Contents

Description of the problem

The Operational Amplifier OPA2137E is being reported a failure in ICT.

In total there are 12 reference designators under investigation:

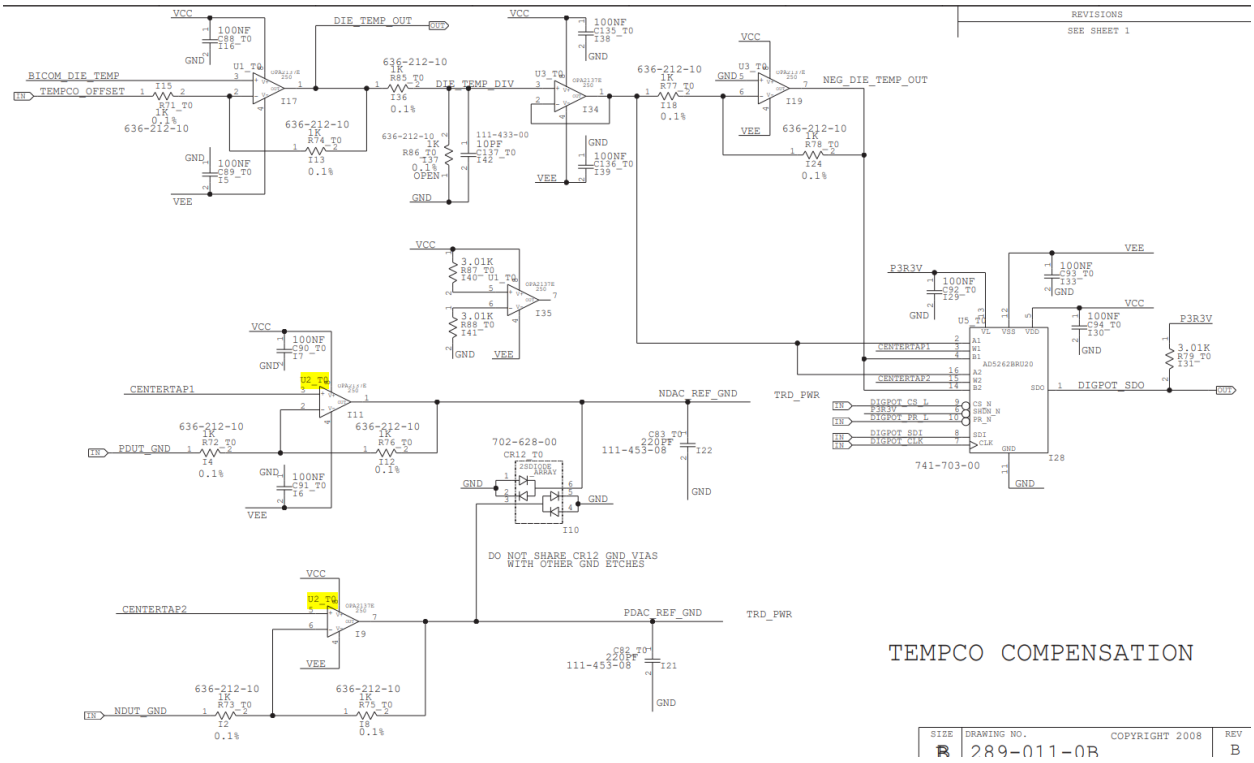
U1_T0 - U1_T3,

U2_T0 - U2_T3

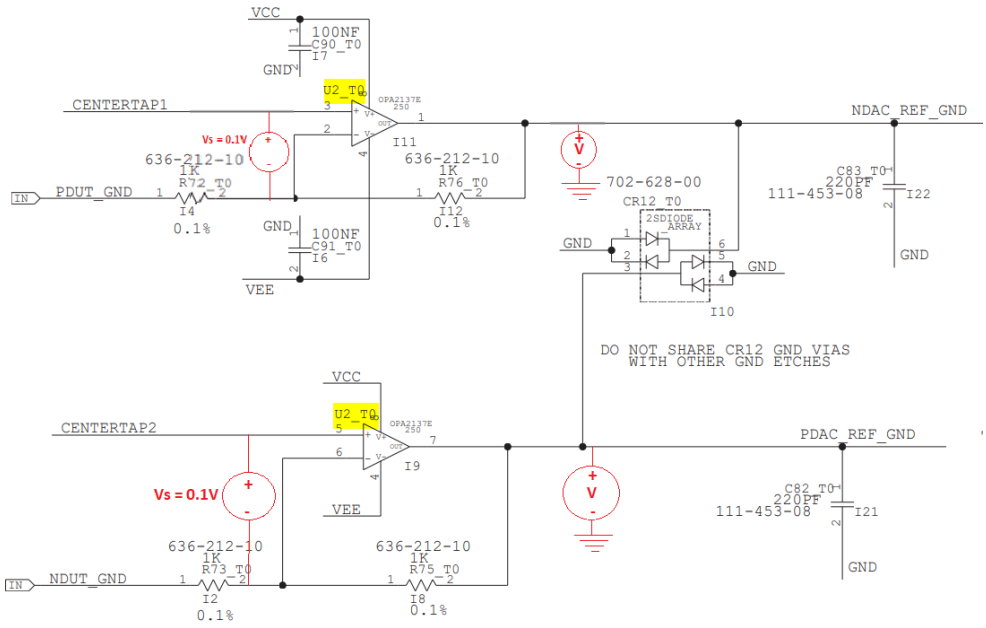
U3_T0 - U3_T3,

all of them belong to the same Part Number OPA2137E.

Let’s take the section only using U1_T0, U2_T0 & U3_T0.



The stimulus(100mV) is applied to the inverter and non-inverter pins of OpAmp, then it output is measured as next figure shows.



Step Tests and their Results

The Test & Failure are:

A) /Test-1***/***

U2_T0_POS_IN1:

SET SCAN AT(CHA=U2_T0_2:CHB=U5_T0_3:CHC=C83_T0_1:CHD=_GND(1));

SET DCV DCS V=100M I=100M DLY=0;

TEST DCV DCS

[WRITE

ID=MESFILE'U2_T0_1 Failed, Unable to apply positive input voltage%NL%';

BRANCH U2_T0_POS_FAIL1;

];

MEAS DCV DCM INTO VVAL1 MAX=5;

TEST ARITH VVAL1 HI=-400M LO=-900M

```
[
    WRITE ID=MESFILE'U2_T0_1 Failed for negative rail%NL%';
    WRITE ID=MESFILE'Expected -650M volts, Measured: %2.2g%%NL%' VVAL1;
    WRITE ID=MESFILE'PN=TSSOP8X118 X:7.995 Y:1.595%NL%%NL%';
    BRANCH U2_T0_POS_PASS1;
];
```

/***Result of Test-1***/

U2_T0_1 Failed for negative rail

Expected -650M volts, Measured: -937.59M

PN=TSSOP8X118 X:7.995 Y:1.595

B) /*Test-2***/**

```
U2_T0_NEG_IN1:
 SET SCAN AT(CHA=U2_T0_2:CHB=U5_T0_3:CHC=C83_T0_1:CHD=_GND(1));
 SET DCV DCS V=-200M I=100M DLY=0;  TEST DCV DCS
      [WRITE
ID=MESFILE'U2_T0_1 Failed, Unable to apply negative input voltage%NL%';
       BRANCH U2_T0_NEG_FAIL1;
       ];

 MEAS DCV DCM INTO VVAL1 MAX=5;
 TEST ARITH VVAL1  HI=900M LO=400M
[
     WRITE ID=MESFILE'U2_T0_1 Failed for positive rail%NL%';
     WRITE ID=MESFILE'Expected +650M volts, Measured: %2.2g%%NL%'
VVAL1;
     WRITE ID=MESFILE'PN=TSSOP8X118 X:7.995 Y:1.595%NL%%NL%';
     BRANCH U2_T0_NEG_PASS1;
    ];
```

/***Result of Test-2***/

U2_T0_1 Failed for positive rail

Expected +650M volts, Measured: 962.26M

PN=TSSOP8X118 X:7.995 Y:1.595

C)/Test-3***/***

U2_T0_POS_IN2:

SET SCAN AT(CHA=U2_T0_6:CHB=U5_T0_15:CHC=C82_T0_1:CHD=_GND(1));

SET DCV DCS V=200M I=100M DLY=0;

TEST DCV DCS

[WRITE

ID=MESFILE'U2_T0_2 Failed, Unable to apply positive input voltage%NL%';

BRANCH U2_T0_POS_FAIL2;

];

MEAS DCV DCM INTO VVAL1 MAX=5;

TEST ARITH VVAL1 HI=-400M LO=-900M

[

WRITE ID=MESFILE'U2_T0_2 Failed for negative rail%NL%';

WRITE ID=MESFILE'Expected -650M volts, Measured: %2.2g%%NL%' VVAL1;

WRITE ID=MESFILE'PN=TSSOP8X118 X:7.995 Y:1.595%NL%%NL%';

BRANCH U2_T0_POS_PASS2;

];

/***Result of Test-3***/

U2_T0_2 Failed for negative rail

Expected -650M volts, Measured: -950.4M

PN=TSSOP8X118 X:7.995 Y:1.595

E) ***/***Test-4***/***

```
U2_T0_NEG_IN2:
 SET SCAN AT(CHA=U2_T0_6:CHB=U5_T0_15:CHC=C82_T0_1:CHD=_GND(1));
 SET DCV DCS V=-200M I=100M DLY=0;  TEST DCV DCS
       [WRITE
ID=MESFILE'U2_T0_2 Failed, Unable to apply negative input voltage%NL%';
        BRANCH U2_T0_NEG_FAIL2;
       ];

 MEAS DCV DCM INTO VVAL1 MAX=5;
 TEST ARITH VVAL1  HI=900M LO=400M
[
      WRITE ID=MESFILE'U2_T0_2 Failed for positive rail%NL%';
      WRITE ID=MESFILE'Expected +650M volts, Measured: %2.2g%%NL%'
VVAL1;
      WRITE ID=MESFILE'PN=TSSOP8X118 X:7.995 Y:1.595%NL%%NL%';
      BRANCH U2_T0_NEG_PASS2;
    ];
```

/Result of Test-4***/***

U2_T0_2 Failed for positive rail

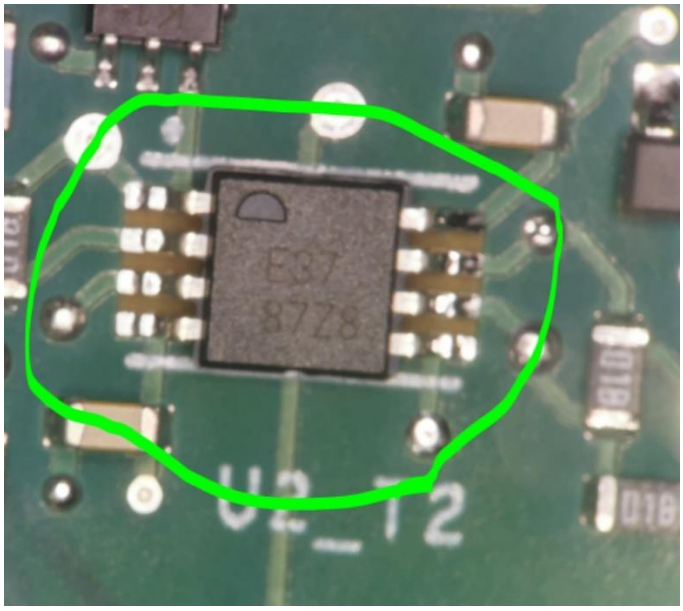
Expected +650M volts, Measured: 955.21M

PN=TSSOP8X118 X:7.995 Y:1.595

Top Marking

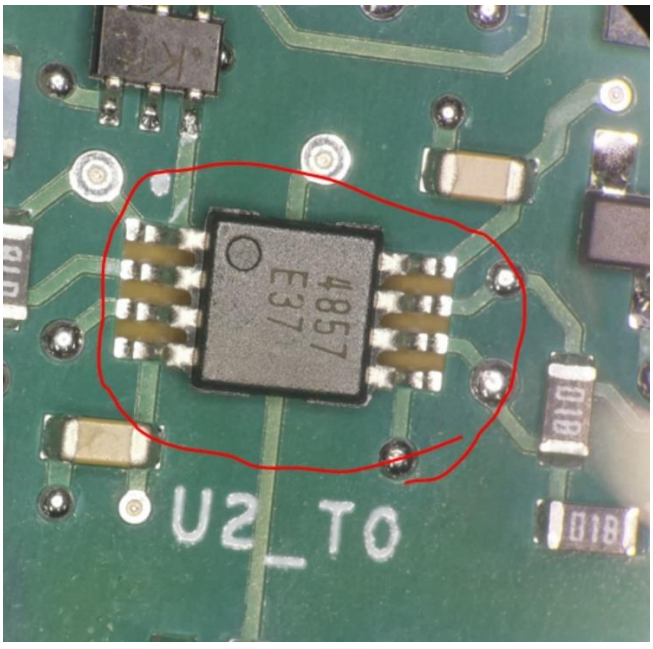
Gold-Board

Next image is U2_T2 on the gold-board



Production Board

Next image is U2_T2 on one production-board



X-RAY on current and previous OPA2137E

Device on the left is the current version, the previous version of the device is on the right hand of next figure.