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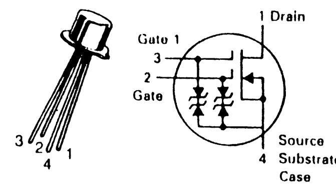
3N204
3N205

MAXIMUM RATINGS

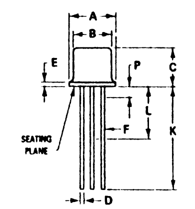
Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	25	Vdc
Drain-Gate Voltage	V_{DG}	30	Vdc
Drain Current	I_D	50	mA
Reverse Gate Current	I_G	10	mA
Forward Gate Current	I_{GF}	10	mA
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	360 2.4	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.2 0.8	mW mW/°C
Lead Temperature	T_L	300	°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65°C to +175°C	°C



DUAL-GATE MOSFET

N-CHANNEL — DEPLETION

(TO-72) METAL



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	—	0.76	—	0.030
F	0.41	0.48	0.016	0.019
G	2.54 BSC		0.100 BSC	
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45° BSC		45° BSC	
N	1.27 BSC		0.050 BSC	
P	—	1.27	—	0.050

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage (I_D = 10 μA, V_{G1} = V_{G2} = −5.0 V)	$V_{(BR)DSX}$	25	—	Vdc
Gate 1-Source Breakdown Voltage (I_{G1} = ±10 mA) Note 1	$V_{(BR)G1SO}$	±6	±30	Vdc
Gate 2-Source Breakdown Voltage (I_{G2} = ±10 mA) Note 1	$V_{(BR)G2SO}$	±6	±30	Vdc
Gate 1 Leakage Current (V_{G1S} = ±5.0 V, V_{G2S} = V_{DS} = 0)	I_{G1SS}	—	±10	nA
Gate 2 Leakage Current (V_{G2S} = ±5.0 V, V_{G1S} = V_{DS} = 0)	I_{G2SS}	—	±10	nA
Gate 1 to Source Cutoff Voltage (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = 20 μA)	$V_{G1S(off)}$	−0.5	−4.0	Vdc
Gate 2 to Source Cutoff Voltage (V_{DS} = 15 V, V_{G1S} = 0 V, I_D = 20 μA)	$V_{G2S(off)}$	−0.2	−4.0	Vdc
ON CHARACTERISTICS				
Zero-Gate-Voltage Drain Current* (V_{DS} = 15 V, V_{G2S} = 4.0 V, V_{G1S} = 0 V)	I_{DSS}*	6	30	mA
SMALL-SIGNAL CHARACTERISTICS				
Forward Transfer Admittance (V_{DS} = 15 V, V_{G2S} = 4.0 V, V_{G1S} = 0 V, f = 1.0 kHz) Note 2	$\lvert Y_{fs} \rvert$	10	22	mmhos
Input Capacitance (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = I_{DSS}, f = 1.0 Mhz)	C_{iss}	Typ. 3.0		pF
Reverse Transfer Capacitance (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = 10 mA, f = 1.0 MHz)	C_{rss}	0.005	0.03	pF
Output Capacitance (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = I_{DSS}, f = 1.0 MHz)	C_{oss}	Typ. 1.4		pF
FUNCTIONAL CHARACTERISTICS				
Noise Figure (V_{DD} = 18 V, V_{GG} = 7.0 V, f = 200 MHz) 3N204 (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = 10 mA, f = 450 MHz) 3N204	NF	 — —	 3.5 5.0	dB
Common Source Power Gain (V_{DD} = 18 V, V_{GG} = 7.0 V, f = 200 MHz) 3N204 (V_{DS} = 15 V, V_{G2S} = 4.0 V, I_D = 10 mA, f = 450 MHz) 3N204	G_{ps}	 20 14	 28 —	dB
Bandwidth (V_{DD} = 18 V, V_{GG} = 7.0 V, f = 200 MHz) 3N3204 (V_{DD} = 18 V, f_{LO} = 245 MHz, f_{RF} = 200 MHz) (Note 4) 3N205	BW	 7.0 4.0	 12 7.0	MHz
Gain Control Gate-Supply Voltage (Note 3) (V_{DD} = 18 V, ΔGPS = 300 dB, f = 200 MHz) 3N204	$V_{GG(GC)}$	0	−2.0	Vdc
Conversion Gain (Note 4) (V_{DD} = 18 V, f_{LO} = 245 MHz, f_{RF} = 200 MHz) 3N205	$G_{(conv.)}$	17	28	dB