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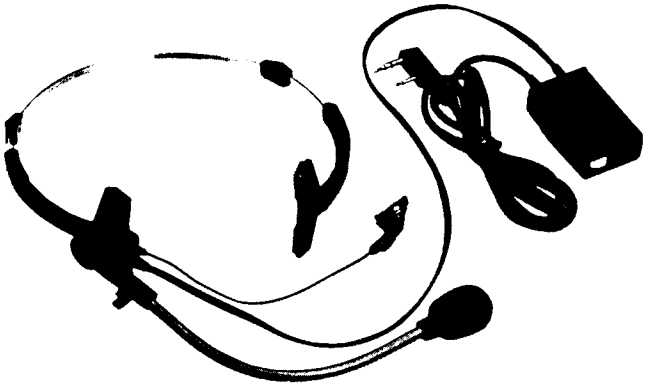
HMC-2 (HEAD SET WITH VOX & PTT)

HMC-2 EXTERNAL VIEW



HMC-2 PARTS LIST

* : New Parts

Ref. No.	New Parts	Parts No.	Description
	*	A02-0840-08	Case (Front)
	*	A02-0841-08	Case (Rear)
	*	E30-2088-08	Cable with plug
	*	F09-0418-08	Microphone pad
	*	F09-0419-08	Ear pad
	*	J29-0427-08	Clip
VR1	*	R05-4422-08	Potentiometer 50kΩ
S1	*	S31-1416-08	Slide switch PTT/VOX
S2		S50-1413-05	Tact switch PTT
	*	T18-0056-08	Earphone with cable
	*	T91-0373-18	MIC ass'y
	*	W02-0806-18	VOX/PTT unit
Q1		FMG2	Digital transistor
Q2	*	FMW2	Digital transistor
Q3		2SC2712(GR)	Chip transistor
IC1	*	NJM2072M	IC
D1		1SS133	Diode

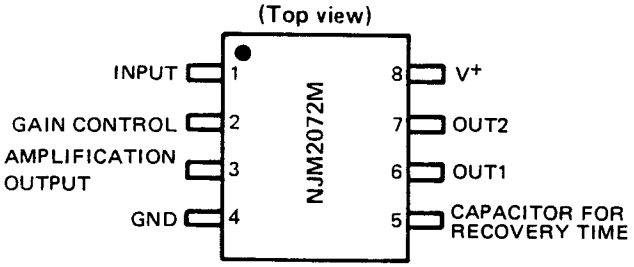
HMC-2 SPECIFICATIONS

Electrical characteristic

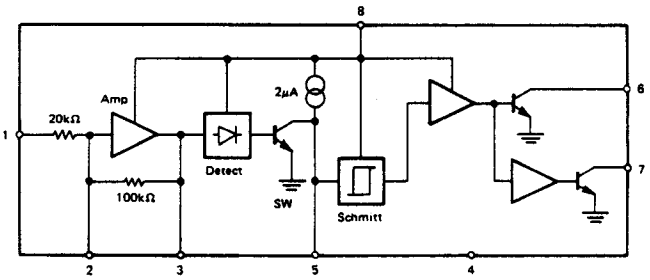
- **Earphone**
  - Diameter φ19
  - Impedance 19Ω (1000Hz)
  - Max. input power 50mW
- **Microphone**
  - Output sensitivity . . −67.5dB (0dB = 1V/μbar 1000Hz)
  - Output impedance 1.6kΩ (1000Hz)

HMC-2 SEMICONDUCTOR DATA

- **Terminal connection diagram**



- **Block diagram**



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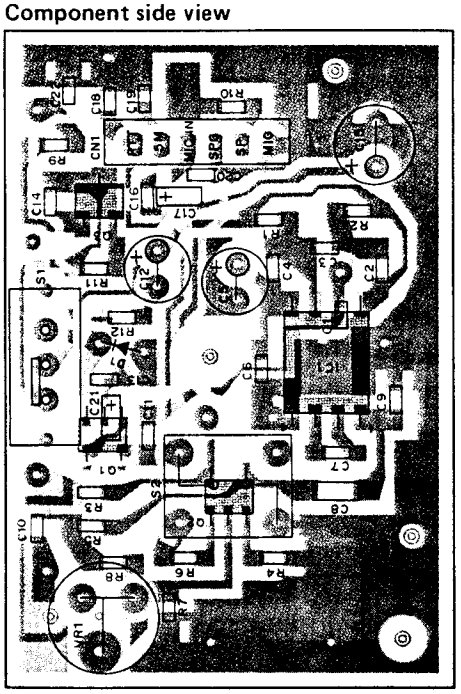
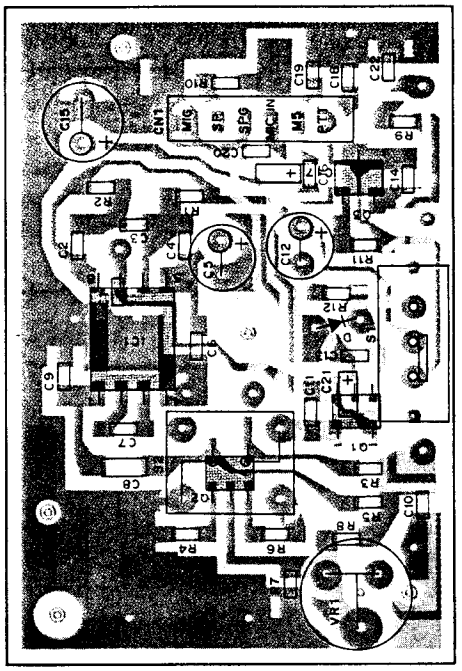
HMC-2 (HEAD SET WITH VOX & PTT)

HMC-2 PC BOARD VIEWS

Component side view



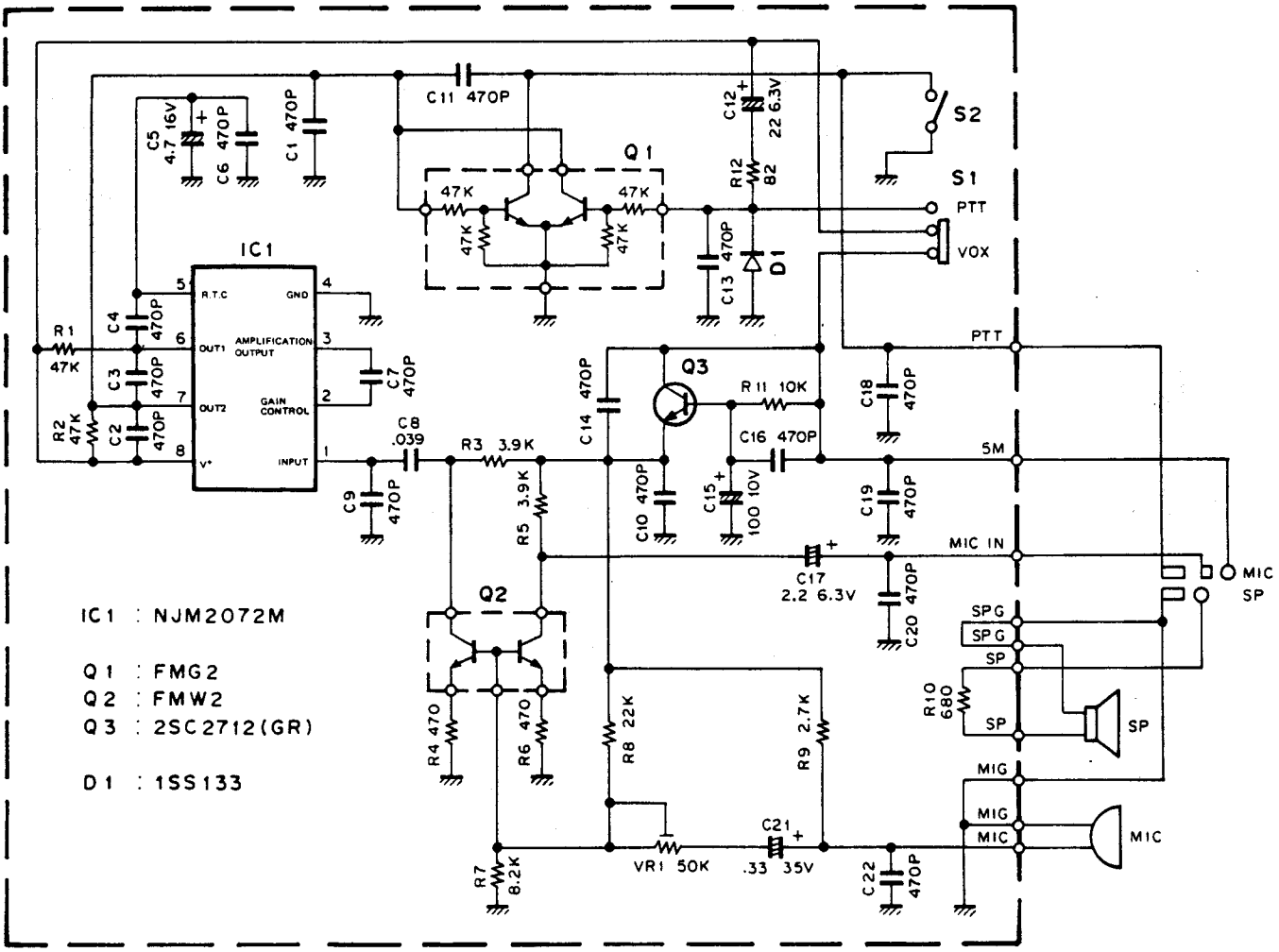
Foil side view



: Component side

: Foil side

HMC-2 CIRCUIT DIAGRAM



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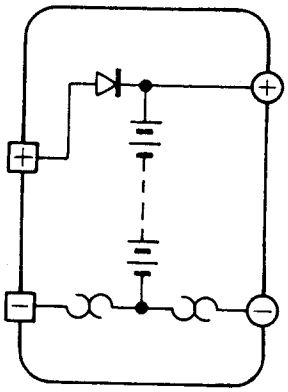
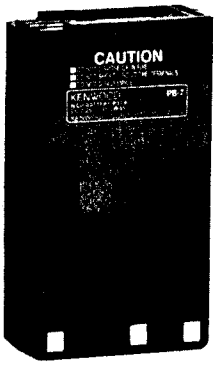
PB-5/6/7/8/9 (Ni-Cd BATTERY)

PB-5 EXTERNAL VIEW

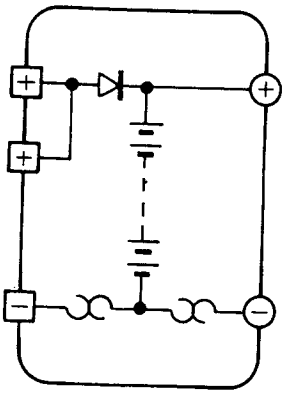
PB-5 CIRCUIT DIAGRAM



PB-7 EXTERNAL VIEW



PB-7 CIRCUIT DIAGRAM



PB-5 SPECIFICATIONS

Electrical characteristic

Voltage . . . . . 7.2V (1.2V x 6)
Charging current 200mAh
Dimensions . . . . . 58 W x 36.5 (39.5) H x 29.5 D (mm)
Weight 80g

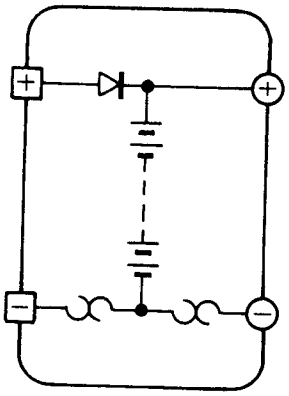
PB-7 SPECIFICATIONS

Electrical characteristic

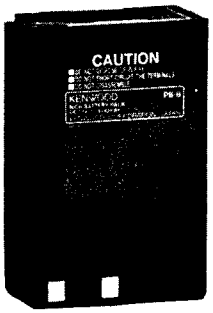
Voltage . . . . . 7.2V (1.2V x 6)
Charging current 1100mAh
Dimensions . . . . . 58 W x 98.5 (101.5) H x 29.5 D (mm)
Weight 300g

PB-6 EXTERNAL VIEW

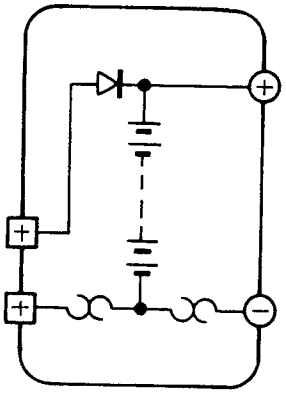
PB-6 CIRCUIT DIAGRAM



PB-8 EXTERNAL VIEW



PB-8 CIRCUIT DIAGRAM



PB-6 SPECIFICATIONS

Electrical characteristic

Voltage . . . . . 7.2V (1.2V x 6)
Charging current 600mAh
Dimensions . . . . . 58 H x 55.5 (58.5) H x 29.5 D (mm)
Weight 180g

PB-8 SPECIFICATIONS

Electrical characteristic

Voltage . . . . . 12V (1.2V x 10)
Charging current 600mAh
Dimensions . . . . . 58 W x 84 (87) H x 29.5 D (mm)
Weight 270g

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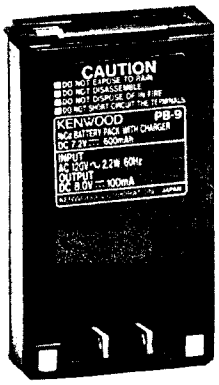
PB-5/6/7/8/9 (Ni-Cd BATTERY)

PB-9 EXTERNAL VIEW

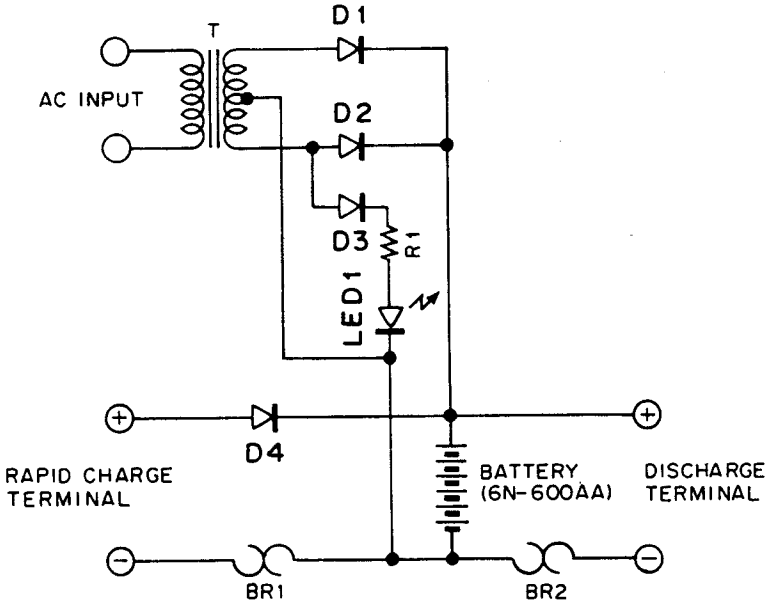


PB-9 SPECIFICATIONS

Electrical characteristic

Voltage	7.2V (1.2V x 6)
Charging current	600mAh
Charging input	AC 100 to 120V, 50/60Hz, 2.2W
Charging output	DC 8.0V, 100mA
Charging time	Approx. 10 hours
Dimensions	58 W x 98.5 (101.5) H x 29.5 D (mm)
Weight	260g

PB-9 SCHEMATIC DIAGRAM



PB-5/6/7/8/9 CHARGING TIME

Battery / Charger	PB-5	PB-6	PB-7	PB-8	PB-9
BC-9		15	30		
BC-10	8	8	15	8	8
BC-11	1	1	1	1	1

Unit : Hour

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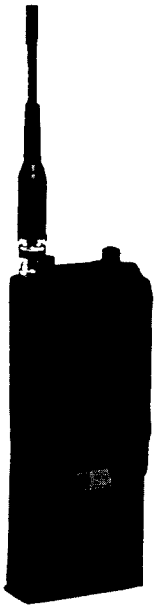
SC-17/18/19 (SOFT CASE)/SMC-31 (SPEAKER MICROPHONE)

SC-17 EXTERNAL VIEW

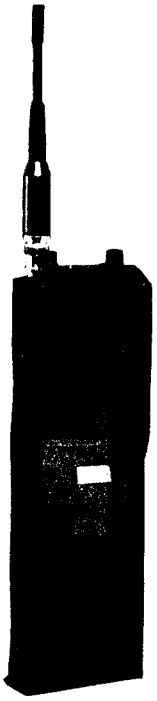
with PB-5.

SC-18 EXTERNAL VIEW



with PB-6.

SC-19 EXTERNAL VIEW



with PB-7, 8 or 9.

SMC-31 EXTERNAL VIEW

SMC-31 SPECIFICATIONS

Electrical characteristic

- **Speaker**
  - Diameter . . . . . ϕ45 (mm)
  - Impedance 8Ω
  - Rated input power 0.15W
  - Max. input power 0.3W
- **Microphone**
  - Sensitivity . . . . . 66dB ± 3dB at 1300Hz
  - Output impedance . . . . . 2kΩ ± 30% at 1000Hz

SMC-31 PARTS LIST

* : New Parts

Ref. No.	New Parts	Parts No.	Description
	*	D10-0605-08	PTT lever
	*	E30-2110-05	Curl cord ass'y
		J19-1360-08	Clip
		T07-0219-08	Speaker
		T97-1024-08	Microphone

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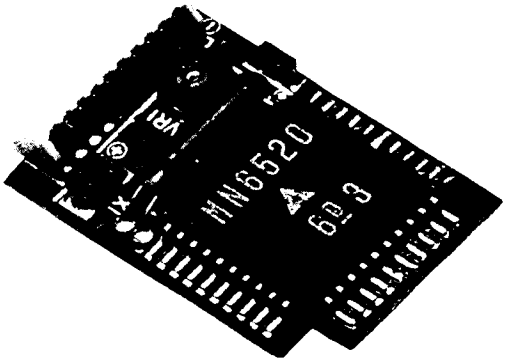
TSU-6 (CTCSS UNIT)

TSU-6 EXTERNAL VIEW



TSU-6 PARTS LIST

• : New Parts

Ref. No.	New Parts	Parts No.	Description
		CTCSS UNIT (X52-3100-00)	
C1		CK73FB1H102K	Chip C 1000pF K
C2		C92-0010-05	Tantal 6.8μF 6.3WV
C3	•	C92-0006-05	Tantal 3.3μF 4.0WV
C4, 5		CK73EB1E104K	Chip C 0.1μF K
C6		CK73EB1H223K	Chip C 0.022μF K
C7		CK73EB1E104K	Chip C 0.1μF K
C8, 9		CC73FCH1H150J	Chip C 15pF J
C10		CK73FB1H102K	Chip C 1000pF K
C11		CK73EB1E104K	Chip C 0.1μF K
C12		C92-0507-05	Chip tan. 4.7μF 6.3WV
C13	•	C92-0510-05	Chip tan. 3.3μF 4.0WV
	•	E40-5121-05	Pin connector (10P)
X1		L77-1313-05	X'tal resonator 4.194304MHz
R1–10		RK73FB2A○○○J	Chip resistor
R12–14		RK73FB2A○○○J	Chip resistor
VR1	•	R12-3460-05	Trimming pot. 33kΩ
Q1		DTC144TK	Digital transistor
Q2		DTA114EK	Digital transistor
Q3		2SC2712(GR)	Chip transistor
IC1		MN6520	IC
IC2		MN4094BS	IC

TSU-6 FINE ADJUSTMENT OF TONE FREQUENCY

The tone frequency can be fine adjusted with an interval of 0.5% step over the range of 0 to +1.5%. Ground the T1 (pin 10) and T2 (pin 9) of IC1 to obtain the desired frequency.

	T1	T2
0%	X	X
+0.5%	O	X
+1.0%	X	O
+1.5%	O	O

O : GND, X : OPEN

Table 3

TSU-6 REFERENCE DATA

TH-25's condition and MN4094BS (IC2) relationship

CTCSS switch	TONE switch	TX/RX	MN4094BS terminal Q5	Q6	Q1 ~ 4, 7, 8
OFF	OFF	TX	L	H	L
		RX	L	H	L
	ON	TX	L	L	See table 2
		RX	L	H	L
ON	OFF	TX	L	L	See table 2
		RX	H	L	
	ON	TX	L	L	
		RX	H	L	

Q1 ~ 4, 7, 8 : Tone frequency setting
Q5 : TX/RX switch for MN6520 (IC1). "H" : RX, "L" : TX.
Q6 : Power switch for MN6520 (IC1). "H" : OFF, "L" : ON.

Table 1

Tone frequency and MN6520 (IC1) relationship

Tone frequency (Hz)	MN6520 terminal $\overline{S6}$	$\overline{S5}$	$\overline{S4}$	$\overline{S3}$	$\overline{S2}$	$\overline{S1}$
	MN4094BS terminal Q1	Q2	Q3	Q4	Q7	Q8
67.0	L	H	H	H	L	H
71.9	L	H	H	H	L	L
74.4	L	H	H	L	H	H
77.0	L	H	H	L	H	L
79.7	L	H	H	L	L	H
82.5	L	H	H	L	L	L
85.4	L	H	L	H	H	H
88.5	L	H	L	H	H	L
91.5	L	H	L	H	L	H
94.8	H	H	H	L	L	H
100.0	H	H	H	L	L	L
103.5	H	H	L	H	H	H
107.2	H	H	L	H	H	L
110.9	H	H	L	H	L	H
114.8	H	H	L	H	L	L
118.8	H	H	L	L	H	H
123.0	H	H	L	L	H	L
127.3	H	H	L	L	L	H
131.8	H	H	L	L	L	L
136.5	H	L	H	H	H	H
141.3	H	L	H	H	H	L
146.2	H	L	H	H	L	H
151.4	H	L	H	H	L	L
156.7	H	L	H	L	H	H
162.2	H	L	H	L	H	L
167.9	H	L	H	L	L	H
173.8	H	L	H	L	L	L
179.9	H	L	L	H	H	H
186.2	H	L	L	H	H	L
192.8	H	L	L	H	L	H
203.5	H	L	L	H	L	L
210.7	H	L	L	L	H	H
218.1	H	L	L	L	H	L
225.7	H	L	L	L	L	H
233.6	H	L	L	L	L	L
241.8	L	H	H	H	H	H
250.3	L	H	H	H	H	L

Table 2

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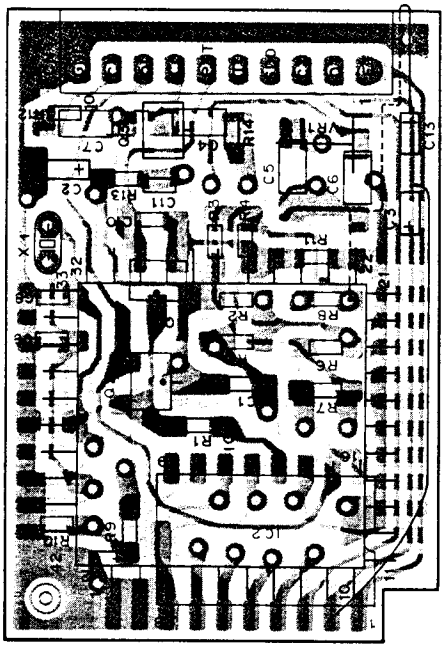
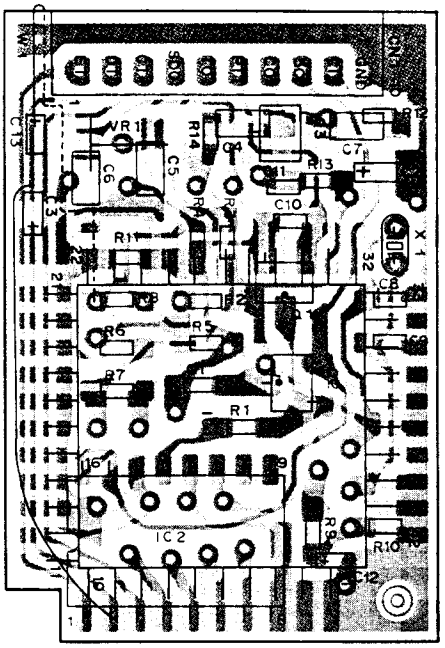
TSU-6 (CTCSS UNIT)

TSU-6 PC BOARD VIEWS

Component side view



Foil side view

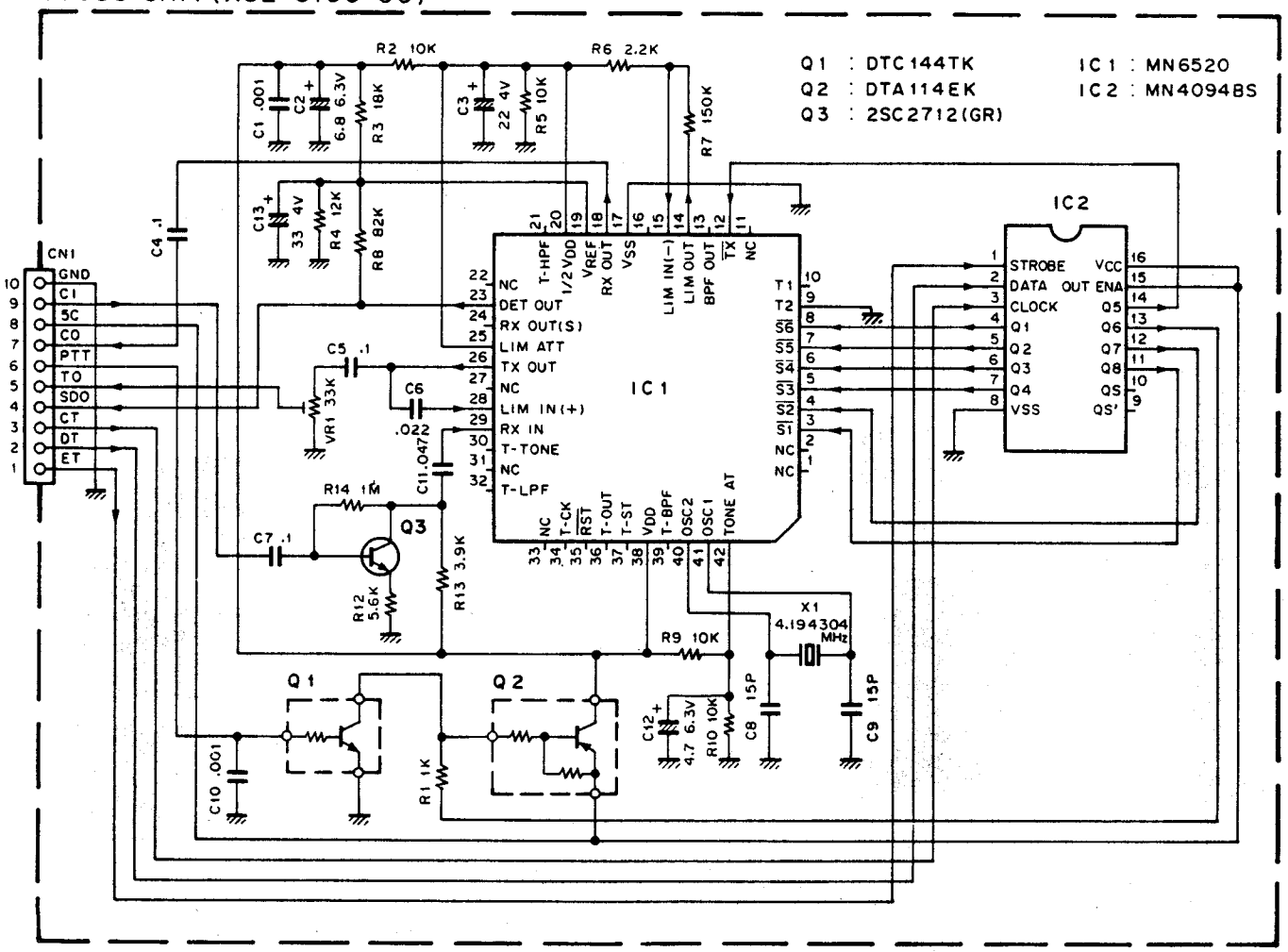


: Component side

: Foil side

TSU-6 CIRCUIT DIAGRAM

CTCSS UNIT (X52-3100-00)



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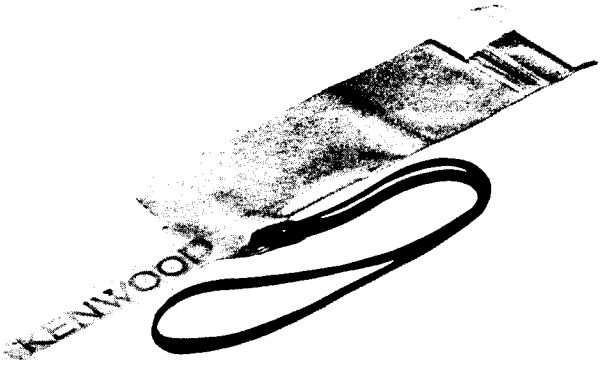
MB-5 (MOBILE BRACKET)/WR-1 (WATERPROOF CASE)

MB-5 EXTERNAL VIEW

WR-1 EXTERNAL VIEW



MB-5 PARTS LIST

* : New Parts

Ref. No.	New Parts	Parts No.	Description
	*	N99-0320-05	Screw set

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SPECIFICATIONS

General

Frequency range	1258.0000MHz – 1299.9875MHz [TH-55AT(K), TH-55E(T,W)]
Signal type	F3 (F3E)
Power supply voltage	DC 6.0V – 16V (DC IN jack)
Power consumption	At reception standby ; Approx. 60mA
	At battery power save ; Approx. 17mA
	At auto power off ; Approx. 5mA
	At transmission (1.0W) ; Less than 1.0A
	At transmission (0.1W) ; Less than 0.6A
Antenna impedance	50Ω
External microphone impedance	2kΩ
Operating temperature	–20°C – +50°C
Dimensions	58 (68.5) W x 157.5 (172) H x 29.5 (37.5) D mm
	The numbers in the parenthesis include projections parts.
Weight	450g (including antenna and Ni-Cd batteries)

Transmitter section

Output power	Hi ; 1.0W, Low ; 0.1W (DC IN 9V)
Modulation system	Reactance modulation
Max. frequency deviation	±5kHz
Unwanted reflection	Less than –50dB
Frequency tolerance	Less than $\pm 3 \times 10^{-6}$ (–10°C – +60°C)

Receiver section

Reception system	Double superheterodyne
Intermediate frequency	1st IF ; 59.7MHz
	2nd IF ; 455kHz
Sensitivity	12dB SINAD ; 0.25μV
Squelch sensitivity	Less than 0.16μV
Selectivity	–6dB at more than 12kHz, –40dB at more than 32kHz
AF output	More than 200mW (8Ω load, distortion 10%)
RIT variable range	More than ±5kHz

Design and specifications subject to change without notice.

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