1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD / DATE	ENG APPD / DATE
02		384232	ENGINEERING RELEASED	06/02/05?	

SCHEM,BASSOON,Q41C
06/02/2005

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1	TITLE PAGE AND CONTENTS
2	PCB NOTES AND HOLES
3	BACK UP BATTERY
4	RIGHT USB PORT
5	CONSTRAINTS / REVISION HISTORY
6	SIGNAL LOCATIONS
7	COMPONENT LOCATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-6851	1	SCHEM,BASSOON,Q41C	SCH1	
820-1824	1	PCBF,BASSOON,Q41C	PCB1	

DIMENSIONS ARE IN MILLIMETERS
XX ± ____
X.XX ± ____
X.XXX ± ____
ANGLES ± ____
DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

METRIC

DRAFTER	/	DESIGN CK	/
ENG APPD	/	MFG APPD	/
QA APPD	/	DESIGNER	/
RELEASE	/	SCALE	NONE

MATERIAL/FINISH NOTED AS APPLICABLE

SIZE D

Apple Computer Inc.

TITLE
SCHEM,BASSOON,Q41C

DRAWING NUMBER 051-6851 REV. 02

SHT 1 OF 7

PCB SPECS

THICKNESS : 1.2 MM / 0.047 IN
1/2 OZ CU THICKNESS: 0.7 MILS
1.0 OZ CU THICKNESS: 1.4 MILS

IMPEDANCE : 50 OHMS +/- 10%
DIELECTRIC: FR-4
LAYER COUNT: 12
SIGNAL TRACE WIDTH: 4 MILS
SIGNAL TRACE SPACING: 4 MILS
PREPREG THICKNESS: 2-3 MILS

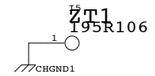
SEE PCB CAD FILES FOR MORE SPECIFIC INFO.

BOARD STACK-UP AND CONSTRUCTION

20R10 TH VIA OR VIA IN PAD

1		SIGNAL (1/3 OZ + COPPER PLATING)
2	PREPREG (3MIL)	GROUND (1/2 OZ)
3	LAMINATE (4MIL)	SIGNAL (1/2 OZ)
4	PREPREG (3MIL)	SIGNAL (1/2 OZ)
5	LAMINATE (4MIL)	GROUND (1/2 OZ)
6	PREPREG (2MIL)	CUT POWER PLANE(1 OZ)
7	LAMINATE (3MIL)	CUT POWER PLANE(1 OZ)
8	PREPREG (2MIL)	GROUND (1/2 OZ)
9	LAMINATE (4MIL)	SIGNAL (1/2 OZ)
10	PREPREG (3MIL)	SIGNAL (1/2 OZ)
11	LAMINATE (4MIL)	GROUND (1/2 OZ)
12	PREPREG (3MIL)	SIGNAL (1/3 OZ + COPPER PLATING)

BOARD HOLES



PCB BOARD STANDOFFS

BOARD INFORMATION

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

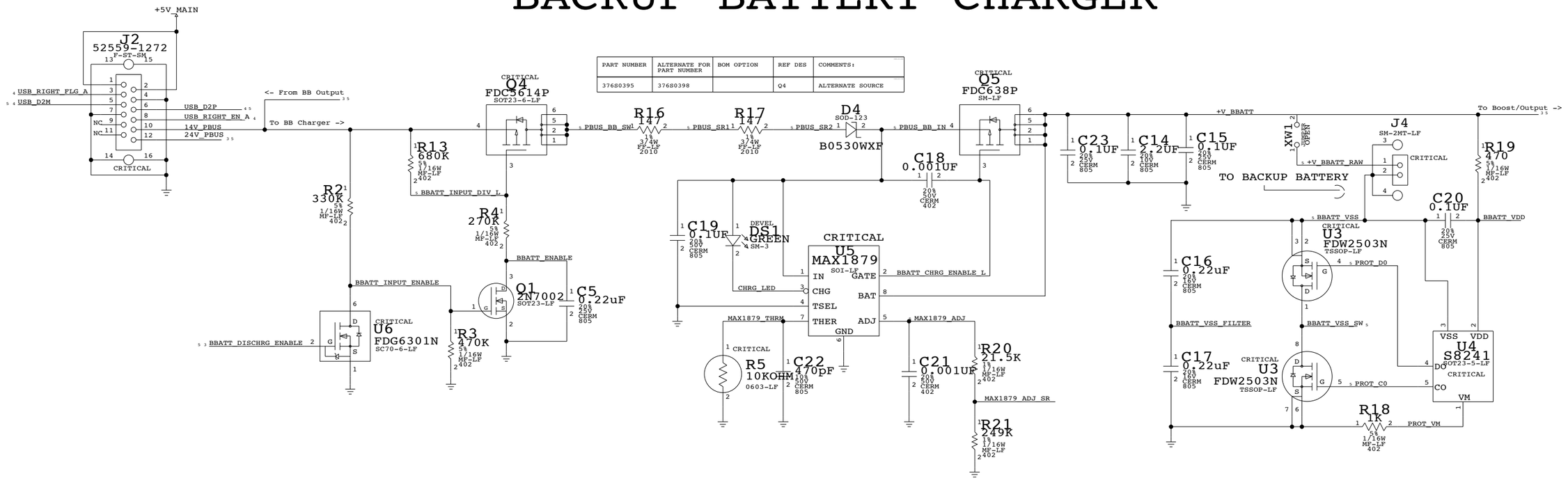
APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6851	02

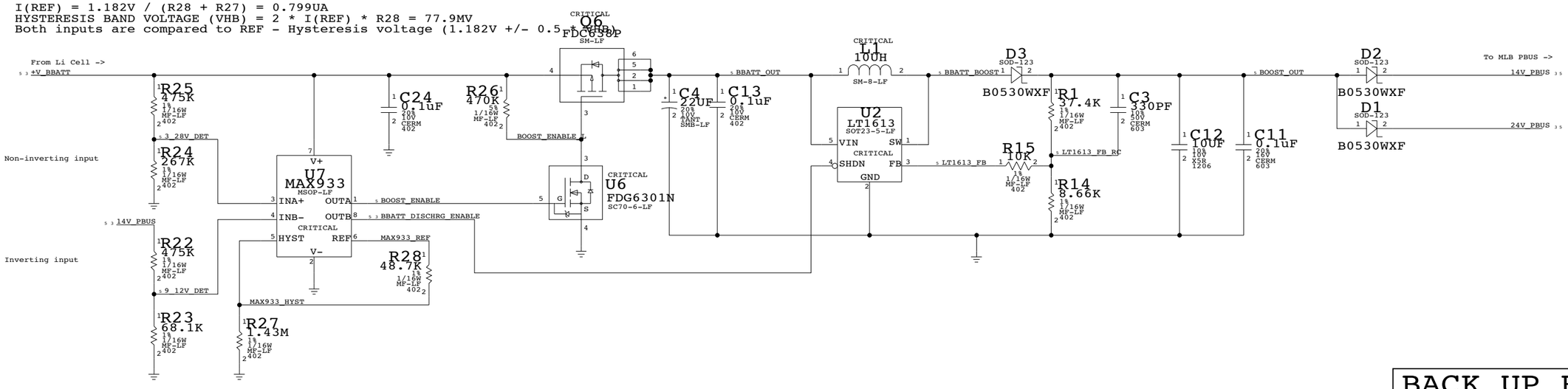
SCALE NONE | SHT 2 OF 7

BACKUP BATTERY CHARGER

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
37680395	37680398		Q4	ALTERNATE SOURCE



I(REF) = 1.182V / (R28 + R27) = 0.799UA
HYSTERESIS BAND VOLTAGE (VHB) = 2 * I(REF) * R28 = 77.9MV
Both inputs are compared to REF - Hysteresis voltage (1.182V +/- 0.5 * VHB)



BACK UP BATTERY

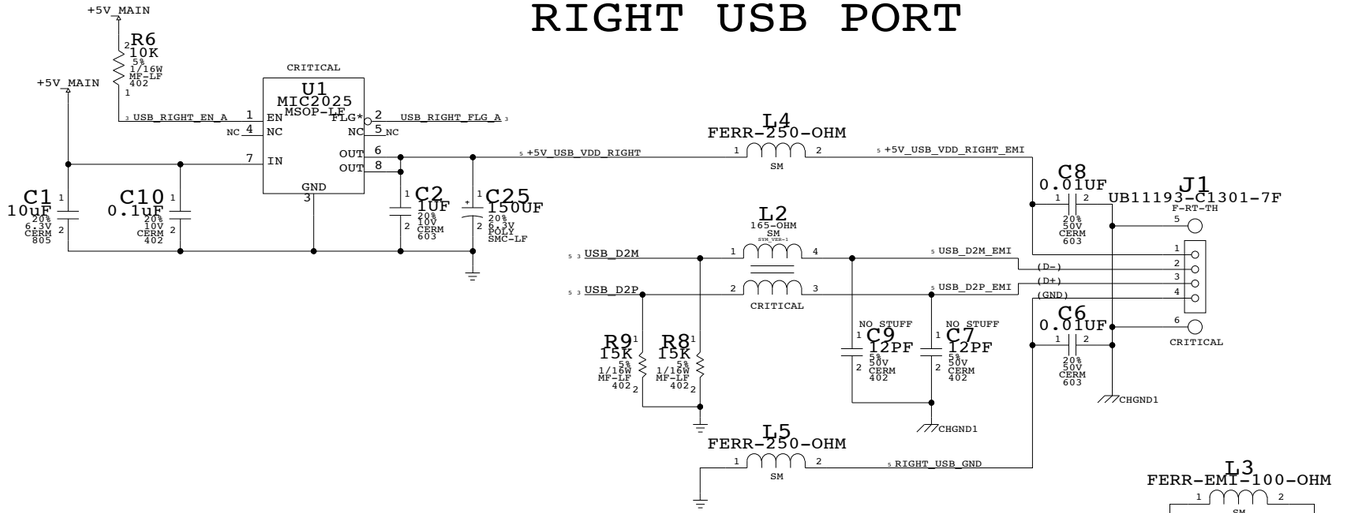
APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6851	02

SCALE: NONE

SHT 3 OF 7

RIGHT USB PORT



PUT L2, L4 AND L5 ACROSS THE MOAT

USB CONNECTOR

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6851	02

SCALE	SHT	OF
NONE	4	7

Differential Signals

GROUP	SIG_NAME	DIFFERENTIAL_PAIR	MATCHED_DELAY
USB	USB_D2M	USB_D2	USB_D2:J2.5:L2.1:5 USB2
	USB_D2P	USB_D2	USB_D2:J2.6:L2.2:5 USB2
	USB_D2M_EMI	USB_D2_EMI	USB_D2_EMI:L2.4:J1.2:5 USB2_EMI
	USB_D2P_EMI	USB_D2_EMI	USB_D2_EMI:L2.3:J1.3:5 USB2_EMI

USB2_PAIR 34
USB2_PAIR 34
USB2_EMI_PAIR
USB2_EMI_PAIR

Power Signals

GROUP	SIG_NAME	VOLTAGE	MIN_LINE_WIDTH	MIN_NECK_WIDTH
BATTERY	24V_PBUS	VOLTAGE=24V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	14V_PBUS	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	PBUS_BB_IN	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	PBUS_SR2	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	PBUS_SR1	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	PBUS_BB_SW	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	+V_BBATT	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	+V_BBATT_RAW	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	BBATT_VSS	VOLTAGE=0V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	BBATT_VSS_SW	VOLTAGE=0V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
MAX1879	MAX1879_ADJ	VOLTAGE=1.4V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	BBATT_INPUT_DIV_L	VOLTAGE=14V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
S8241	PROT_D0	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	PROT_C0	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	9_12V_DET	VOLTAGE=1.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	3_28V_DET	VOLTAGE=1.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
MAX933	BOOST_ENABLE	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	BBATT_DISCHRG_ENABLE	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
LT1613	BBATT_OUT	VOLTAGE=4.2V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	BBATT_BOOST	VOLTAGE=6.5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	BOOST_OUT	VOLTAGE=6.5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	LT1613_FB	VOLTAGE=1.3V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
	LT1613_FB_RC	VOLTAGE=1.3V	MIN_LINE_WIDTH=0.25MM	MIN_NECK_WIDTH=0.25MM
USB	+5V_USB_VDD_SW	VOLTAGE=5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	+5V_USB_VDD_RIGHT	VOLTAGE=5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	+5V_USB_VDD_RIGHT_EMI	VOLTAGE=5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	RIGHT_USB_GND	VOLTAGE=0V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	+5V_MAIN	VOLTAGE=5V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM
	GND	VOLTAGE=0V	MIN_LINE_WIDTH=0.5MM	MIN_NECK_WIDTH=0.25MM

REVISION HISTORY

02/18/05 - SCHEMATIC ORIGINATED FROM Q41B 051-6753-A
02/21/05 - REMOVED R6 AND J3 FOR SUPERCAP
- REMOVED R7
02/22/05 - CORRECTED THE NOTE
03/09/05 - CHANGED CONSTRAINT FOR 14V_PBUS
04/25/05 - SCHEMATIC RELEASE FOR PROTO
06/02/05 - SCHEMATIC RELEASE FOR EVT. LEAD FREE PARTS.

SIGNAL CONSTRAINTS

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6851	02

SCALE	SHT	OF
NONE	5	7

*** Signal Cross-Reference for the entire design ***

+5V_MAIN	5C6>
+5V_USB_VDD_RIGHT	4C5<> 5C6>
+5V_USB_VDD_RIGHT_EMI	4C4<> 5C6>
+5V_USB_VDD_SW	5C6>
+V_BBATT	3B8<> 3D1<> 5D6>
+V_BBATT_RAW	3D2<> 5D6>
3_28V_DET	3B7< 5C6>
9_12V_DET	3A7< 5C6>
14V_PBUS	3B1<> 3B8< 3D7<> 5D6>
24V_PBUS	3B1<> 3D7<> 5D6>
BBATT_BOOST	3B4<> 5C6>
BBATT_CHRG_ENABLE_L	3C4<>
BBATT_DISCHRG_ENABLE	3B6<> 3C7<> 5C6>
BBATT_ENABLE	3C6<
BBATT_INPUT_DIV_L	3D6<> 5C6>
BBATT_INPUT_ENABLE	3C7<>
BBATT_OUT	3B5<> 5C6>
BBATT_VDD	3C1<
BBATT_VSS	3C2<> 5D6>
BBATT_VSS_FILTER	3C2<
BBATT_VSS_SW	3C2<> 5D6>
BOOST_ENABLE	3B6<> 5C6>
BOOST_ENABLE_L	3B6<>
BOOST_OUT	3B3<> 5C6>
CHRG_LED	3C5<
LT1613_FB	3B4<> 5C6>
LT1613_FB_RC	3B3< 5C6>
MAX933_RSET	3A7<
MAX933_REF	3A6<>
MAX1879_ADJ	3C4<> 5C6>
MAX1879_ADJ_SR	3C3<
MAX1879_THRM	3C5<>
PBUS_BB_IN	3D4<> 5D6>
PBUS_BB_SW	3D6<> 5D6>
PBUS_SR1	3D5< 5D6>
PBUS_SR2	3D5<> 5D6>
PROT_C0	3C2<> 5C6>
PROT_D0	3C2<> 5C6>
PROT_VM	3C2<
RIGHT_USB_GND	4B4<> 5C6>
USB_D2M	3D8<> 4C5<> 5D7>
USB_D2M_EMI	4C4<> 5D7>
USB_D2P	3D7<> 4C5<> 5D7>
USB_D2P_EMI	4C4<> 5D7>
USB_RIGHT_EN_A	3D7<> 4C6<
USB_RIGHT_FLG_A	3D8<> 4C5>

*** Part Cross-Reference for the entire design ***

C1	CAP	4
C2	CAP	4
C3	CAP	3
C4	CAP_P	3
C5	CAP	3
C6	CAP	4
C7	CAP	4
C8	CAP	4
C9	CAP	4
C10	CAP	4
C11	CAP	3
C12	CAP	3
C13	CAP	3
C14	CAP	3
C15	CAP	3
C16	CAP	3
C17	CAP	3
C18	CAP	3
C19	CAP	3
C20	CAP	3
C21	CAP	3
C22	CAP	3
C23	CAP	3
C24	CAP	3
C25	CAP_P	4
D1	DIODE_SCHOT	3
D2	DIODE_SCHOT	3
D3	DIODE_SCHOT	3
D4	DIODE_SCHOT	3
D81	LED	3
J1	CON_F4RT_S2MT_TH	4
J2	CON_F12ST_D4MT_SM	3
J4	CON_2RTSM_125	3
L1	IND	3
L2	FILTER_4P	4
L3	IND	4
L4	IND	4
L5	IND	4
Q1	TRA_2N7002	3
Q4	TRA_FDC5614P	3
Q5	TRA_FDC638P	3
Q6	TRA_FDC638P	3
R1	RES	3
R2	RES	3
R3	RES	3
R4	RES	3
R5	THERMISTER	3
R6	RES	4
R8	RES	4
R9	RES	4
R13	RES	3
R14	RES	3
R15	RES	3
R16	RES	3
R17	RES	3
R18	RES	3
R19	RES	3
R20	RES	3
R21	RES	3
R22	RES	3
R23	RES	3
R24	RES	3
R25	RES	3
R26	RES	3
R27	RES	3
R28	RES	3
U1	SWI_MIC2025	4
U2	DCDC_LT1613	3
U3	TRA_FDW2503N	3
U4	BAT_PROT_S8241	3
U5	MAX1879	3
U6	TRA_FDG6301N	3
U7	MAX933	3
XW1	JUMPER	3
ET1	MTGHOLE	2