

6367254 MOTOROLA SC (XSTRS/R F)

96D 82613 D

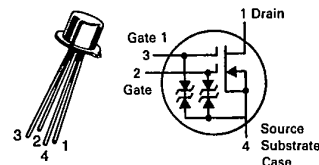
T-29-25

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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	360 2.4	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.2 0.8	mW mW/ $^\circ\text{C}$
Lead Temperature	T_L	300	$^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 $^\circ\text{C}$ to +175 $^\circ\text{C}$	$^\circ\text{C}$

3N204
3N205

CASE 20-03, STYLE 9
TO-72 (TO-206AF)



DUAL-GATE MOSFET
N-CHANNEL — DEPLETION

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage ($I_D = 10\ \mu\text{A}$, $V_{G1} = V_{G2} = -5.0\ \text{V}$)	$V_{(BR)DSX}$	25	—	Vdc
Gate 1-Source Breakdown Voltage ($I_{G1} = \pm 10\ \text{mA}$) Note 1	$V_{(BR)G1SO}$	± 6	± 30	Vdc
Gate 2-Source Breakdown Voltage ($I_{G2} = \pm 10\ \text{mA}$) Note 1	$V_{(BR)G2SO}$	± 6	± 30	Vdc
Gate 1 Leakage Current ($V_{G1S} = \pm 5.0\ \text{V}$, $V_{G2S} = V_{DS} = 0$)	I_{G1SS}	—	± 10	nA
Gate 2 Leakage Current ($V_{G2S} = \pm 5.0\ \text{V}$, $V_{G1S} = V_{DS} = 0$)	I_{G2SS}	—	± 10	nA
Gate 1 to Source Cutoff Voltage ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = 20\ \mu\text{A}$)	$V_{G1S(off)}$	-0.5	-4.0	Vdc
Gate 2 to Source Cutoff Voltage ($V_{DS} = 15\ \text{V}$, $V_{G1S} = 0\ \text{V}$, $I_D = 20\ \mu\text{A}$)	$V_{G2S(off)}$	-0.2	-4.0	Vdc
ON CHARACTERISTICS				
Zero-Gate-Voltage Drain Current* ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $V_{G1S} = 0\ \text{V}$)	I_{DSS}^*	6	30	mA
SMALL-SIGNAL CHARACTERISTICS				
Forward Transfer Admittance ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $V_{G1S} = 0\ \text{V}$, $f = 1.0\ \text{kHz}$) Note 2	$ Y_{fs} $	10	22	mmhos
Input Capacitance ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = I_{DSS}$, $f = 1.0\ \text{MHz}$)	C_{iss}	Typ. 3.0		pF
Reverse Transfer Capacitance ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = 10\ \text{mA}$, $f = 1.0\ \text{MHz}$)	C_{rss}	0.005	0.03	pF
Output Capacitance ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = I_{DSS}$, $f = 1.0\ \text{MHz}$)	C_{oss}	Typ. 1.4		pF
FUNCTIONAL CHARACTERISTICS				
Noise Figure ($V_{DD} = 18\ \text{V}$, $V_{GG} = 7.0\ \text{V}$, $f = 200\ \text{MHz}$) ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = 10\ \text{mA}$, $f = 450\ \text{MHz}$)	NF	— —	3.5 5.0	dB
Common Source Power Gain ($V_{DD} = 18\ \text{V}$, $V_{GG} = 7.0\ \text{V}$, $f = 200\ \text{MHz}$) ($V_{DS} = 15\ \text{V}$, $V_{G2S} = 4.0\ \text{V}$, $I_D = 10\ \text{mA}$, $f = 450\ \text{MHz}$)	G_{ps}	20 14	28 —	dB

MOTOROLA SMALL-SIGNAL SEMICONDUCTORS

6367254 MOTOROLA SC (XSTRS/R F)

96D 82614 D

3N204, 3N205

T-29-25

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

Characteristic	Symbol	Min	Max	Unit
Bandwidth ($V_{DD} = 18\text{ V}$, $V_{GG} = 7.0\text{ V}$, $f = 200\text{ MHz}$) ($V_{DD} = 18\text{ V}$, $f_{LO} = 245\text{ MHz}$, $f_{RF} = 200\text{ MHz}$) (Note 4)	BW	7.0 4.0	12 7.0	MHz
Gain Control Gate-Supply Voltage (Note 3) ($V_{DD} = 18\text{ V}$, $\Delta G_{PS} = 300\text{ dB}$, $f = 200\text{ MHz}$)	$V_{GG}(GC)$	0	-2.0	Vdc
Conversion Gain (Note 4) ($V_{DD} = 18\text{ V}$, $f_{LO} = 245\text{ MHz}$, $f_{RF} = 200\text{ MHz}$)	$G_{(conv.)}$	17	28	dB

*PW = 30 μs , Duty Cycle $\leq 2.0\%$.

(1) All gate breakdown voltages are measured while the device is conducting rated gate current. This insures that the gate voltage limiting network is functioning properly.

(2) This parameter must be measured with bias voltages applied for less than five (5) seconds to avoid overheating.

(3) ΔG_{PS} is defined as the change in G_{PS} from the value at $V_{GG} = 7.0\text{ V}$.

(4) Amplitude at input from local oscillator is 3 volts RMS.