C25(88)

Level 2.5

Repair Documentation

1 Introduction

The C25 is the first dualband handset (GSM-900 and GSM-1800) in the C-class. The C2588 is a special version for the asian market featuring a graphic display instead of the alphanumeric C25 display.

The repairs for C25 and C2588 are identical unless otherwise noted.

Lately a new version of the C25 has been introduced. This version has the main processor HiGold version 4.3 of the S25(88). Internally this C25 is therefore called C25V4. The level 2.5 parts are identical to the old C25 version.

This manual is intended to help you carry out repairs on level 2.5, meaning limited component repairs. Failure highlights are documented and should be repaired in the local workshops.

It must be noted that all repairs have to be carried out in an environment set up according to the ESD (Electrostatic Discharge Sensitive Devices) regulations defined in international standards.

If you have any questions regarding the repair procedures or spare parts do not hesitate to contact our technical support team in Kamp-Lintfort, Germany:

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2 Antenna Connector

2.1 Affected Units

2.1.1 Type: **C25**

2.1.2 Affected IMEIs / Date Codes: *All / All*

2.1.3 Affected SW-Versions: *All*

2.1.4 Fault Code for LSO reporting: 3ANC

2.2 Fault Description

2.2.1 Fault Symptoms for customers:

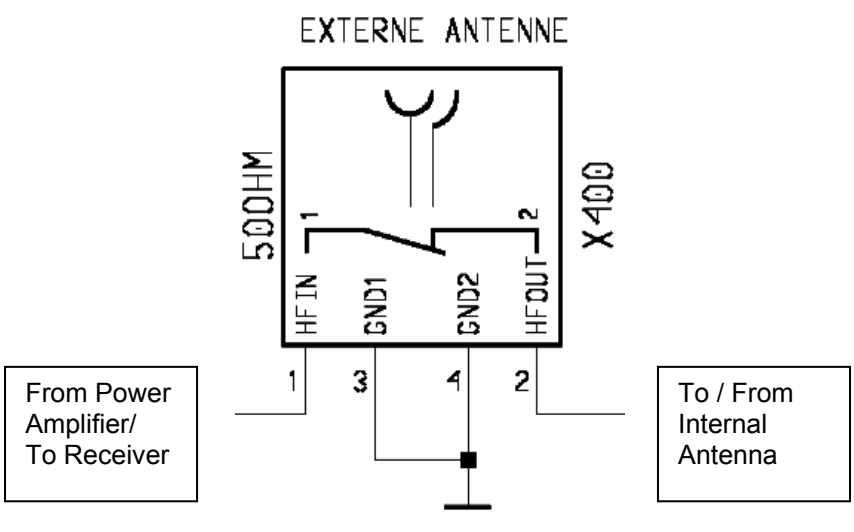
Network Search when using the external antenna (carkit)
No location update possible on external antenna (carkit)

2.2.2 Fault Symptom on GSM-Tester:

Output power problems on the external antenna
No location update possible

2.2.3 Component Information

The Antenna Connector is a mechanical switch operated by the RF plug of a carkit or, for testing purposes, of an RF clip.
Normally the RF signal goes to and comes from the internal antenna. Whenever an RF plug is plugged into the antenna connector the connection to the internal antenna is openend and the connection to the external antenna socket is made. See drawing below.



2.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

2.4 Repair Documentation

2.4.1 Description of procedure:

2.4.1.1 Diagnosis

Check the output power of the handset with the LSO testprogram.
Especially watch the external antenna power!

2.4.1.2 Repair by component change

Use hot air blower to remove defective connector
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.

2.4.1.3 Repair by SW-Booting

Not possible!

2.4.1.4 Test

Retest handset after repair as described above.

2.4.2 List of needed material

2.4.2.1 Components

C25 antenna connector
Part-Number: L36334-Z93-C261

2.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

2.4.2.3 Special Tools

None

2.4.2.4 Working materials

Desolder Wick / Braid
Solder

2.4.3 Drawings

Figure 1: C25 Board Antenna Connector Side (Top View)

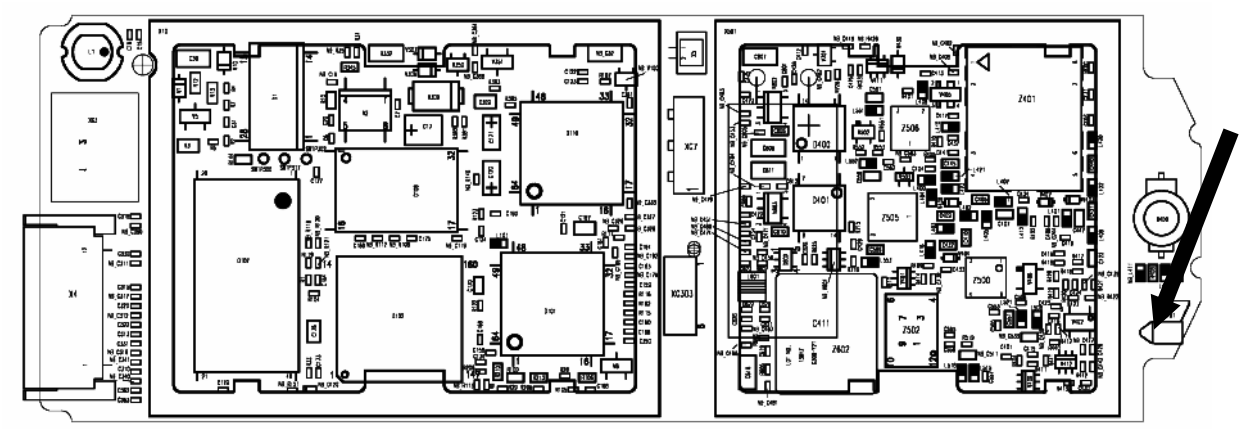
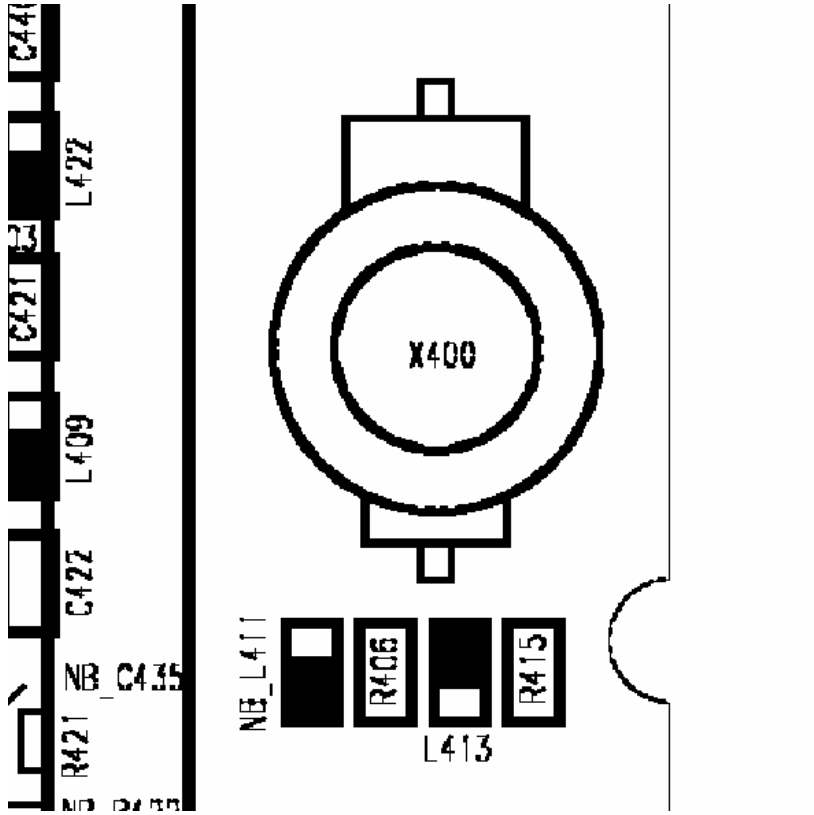


Figure 2: C25 Antenna Connector Placement (X400) (Top View)



3 Ringer Connector

3.1 Affected Units

3.1.1 Type: **C25**

3.1.2 Affected IMEIs / Date Codes: *All / All*

3.1.3 Affected SW-Versions: *All*

3.1.4 Fault Code for LSO reporting: 3RIC

3.2 Fault Description

3.2.1 Fault Symptoms for customers:

Problems with the handset ringer. No ringer tone audible.

3.2.2 Fault Symptom on GSM-Tester:

Handset fails ringer test.

3.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

3.4 Repair Documentation

3.4.1 Description of procedure:

The connector X5 is connecting the main board of the C25 with the piezo ringer through a two pin cable.

3.4.1.1 Diagnosis

Visually check the connector. Watch for bent contacts and dry joints.

3.4.1.2 Repair by component change

Resolder dry soldering joints.
If the connector is physically damaged use hot air blower or wick to remove defective connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.

3.4.1.3 Repair by SW-Booting

Not possible!

3.4.1.4 Test

Retest handset after repair.

3.4.2 List of needed material

3.4.2.1 Components

Ringer Connector C25:
Part-Number: L36334-Z97-C43

3.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

3.4.2.3 Special Tools

None

3.4.2.4 Working materials

Desolder Wick / Braid
Solder
Flux

3.4.3 Drawings

Figure 1: C25 Board Ringer Connector Side

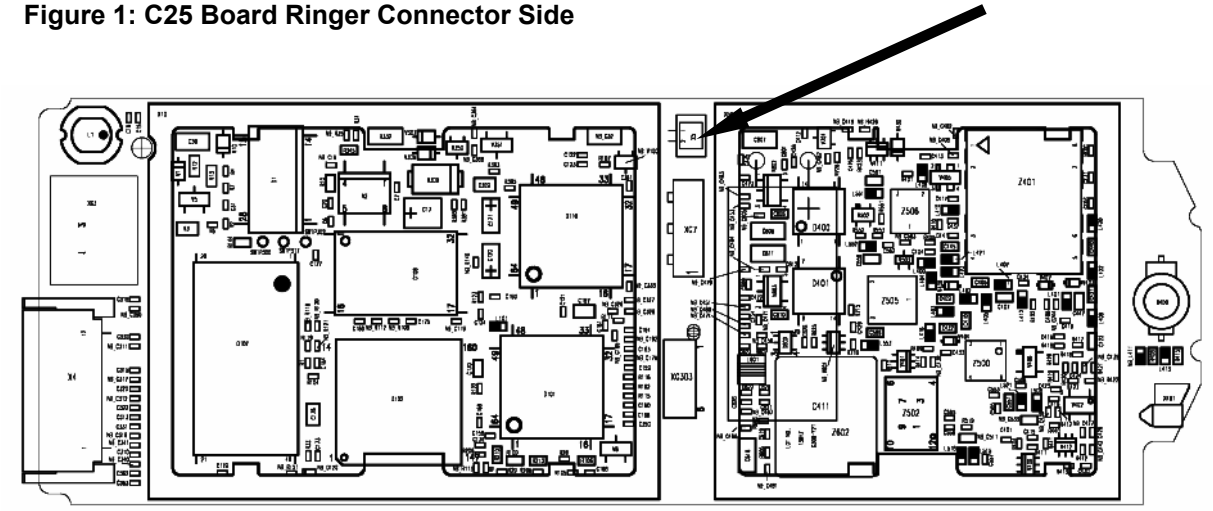
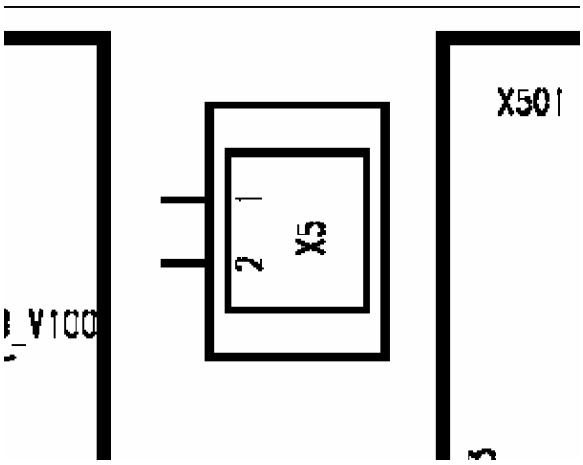


Figure 2: C25 Ringer Connector (X5) Placement (Top View)



4 Bottom Connector (Lumberg)

4.1 Affected Units

4.1.1 Type: **C25**

4.1.2 Affected IMEIs / Date Codes: *All / All*

4.1.3 Affected SW-Versions: *All*

4.1.4 Fault Code for LSO reporting: 3LUC

4.2 Fault Description

4.2.1 Fault Symptoms for customers:

Charging problems.
Problems with external loudspeaker or microphone when using a car kit.
Problems with accessories connected at the bottom connector.

4.2.2 Fault Symptom on GSM-Tester:

Testequipment cannot communicate with the handset.

4.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

4.4 Repair Documentation

4.4.1 Description of procedure:

4.4.1.1 Diagnosis

Visually check the bottom connector. Watch for dry joints!

4.4.1.2 Repair by component change

Use hot air blower remove defective bottom connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new bottom connector afterwards.

4.4.1.3 Repair by SW-Booting

Not possible!

4.4.1.4 Test

Retest handset after repair.

4.4.2 List of needed material

4.4.2.1 Components

Bottom Connector C25
Part-Number: L36334-Z93-C262

4.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

4.4.2.3 Special Tools

None

4.4.2.4 Working materials

Desolder Wick / Braid
Solder

4.4.3 Drawings

Figure 1: C25 Board Bottom Connector Side

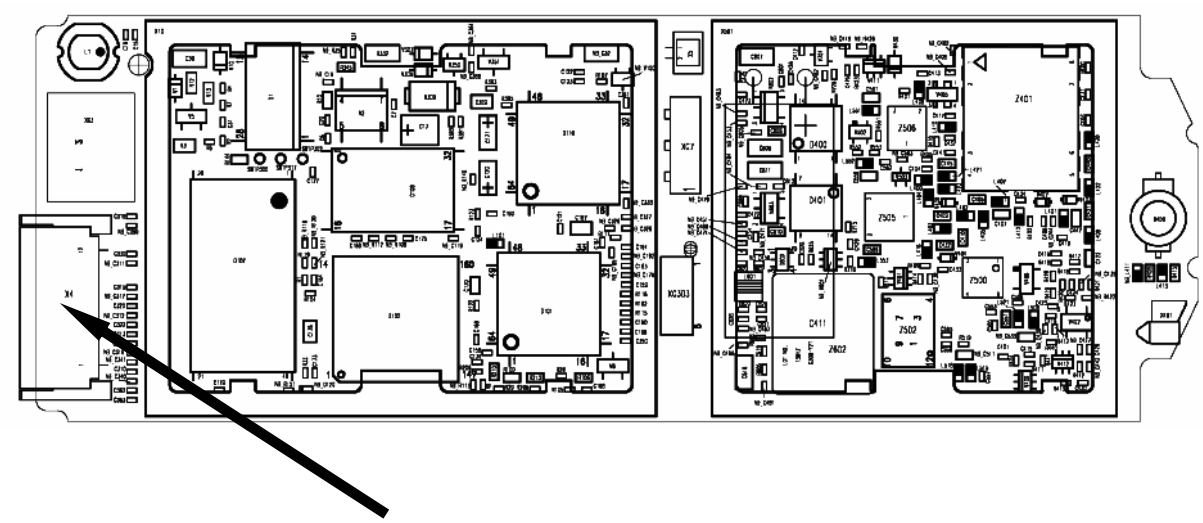
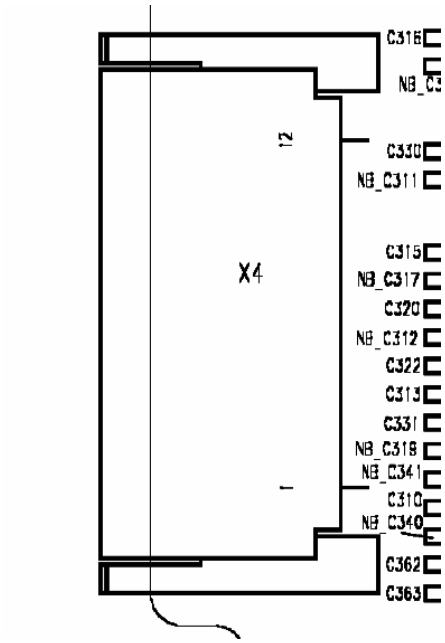


Figure 2: C25 Bottom Connector (X4) Placement (Top View)



5 18µH Coil

5.1 Affected Units

5.1.1 Type: **C25**

5.1.2 Affected IMEIs / Date Codes: *All / All*

5.1.3 Affected SW-Versions: *All*

5.1.4 Fault Code for LSO reporting: 3COI

5.2 Fault Description

5.2.1 Fault Symptoms for customers:

Loud humming noise in loudspeaker.

5.2.2 Fault Symptom on GSM-Tester:

Handset fails with loud humming noise in echo loop.

5.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

5.4 Repair Documentation

5.4.1 Description of procedure:

5.4.1.1 Diagnosis

The 18µH coil is used in the step up converter which is generating a 5.4 V supply voltage for the power amplifier out of the 2.8V battery voltage.
If the coil is mechanically damaged (broken) it produces heavy interference with the acoustical elements of the C25 resulting in a loud humming noise in the earpiece.

A broken coil can easily be diagnosed by trying to move it with two fingers. If it moves, the core is broken and the coil has to be replaced.

5.4.1.2 Repair by component change

Use hot air to remove defective coil.
Avoid excessive heat!
Watch surrounding components!!

Resolder new coil afterwards

5.4.1.3 Repair by SW-Booting

Not possible!

5.4.1.4 Test

Retest handset after repair by checking the audio quality with the echo loop of the testprogram.

5.4.2 List of needed material

5.4.2.1 Components 18µH Coil

Part-Number: L36151-F5183-M

5.4.2.2 Jigs and Tools

Soldering Iron
Hot Air Blower

5.4.2.3 Special Tools

None

5.4.2.4 Working materials

Desolder Wick / Braid
Solder

5.4.3 Drawings

Figure 1: C25 Board 18µH Coil (L201) Side

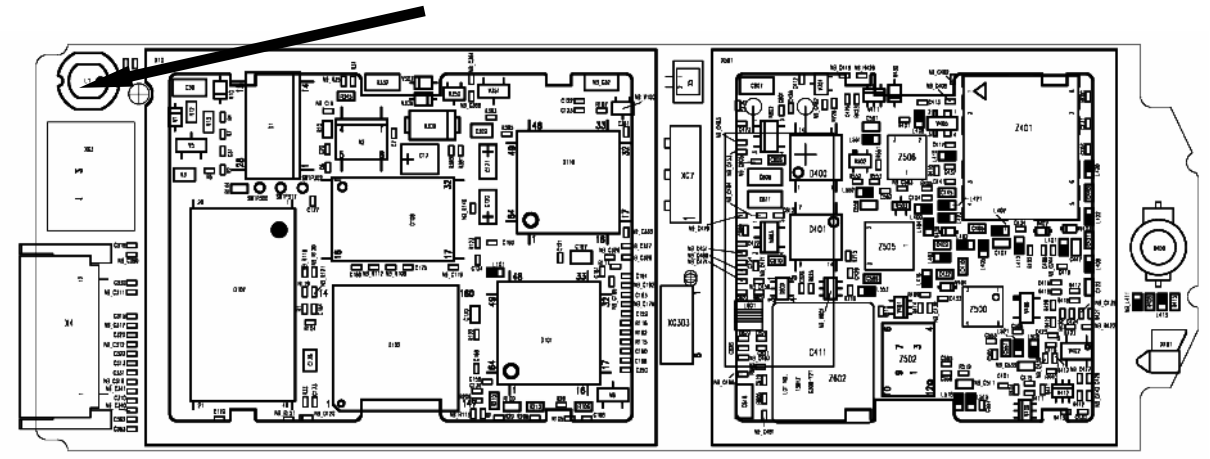
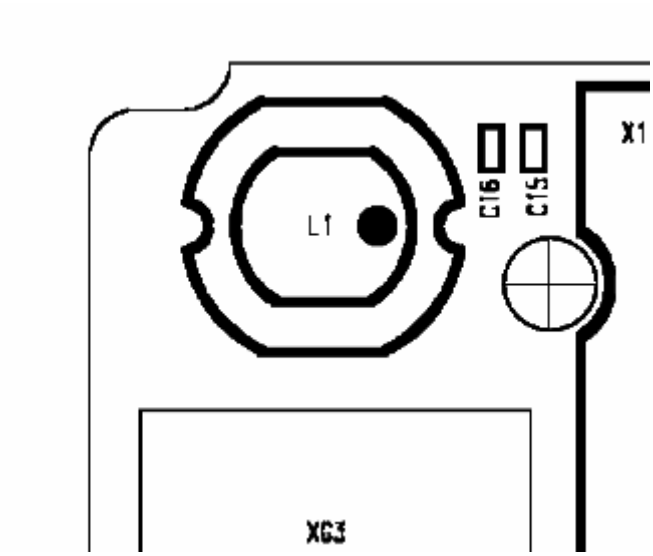


Figure 2: C25 18µH Coil (L1) Placement (Top View)



6 Antenna Spring

6.1 Affected Units

6.1.1 Type: **C25**

6.1.2 Affected IMEIs / Date Codes: *All / All*

6.1.3 Affected SW-Versions: *All*

6.1.4 Fault Code for LSO reporting: 3ANS

6.2 Fault Description

6.2.1 Fault Symptoms for customers:

Network Search.
Handset drops calls.

6.2.2 Fault Symptom on GSM-Tester:

Power problems on the ***internal*** antenna of the handset only.

6.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

6.4 Repair Documentation

6.4.1 Description of procedure:

The antennaspring connects the main board with the internal antenna of the handset.

6.4.1.1 Diagnosis

Visually check the status of the spring. Bent or oxidated springs have to be replaced.

6.4.1.2 Repair by component change

Use soldering iron to remove defective spring.
Avoid excessive heat!
Watch surrounding components!

Resolder new spring afterwards.

6.4.1.3 Repair by SW-Booting

Not possible!

6.4.1.4 Test

Retest handset after repair.

6.4.2 List of needed material

6.4.2.1 Components

Antenna Spring C25
Part-Number: L36158-A25-C9

6.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

6.4.2.3 Special Tools

None

6.4.2.4 Working materials

Desolder Wick / Braid
Solder

6.4.3 Drawings

Figure 1: C25 Board Antenna Spring Side

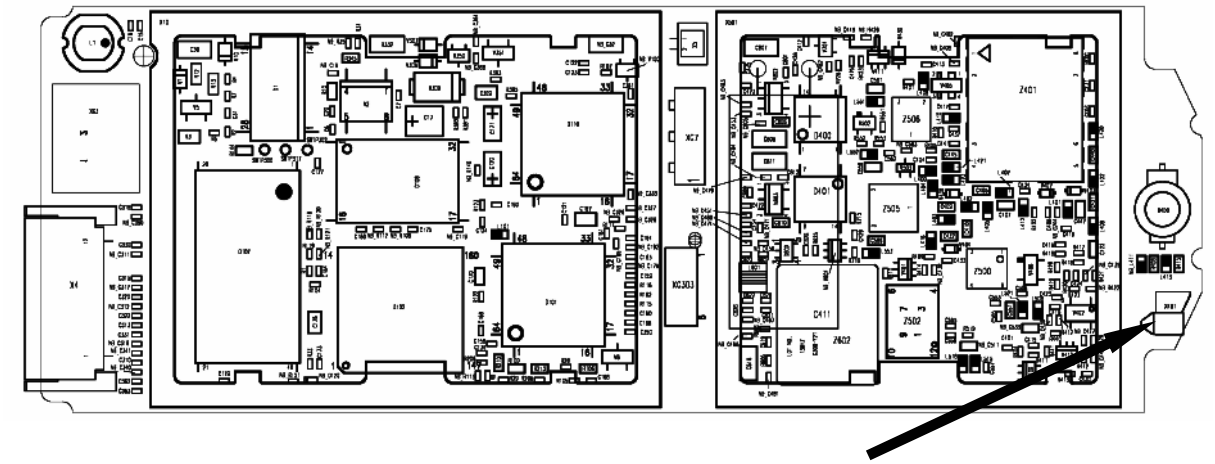
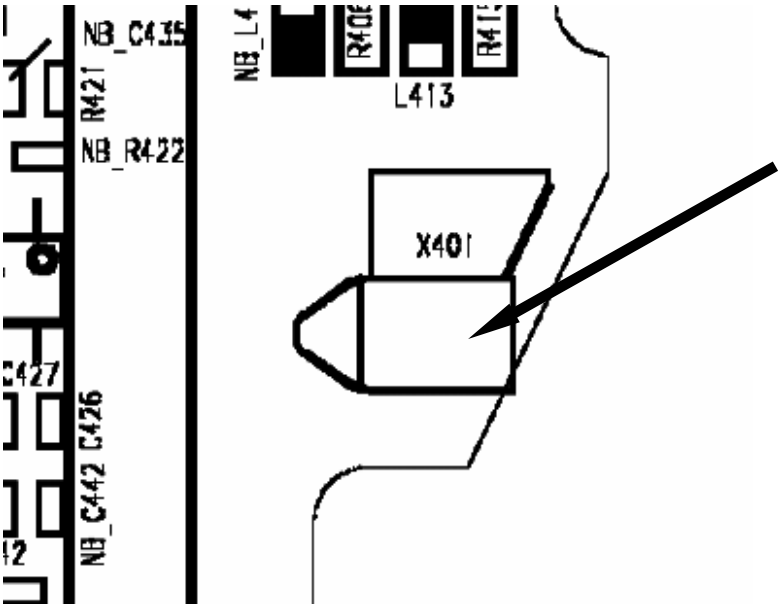


Figure 2: C25 Antenna Spring (X401) Placement (Top View)



7 Display Connector

7.1 Affected Units

7.1.1 Type: **C25**

7.1.2 Affected IMEIs / Date Codes: *All / All*

7.1.3 Affected SW-Versions: *All*

7.1.4 Fault Code for LSO reporting: 3DIC

7.2 Fault Description

7.2.1 Fault Symptoms for customers:

Display problems.
Missing Lines or columns on the LCD.

7.2.2 Fault Symptom on GSM-Tester:

Handset fails display test.

7.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

7.4 Repair Documentation

7.4.1 Description of procedure:

7.4.1.1 Diagnosis

Visually check the status of the connector. Check the opening/closing mechanism and watch for dry joints.

7.4.1.2 Repair by component change

Use soldering iron to resolder dry joints or use hot air blower to remove defective connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.

7.4.1.3 Repair by SW-Booting

Not possible!

7.4.1.4 Test

Retest handset after repair.

7.4.2 List of needed material

7.4.2.1 Components

Remark: Both C25 and C2588 use the same connector, but the placement position is slightly different!

Display Connector C25(88)
Part-Number: L36195-Z26-C624

7.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

7.4.2.3 Special Tools

None

7.4.2.4 Working materials

Desolder Wick / Braid
Solder

7.4.3 Drawings

Figure 1: C25 Board Display Connector Side

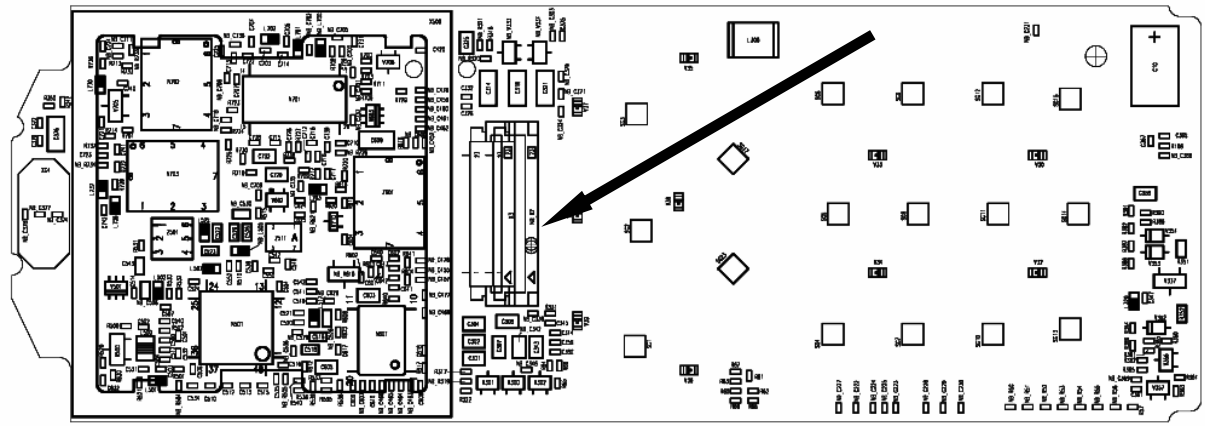
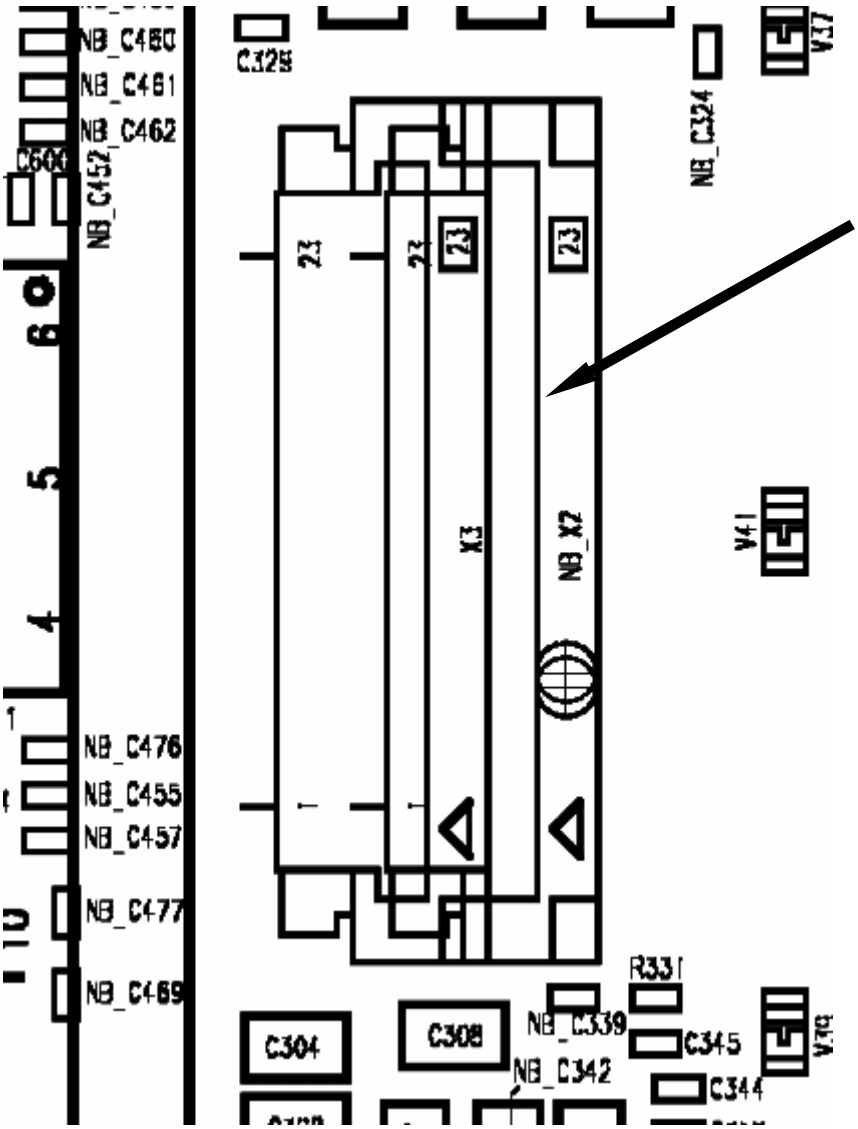


Figure 2: C25 Display Connector (X3) and C2588 Display Connector (X2) Placement (Top View)


NB_C460
NB_C461
NB_C462
C600
NB_C452
NB_C476
NB_C455
NB_C457
NB_C477
NB_C469
C325
NB_C324
V17
23
23
23
23
X3
NB_X2
V41
R331
C304
C308
NB_C339
C345
NB_C342
C344

8 Display Capacitors

8.1 Affected Units

8.1.1 Type: **C25**

8.1.2 Affected IMEIs / Date Codes: *All / All*

8.1.3 Affected SW-Versions: *All*

8.1.4 Fault Code for LSO reporting: 3DCA

8.2 Fault Description

8.2.1 Fault Symptoms for customers:

The display is not working at all or shows strange characters.

8.2.2 Fault Symptom on GSM-Tester:

Handset fails display test.

8.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

8.4 Repair Documentation

8.4.1 Description of procedure:

8.4.1.1 Diagnosis

The capacitors are used to buffer the supply voltage of the display controller. Especially C308 has occasionally been found defective. Check the status of the capacitors by measuring ist capacitance with a appropriate measurement device. The capacitance must be in the 220nF range. Defective caps often have a lower capacitance around 100nF.

8.4.1.2 Repair by component change

Use hot air blower or soldering iron to remove defective capacitor.
Avoid excessive heat!
Watch surrounding components!

Resolder new capacitor afterwards.

8.4.1.3 Repair by SW-Booting

Not possible!

8.4.1.4 Test

Retest handset after repair.

8.4.2 List of needed material

8.4.2.1 Components

Display Capacitor C25(88)
Part-Number: L36375-F3224-K

8.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

8.4.2.3 Special Tools

None

8.4.2.4 Working materials

Desolder Wick / Braid
Solder

8.4.3 Drawings

Figure 1: C25 Board Display Capacitor Side

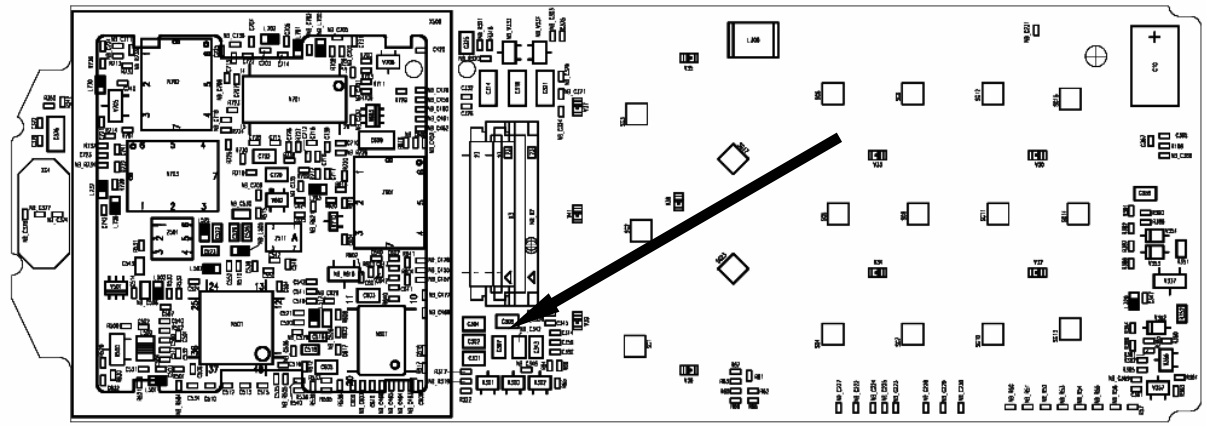
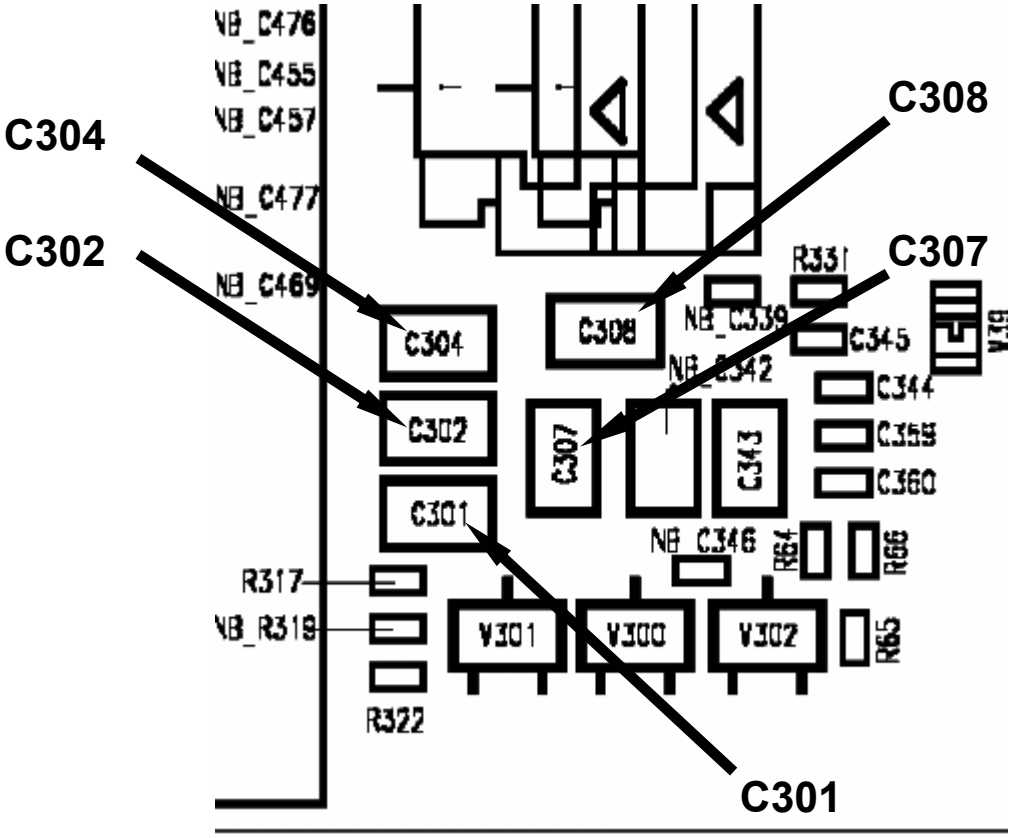


Figure 2: C25 Display Capacitor (C301, C302, C304, C307, C308) Placement


C304
C302
C308
C307
C301
NB_C476
NB_C455
NB_C457
NB_C477
NB_C469
R331
NB_C539
C345
C344
C359
C360
C304
C308
C302
C307
C343
C301
NB_C346
R64
R66
R317
NB_R319
V301
V300
V302
R65
R322

9 Ringer Coil

9.1 Affected Units

9.1.1 Type: **C25**

9.1.2 Affected IMEIs / Date Codes: *All / All*

9.1.3 Affected SW-Versions: *All*

9.1.4 Fault Code for LSO reporting: 3RCO

9.2 Fault Description

9.2.1 Fault Symptoms for customers:

The handset ringer (buzzer) is not working or the Ringer level is too low

9.2.2 Fault Symptom on GSM-Tester:

Handset fails ringer test.

9.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

9.4 Repair Documentation

9.4.1 Description of procedure:

9.4.1.1 Diagnosis

The coil is used to generate the voltage to operate the piezo ringer. If it is defective, the ringer cannot work anymore.
Check the status of the coil by measuring its resistance with a multimeter. The resistance must be very low. Also broken coils have to be replaced.

9.4.1.2 Repair by component change

Use hot air blower or soldering iron to remove defective coil.
Avoid excessive heat!
Watch surrounding components!

Resolder new coil afterwards.

9.4.1.3 Repair by SW-Booting

Not possible!

9.4.1.4 Test

Retest handset after repair.

9.4.2 List of needed material

9.4.2.1 Components

Ringer Coil C25(88)
Part-Number: L36151-F5105-K3

9.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

9.4.2.3 Special Tools

None

9.4.2.4 Working materials

Desolder Wick / Braid
Solder

9.4.3 Drawings

Figure 1: C25 Board Ringer Coil Side

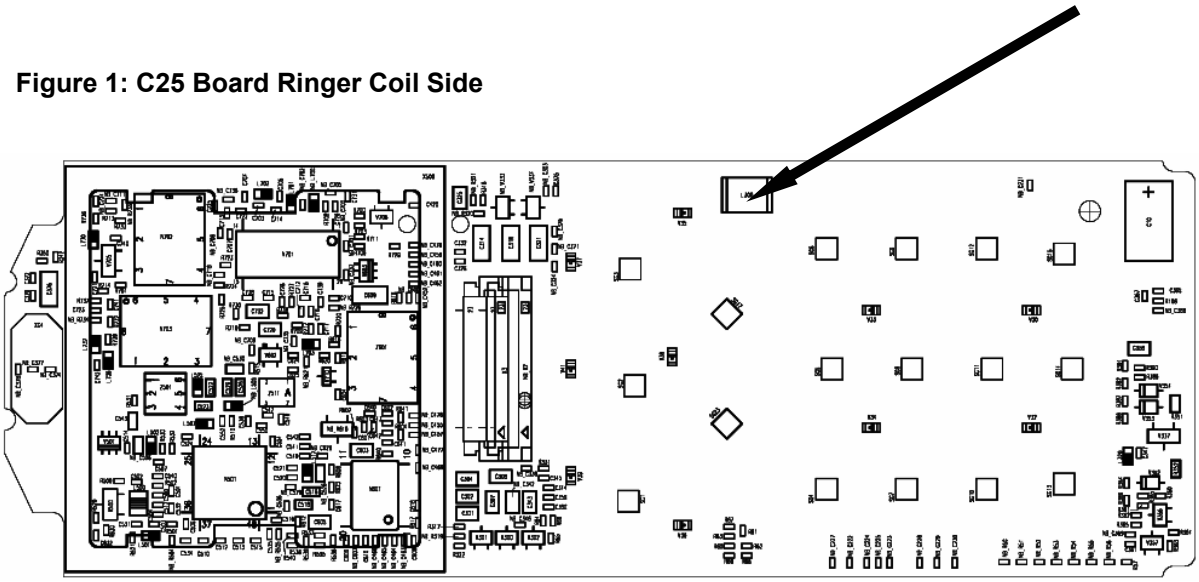
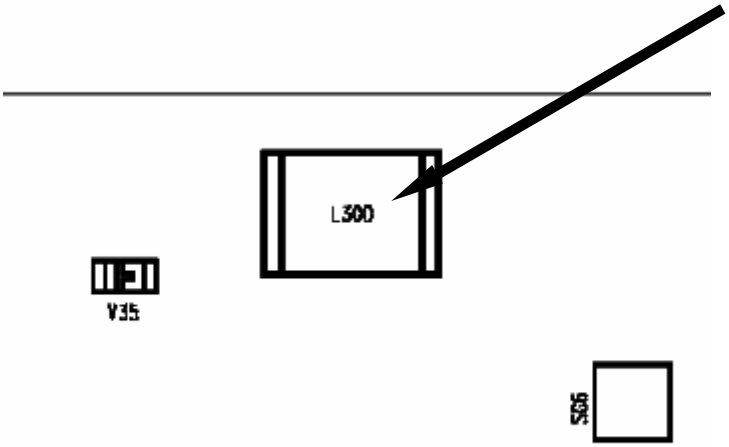


Figure 2: C25 Ringer Coil (L300) Placement (Top View)



10 Keypad LEDs

10.1 Affected Units

10.1.1 Type: **C25**

10.1.2 Affected IMEIs / Date Codes: *All / All*

10.1.3 Affected SW-Versions: *All*

10.1.4 Fault Code for LSO reporting: 3LED

10.2 Fault Description

10.2.1 Fault Symptoms for customers:

The display/keypad illumination is not working properly.

10.2.2 Fault Symptom on GSM-Tester:

This fault cannot be tested with the GSM-Tester.

10.3 Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

10.4 Repair Documentation

10.4.1 Description of procedure:

10.4.1.1 Diagnosis

The nine LEDs are providing the illumination both for the display and for the keyboard. Just switch on the phone without upper case and remove the keyboard. Now visually check the function of the LEDs.

10.4.1.2 Repair by component change

Use hot air blower or soldering iron to remove defective LED.
Watch the polarity of the LED!
Avoid excessive heat!
Watch surrounding components!

Resolder new LED afterwards.

10.4.1.3 Repair by SW-Booting

Not possible!

10.4.1.4 Test

Retest handset after repair.

10.4.2 List of needed material

10.4.2.1 Components

LED C25(88)
Part-Number: L36840-L2031-D670

10.4.2.2 Jigs and Tools

Hot Air Blower
Soldering Iron

10.4.2.3 Special Tools

None

10.4.2.4 Working materials

Desolder Wick / Braid
Solder

10.4.3 Drawings

Figure 1: C25 Board LED Side