

1. 900T Transceiver Function Description:

The 900T transceiver is the interface device between an ECU (Electronic Control Unit) and a Tiris transponder. The ECU interrogates the transponder by first initiating a charge phase. The charge phase generates an electromagnetic field around the antenna coil from which the transponder will accumulate and store energy on its internal charge capacitor. This energy is used to power the transponder in the Read Phase where it sends back a total of 128 bits. In the Read Phase, the data read is validated against a known value and depending on match, the vehicle is enabled.

1.1. Charge Phase:

The ECU initiates the charge phase by simply pulling the TXCT signal high to +5V nom.. As long as the TXCT stays at a high level, the transceiver will continuously charge the transponder. When the charge time expires (typically about 50 ms), the ECU will then pull the TXCT line low and continue into the read phase. In the charge phase, the ECU is immune to any activity on both RXCK and CODE line.

1.2. Read Phase:

The read phase consist of two sub-phases, the waiting time, the watching time and the data processing time.

1.2.1. Waiting:

Upon pulling the TXCT line low, the ECU must enter a wait state of not less than 1ms and no more than 1.5 ms after the falling edge of TXCT. In this period of time, no valid data on CODE is present and the ECU must not respond to any transition on CODE or RXCK lines.

1.2.2. Receiving:

After the Waiting state, the transponder sends a FSK signal back to the transceiver. The two nominal frequencies are 123.4 kHz representing a logical "1" and 134.2 kHz representing a logical "0". One bit consists of 16 periods of the corresponding frequency. This signal is picked-up by the coil then amplified and decoded. This decoded information is sent to the ECU, using a Synchronous Serial Interface.

The ECU starts to check the (data) CODE signal to detect the first low to high transition of the Start Byte (7E). The (clock) RXCK signal is synchronous to the CODE after the first rising edge of CODE. After this event the data on CODE is valid during a low level of RXCK. Since the first transition of the CODE signal is the second bit of the start byte, the first bit (LSB) has to be stuffed with a "0". See Error! Reference source not found.

The Receiving state must be limited depending on the selected Waiting state. The sum of Waiting time and Receiving time should be equal or less than 20 ms. This is the time in which data on CODE can be expected.

EXHIBIT 7

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KYU3F-3458-AAA

20. Design Review
Added T20 and T26
per Design Review
Changed C11 to 220p
between TP25 and T26
to allow for input
leakage
Changed C5 to
Low ESR Tantalum
Changed R12 to 0Ω
October 2 1998---
Changed R9 and R12
to 510Ω / 10%
Use Murata parts for
C9 and C11 min. 50V
Use MRC parts for
R3 and R7
Production Release
23 OCTOBER 1998
Updated to PWB7395

PART MUST COMPLY WITH SPECIFICATION WMT-MSP883P-A1
TO HELP MAINTAIN HEALTH, SAFETY AND THE ENVIRONMENT

VISTEON PRODUCT ENGINEERING

COMPUTER ☐ MANUAL ☒ "D" SIZE ☐ APERTURE ONLY
CO COLUMN - GRAPHIC DATA LEVEL ORIGINAL MUST BE

REVISIONS
REV IN BOX JAW MUST BE PRESENT FOR ALL CHANGES
DO NOT SCALE ABOVE SCALE FOR REFERENCE ONLY

DATE
REV
APPROVED
BY
DATE

DESIGNER
CHECKED
APPROVED
BY
DATE

INCHES ☐ MILLIMETERS 3RD ANGLE PROJECTION
UNLESS OTHERWISE SPECIFIED
STANDARD DIM. "X"

MATERIAL

NAME
9007 TRANSFORMER KEY AMPLIFIER

KYU3F-3458-AAA

PWB7395 PLANT CODE: 1W65

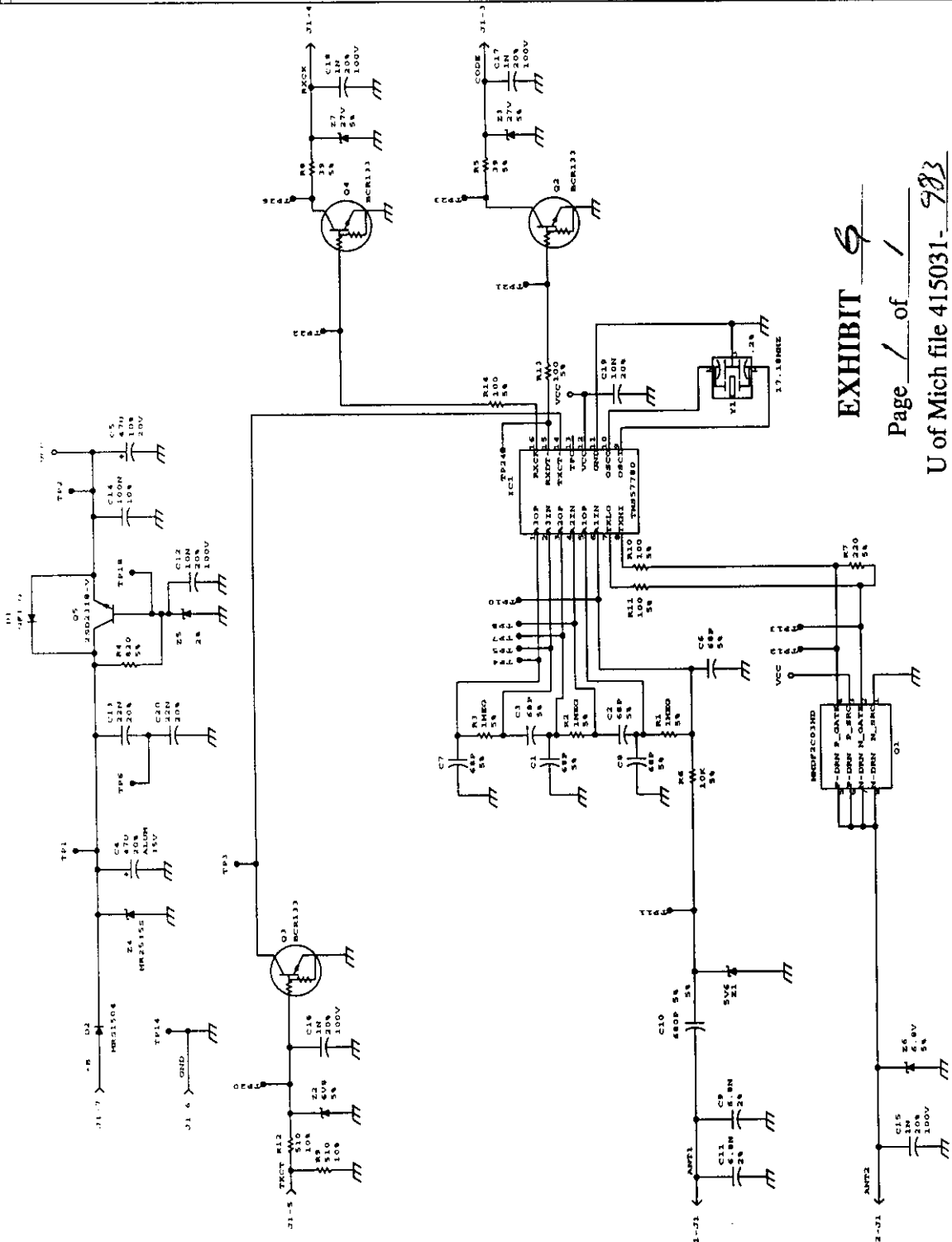
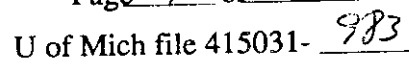


EXHIBIT 6
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Designer: A. Ottley
Engineer: L. Beck
PWB#: 7395
Layer: Top Overlay
Scale: 4:1



Visteon Automotive Systems

Designer: A. Ottley

Engineer: L. Beck

PWB#: 7395

Layer: Top Layer

Scale: 4:1

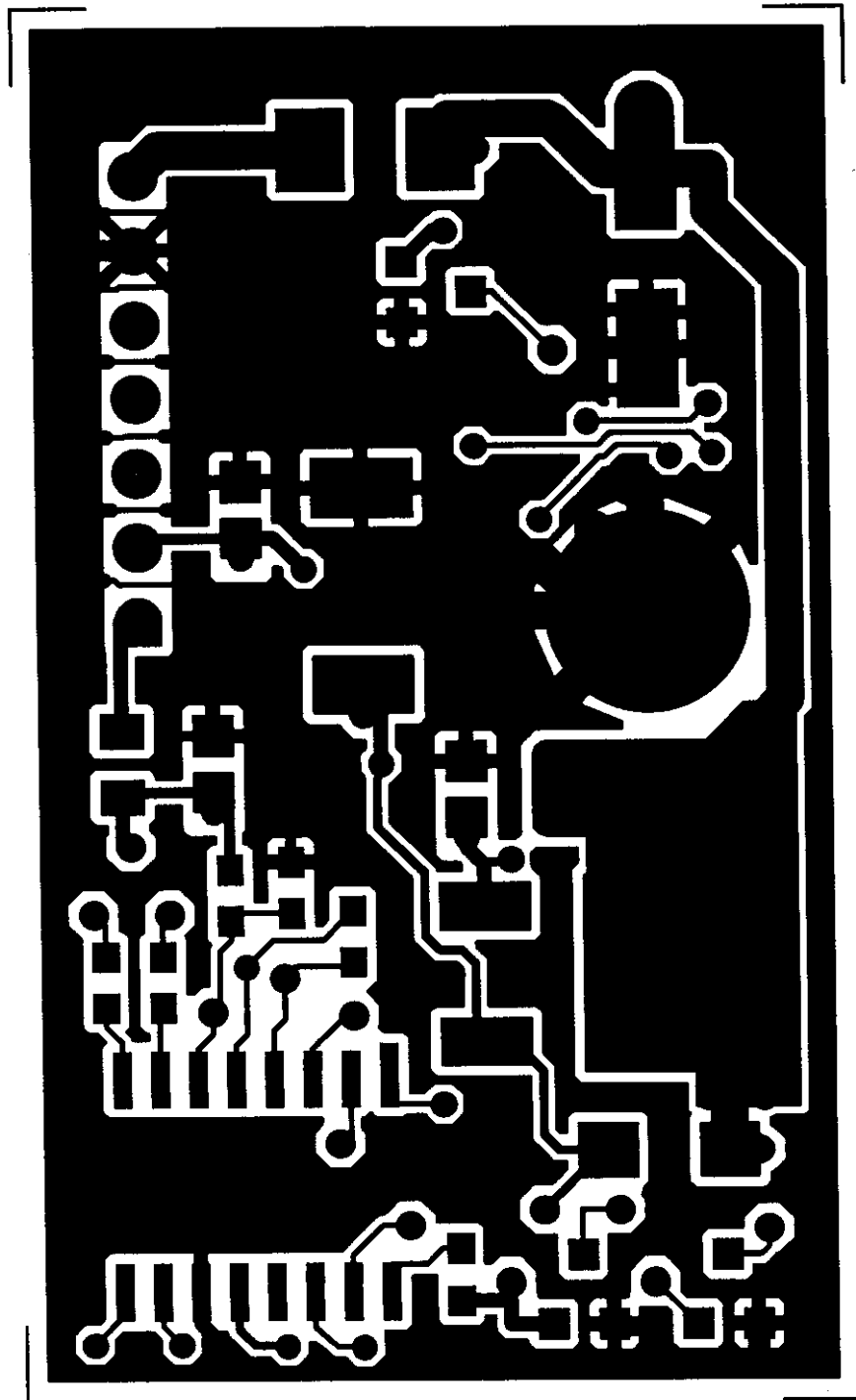


EXHIBIT H

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Visteon Automotive Systems

Designer: A. Ortle

Engineer: L. Beck

PUB#: 7395

Layer: Bottom Overlay

Scale: 4:1

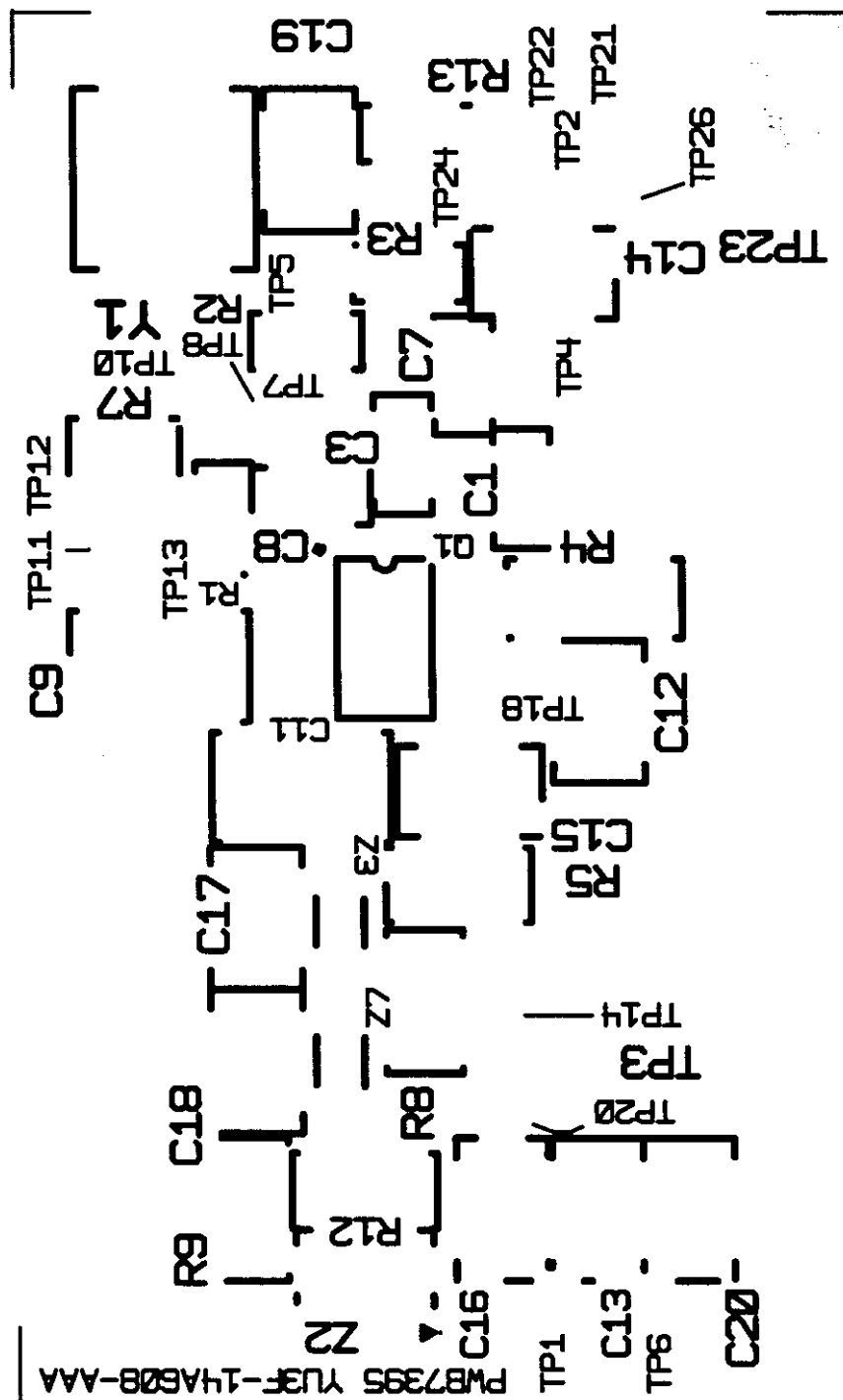


EXHIBIT H

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Visteon Automotive Systems

Designer: A. Ottley

Engineer: L. Beck

PWB#: 7395

Layer: Bottom Layer

Scale: 4:1

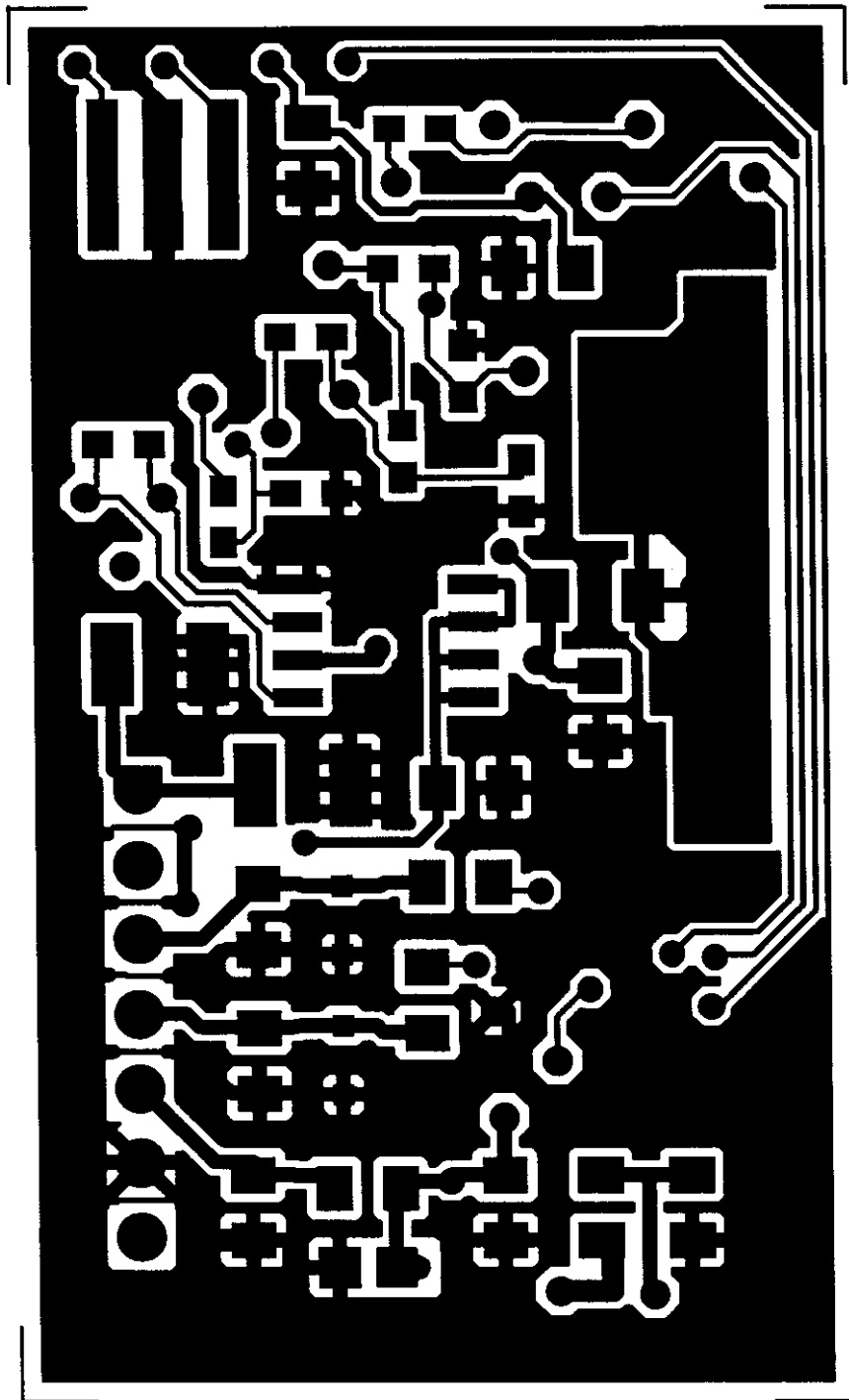


EXHIBIT 4

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900T Bill of Material YU3F-14B115-AAA

Line	Description	Symbol	PLACED
100	SKETCH.WIR.DIAG. 900T		
110	DIO,ZENR,27V,5%,200mW,SOD323	Z3	BOT
120	DIO,ZENR,27V,5%,200mW,SOD323	Z7	BOT
130	INTRFC IC, TMS57780, SOIC, 16	IC1	TOP
140	RES,SMD,100Ohms,5%,63mW,0603	R10	TOP
150	RES,SMD,100Ohms,5%,63mW,0603	R11	TOP
160	RES,SMD,100Ohms,5%,63mW,0603	R13	BOT
170	RES,SMD,100Ohms,5%,63mW,0603	R14	TOP
180	RES,SMD,10KOhms,5%,63mW,0603	R6	TOP
190	RES,SMD,1MOhms,5%,63mW,0603	R1	BOT
200	RES,SMD,1MOhms,5%,63mW,0603	R2	BOT
210	RES,SMD,1MOhms,5%,63mW,0603	R3	BOT
220	RES,SMD,220Ohms,5%,63mW,0603	R7	BOT
230	RES,SMD,39Ohms,5%,100mW,0805	R5	BOT
240	RES,SMD,39Ohms,5%,100mW,0805	R8	BOT
250	RES,SMD,510OHMS,10%,100MW,0805	R9	BOT
260	RES,SMD,510OHMS,10%,100MW,0805	R12	BOT
270	RES,SMD,820Ohms,5%,125mW,1206	R4	BOT
280	CAP,CERM,1nF,20%,100V,0805	C15	BOT
290	CAP,CERM,1nF,20%,100V,0805	C16	BOT
300	CAP,CERM,1nF,20%,100V,0805	C17	BOT
310	CAP,CERM,1nF,20%,100V,0805	C18	BOT
320	CAP,CERM,10nF,20%,100V,0805	C12	BOT
330	CAP,CERM,10nF,20%,100V,0805	C19	BOT
340	CAP,CERM,100nF,10%,50V,0805	C14	BOT
350	CAP,CERM,22nF,20%,100V,0805	C13	BOT
360	CAP,CERM,22nF,20%,100V,0805	C20	BOT
370	CAP,CERM,68pF,5%,50V,0603	C1	BOT
380	CAP,CERM,68pF,5%,50V,0603	C2	TOP
390	CAP,CERM,68pF,5%,50V,0603	C3	BOT
400	CAP,CERM,68pF,5%,50V,0603	C6	TOP
410	CAP,CERM,68pF,5%,50V,0603	C7	BOT
420	CAP,CERM,68pF,5%,50V,0603	C8	BOT
430	CAP,CERM,680pF,5%,100V,0805	C10	TOP
440	CAP,CERM,6.8nF,2%,200V,1210	C9	BOT
450	CAP,CERM,6.8nF,2%,200V,1210	C11	BOT
460	CAP,TANT,47uF,10%,20V,TA-X	C5	TOP
470	CAP,ALUM,47uF,20%,35V,SMD	C4	TOP
480	DIO,VSUP,27V,11%,421-01	Z4	TOP
490	DIO,RECT,400V,1A,GF-1	D1	TOP
500	DIO,RECT,400V,1.5A,SMB	D2	TOP
510	DIO,ZENR,5.6V,2%,400mW,SOD110	Z5	TOP
520	DIO,ZENR,5.6V,5%,400mW,SOD110	Z1	TOP
530	DIO,ZENR,6.8V,5%,400mW,SOD110	Z2	BOT
540	DIO,ZENR,6.8V,5%,400mW,SOD110	Z6	TOP
550	TRANS,PBIP,NPN,1W,D-PAK	Q5	TOP
560	TRANS,BRES,NPN,200mW,SOT-23	Q2	TOP
570	TRANS,BRES,NPN,200mW,SOT-23	Q3	TOP
580	TRANS,BRES,NPN,200mW,SOT-23	Q4	TOP
590	TRANS,PMOS,COMP,2W,SO-8	Q1	BOT
600	RESON,RCERM,17.178MHz,CSTCS_MX	Y1	BOT