Cobra 146 GTL Service Manual

COBRA 146GTL

(PRELIMINARY)

SERVICE MANUAL

REPLACEMENT PARTS LIST FOR MODEL C-146GTL

CIRCUIT SYMBOL	DESCRIPTION	DYNASCAN PART NUMBER
IC 1	Integrated circuit, TA75902P	307-248-9-001
IC 2	I.C., uPD2824C	307-248-9-002
IC 3	I.C., AN612	307-143-9-002
IC 4	I.C., uPC1182H	307-248-9-003
IC 5	I.C., SO42P	307-143-9-004
TR 4, 5, 7, 8, 9, 10, 11, 18, 24, 25, 27, 29, 30, 32, 34, 36, 42, 45, 46	Transistor, 2SC945A-Q	176-062-9-001
TR 12, 14	Transistor, 2SC1674-L	176-081-9-001
TR 1, 2, 13, 15, 16, 19, 20, 21, 22, 23, 37	Transistor, 2SC1675-L	176-065-9-001
TR 3, 17, 41	Transistor, 2SC1730-L	176-073-9-001
TR 39	Transistor, 2SC2166-C	176-108-9-001
TR 38	Transistor, 2SC1969-B	176-087-9-002
TR 40	Transistor, 2SC2086-D	176-108-9-002
TR 31, 33, 43	Transistor, 2SB525-C	177-045-9-001
TR 35	Transistor, 2SA473-O	177-045-9-002
TR 44	Transistor, 2SA1012-O	177-045-9-003
TR 6, 28	Transistor, 2SA733-P	177-020-9-001
TR 26	Transistor, 2SC1312-F	176-108-9-003
D 3, 4, 6, 7, 8, 9, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 48, 51, 52, 53, 56, 66, 70	Diode, 1S2075K	151-028-9-001
D 1, 2, 5, 10, 11	Diode, 1N60	150-001-9-005
D 13, 14	Diode, MC301	151-072-9-001
D 501	Diode, 1N4003	151-083-9-001
D 25, 30	Diode, Vari-cap, 1S2688EB	154-006-9-001
D 401	Diode, LED, DR-202AL	158-036-9-001
D 402	Diode, LED, TLRG-101	158-020-9-001
D 33	Diode, Zener, RD5.1EBZ	152-098-9-001
D 50	Diode, Zener, RD7.5EBZ	152-097-9-001

CIRCUIT SYMBOL	DESCRIPTION	DYNASCAN PART NUMBER
VR 7	Res., Semi-fixed, RV-182 100K B	008-372-9-003
VR 2	Res., Semi-fixed, RV-182 200K B	008-404-9-002
FL 1	Filter, Crystal, FL-090	143-012-9-001
S 1	Switch, Rotary, Channel, SR-216	083-243-9-001
S 402	Switch, Rotary, Mode, SR-297	083-267-9-001
S 403	Switch, Slide, PA-CB, SW-250	084-095-9-001
S 404	Switch, Slide, Off-ANL-NB, SW-252	084-095-9-002
VR 404	Res., Variable, RF Gain, RV-498 1K B	008-404-9-003
VR 403	Res., Var., Voice Lock, RV-500 20K B	008-404-9-004
VR 402	Res., Var., Squelch, RV-501 50K B	008-404-9-005
VR 401, S 401	Res., Var., Volume Pow Sw, RV-486 50K A	008-404-9-006
X 1	Crystal, QX-122 10.2417MHz	135-033-9-001
X 2	Crystal, QX-122 10.6975MHz	135-033-9-002
SP 501	Speaker, SP-057	580-034-9-001
M 401	Meter, MT-206	320-108-9-001
------	Microphone	562-027-9-001
J 504	Receptacle, DC Power, JK-052	762-020-9-001
J 505	Jack, Antenna, JK-035	772-027-9-001
J 501	Jack, Microphone, JK-087	773-106-9-001
J 1, 2	Jack, Speaker, JK-089	773-086-9-001
------	Socket, I.C., SK-032	762-024-9-001
------	Socket, Transistor, TX/RX LED, SK-031	762-024-9-002
------	DC Power Cord, W-070234	426-035-9-004
FC 1	Flat Cable, WF-008	426-077-9-001
FC 2	Flat Cable, WF-121	426-077-9-002
FC 3, 4	Flat Cable, WF-105	426-077-9-003
R 175	Res., Metal Film, 100 1W K	002-001-6-101
------	Cover, top	253-091-9-001
------	Cover, bottom	252-035-9-001
------	Mounting Bracket, ZMC	251-353-9-001
------	Hanger, Microphone, Ni.	741-074-9-001
------	Washer, flat	724-047-9-001
------	Front panel	255-202-9-001

ALIGNMENT OF TRANSMITTER SECTION

1. Equipment Required:
   a. AF Oscillator (two required)
   b. AF VTVM (Full scale: 1V DC with RF probe)
   c. DC Ammeter
   d. RF Power Meter
   e. 50 ohm load and Attenuator
   f. Oscilloscope
   g. RF VTVM
   h. Monitor Receiver or Spectrum Analyzer
   i. DC Power Supply (13.8V/3amp.)

2. Alignment Procedure:
   Connect test equipment as shown below.

STEP	PRESET TO	ADJUSTMENT	PROCEDURE
1	CH : 19 PA/CB : CB MODE : USB, TX S1 and S2: OFF	VR-9	Break circuit at TP-8 and TP-7, place DC mA meter in series. Adjust for 8 mA.
2	Same as step 1	VR-8	Break circuit at TP-8 and TP-6, place DC mA meter in series. Adjust for 100 mA.
	AFTER STEPS 1 AND 2, RESTORE CIRCUIT AT TP-8, TP-7 AND TP-6.		
3	Same as step 1 OSC 1 : 500Hz OSC 2 : 2400Hz S1 and S2: ON	L37 and VR-6	Set VR6 to full CW rotation. Set the core of L37 to the bottom (max. CW). Adjust the OSC1, 2 level to 30mV.
4	Same as step 3	L38,39,40 and 37.	Adjust coils for max. reading on RF VTVM. Check the power difference between CH1 and CH40. If it is over 1V on RF VTVM, readjust L37 to obtain within 1V.
5	Same as step 1 Mode : AM OSC 1 : 1kHz S1 : ON, S2: OFF	L27	Adjust level of OSC1 for 90% of modulation reading on oscilloscope, then adjust L27 for max. reading on RF VTVM.
6	Same as step 5	VR-6	Adjust VR6 for 24.5V reading on RF VTVM.
7	Same as step 1	VR-4	Adjust for min. carrier leakage for both USB and LSB on spectrum analyzer or oscilloscope.
8.	Same as step 1 Mode : AM	VR-10	Adjust for 4.0W reading on RF Power meter.
9	Same as step 8	VR-7	Adjust for 4W reading on the Transceiver's meter.

ALIGNMENT OF PLL AND CARRIER OSCILLATOR

1. Test Equipment required:
   a. Oscilloscope (DC-50MHz)
   b. Frequency Counter (0-30MHz)
   c. DC Power Supply
   d. 50 ohm load

2. Alignment Procedure;
   Connect test equipment as shown below.

STEP	PRESET TO	CONNECTION	ADJUSTMENT
1	CH;19, AM,RX Voice Lock:Center	Lead of R84 (TP-4)	Adjust L-13 for max. reading on oscilloscope. (Oscilloscope in AC mode)
2	Same as step 1. CH: 40	Lead of R93 (TP-2)	Adjust L-14 for 4.5V DC reading on oscilloscope. (Oscilloscope in DC mode)
3	Same as step 1. CH: 1	Lead of R93 (TP-2)	Check that the voltage is more than 2V DC on oscilloscope.
4	Same as step 1	Lead of R105 (TP-3)	Adjust L-15 for max. reading on Oscilloscope.
5	Same as step 1	Lead of R105 (TP-3)	Adjust L-16 for 16.4900MHz.
6	Same as step 1 USB	Lead of R105 (TP-3)	Adjust L-17 for 16.4925MHz.
7	Same as step 1 LSB	Lead of R105 (TP-3)	Adjuat L-18 for 16.4875MHz.
8	Same as step 1 LSB, TX	Lead of R105 (TP-3)	Adjust VR-3 for 16.4875MHz.
9	Same as step 1 AM, TX	Lead of R61 (TP-9)	Adjust L-19 for 10.6950MHz.
10	Same as step 1 USB, RX	Lead of R34 (TP-5)	Adjust L-20 for 10.6925MHz.
11	Same as step 1 LSB, RX	Lead of R34 (TP-5)	Adjust L-21 for 10.6975MHz.

TX

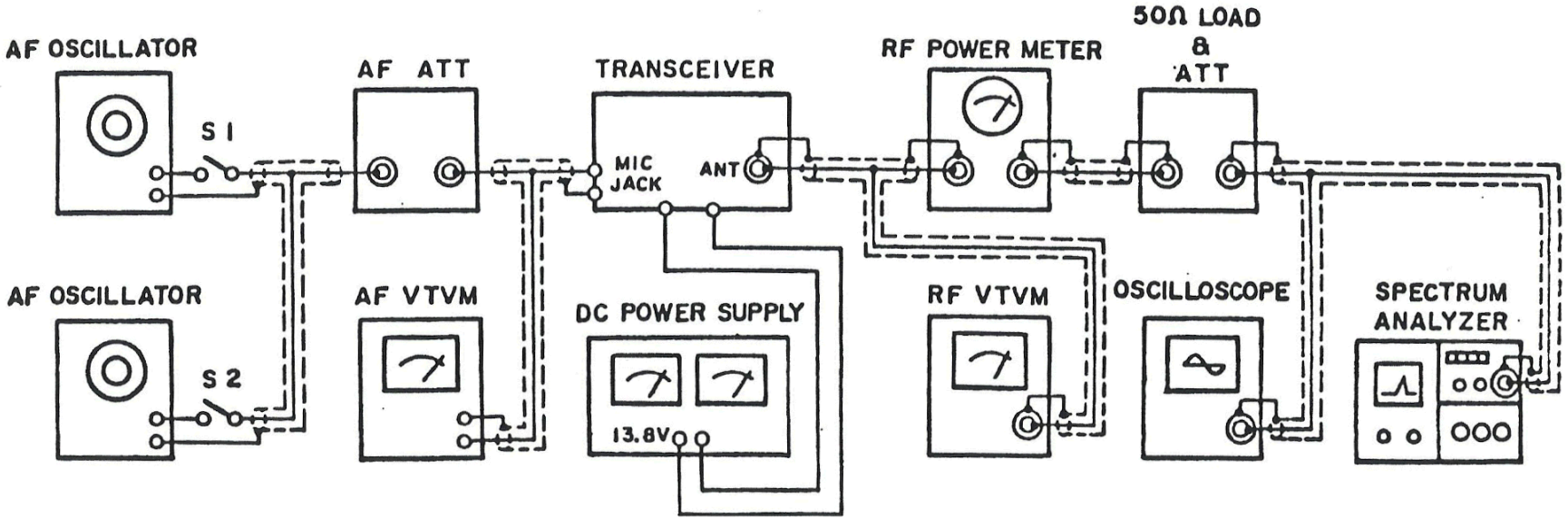
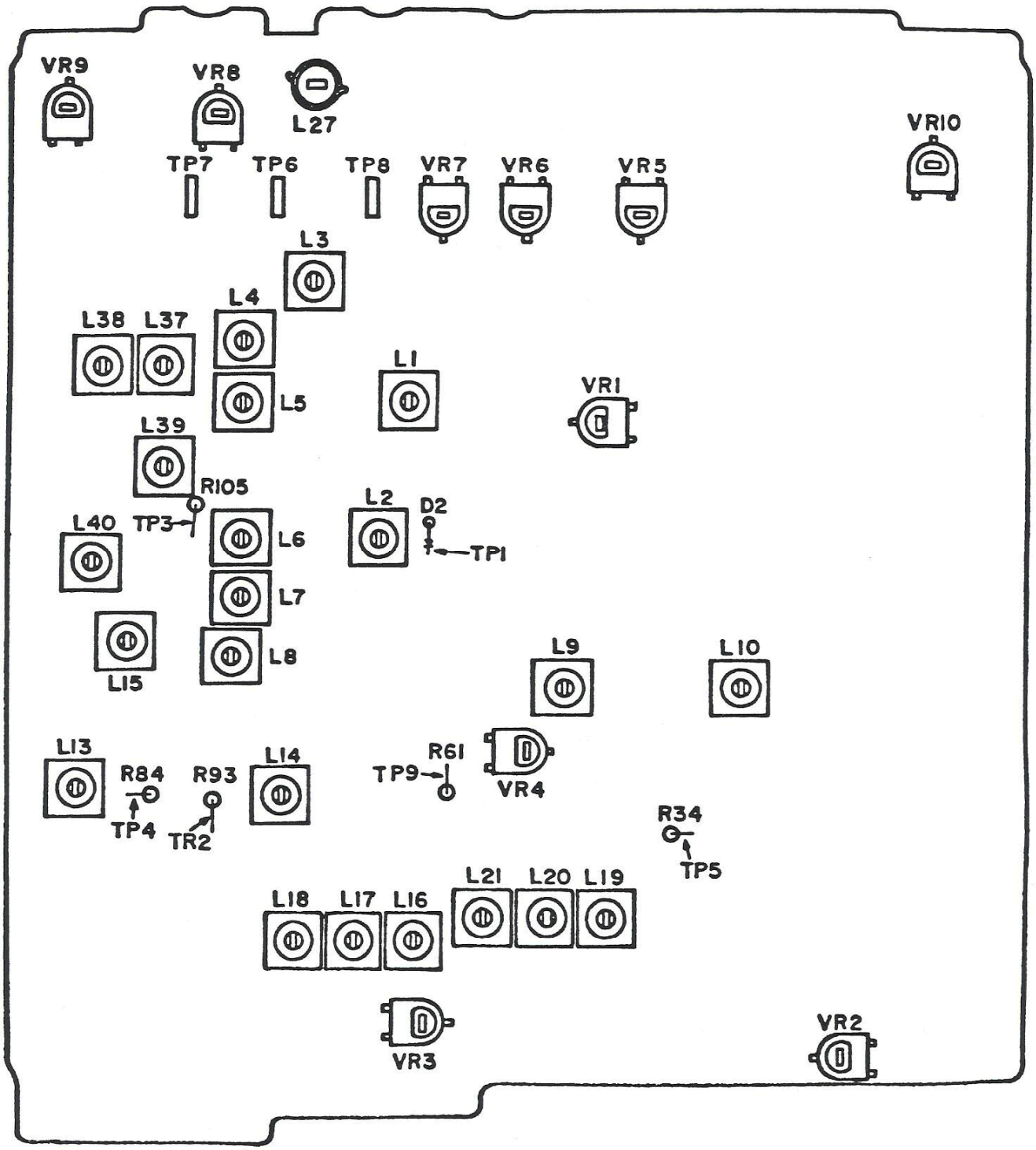

AF OSCILLATOR
S 1
AF OSCILLATOR
S 2
AF ATT
AF VTVM
TRANSCEIVER
MIC JACK
ANT
DC POWER SUPPLY
13.8V
RF POWER METER
RF VTVM
50Ω LOAD & ATT
OSCILLOSCOPE
SPECTRUM ANALYZER

Fig D1


VR9
VR8
L27
VR10
TP7
TP6
TP8
VR7
VR6
VR5
L3
L4
L38
L37
L1
VR1
L5
L39
R105
L2
D2
L40
TP3
L6
TP1
L7
L15
L8
L9
L10
L13
R84
R93
L14
R61
TP9
VR4
TP4
TR2
R34
TP5
L21
L20
L19
L18
L17
L16
VR3
VR2

4) Transmitting Frequency CalculaTion

For an example , when the unit is operated on channel No. 18 the transmitting frequency is calculated as shown in the following table for each mode.

	AM mode	LSB mode	USB mode
N	112	112	112
3/2x Fo(MHz)	15.360	15.3575	15.3625
N x 10KHz(MHz)	1.12	1.12	1.12
FL (MHz)	16.480	16.4775	16.4825
Fc (MHz)	10.695	10.6975	10.6925
Ft (MHz)	27.175	27.175	27.175

5) Clarifier Circuit

In the receive operation ,the control voltage varied by the clarifier cotrol VR-303 are passed through the clarifier gate diode D 31 and are applied to a variable capacirance diode which is connected to the off-set frequency oscillator crystals.

The above mentioned circuit it may vary the off -set frequency by means of rotating the clarifier control VR 303 at the range of approximately ±1KHz. In the transmit operation , clarifier gate diode D 31 is reverse biased and that separates the variable capacitance diode from the clarifier control.

Attachment E

FCC Part 2.983(d)(10)

Table B FREQUENCIES OF LOCAL OSCILLATORS AND IF STAGE IN RECEIVING STATE

Channel No.	Reception frequencies (MHz)	Divide ratio (N)	Local oscillator frequencies (MHz) AM mode	USB mode	LSB mode	IF frequncy (MHz)
1	26.965	91	16,270	16.2725	16.2675	10.695
2	.975	92	16,280	16.2825	16.2775	"
3	.985	93	16.290	16.2925	16,2875	"
4	27.005	95	16.310	16.3125	16.3075	"
5	.015	96	16.320	16.3225	16,3175	"
6	.025	97	16.330	16.3325	16.3275	"
7	.035	98	16.340	16.3425	16.3375	"
8	.055	100	16.360	16.3625	16.3575	"
9	.065	101	16.370	16.3725	16.3675	"
10	.075	102	16.380	16.3825	16.3775	"
11	.085	103	16.390	16.3925	16.3875	"
12	.105	105	16.410	16.4125	16.4075	"
13	.115	106	16.420	16.4225	16,4175	"
14	.125	107	16.430	16,4325	16.4275	"
15	.135	108	16,440	16.4425	16,4375	"
16	.155	110	16.460	16.4625	16.4575	"
17	.165	111	16.470	16.4725	16.4675	"
18	.175	112	16.480	16.4825	16.4775	"
19	.185	113	16.490	16,4925	16,4875	"
20	.205	115	16.510	16.5125	16.5075	"
21	.215	116	16.520	16,5225	16.5175	"
22	.225	117	16.530	16.5325	16.5275	"
23	.255	120	16.560	16.5625	16.5575	"
24	.235	118	16.540	16.5425	16.5375	"
25	.245	119	16.550	16.5525	16.5475	"
26	.265	121	16.570	16.5725	16.5675	"
27	.275	122	16.580	16.5825	16.5775	"
28	.285	123	16.590	16.5925	16.5875	"
29	.295	124	16.600	16.6025	16.5975	"
30	.305	125	16.610	16.6125	16,6075	"
31	.315	126	16.620	16.6225	16.6175	"
32	.325	127	16.630	16,6325	16.6275	"
33	.335	128	16.640	16.6425	16.4375	"
34	.345	129	16,650	16,6525	16,6475	"
35	.355	130	16.660	16.6625	16.6575	"
36	.365	131	16.670	16.6725	16.6675	"
37	.375	132	16.680	16.6825	16.6775	"
38	.385	133	16.690	16.6925	16.6875	"
39	.395	134	16.700	16.7025	16.6975	"
40	.405	135	16.710	16.7125	16.7075	"

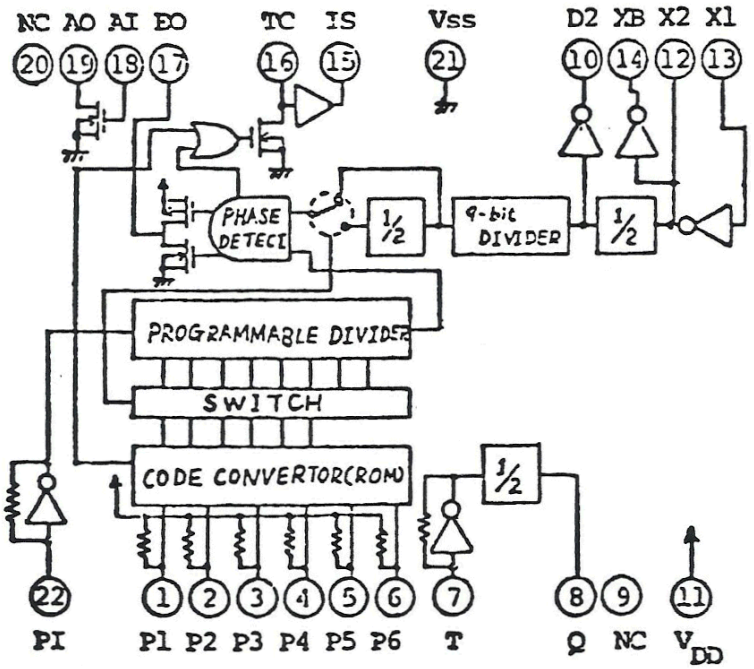
PHASE LOCKED LOOP FREQUENCY SYNTHESIZER
CMOS LSI

The μPD2824C is a CMOS LSI intended for a Phase Locked Loop Frequency Synthesizer for Citizens Band Radio.
The μPD2824C is packaged in a 22pins dualin-line package.

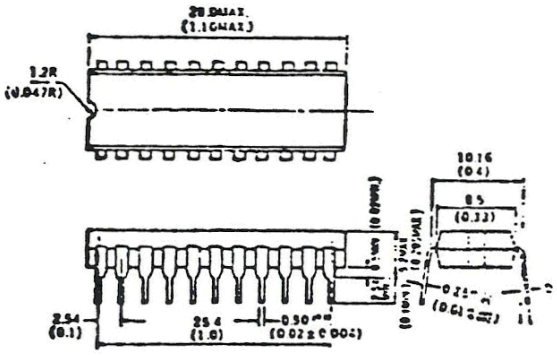
FEATURES

* On chip open drain filter amplifier
* Buffered 10.24MHz output
* Protection circuit for the miss-programming and un-locked conditions
* BCD 6-bits input channel select code
* High speed and low power consumption due to CMOS

BLOCK DIAGRAM

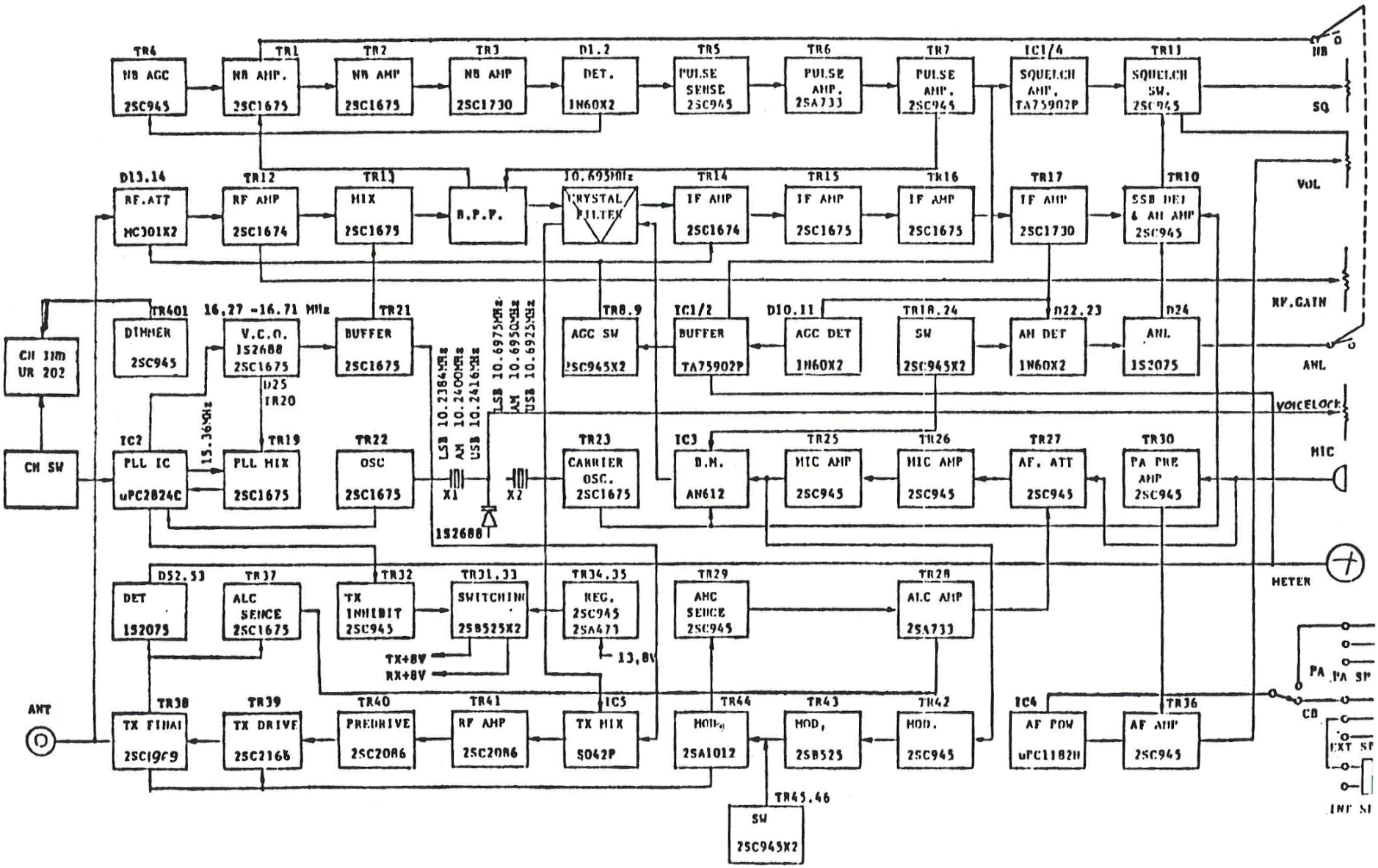


PACKAGE DIMENSIONS
in milimeters (inches)



CH	PROGRAM INPUT						N	IS
	P1	P2	P3	P4	P5	P6		
1	1	0	0	0	0	0	91	1
2	0	1	0	0	0	0	92	1
3	1	1	0	0	0	0	93	1
4	0	0	1	0	0	0	95	1
5	1	0	1	0	0	0	96	1
6	0	1	1	0	0	0	97	1
7	1	1	1	0	0	0	98	1
8	0	0	0	1	0	0	100	1
9	1	0	0	1	0	0	101	1
10	0	0	0	0	1	0	102	1
11	1	0	0	0	1	0	103	1
12	0	1	0	0	1	0	105	1
13	1	1	0	0	1	0	106	1
14	0	0	1	0	1	0	107	1
15	1	0	1	0	1	0	108	1
16	0	1	1	0	1	0	110	1
17	1	1	1	0	1	0	111	1
18	0	0	0	1	1	0	112	1
19	1	0	0	1	1	0	113	1
20	0	0	0	0	0	1	115	1
21	1	0	0	0	0	1	116	1
22	0	1	0	0	0	1	117	1
23	1	1	0	0	0	1	120	1
24	0	0	1	0	0	1	118	1
25	1	0	1	0	0	1	119	1
26	0	1	1	0	0	1	121	1
27	1	1	1	0	0	1	122	1
28	0	0	0	1	0	1	123	1
29	1	0	0	1	0	1	124	1
30	0	0	0	0	1	1	125	1
31	1	0	0	0	1	1	126	1
32	0	1	0	0	1	1	127	1
33	1	1	0	0	1	1	128	1
34	0	0	1	0	1	1	129	1
35	1	0	1	0	1	1	130	1
36	0	1	1	0	1	1	131	1
37	1	1	1	0	1	1	132	1
38	0	0	0	1	1	1	133	1
39	1	0	0	1	1	1	134	1
40	0	0	0	0	0	0	135	1
	0	1	0	1	PROGRAM INHIBIT			0
	1	1	0	1				0
	0	0	1	1				0
	1	0	1	1				0
	0	1	1	1				0
	1	1	1	1				0

0 = Low Level
1 = High Level
IS Output : "0" output except 1CH to 40CH


TR4
NB AGC
2SC945
TR1
NB AMP.
2SC1675
TR2
NB AMP
2SC1675
TR3
NB AMP
2SC1730
D1.2
DET.
1N60X2
TR5
PULSE SENSE
2SC945
TR6
PULSE AMP.
2SA733
TR7
PULSE AMP.
2SC945
IC1/4
SQUELCH AMP.
TA75902P
TR11
SQUELCH SW.
2SC945
NB
SQ
D13.14
RF.ATT
MC301X2
TR12
RF AMP
2SC1674
TR13
MIX
2SC1675
B.P.F.
10.695MHz
CRYSTAL FILTER
TR14
IF AMP
2SC1674
TR15
IF AMP
2SC1675
TR16
IF AMP
2SC1675
TR17
IF AMP
2SC1730
TR10
SSB DET & AM AMP
2SC945
VOL
RF.GAIN
TR401
DIMMER
2SC945
16.27 -16.71 MHz
V.C.O.
1S2688
2SC1675
TR21
BUFFER
2SC1675
D25
TR20
15.365MHz
LSB 10.238MHz
AM 10.240MHz
USB 10.241MHz
LSB 10.697MHz
AM 10.695MHz
USB 10.692MHz
TR8.9
AGC SW
2SC945X2
IC1/2
BUFFER
TA75902P
D10.11
AGC DET
1N60X2
TR18.24
SW
2SC945X2
D22.23
AM DET
1N60X2
D24
ANL
1S2075
ANL
VOICELOCK
MIC
CH IND
UR 202
CH SW
IC2
PLL IC
uPC2824C
TR19
PLL MIX
2SC1675
TR22
OSC
2SC1675
X1
X2
1S2688
TR23
CARRIER OSC.
2SC1675
IC3
B.M.
AN612
TR25
MIC AMP
2SC945
TR26
MIC AMP
2SC945
TR27
AF. ATT
2SC945
TR30
PA PRE AMP
2SC945
METER
D52.53
DET
1S2075
TR37
ALC SENCE
2SC1675
TR32
TX INHIBIT
2SC945
TR31.33
SWITCHING
2SB525X2
TR34.35
REG.
2SC945
2SA471
TR29
AMC SENCE
2SC945
TR28
ALC AMP
2SA733
TX+8V
RX+8V
13.8V
PA
PA SP
CB
EXT SP
ANT
TR38
TX FINAL
2SC1969
TR39
TX DRIVE
2SC2166
TR40
PREDRIVE
2SC2086
TR41
RF AMP
2SC2086
IC5
TX MIX
SD42P
TR44
MOD.
2SA1012
TR43
MOD.
2SB525
TR42
MOD.
2SC945
IC4
AF POW
uPC1182H
TR36
AF AMP
2SC945
TR45.46
SW
2SC945X2

Transistor(Continued)

Part No.	Type	Manufacturer	Function
TR 6	2SA733	N.E.C.	Noise Blanker Pulse Amp
	or 2SA495	Toshiba	
	or 2SA564	Matsushita	
	or 2SA628	Mitsubishi	
	or 2SA1015	Toshiba	
TR 7	-the same as TR 4-		Noise Blanker Pulse Amp
TR 8	-the same as TR 4-		AGC Switching
TR 9	-ditto-		-ditto-
TR 10	-the same as TR 4-		SSB DET & AM AF Amp
TR 11	-the same as TR 4-		Squelch Switching
TR 12	2SC1674	N.E.C	RX RF Amp
	or 2SC710	Mitsubishi	
	or 2SC763	Mitsubishi	
	or 2SC930	Sanyo	
	or 2SC1342	Hitachi	
	or 2SC1675	N.E.C	
	or 2SC1730	N.E.C	
	or 2SC1856	Hitachi	
	or 2SC784	Toshiba	
TR 13	-the same as TR 1-		RX Mixer
TR 14	-the same as TR 12-		RX IF Amp
TR 15	-the same as TR 1-		RX IF Amp
TR 16	-ditto-		-ditto-
TR 17	-the same as TR 3-		RX IF Amp
TR 18	-the same as TR 4-		Switching
TR 19	-the same as TR 1-		P.L.L. Inloop Mixer
TR 20	-the same as TR 1-		V.C.O
TR 21	-the same as TR 1-		V.C.O. Buffer
TR 22	-the same as TR 1-		P.L.L.Inloop OSC
TR 23	-the same as TR 1-		Carrier OSC
TR 24	-the same as TR 4-		Swtching
TR 25	-the same as TR 4-		Mic Amp
TR 26	-ditto-		-ditto-
TR 27	-the same as TR 4-		AF ATT

Transistor(continued)

Part No.	Type	Manufacturer	Function
TR 46	-ditto-		-ditto-

Diode Complement

Part No.	Type	Manufacturer	Function
D 1	1N60	Unizon	Noise Det
D 2	-ditto-		-ditto-
D 3	1S2075 or 1S2076 or 1S1588 or 1S2473 or 1S953	Hitachi Hitachi Toshiba Toyo Dengu N.E.C.	Switching
D 4	-Ditto-		
D 5	1N60	Unizon	-ditto-
D 6	-the same as D 3-		-ditto-
D 7	-ditto-		S.Meter Level Shifter
D 8	-ditto-		-ditto-
D 9	-ditto-		-ditto-
D 10	-the same as D 5-		AGC Det
D 11	-ditto-		-ditto-
D 12	-the same as D3 -		Switching
D 13	MC 301 or 1S2186 or BA 243	Mitsubishi Toshiba ITT	RX RF Attenuator
D 14	- ditto-		-ditto-
D 15	-the same as D 3-		Temp, Conpensator
D 16	-ditto-		-ditto-
D 17	-ditto-		Switching

Diode(continued)

Part No.	Type	Manufacturer	Function
D 45	-ditto-		-ditto-
D 46	-the same as D 3-		Switching
D 47	-ditto-		-ditto-
D 48	-ditto-		-ditto-
D 49	KB262	Unizon	Temp.Compensator
D 50	RD7.5E or WZ-075	N.E.C. JRC	Voltage Regulator
D 51	-the same as D 3-		Switching
D 52	-ditto-		TX.Meter Det
D 53	-ditto-		-ditto-
D 54	MV-1Y	Ohizumi Mfg.	Temp.Compensator
D 55	-ditto-		-ditto-
D 56	-the same as D 3-		Switching
D 57	1N 4003 or SR1K-1 or 10D-1 or DS130D	Rectron Unizon IR T.T.S	Protector
D 66	-the same as D 3-		Bias.
D 401	UR 202 or TLR 321 or SL 1221	Uni Crystal Toshiba Sanyo	Channel Display
D 402	TLRG101	Toshiba	TX/RX Display

BILL OF MATERIAL FOR COBRA 146GTL

CIRCUIT SYMBOL	DESCRIPTION		DYNASCAN PART NO.
	SEMICONDUCTORS		
IC 1	Integrated Circuit,	TA75902P	
IC 2	Integrated Circuit,	μPD2824C	
IC 3	Integrated Circuit,	AN612	
IC 4	Integrated Circuit,	μPC1182H	
IC 5	Integrated Circuit,	SO42P	
TR 4,5,7,8,9,10,11,18,24, 25,27,29,30,32,34,36, 42,45,46	Transistor,	2SC945A-O	
TR 12,14	Transistor,	2SC1674-L	
TR 1,2,13,15,16,19,20, 21,22,23,37	Transistor,	2SC1675-L	
TR 3,17,41	Transistor,	2SC1730-L	
TR 39	Transistor,	2SC2166-C	
TR 38	Transistor,	2SC1969-B	
TR 40	Transistor,	2SC2086-D	
TR 31,33,43	Transistor,	2SB525-C	
TR 35	Transistor,	2SA473-O	
TR 44	Transistor,	2SA1012-O	
TR 6,28	Transistor,	2SA733-P	
TR 26	Transistor,	2SC1312F	
D 3,4,6,7,8,9,12,15,16, 17,18,19,20,21,22,23, 24,26,27,28,29,31,32, 34,35,36,37,38,39,40, 41,42,43,45,46,47,48, 51,52,53,56,66,70	Diode,	1S2075K	
D 1,2,5,10,11	Diode,	1N60	
D 13,14	Diode,	MC301	
D 501	Diode,	1N4003	
D 25,30	Diode, Vari-Cap,	1S2688EB	
D 401	Diode, LED,	DR-202AL	
D 402	Diode, LED,	TLRG 101	
D 33	Diode, Zener,	RD5 1EB2	
D 50	Diode, Zener,	RD7.5EB2	
D 49	Varistor,	KB262	
D 54,55	Varistor,	MV-1Y	
	INDUCTORS		
L 1	Coil,	LA-120	
L 14	Coil,	LA-165	
L 13,15,39	Coil,	LA-166	
L 15,21	Coil,	LA-217	
L 38	Coil,	LA-220	
L 5	Coil,	LA-259	
L 4	Coil,	LA-260	
L 18	Coil,	LA 265	
L 19,20	Coil,	LA 266	
L 17	Coil,	LA 273	
L 2,9	Coil,	LA 277	

CIRCUIT SYMBOL	DESCRIPTION	DYNASCAN PART NO

INDUCTORS (Continued)

L-3	Coil,	LA-279
L-6,7,8,40	Coil,	LA 350
L 10	Coil,	LA 351
L 37	Coil,	LA-352
L 27	Coil,	LC-072
L 31	Coil,	LD-033
L-11	Coil,	LD-077
L 29,32,33,35,36,41,42	Coil,	LD-087
L-501	Coil,	LD-089
L-24,26	Coil,	LE-088
L-25	Coil,	LE-089
L-34	Coil,	LE-151
L-28	Coil,	LE-187
L-30	Coil,	LE-188
L-12,22,23	Inductor, Molded,	LZ-012 470μH
T-1	Transformer, AF chock, TF-083	

SEMI-FIXED & VARIABLE RESISTORS

VR-8	Resistor, Semi-fixed,	RV-182	100 ohm	B	
VR-5	Resistor, Semi-fixed,	RV 182	1K ohm	B	
VR-9	Resistor, Semi-fixed,	RV-182	3K ohm	B	
VR-1,10	Resistor, Semi-fixed,	RV-182	5K ohm	B	
VR-4,6	Resistor, Semi-fixed,	RV-182	10K ohm	B	
VR-3	Resistor, Semi-fixed,	RV-182	50K ohm	B	
VR-7	Resistor, Semi-fixed,	RV 182	100K ohm	B	
VR-2	Resistor, Semi-fixed,	RV-182	200K ohm	B	
VR-404	Resistor, Variable,	RV-498	1K ohm	B	RF GAIN
VR-403	Resistor, Variable,	RV 500	20K ohm	B	VOICE LOCK
VR-402	Resistor, Variable,	RV-501	50K ohm	B	SQUELCH
VR-401,S-401	Resistor, Variable,	RV-486	50K ohm	A	VOLUME POW.SW

FIXED RESISTORS

NOTE:
Resistor tolerance: J = ±5% K = ±10%

R-175	Resistor, Metal Film,	100 ohm	1W	K
R-189,215	Resistor, Carbon, Axial Lead,	150 ohm	1/2W	J
R-186	Resistor, Carbon, Axial Lead,	10K ohm	1/2W	J
R-211	Resistor, Carbon, Axial Lead,	15 ohm	1/8W	J
R-406	Resistor, Carbon, Axial Lead,	47 ohm	1/8W	J
R-105	Resistor, Carbon, Axial Lead,	56 ohm	1/8W	J
R-9,75	Resistor, Carbon, Axial Lead,	68 ohm	1/8W	J
R-68,134,501	Resistor, Carbon, Axial Lead,	100 ohm	1/8W	J
R-4,123	Resistor, Carbon, Axial Lead,	220 ohm	1/8W	J
R-402	Resistor, Carbon, Axial Lead,	390 ohm	1/8W	J
R-203	Resistor, Carbon, Axial Lead,	470 ohm	1/8W	J
R 201	Resistor, Carbon, Axial Lead,	560 ohm	1/8W	J
R 28,408,409,413	Resistor, Carbon, Axial Lead,	680 ohm	1/8W	J
R-35,49,61,161	Resistor, Carbon, Axial Lead,	1K ohm	1/8W	J
R-155,198	Resistor, Carbon, Axial Lead,	1.5K ohm	1/8W	J

CIRCUIT SYMBOL	DESCRIPTION		DYNASCAN PART NO.
	FIXED RESISTORS (Continued)		
R 7,139	Resistor, Carbon, Axial Lead,	2.7K ohm 1/8W J	
R 34,84,137,208	Resistor, Carbon, Axial Lead,	3.3K ohm 1/8W J	
R 63	Resistor, Carbon, Axial Lead,	8.2K ohm 1/8W J	
R 46,59,107,213	Resistor, Carbon, Axial Lead,	10K ohm 1/8W J	
R 93	Resistor, Carbon, Axial Lead,	22K ohm 1/8W J	
R 21	Resistor, Carbon, Axial Lead,	39K ohm 1/8W J	
R 6	Resistor, Carbon, Axial Lead,	47K ohm 1/8W J	
R 20	Resistor, Carbon, Axial Lead,	82K ohm 1/8W J	
R 19	Resistor, Carbon, Axial Lead,	100K ohm 1/8W J	
R 143,193	Resistor, Carbon, Formed VERT,	10 ohm 1/8W J	
R 85	Resistor, Carbon, Formed VERT,	15 ohm 1/8W J	
R 172,196	Resistor, Carbon, Formed VERT,	47 ohm 1/8W J	
R 11,99,173,187	Resistor, Carbon, Formed VERT,	56 ohm 1/8W J	
R 52,54,57,72,104,106, 199,202	Resistor, Carbon, Formed VERT,	100 ohm 1/8W J	
R 74	Resistor, Carbon, Formed VERT,	150 ohm 1/8W J	
R 141,182	Resistor, Carbon, Formed VERT,	220 ohm 1/8W J	
R 73	Resistor, Carbon, Formed VERT,	270 ohm 1/8W J	
R 5,8,17,192,195,197,407	Resistor, Carbon, Formed VERT,	330 ohm 1/8W J	
R 149,151	Resistor, Carbon, Formed VERT,	390 ohm 1/8W J	
R 41,58,87,112,152,204, 206	Resistor, Carbon, Formed VERT,	470 ohm 1/8W J	
R 145,212	Resistor, Carbon, Formed VERT,	560 ohm 1/8W J	
R 3,66,113,171,217,410, 411,412,414,415,416, 417,418	Resistor, Carbon, Formed VERT,	680 ohm 1/8W J	
R 144	Resistor, Carbon, Formed VERT,	820 ohm 1/8W J	
R 39,48,50,89,95,98,103, 125,166,174,183,191, 214,220,221,403	Resistor, Carbon, Formed VERT,	1K ohm 1/8W J	
R 62	Resistor, Carbon, Formed VERT,	1.2K ohm 1/8W J	
R 71,109,129,131,163, 177,194,205,404	Resistor, Carbon, Formed VERT,	1.5K ohm 1/8W J	
R 116,178	Resistor, Carbon, Formed VERT,	1.8K ohm 1/8W J	
R 47,51,53,67,91,127,158	Resistor, Carbon, Formed VERT,	2.2K ohm 1/8W J	
R 18,40,42,76,138,142, 148,153,167	Resistor, Carbon, Formed VERT,	3.3K ohm 1/8W J	
R 219,405	Resistor, Carbon, Formed VERT,	3.9K ohm 1/8W J	
R 102,117,118,119,128, 162,181	Resistor, Carbon, Formed VERT,	4.7K ohm 1/8W J	
R 65,86,209	Resistor, Carbon, Formed VERT,	5.6K ohm 1/8W J	
R 97	Resistor, Carbon, Formed VERT,	6.8K ohm 1/8W J	
R 1,12,13,15,16,31,32,37, 43,44,55,92,94,101,111, 124,126,147,156,157, 159,164,168,176,179, 216,401	Resistor, Carbon, Formed VERT,	10K ohm 1/8W J	
R 185	Resistor, Carbon, Formed VERT,	12K ohm 1/8W J	
R 45,96,122,150	Resistor, Carbon, Formed VERT,	15K ohm 1/8W J	
R 207	Resistor, Carbon, Formed VERT,	18K ohm 1/8W J	
R 33,64,108,114,115,154	Resistor, Carbon, Formed VERT,	22K ohm 1/8W J	
R 2	Resistor, Carbon, Formed VERT,	33K ohm 1/8W J	
R 36,69,79,81,165	Resistor, Carbon, Formed VERT,	47K ohm 1/8W J	
R 56	Resistor, Carbon, Formed VERT,	82K ohm 1/8W J	
R 10,26,27,29,30,82,83, 121,146	Resistor, Carbon, Formed VERT,	100K ohm 1/8W J	

CIRCUIT SYMBOL	DESCRIPTION	DYNASCAN PART NO.

FIXED RESISTORS (Continued)

R-23	Resistor, Carbon, Formed VERT, 150K ohm 1/8W J	
R-135	Resistor, Carbon, Formed VERT, 180K ohm 1/8W J	
R-38	Resistor, Carbon, Formed VERT, 220K ohm 1/8W J	
R-25,136	Resistor, Carbon, Formed VERT, 270K ohm 1/8W J	
R-78	Resistor, Carbon, Formed VERT, 330K ohm 1/8W J	
R-14	Resistor, Carbon, Formed VERT, 470K ohm 1/8W J	
R-22	Resistor, Carbon, Formed VERT, 560K ohm 1/8W J	
R 184	Resistor, Carbon, Formed VERT, 680K ohm 1/8W J	
R 77	Resistor, Carbon, Formed VERT, 1.5M ohm 1/8W J	
R-24	Resistor, Carbon, Formed VERT, 4.6M ohm 1/8W J	

CAPACITORS

NOTE:
The first code indicates tolerance of capacitance:
C = ±0.25pF, D = ±0.5pF, F = ±1pF, G = ±2%, J = ±5%, K = ±10%, M = ±20%, Z = +70% -20%
The second code indicates variation of capacitance with temperature:
YA = ±5%, YB = ±10%, YD = +20 -30%, YE = +20 -50%, YF = +30 -70%, (-25 ~ +85°C), ZF = +30 -80% (-10 ~ +70°C), CH = 0±60ppm/°C, RH = -220ppm/°C±60ppm/°C, CJ = 0±120ppm/°C, RJ = -220ppm/°C±120ppm/°C, TH = -470ppm/°C±60ppm/°C, UJ = -750ppm/°C±120ppm/°C, SL = +350ppm/°C ~ -1000ppm/°C

C-135	Capacitor, Tantalum,	10µF	10V	M	
C-11,54,127	Capacitor, Electrolytic,	0.47µF	50V		
C-63,64,86,128,142,152, 180,401	Capacitor, Electrolytic,	1µF	50V		
C-68,69	Capacitor, Electrolytic,	2.2µF	25V		
C-131,134,197	Capacitor, Electrolytic,	4.7µF	25V		
C-30	Capacitor, Electrolytic,	10µF	16V		
C-28,123	Capacitor, Electrolytic,	22µF	10V		
C-16,17,24,26,126,136, 141	Capacitor, Electrolytic,	47µF	10V		
C-71,105,116,183	Capacitor, Electrolytic,	100µF	10V		
C-113	Capacitor, Electrolytic,	220µF	6.3V		
C-132	Capacitor, Electrolytic,	330µF	16V		
C-184,186	Capacitor, Electrolytic,	1000µF	25V		
C-25	Capacitor, Mylar,	0.001µF	50V	K	
C-112,137,169	Capacitor, Mylar,	0.01µF	50V	K	
C-27,76,111,118,125,138, 196	Capacitor, Mylar,	0.047µF	50V	K	
C-29,129,133,139,155,158	Capacitor, Mylar,	0.1µF	50V	K	
C-151	Capacitor, Ceramic,	0.5pF	50V	C	SL
C-172	Capacitor, Ceramic,	1pF	50V	C	SL
C-41,46,47,72	Capacitor, Ceramic,	2pF	50V	C	SL
C-22,49,73	Capacitor, Ceramic,	5pF	50V	D	SL
C-1,4,37,61,78,82,110	Capacitor, Ceramic,	10pF	50V	K	SL
C-19,23	Capacitor, Ceramic,	15pF	50V	K	SL
C-21	Capacitor, Ceramic,	18pF	50V	K	SL
C-56,87	Capacitor, Ceramic,	22pF	50V	K	SL
C-65	Capacitor, Ceramic,	27pF	50V	K	SL
C-175,176	Capacitor, Ceramic,	33pF	50V	K	SL
C-144,147	Capacitor, Ceramic,	39pF	50V	K	SL
C-62,109,148	Capacitor, Ceramic,	47pF	50V	K	SL
C-66	Capacitor, Ceramic,	56pF	50V	K	SL
C-8,143	Capacitor, Ceramic,	82pF	50V	K	SL