ORDER NO. KMS9508085C2

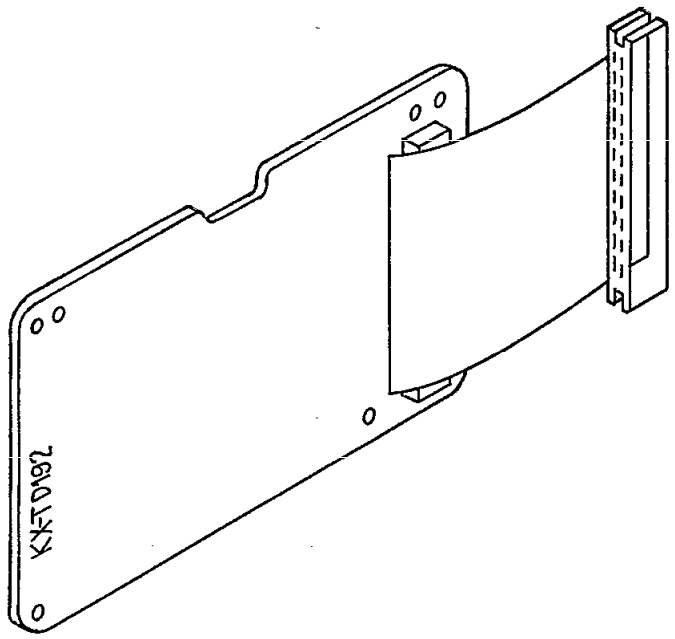
Service Manual

and Technical Guide

SYSTEM INTER CONNECTING CARD
FOR KX-TD1232

KX-TD192E

(for United Kingdom)



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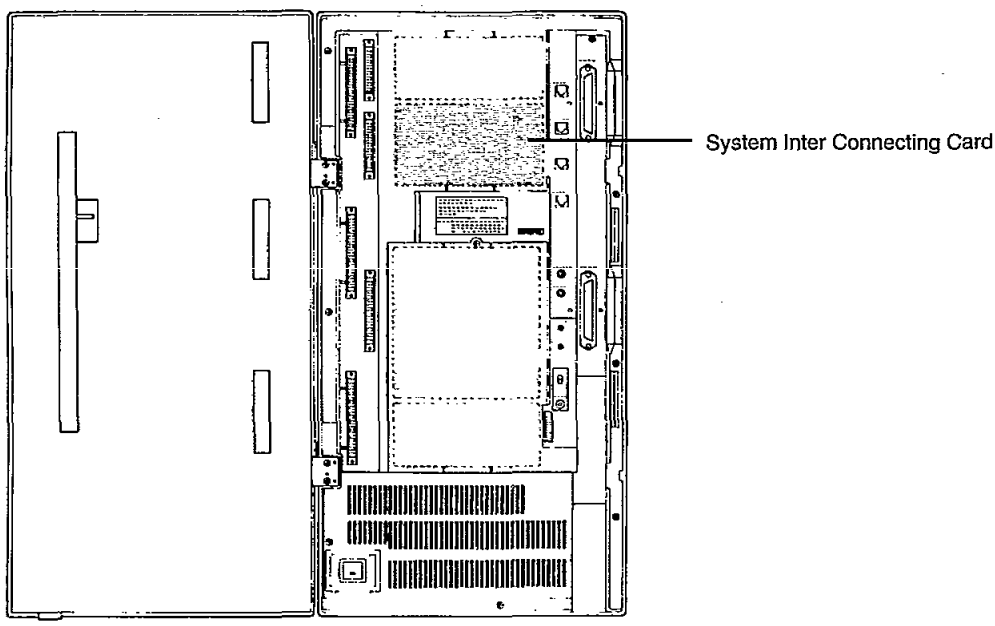
⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

LOCATION OF THE CARD

The location of the doorphone card is shown below.
Precaution: Do not touch parts on the card.



Front Cover is open.

CIRCUIT OPERATION

1. FUNCTION

SYSTEM INTERCONNECTION CARD is an optional card for connecting two systems together to be operated as one system. It plays the interface for 30 channels of the call lines and 1 control channel. Signal types are three types; the PCM highway, the highway clock and the frame pulse.

Function	Description
Driver/receiver	Sending the PCM highway, the highway clock and the frame pulse in the system to another system. Three signals fore-mentioned are received from another system.
HDLC control	Converting the control data into the HDLC protocol, and sending it to another system through the PCM highway. The data of HDLC protocol from another system are converted into the normal data.
Clock watch function	Watching the PCM highway clock and the frame pulse from another system.

2. EXPLANATION OF THE CIRCUIT OPERATION

SIC CARD consists of the following.
HDLC Controller
Timing Signal Generator Circuit
Sending and Receiving Circuit
Clock Guard Circuit

■ HDLC Controller

Composition:
HDLC Controller IC (IC115)

Circuit Operation:
HDLC Controller is a circuit which performs the conversion of the data format according to the HDLC protocol between main CPU on CPU CARD and the PCM highway connected with another system. It works as the serial/parallel converter at the same time.

■ Timing Signal Generator Circuit

Composition:

IC117, IC119

Circuit Operation:
This circuit generates the frame pulse which are presented to the another system, and also generates the signals for the data transmission between the HDLC controller and the PCM highway. These signals are generated from the channel select signals (CHS0 Å`4) and the highway clock (C2M, C4MN) presented by the CPU CARD.

■ Sending and Receiving Circuit

Composition:
IC107, IC108, IC109, etc.

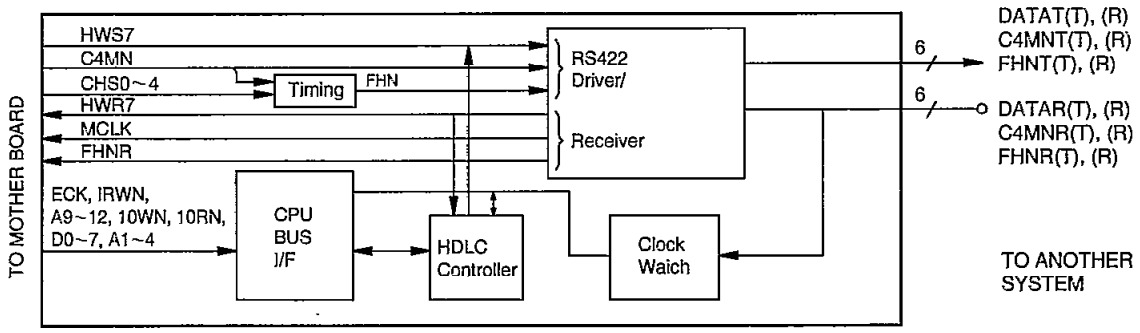
Circuit Operation:
This circuit sends the PCM highway, the highway clock and the frame pulse from the system to the another system (IC109) , and receives those signals from the another system (IC108). Interface is RS-422.

■ Clock Guard Circuit

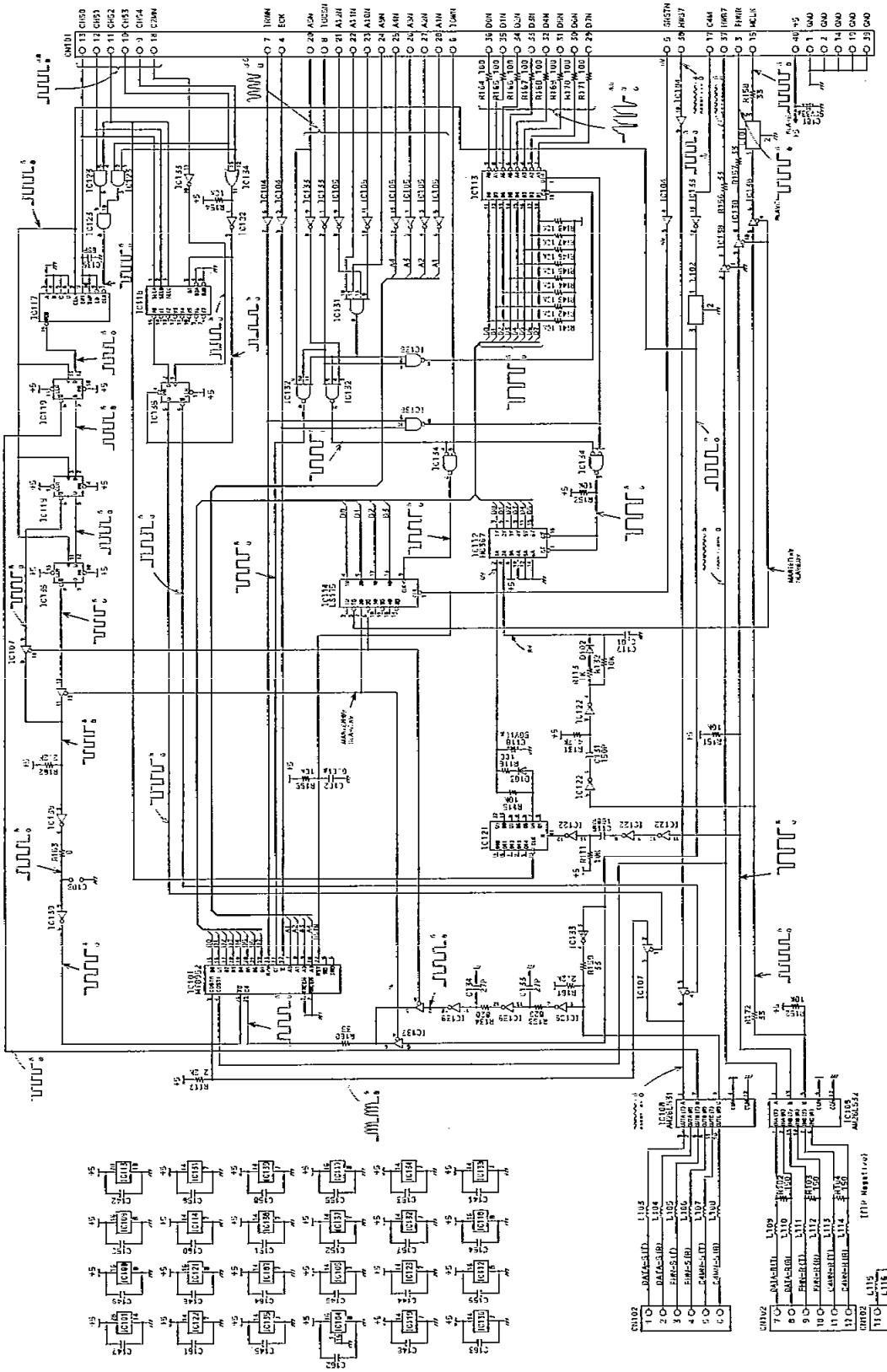
Composition:
IC121, IC122, etc.

Circuit Operation:
This circuit watches the PCM highway clock, the highway clock and the frame pulse from another system.

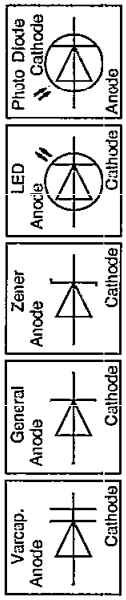
SYSTEM CONNECTION CARD



SCHEMATIC DIAGRAM



3.

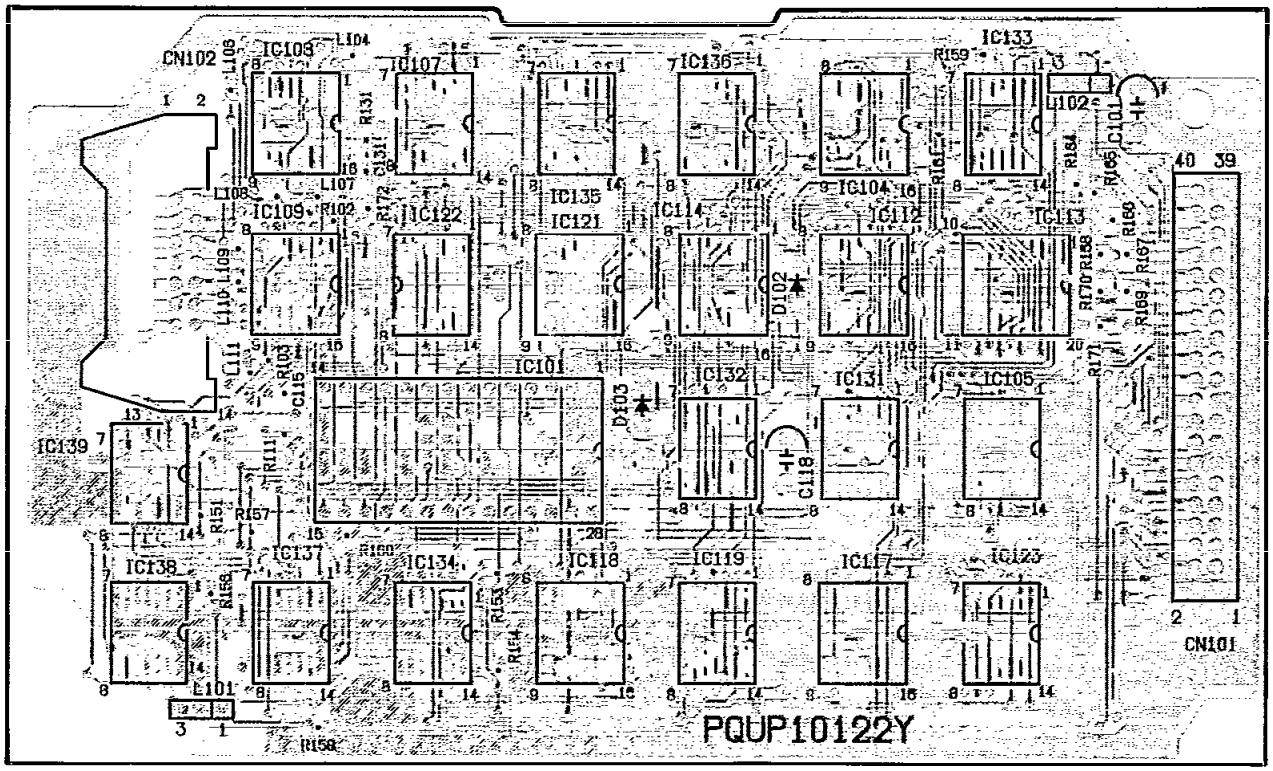


Notes:

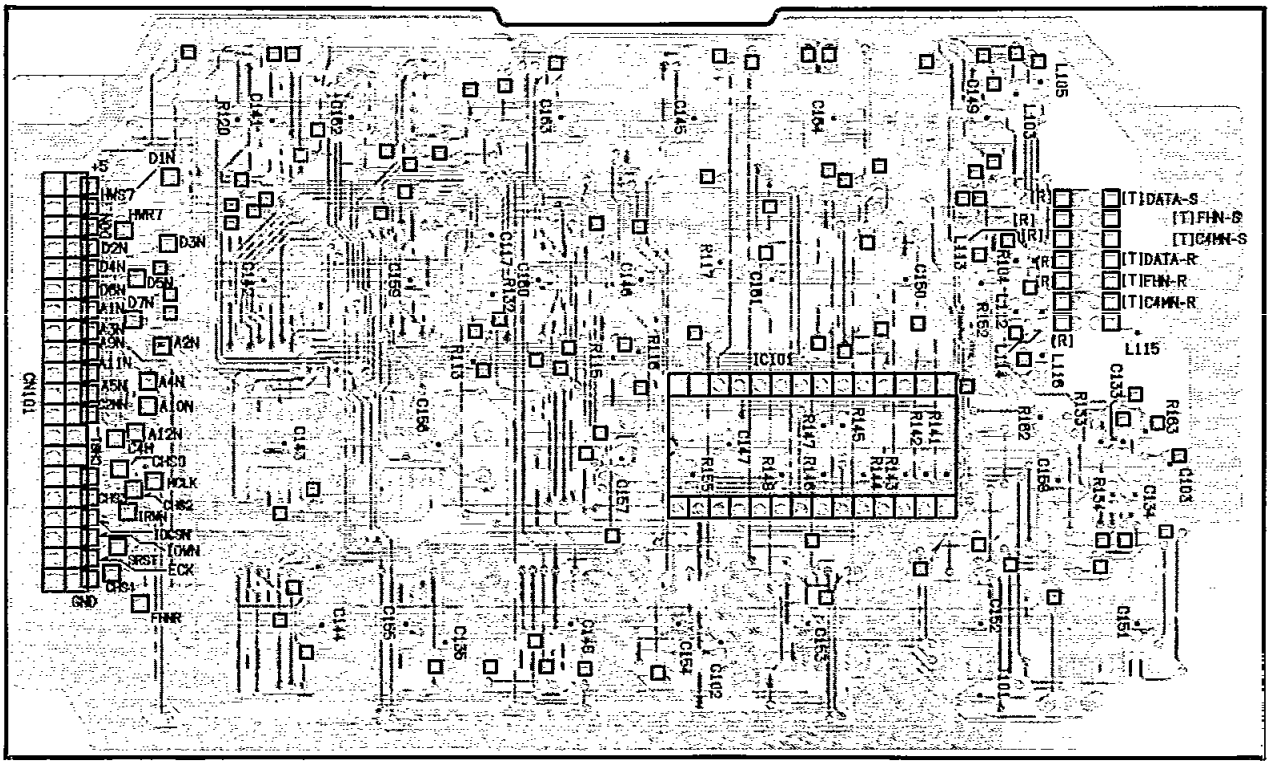
1. DC voltage measurements are taken with oscilloscope from ground line.
   (Waiting condition. Value is V.)
2. The schematic diagram and circuit board may be modified at any time a with the development of new technology.

PRINTED CIRCUIT BOARD

(COMPONENT VIEW)



(BOTTOM VIEW)



Notes:

1. The circuit shown in ▭ on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ▭ on the conductor indicates printed circuit on the front side of the printed circuit board.
3. The printed circuit board may be modified at any time with the development of new technology.

HOW TO REPLACE FLAT PACKAGE IC

■ PREPARATION

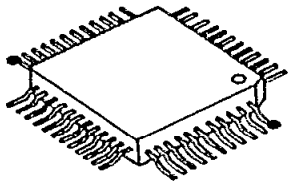
- SOLDER ..... Sparkle Solder 115A-1, 115B-1
  OR
  Almit Solder KR-19, KR-19RMA
- Soldering iron ..... Recommended power consumption will be between 30 W to 40 W.
  Temperature of Copper Rod 662 ± 50 F (350 ±10 C)

  (An expert may handle 60~80 W iron, but a beginner might damage the foil by overheating.)
- Flux ..... HI115 Specific gravity 0.863

  (Original flux will be replaced daily.)

■ PROCEDURE

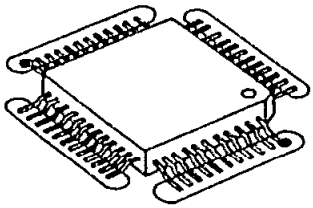
1. Temporary fix the FLAT PACKAGE IC by Soldering on marked 2 pins.



●..... Temporary soldering point.

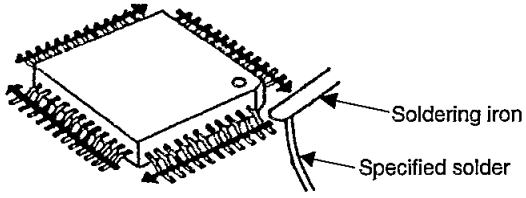
*Accurate setting of the IC to the corresponding soldering foil is vital

2. Apply flux to the all pins of the FLAT PACKAGE IC.



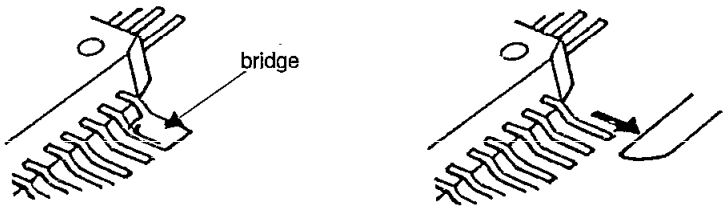
..... Flux

3. Solder the specified solder in the direction of the arrow, while sliding the soldering iron.



■ MODIFICATION PROCEDURE OF BRIDGE

1. Re-solder slightly on bridged portion.
2. Remove any remaining solder along the pins using a soldering iron as shown below.



This replacement parts list is for KX-TD192E version only. Refer to the simplified manual (cover) for other areas.

REPLACEMENT PARTS LIST

Model KX-TD192E

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue tobe available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.
2. The S mark indicates service standard parts and may differ from production parts.
3. RESISTORS & CAPACITORS
   Unless otherwise specified.
   All resistors are in ohms (Ω) k=1000Ω, M=1000kΩ
   All capacitors are in MICRO FARADS(μF) P= μμF
   *Type &Wattage of Resistor
   Type

ERC:Solid	ERX:Metal Film	PQRD:Carbon
ERD:Carbon	ERG:Metal Oxide	PQRQ:Fuse
PQ4R:Chip	ERO:Metal Film	ERF:Wire Wound

Wattage

10,16,18:1/8W	14,25,S2:1/4W	12,50,S1:1/2W	1:1W	2:2W	5:5W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor	ECCD,ECKD,PQCBC,PQVP : Ceramic
ECQS:Styrol	ECQM,ECQV,ECQE,ECQU,ECQB : Polyester
PQCBX,ECUV:Chip	ECEA,ECSZ,ECOS : Electrolytic
ECMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	OF:3.15V	OJ :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		OJ:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description		Pcs
		MAIN PRINTED BOARD		
PCB1	PSWPTD192E	PRINTED BOARD ASS'Y		1
		(ICS)		
IC101	PQVIMT8952BE	IC		1
IC102	Not Used			
IC103	Not Used			
IC104	PQVISN7L365S	IC		1
IC105	PQVISN7L14S	IC		1
IC106	Not Used			
IC107	PQVISN7L125S	IC	S	1
IC108	PQVIMC26L31M	IC		1
IC109	PQVIMC26L32M	IC		1
IC112	PQVISN7H367S	IC	S	1
IC113	PQVISN7L640M	IC		1
IC114	PQVISN7L175M	IC		1
IC115	Not Used			
IC116	Not Used			
IC117	PQVISN7L163S	IC		1
IC118	PQVISN7L138M	IC		1
IC119	PQVISN7L74S	IC		1
IC121	PQVISN7H402S	IC	S	1
IC122	PQVIM7H04F	IC	S	1
IC123	PQVISN7L08S	IC		1
IC131	PQVISN7L21S	IC		1
IC132	PQVISN7L10S	IC		1
IC133	PQVISN7L14S	IC		1
IC134	PQVISN7L32S	IC		1
IC135	PQVISN7L74S	IC		1
IC136	PQVISN7L00S	IC		1
IC137	PQVISN7L125S	IC		1
IC138	PQVISN7L125S	IC		1
IC139	PQVIM7H04F	IC		1
		(DIODES)		
D102	MA723	DIODE(SI)		1
D103	MA723	DIODE(SI)		1
		(CERAMIC FILTERS & COILS)		
L101	PQVFTU50MT	CERAMIC FILTER		1
L102	PQVFTU50MT	CERAMIC FILTER		1
L103	PQ4R10XJ330	33 (RESISTOR)		1
L104	PQ4R10XJ330	33 (RESISTOR)		1
L105	PQ4R10XJ330	33 (RESISTOR)		1
L106	PQ4R10XJ330	33 (RESISTOR)		1
L107	PQ4R10XJ330	33 (RESISTOR)		1
L108	PQ4R10XJ330	33 (RESISTOR)		1
L109	PQ4R10XJ330	33 (RESISTOR)		1
L110	PQ4R10XJ330	33 (RESISTOR)		1
L111	PQ4R10XJ330	33 (RESISTOR)		1
L112	PQLQR1KT	COIL		1
L113	PQLQR1KT	COIL		1
L114	PQLQR1KT	COIL		1
L115	PQLQR1KT	COIL		1
L116	PQLQR1KT	COIL		1
		(CONNECTORS)		
CN	PQJS12R82Y	CONNECTOR CABLE		1
CN101	PQJS40R15Z	CONNECTOR, 40P		1
CN102	PQJP14A37Z	CONNECTOR, 14P		1
		(CAPACITORS)		
C101	ECEA1VU330	33		1
C102	PQCUV1H103KB	0.01		1
C103	PQCUV1H390JC	39P		1
C104	Not Used			
C115	PQCUV1H151JC	150P		1
C116	Not Used			
C117	PQCUV1H103KB	0.01		1
C118	ECEA1HU100	10		1
C131	PQCUV1H151JC	150P		1
C132	Not Used			
C133	PQCUV1H270JC	27P		1
C134	PQCUV1H270JC	27P		1
C135	PQCUV1H680JC	68P		1
C141-164	PQCUV1H223KB	0.022	S	24

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This replacement parts list is for KX-TD192E version only. Refer to the simplified manual (cover) for other areas.

Ref. No.	Part No.	Value, Part Name & Description	Pcs
		(RESISTORS)	
J101	PQ4R10XJ000	0	1
R102	PQ4R10XJ151	150	1
R103	PQ4R10XJ151	150	1
R104	PQ4R10XJ151	150	1
R111	PQ4R10XJ103	10K	1
R112	Not Used		
R113	PQ4R10XJ102	1K	1
R114	Not Used		
R115	PQ4R10XJ103	10K	1
R116	PQ4R10XJ101	100	1
R117	PQ4R10XJ222	2.2K	1
R120	PQ4R10XJ330	33	1
R131	PQ4R10XJ472	4.7K	1
R132	PQ4R10XJ103	10K	1
R133	PQ4R10XJ821	820	1
R134	PQ4R10XJ821	820	1
R141	PQ4R10XJ103	10K	1
R142	PQ4R10XJ103	10K	1
R143	PQ4R10XJ103	10K	1
R144	PQ4R10XJ103	10K	1
R145	PQ4R10XJ103	10K	1
R146	PQ4R10XJ103	10K	1
R147	PQ4R10XJ103	10K	1
R148	PQ4R10XJ103	10K	1
R151	PQ4R10XJ103	10K	1
R152	PQ4R10XJ103	10K	1
R153	PQ4R10XJ103	10K	1
R154	PQ4R10XJ103	10K	1
R155	PQ4R10XJ103	10K	1
R156	PQ4R10XJ330	33	1
R157	PQ4R10XJ330	33	1
R158	PQ4R10XJ330	33	1
R159	PQ4R10XJ330	33	1
R160	PQ4R10XJ330	33	1
R161	PQ4R10XJ222	2.2K	1
R162	PQ4R10XJ222	2.2K	1
R163	PQ4R10XJ122	1.2K	1
R164	PQ4R10XJ101	100	1
R165	PQ4R10XJ101	100	1
R166	PQ4R10XJ101	100	1
R167	PQ4R10XJ101	100	1
R168	PQ4R10XJ101	100	1
R169	PQ4R10XJ101	100	1
R170	PQ4R10XJ101	100	1
R171	PQ4R10XJ101	100	1
R172	PQ4R10XJ330	33	1

O (Q) KXTD192E
Printed in Japan