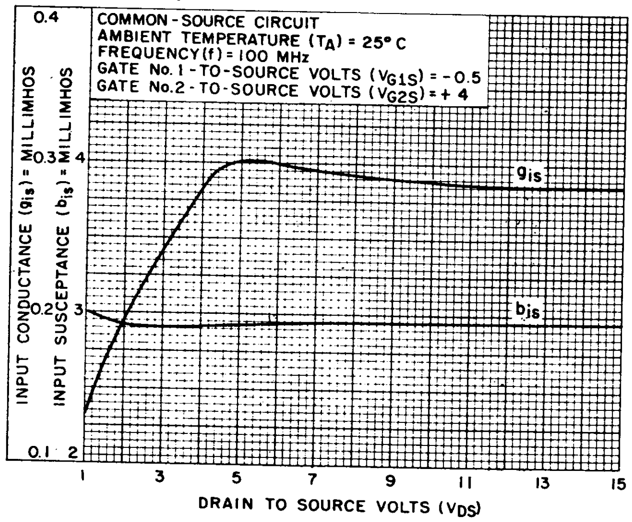


Fig. 1 – Input Admittance vs Drain-to-Source Volts

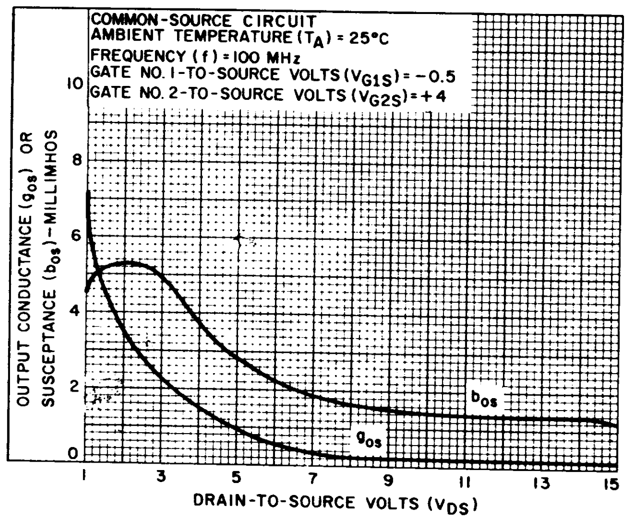


Fig. 2 – Output Admittance vs Drain-to-Source Volts

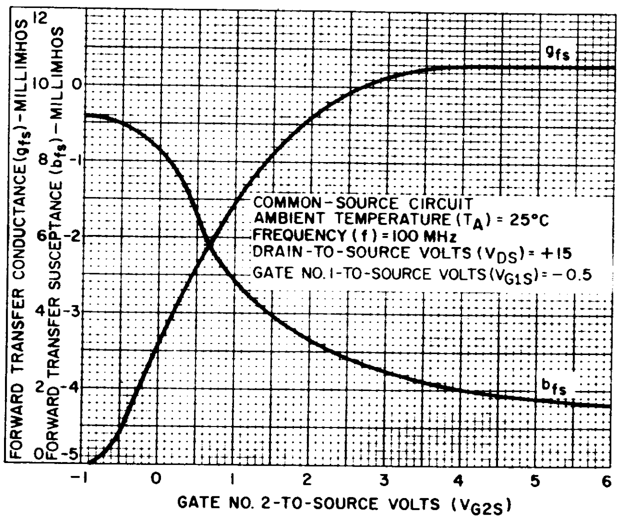


Fig. 3 – Forward Transfer Admittance vs Gate No. 2-to-Source Volts

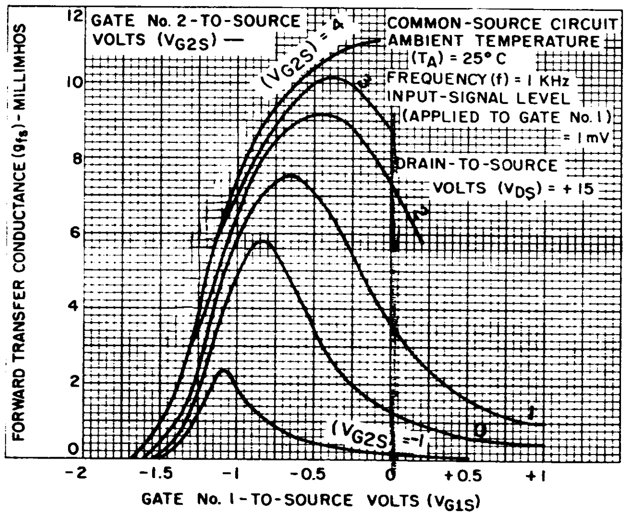


Fig. 4 – Forward Transfer Conductance vs Gate No. 1-to-Source Volts, f = 1kHz

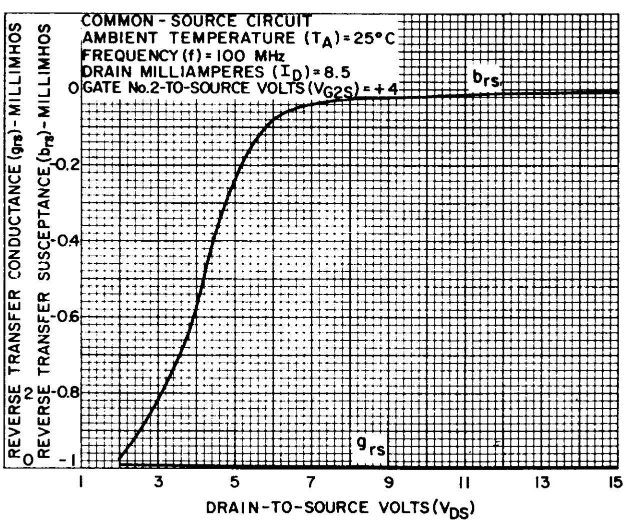


Fig. 5 – Reverse Transfer Admittance vs Drain-to-Source Volts

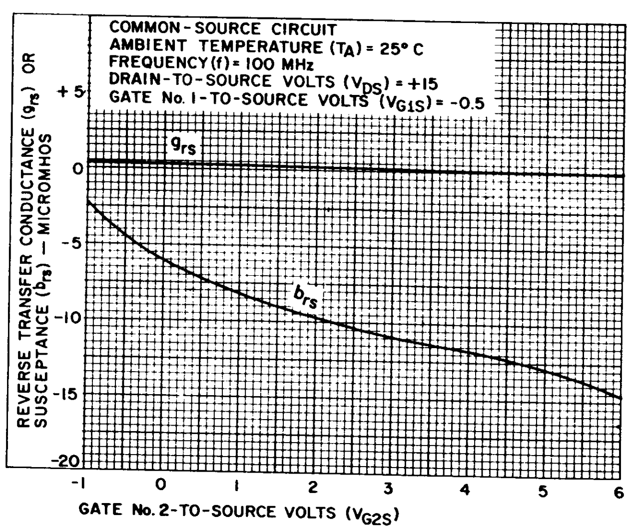


Fig. 6 – Reverse Transfer Admittance vs Gate No. 2-to-Source Volts

TYPICAL y PARAMETER CHARACTERISTICS at 100MHz

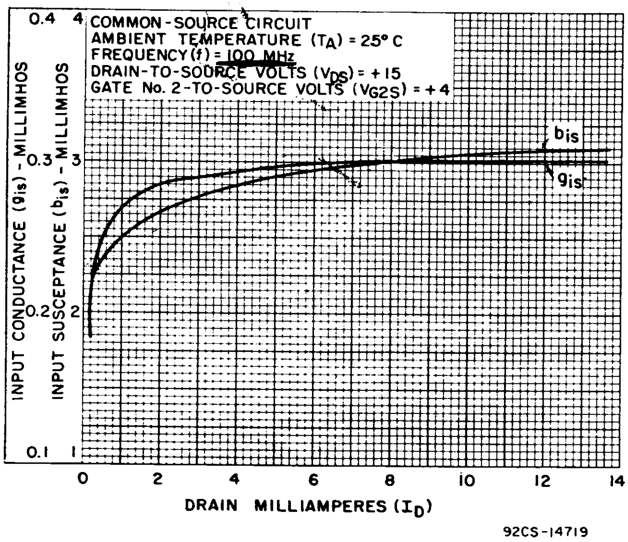


Fig. 7 — Input Admittance vs Drain Current

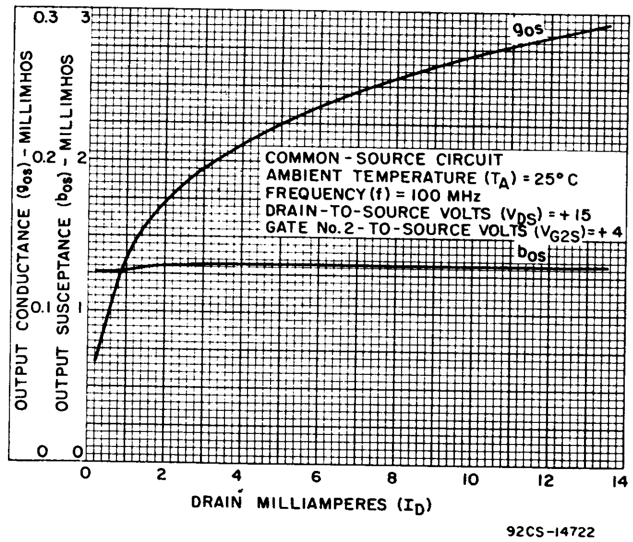


Fig. 8 — Output Admittance vs Drain Current

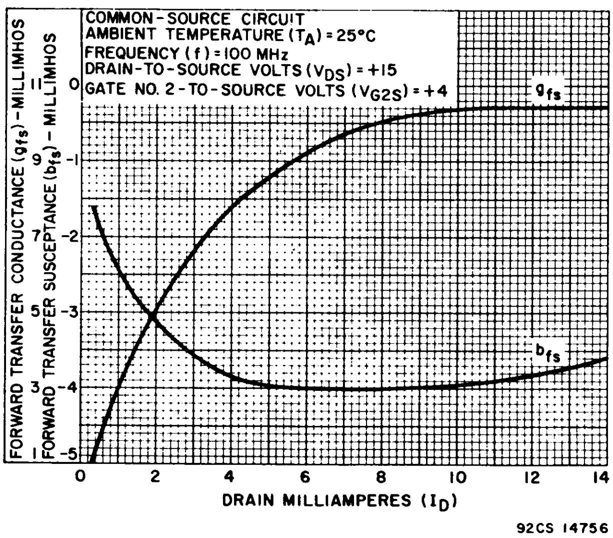


Fig. 9 — Forward Transfer Admittance vs Drain Current

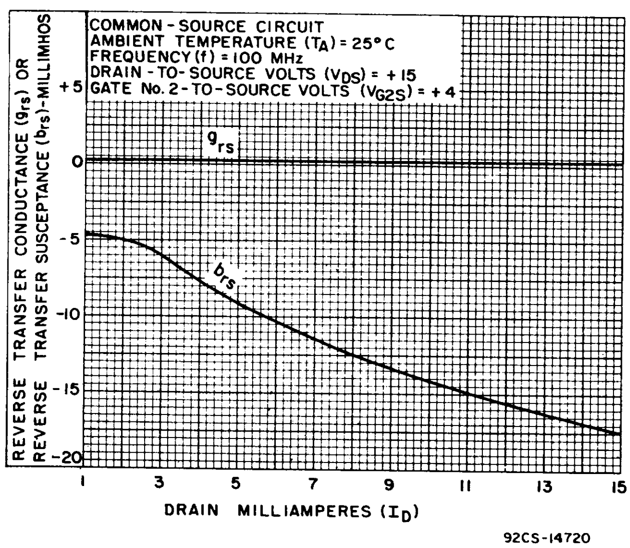


Fig. 10 — Reverse Transfer Admittance vs Drain Current