MOBILE RADIO

MAINTENANCE MANUAL

406—512 MHz POWER AMPLIFIER BOARD 19D423928G5, G6, G8

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DESCRIPTION

The PA assembly for CUSTOM MVP transmitters uses four RF power transistors to provide a power output of 35 Watts. The output power is adjustable using power control R213 and is type accepted with the FCC to operate over a range of 1-Watt to rated output power. A single transistor is used in the power control circuit.

Supply voltage (A+) for the PA is connected from J1 on the back of the radio through FL210-C5 on the side of the radio. C201, C202, and C203 prevent RF from getting on the power leads. Diode CR201 will cause the main fuse assembly to blow if the polarity of the power leads is reversed, providing reverse voltage protection for the radio.

Centralized metering jack J5 is provided for use with GE Test Set Model 4EX3A11 or Test Kit 4EX8K12. The Test Set meters the Ampl-1 drive (exciter output), power adjust voltage, driver, and PA current.

CIRCUIT ANALYSIS

RF POWER AMPLIFIERS

The exciter output is coupled through RF cable W201 to PA input jack J1. The 50 ohms RF input is coupled through a matching network comprised of C6, C7, C8 and W2 to the base of power amplifier Q1.

Part of the RF input is rectified by CR1 and metered at J5-4 through resistor R1.

Collector voltage for Q1 is applied direct from the DC power input through collector stabilizing network R5 and L2 and collector feed network L3 and C10.

The output of Q1 is coupled to the base of a second power amplifier Q202 through a matching network consisting of T1, C15 and C16.

Collector voltage to Q202 is controlled by power control circuit, Q215, and is applied through a collector stabilizing network L6 and R6 and collector feed network L5 and C18.

The output of Q202 is coupled to the base of driver Q203 through C17, C19 and a matching network consisting of T2, C22, C52, C24 and C25. The collector voltage to Q203 is coupled through collector stabilizing network L9 and R14 and collector feed network L8 and C26.

Collector current for Q203 is metered across tapped manganin resistor R12. The reading is taken in position F on the 1-Volt scale with the High Sensitivity button pressed, and read as 0-15 amperes full scale.

The output of driver Q203 is coupled through an impedance matching network (C26, C27, C29, C30, C33 and T3) that matches the output impedance of Q203 to the input impedance of power amplifier Q204 through a 50 ohm micro strip (W204) and input impedance matching network T4, C34, C35 and C36.

Collector current for Q204 is metered across tapped manganin resistor R10. The reading is taken in position G on the 1-Volt scale with the High Sensitivity button pressed and read as 0-15 amperes full scale.

Following power amplifier Q204 is a matching network C37, C38, and T5 that matches the output of Q204 to the 50-ohm input of low pass filter, through 50 ohm micro strip W5 and a 50 ohm cable W214. C1 on the low pass filter board provides DC isolation between the transmitter and the antenna.

The PA output is coupled through the low-pass filter to the antenna through antenna transfer relay K1.

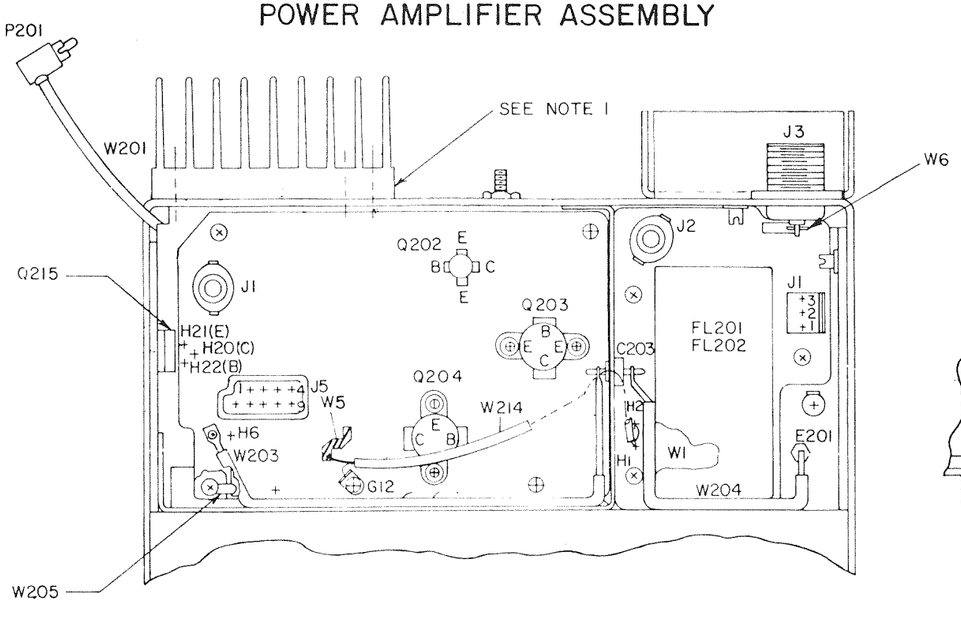
WARNING

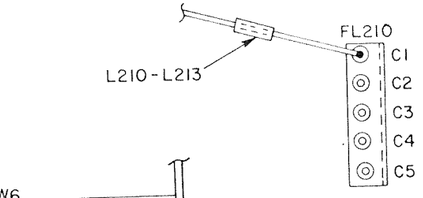
The RF Power Transistors used in the transmitter contain Beryllium Oxide, a TOXIC substance. If the ceramic, or other encapsulation is opened, crushed, broken or abraded, the dust may be hazardous if inhaled. Use care in replacing transistors of this type.

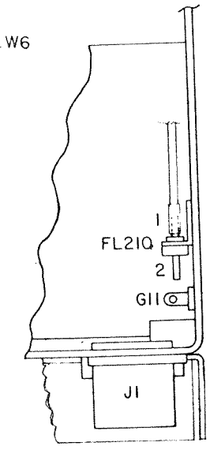
POWER CONTROL CIRCUIT

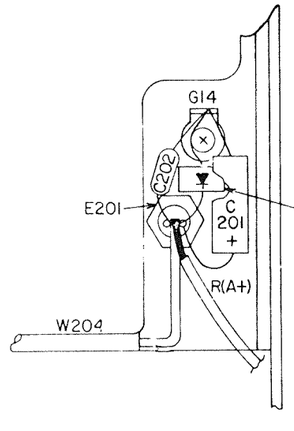
The power control circuit consists of R13 and Q215. R13 controls the base voltage, and conduction of Q215. Q215 is connected in series with the collector feed network for Q202 thereby controlling the drive to Q203 and therefore the output power. R13 is adjusted to provide the desired output power. The control voltage for Q202 is measured in position C on 1 volt scale and read as 0-15 volts full scale.

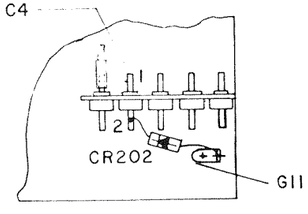
POWER AMPLIFIER ASSEMBLY







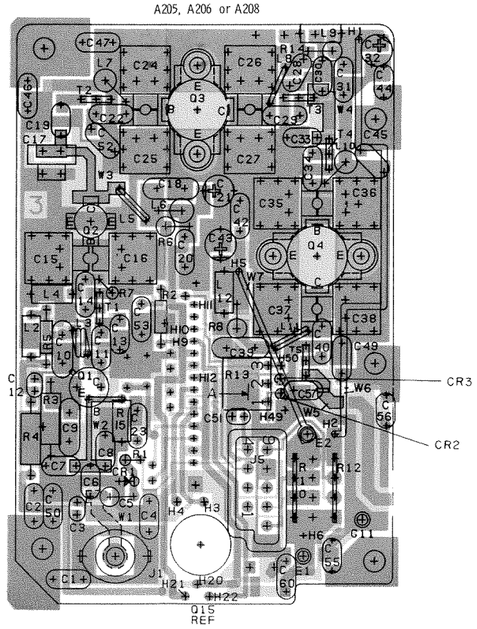


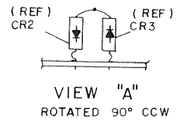


NOTE:
1. APPLY SILICONE GREASE (19A115205P3) BETWEEN CHASSIS AND HEAT SINK.

(19C327852, Rev. 2)

A205, A206 or A208

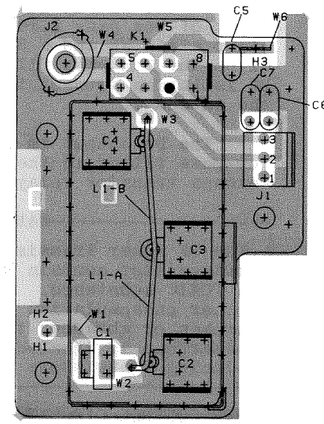




PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH 200 SERIES. EXAMPLE: C1=C201, R1=R201, ETC.

(19C327156, Rev. 4)
(19B226633, Sh. 1, Rev. 3)
(19B226633, Sh. 2, Rev. 2)

FL201/FL202

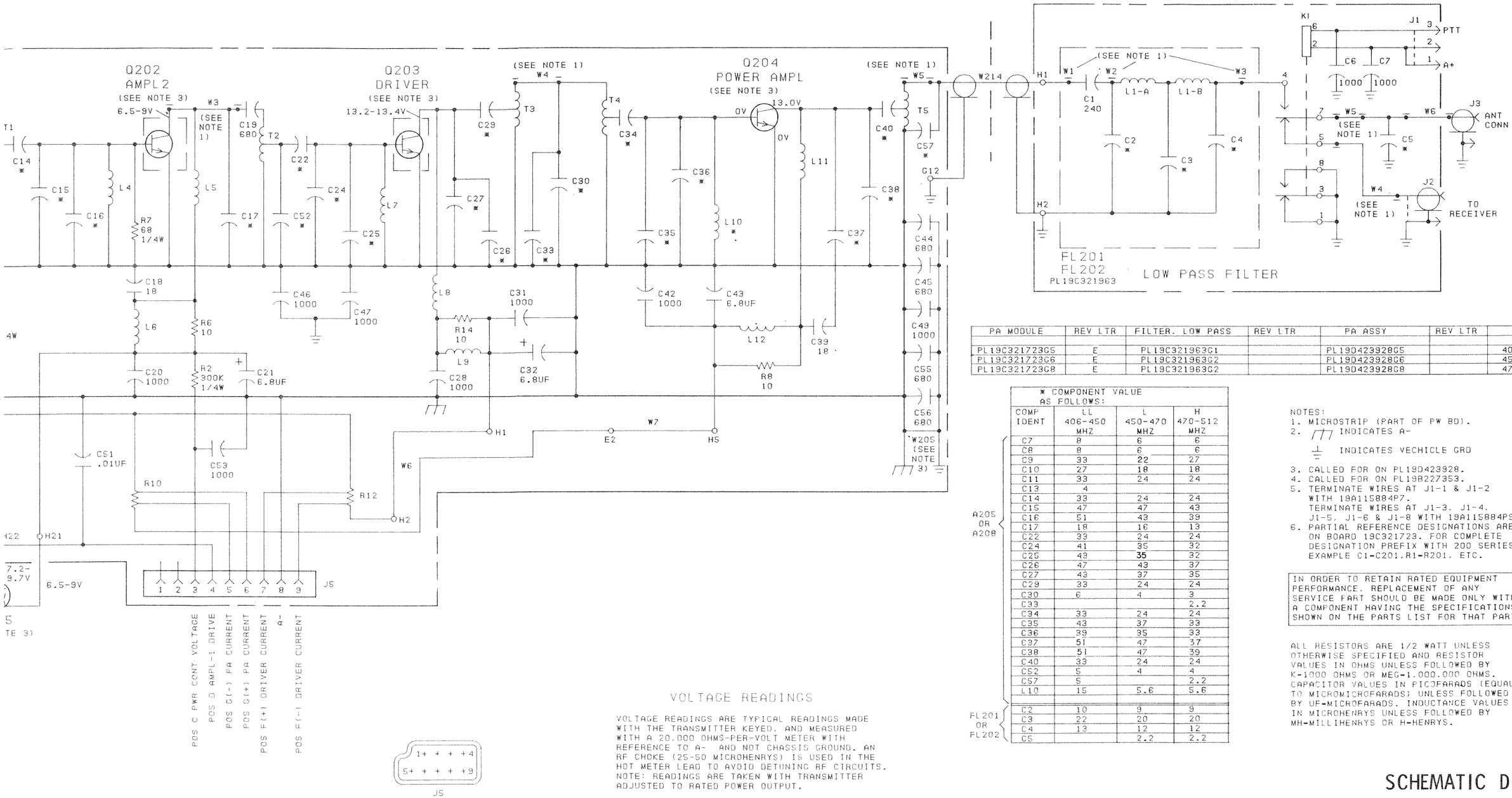


(19C327137, Rev. 2)
(19B227225, Sh. 2, Rev. 0)
(19B227225, Sh. 3, Rev. 0)

RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

OUTLINE DIAGRAM

406—512 MHz, 35-WATT
POWER AMPLIFIER



PA MODULE	REV LTR	FILTER, LOW PASS	REV LTR	PA ASSY	REV LTR	FREQ
PL19C321723G5	E	PL19C321963G1		PL19D423928G5		406-450 MHZ
PL19C321723G6	E	PL19C321963G2		PL19D423928G6		450-470 MHZ
PL19C321723G8	E	PL19C321963G2		PL19D423928G8		470-512 MHZ

* COMPONENT VALUE AS FOLLOWS:			
COMP IDENT	LL 406-450 MHZ	L 450-470 MHZ	H 470-512 MHZ
C7	8	6	6
C8	8	6	6
C9	33	22	27
C10	27	18	18
C11	33	24	24
C13	4		
C14	33	24	24
C15	47	47	43
C16	51	43	39
C17	18	16	13
C22	33	24	24
C24	41	35	32
C25	43	35	32
C26	47	43	37
C27	43	37	35
C29	33	24	24
C30	6	4	3
C33			2.2
C34	33	24	24
C35	43	37	33
C36	39	35	33
C37	51	47	37
C38	51	47	39
C40	33	24	24
C52	5	4	4
C57	5		2.2
L10	15	5.6	5.6
C2	10	9	9
C3	22	20	20
C4	13	12	12
C5		2.2	2.2

A205 OR A208

FL201 OR FL202

NOTES:
1. MICROSTRIP (PART OF PW BD).
2. ⫽⫽ INDICATES A-
   ⏚ INDICATES VECHICLE GRD
3. CALLED FOR ON PL19D423928.
4. CALLED FOR ON PL19B227353.
5. TERMINATE WIRES AT J1-1 & J1-2 WITH 19A115884P7.
   TERMINATE WIRES AT J1-3, J1-4, J1-5, J1-6 & J1-8 WITH 19A115884P9.
6. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN ON BOARD 19C321723. FOR COMPLETE DESIGNATION PREFIX WITH 200 SERIES; EXAMPLE C1-C201, R1-R201, ETC.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K-1000 OHMS OR MEG-1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF-MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH-MILLIHENRYS OR H-HENRYS.

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MADE WITH THE TRANSMITTER KEYED, AND MEASURED WITH A 20,000 OHMS-PER-VOLT METER WITH REFERENCE TO A- AND NOT CHASSIS GROUND. AN RF CHOKE (25-50 MICROHENRYS) IS USED IN THE HOT METER LEAD TO AVOID DETUNING RF CIRCUITS. NOTE: READINGS ARE TAKEN WITH TRANSMITTER ADJUSTED TO RATED POWER OUTPUT.

SCHEMATIC DIAGRAM

406—512 MHz, 35-WATT
POWER AMPLIFIER

Issue 2

PARTS LIST

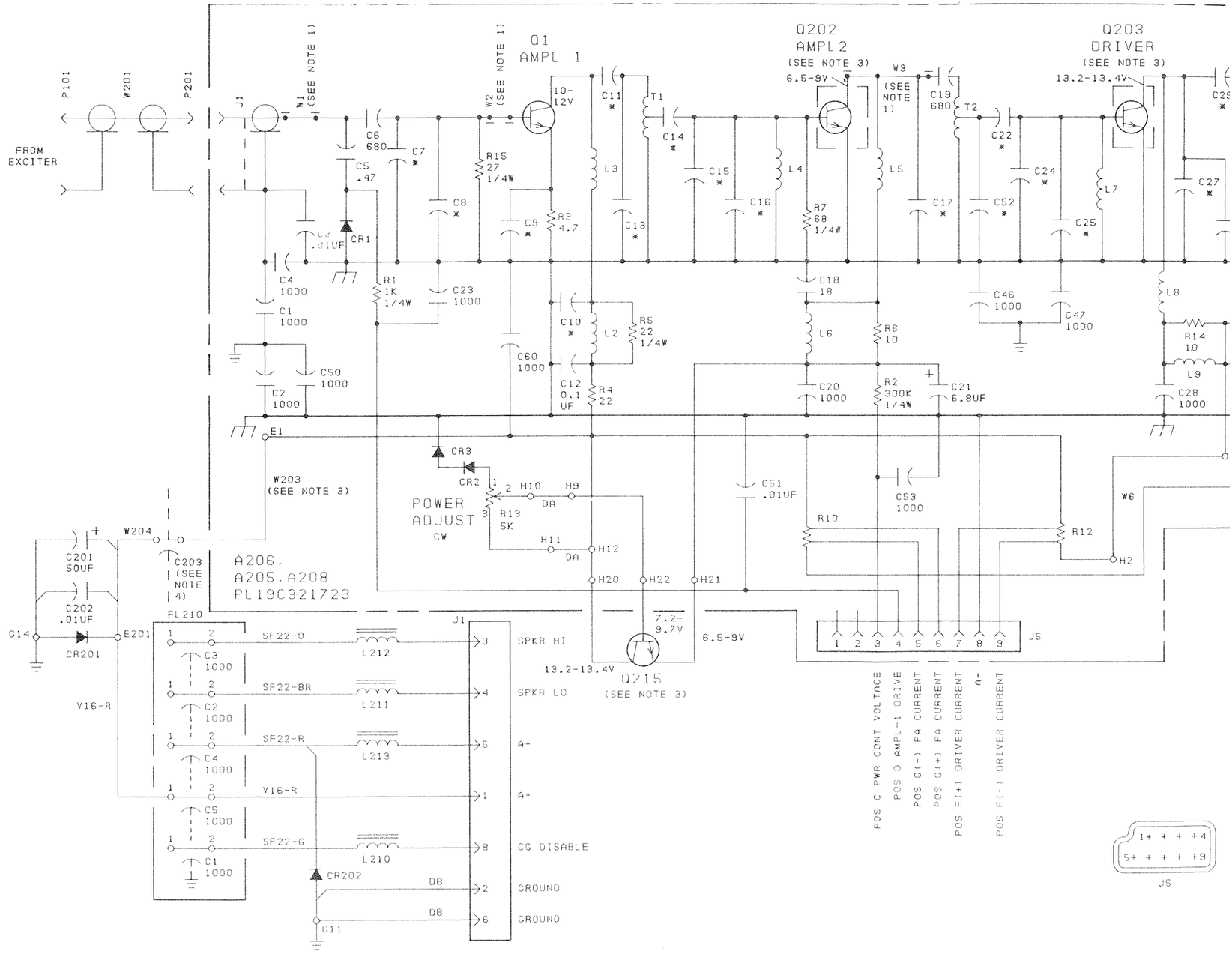
LBI30585B

406-512 MHz 35 WATT POWER AMPLIFIER
19D423928G5 406-450 MHz
19D423928G6 450-470 MHz
19D423928G8 470-512 MHz

SYMBOL	GE PART NO.	DESCRIPTION
A205, A206, A208		POWER AMPLIFIER MODULE A205 19C321723G5 406-450 MHz A206 19C321723G6 450-470 MHz A208 19C321723G8 470-512 MHz
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C201 and C202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C204	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C205	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW.
C206	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C207LL	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C207L and C207H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C208LL	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C208L and C208H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C209LL	19A134666P4	Silver mica: 33 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C209L	19A134666P2	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C209H	19A134666P3	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210LL	19A134666P3	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210L and C210H	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C211LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C211L and C211H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C212	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C213	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C214LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C214L and C214H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C215LL and C215L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C215H	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216LL	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW.
C216L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216H	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW.
C217LL	19A116679P18	Metallized teflon: 18 pf ±.5 pf, 250 VDCW.
C217L	19A116679P16D	Metallized teflon: 16 pf ±.5 pf, 250 VDCW.
C217H	19A116679P13D	Metallized teflon: 13 pf ±.5 pf, 250 VDCW.

(Cont'd on Page 4)

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



(LBI30585 Cont'd from Page 3)

SYMBOL	GE PART NO.	DESCRIPTION
C218	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C219	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C220	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C221	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C222LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C222L and C222H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C223	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf ±2%, 250 VDCW.
C224L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C224H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C225LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C225L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C225H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C226LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C226L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C226H	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C227L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227H	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C228	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C229LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C229L and C229H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C230LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230L	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230H	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C231	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C232	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C233H	19A134100P20	Ceramic disc: 2.2 pf ±0.1 pf, 100 VDCW, temp coef 0 ±120PPM/°C.
C234LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C234L and C234H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C235LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C235L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C235H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236LL	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237LL*	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In REV D & earlier:
	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237H*	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In REV D and earlier:
	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238LL*	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In REV D & earlier:
	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238H*	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In REV D & earlier:
	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C239	19A116666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C240LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C240L and C240H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C242	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C243	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C244 and C245	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C246 and C247	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C249 and C250	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C252LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C252L and C252H	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C253	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C255 and C256	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C257LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C257H	19A134100P20	Ceramic disc: 2.2 pf ±0.1 pf, 100 VDCW.
C260	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - DIODES AND RECEPTACLES - - - - -
CR201	19A116052P1	Diode, silicon.
CR202 and CR203	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - - - TERMINALS - - - - - - - - - -
E1 and E2	19A134263P1	Contact, electrical; sim to Selectro X-L-070174-1.
G11	19A134263P1	Contact, electrical; sim to Selectro X-L-070174-1.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J201	19A130924G1	Connector, coaxial: jack type; sim to Cinch 14H11613.
J205	19B219374G1	Connector: 9 contacts.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L202	19A129773G1	Coil.
L203	19A129774P1	Coil.
L204	19A129773G1	Coil.
L205	19B219457P6	Coil.
L206	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1K.
L207	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L208LL	19B219457P6	Coil.
L208L and L208H	19A130650P1	Coil.
L209	19A129773G1	Coil.
L210LL	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9K.
L210L and L210H	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L211	19B219457P6	Coil.
L212	19A129773G1	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q201	19A134237P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R201	3R151P102J	Composition: 1K ohms ±5%, 1/8 w.
R202	3R152P304J	Composition: 300K ohms ±5%, 1/4 w.
R203	7147161P13	Composition: 4.7 ohms ±5%, 1/2 w.
R204	3R77P220J	Composition: 22 ohms ±5%, 1/2 w.
R205	3R152P220J	Composition: 22 ohms ±5%, 1/4 w.
R206	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R207	3R152P680J	Composition: 68 ohms ±5%, 1/4 w.
R208	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R210	19C320212P1	Shunt resistor.
R212	19C320212P1	Shunt resistor.
R213	19A116559P102	Variable, cermet: 5K ohms ±20%, .5 w; sim to CTS Series 360.
R214	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R215	3R152P270J	Composition: 27 ohms ±5%, 1/4 w.
		- - - - - - - - - - TRANSFORMERS - - - - - - - - -
T201 thru T205	19A130446G1	Coil.
		- - - - - - - - - - CABLES - - - - - - - - - -
W201 thru W204		(Part of printed board 19D423005P1).
W206	19B226971G1	Jumper.
W207	19A130791G1	Jumper.
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C201	19A115680P4	Electrolytic: 50 µf +150% -10%, 25 VDCW: sim to Mallory Type TTX.
C202	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
C203	19B209488P2	Ceramic, feed-thru: 1000 pf +100% -0%, 500 VDCW; sim to Allen-Bradley Style FA5D.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR201	19A116783P1	Silicon.
CR202	4037822P1	Silicon, 1000 mA, 400 PIV.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E201	7143206P1	Terminal, standoff.
		- - - - - - - - - - FILTERS - - - - - - - - - -
FL201 and FL202		FILTER BOARD FL201 19C321963G1 406-450 MHz (LL) FL202 19C321963G2 450-512 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	19A116679P240J	Silver mica: 240 pf ±5%, 250 VDCW.
C2LL	19A116952P10	Metallized teflon: 10 pf ±0.5 pf, 250 VDCW.
C2H	19A116952P9	Metallized teflon: 9 pf ±0
C3LL	19A116952P22	Metallized teflon: 22 pf ±
C3H	19A116952P20	Metallized teflon: 20 pf ±
C4LL	19A116952P13	Metallized teflon: 13 pf ±
C4H	19A116952P12	Metallized teflon: 12 pf ±
C5H	19A134100P20	Ceramic: 2.2 pf ±0.1 pf, 1
C6 and C7	19A116655P20	Ceramic disc: 1000 pf ±10% sim to RMC Type JF Discap.
		- - - - - - - - JACKS AND REC
J1	19A116659P55	Connector, printed wiring: Molex 09-65-1031.
J2	19A130924G1	Connector, coaxial: jack t 14H11613.
		- - - - - - - - - - - RELAY
K1	19B209558P1	Hermetic sealed: 180 to 3 2 form C contacts, 8.0 to 1 3SAV1760A2.
		- - - - - - - - - - INDUCTO
L1LL	19B227240P1	Jumper.
L1H	19B227240P2	Jumper.
		- - - - - - - - - - CABLE
W1 thru W5		(Part of printed board 19C
W6	19A136512P1	Antenna strap.
		- - - - - - - - - - FILTERS
FL210		FILTER 19A1366
		- - - - - - - - - - CAPACIT
C1 thru C5	5493392P7	Ceramic, feed-thru: 1000 sim to Allen-Bradley Type
		- - - - - - - - - TERMINALS
G11 and G12	7135118P2	Terminal, solderless.
G14	7135118P2	Terminal, solderless.
		- - - - - - - - JACKS AND
J1		Connector. Includes:
	19A115884P12	Shell.
	19A115884P7	Contacts, male: wire size 60528-1.
	19A115884P9	Contacts, male: wire size 60910-1.
J3	4029493P1	Connector, receptacle: co 83-798.
		- - - - - - - - - - INDUCT
L210 thru L213	19A126140P3	Core, toroidal, ferrite: 88-31959.
		- - - - - - - - - - PLUGS
P201		(Part of W201).
		- - - - - - - - - - TRANSI
Q202	19A134164P2	Silicon, NPN: sim to Type
Q203C	19A134171P2	Silicon, NPN. (406-450 MH
Q203D	19A134239P1	Silicon, NPN. (450-512 MH

DESCRIPTION
RF: 15.0 µh ±10%, 1.20 ohms DC res max; Jeffers 4421-9K.
RF: 5.60 µh ±10%, 0.30 ohms DC res max; Jeffers 4421-4K.
- - - - - - - TRANSISTORS - - - - - - - -
n, NPN.
- - - - - - - RESISTORS - - - - - - - - -
ition: 1K ohms ±5%, 1/8 w.
ition: 300K ohms ±5%, 1/4 w.
ition: 4.7 ohms ±5%, 1/2 w.
ition: 22 ohms ±5%, 1/2 w.
ition: 22 ohms ±5%, 1/4 w.
ition: 10 ohms ±5%, 1/2 w.
ition: 68 ohms ±5%, 1/4 w.
ition: 10 ohms ±5%, 1/2 w.
esistor.
esistor.
le, cermet: 5K ohms ±20%, .5 w; sim to ies 360.
ition: 10 ohms ±5%, 1/2 w.
tion: 27 ohms ±5%, 1/4 w.
- - - - - - - TRANSFORMERS - - - - - - - -
- - - - - - - CABLES - - - - - - - - - -
of printed board 19D423005P1).
- - - - - - - CAPACITORS - - - - - - - - -
olytic: 50 µf +150% -10%, 25 VDCW: sim ory Type TTX.
er: 0.01 µf ±10%, 50 VDCW.
, feed-thru: 1000 pf +100% -0%, 500 VDCW; Allen-Bradley Style FA5D.
- - - - DIODES AND RECTIFIERS - - - - - -
.
, 1000 mA, 400 PIV.
- - - - - - - TERMINALS - - - - - - - - -
l, standoff.
- - - - - - - FILTERS - - - - - - - - - -
FILTER BOARD L201 19C321963G1 406-450 MHz (LL) L202 19C321963G2 450-512 MHz (H)
- - - - - - - CAPACITORS - - - - - - - - -
mica: 240 pf ±5%, 250 VDCW.
zed teflon: 10 pf ±0.5 pf, 250 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C2H	19A116952P9	Metallized teflon: 9 pf ±0.5 pf, 250 VDCW.
C3LL	19A116952P22	Metallized teflon: 22 pf ±0.5 pf, 250 VDCW.
C3H	19A116952P20	Metallized teflon: 20 pf ±0.5 pf, 250 VDCW.
C4LL	19A116952P13	Metallized teflon: 13 pf ±0.5 pf, 250 VDCW.
C4H	19A116952P12	Metallized teflon: 12 pf ±0.5 pf, 250 VDCW.
C5H	19A134100P20	Ceramic: 2.2 pf ±0.1 pf, 100 VDCW.
C6 and C7	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J1	19A116659P55	Connector, printed wiring: 3 contacts; sim to Molex 09-65-1031.
J2	19A130924G1	Connector, coaxial: jack type; sim to Cinch 14H11613.
		- - - - - - - - - - - RELAYS - - - - - - - - - -
K1	19B209558P1	Hermetic sealed: 180 to 330 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 3SAV1760A2.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1LL	19B227240P1	Jumper.
L1H	19B227240P2	Jumper.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 thru W5		(Part of printed board 19C321962P1).
W6	19A136512P1	Antenna strap.
		- - - - - - - - - - FILTERS - - - - - - - - - -
FL210		FILTER 19A136680G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 thru C5	5493392P7	Ceramic, feed-thru: 1000 pf +100% -0%, 500 VDCW; sim to Allen-Bradley Type FA5C.
		- - - - - - - - - TERMINALS - - - - - - - - - -
G11 and G12	7135118P2	Terminal, solderless.
G14	7135118P2	Terminal, solderless.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J1		Connector. Includes:
	19A115884P12	Shell.
	19A115884P7	Contacts, male: wire size 14-20; sim to AMP 60528-1.
	19A115884P9	Contacts, male: wire size 22-30; sim to AMP 60910-1.
J3	4029493P1	Connector, receptacle: coaxial; sim to Amphenol 83-798.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L210 thru L213	19A126140P3	Core, toroidal, ferrite: sim to Stackpole 88-31959.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P201		(Part of W201).
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q202	19A134164P2	Silicon, NPN; sim to Type 2N5945.
Q203C	19A134171P2	Silicon, NPN. (406-450 MHz)
Q203D	19A134239P1	Silicon, NPN. (450-512 MHz)

SYMBOL	GE PART NO.	DESCRIPTION
Q204	19A134242P1	Silicon, NPN.
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W201	5491689P91	Cable, RF: approx 7-1/2 inches long.
W203	19C327146P1	Jumper.
W204	19C327146P2	Jumper.
W205	7135118P1	Terminal, solder.
W214	19A130831G2	Cable: approx 5-1/4 inches long.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	19C327846G1	Heat sink, finned.
	19C321441P1	Insulator. (Located under A205 and A206, A208).
	19B227353G1	Shield. (Located around A205, A206, A208).
	19B201074P304	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/4. (Secures shield to frame at C17).
	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Secures shield to frame at J5).
	5492178P2	Washer, spring tension. (Used with Q202).
	N207P15C6	Hex nut: No. 8-32. (Used with Q202).
	19A130465P1	Spacer. (Used with Q202).
	N44P9006C6	Screw, machine: No. 4-40 x 3/8. (Secures Q203).
	19A116023P1	Insulator, plate. Dupont No. 300 Kapton H. (Located under Q215).
	19A134016P1	Insulator, bushing. (Used with Q215).
	7878243P11	Hex nut: No. 8-32. (Secures stud that mates with wing nut securing radio to case).
	4033714P11	Terminal, solderless: sim to Zierick 349. (Solders to FL201 and FL202).
	N84P13003C6	Tap screw, Phillips Pozidriv®: No. 6-32 x 3/16. (Secures FL210).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures J3).
	4036555P1	Insulator, washer: nylon. (Used with Q201 on PA Module).
	19B219554G2	Can. (FL201, FL202).
	19B219555P1	Cover. (FL201, FL202).
	19B209502P1	Terminal, stud. (Used with C2, C3, C4, L1).

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - D - Power Amplifier Module 19C321723G5, 6, 8

REV. E - Power Amplifier Module 19C321723G6
Incorporated in initial shipment.

REV. E - Power Amplifier Module 19C321723G5
Increase Power output. Changed C237LL and C238LL.

REV. E - Power Amplifier Module 19C321723G8
Increase Power output. Changed C237H and C238H.