



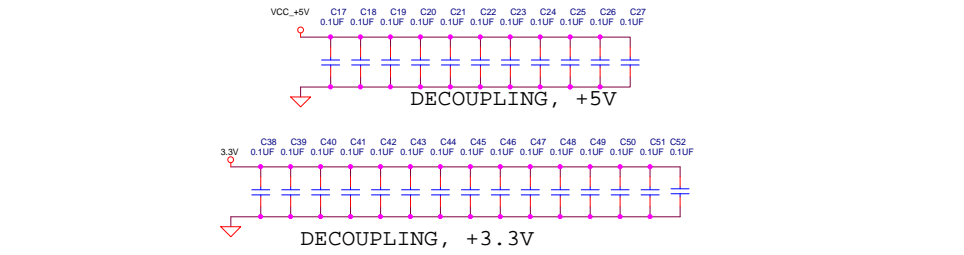
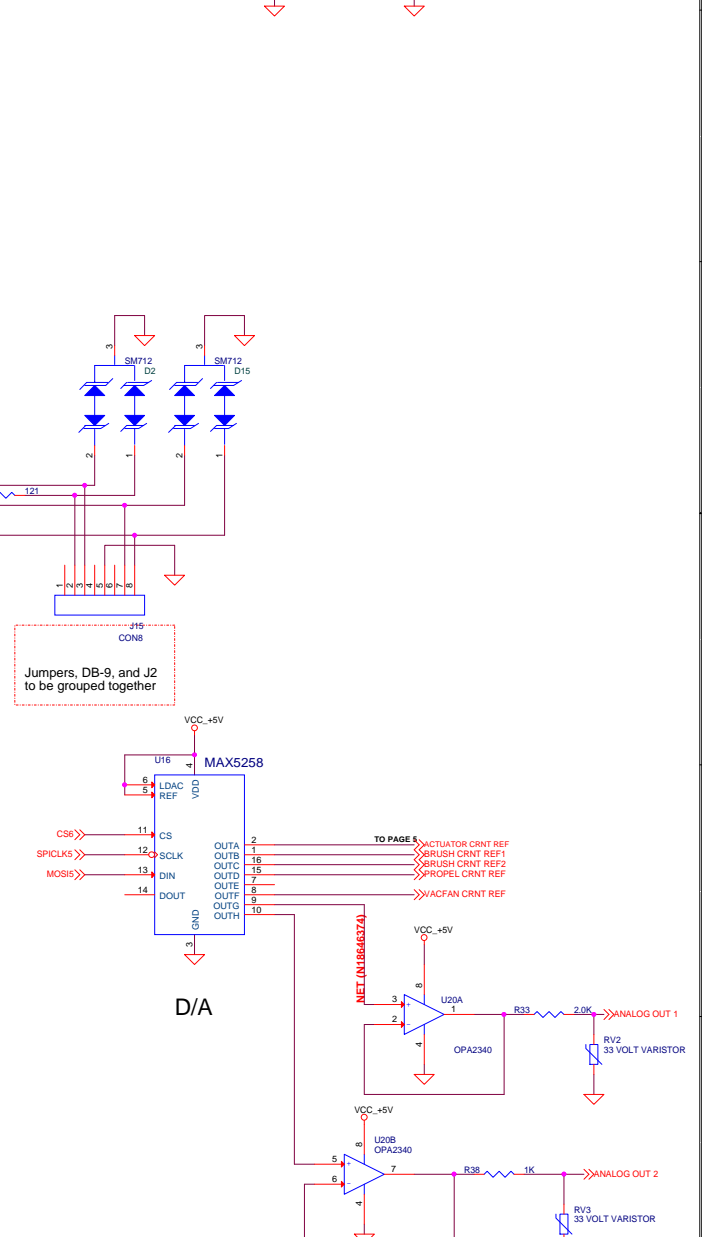
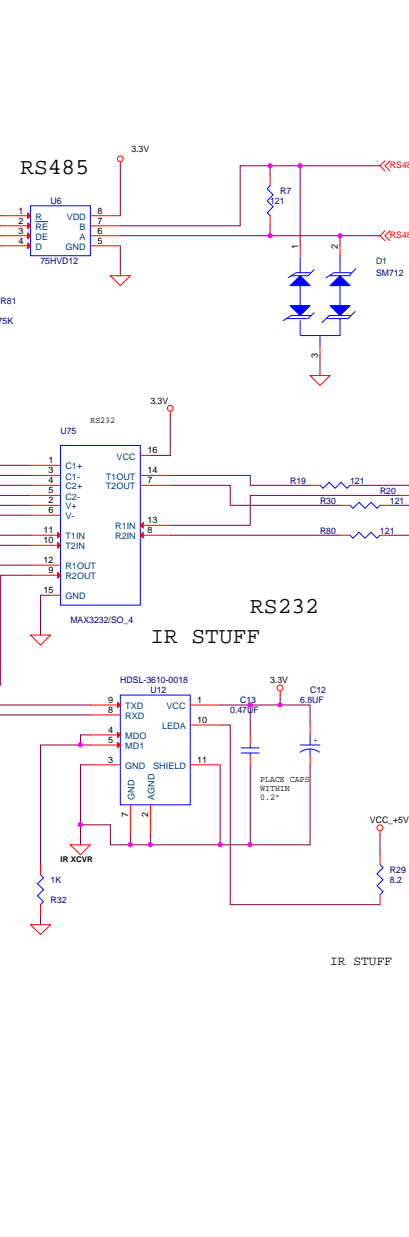
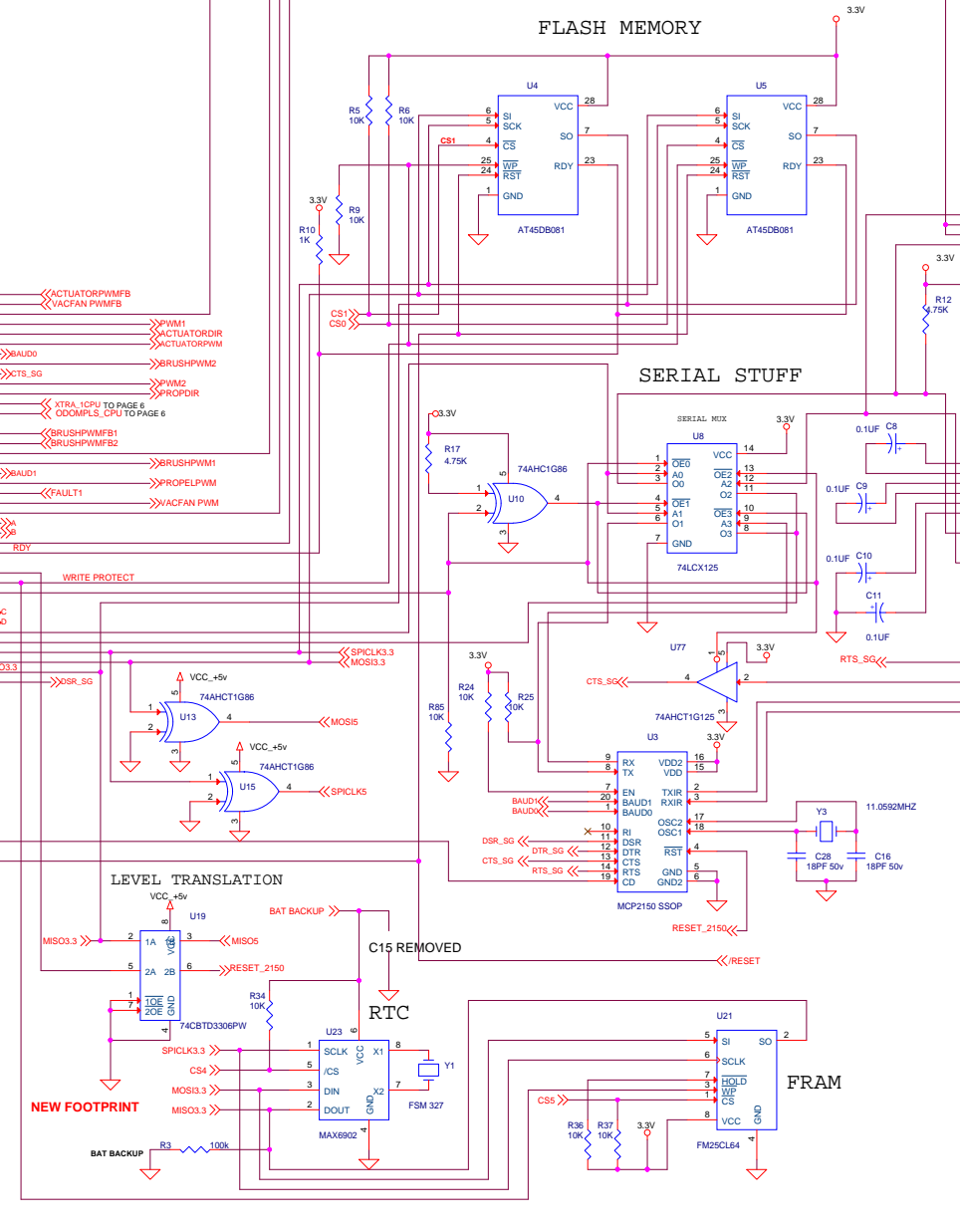
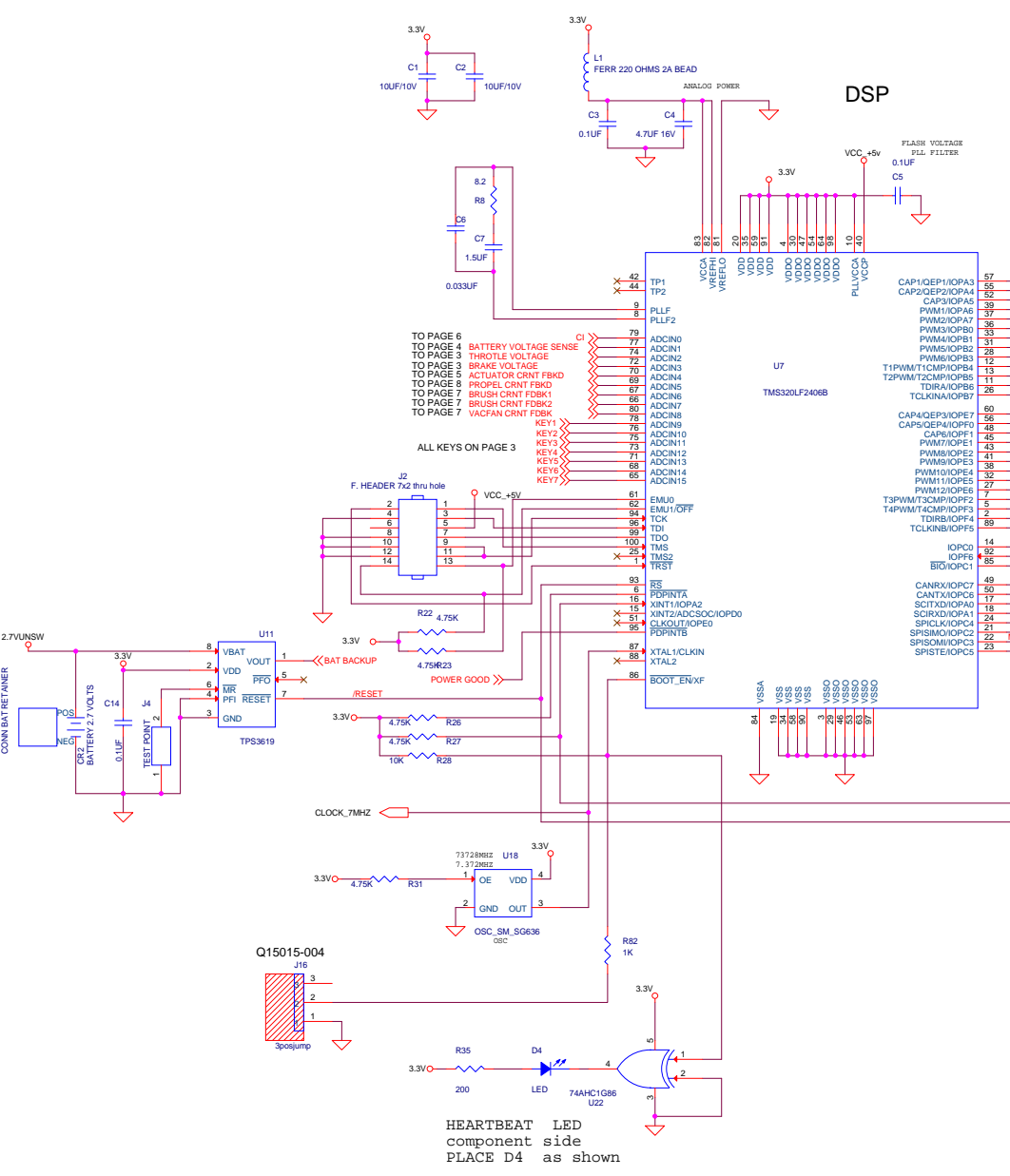
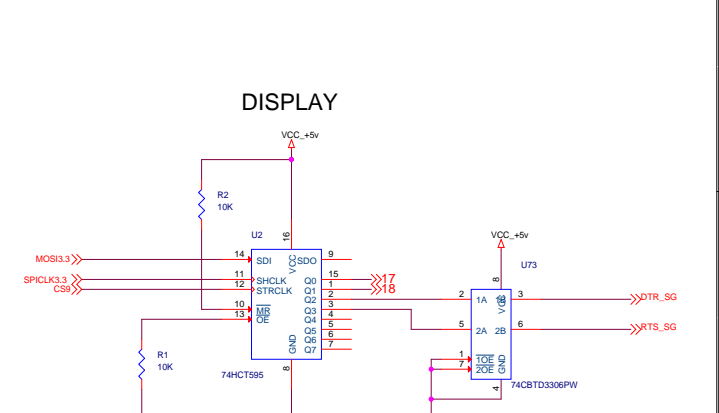
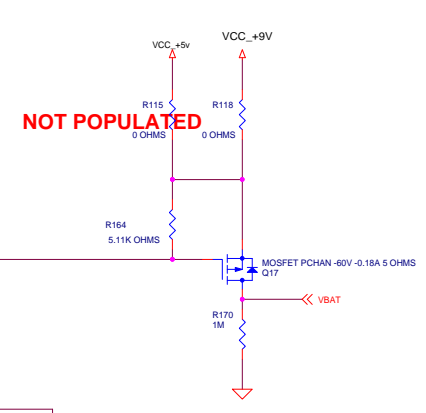
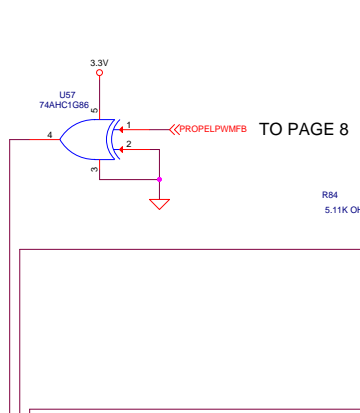
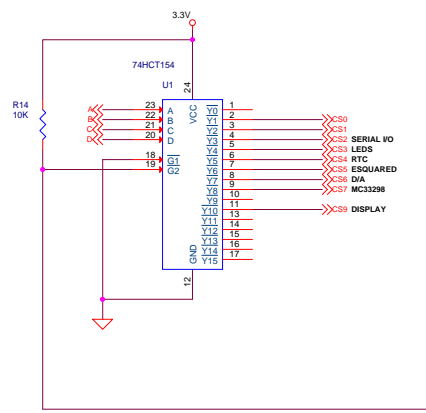
T5

- PAGE 1: COVER SHEET, INDEX
- PAGE 2: DSP, FLASH, EEPROM, RTC, RS232, RS485, IR, DISPLAY
- PAGE 3: POWER SUPPLIES, INPUTS, LED DRIVERS KEYPAD, ANALOG
- PAGE 4: LOWSIDE DRIVERS / DIGITAL INPUTS
- PAGE 5: ACTUATOR (SQUEEGE OR HEAD)
- PAGE 6: BATTERY CONNECTION
- PAGE 7: SCRUB BRUSHES VAC FAN
- PAGE 8: PROPEL

Component Ref #	T5	Prowler	Gator
	Value, QPL#	Value, QPL#	Value, QPL#
R33	2.00K, Q10002-222	499, Q10002-164	499, Q10002-164
R38	1.0K, Q10002-193	499, Q10002-164	499, Q10002-164
R76	30.1K, Q10002-335	15.0K, Q10002-306	15.0K, Q10002-306
R77	64.9K, Q10002-367	30.1K, Q10002-335	30.1K, Q10002-335
Q1	IRFR3518, Q19033-005	IRFR3518, Q19033-005	STD35NF06, Q19033-007
Q19, Q20, Q21, Q46	NOT USED	NOT USED	IRF3205S, Q19033-002
R249, R216, R251, R250	NOT USED	NOT USED	45.3, Q10002-064
C203, C204	NOT USED	NOT USED	0.033UF, Q11003-008
J9, J10	NOT USED	42820-2212	NOT USED
J12, J14	42819-2212	NOT USED	NOT USED
J17, J18	NOT USED	NOT USED	39425-0002
J13	42819-4212, Q15020-004	NOT USED	NOT USED
J8	NOT USED	42820-4212, Q15020-001	42820-4212, Q15020-001

MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		F	GXXXX	RFM/08-08-2005	
TREATMENTS AND FINISHES		NONE		THE INFORMATION IN THIS DOCUMENT IS PROPERTY OF TENNANT COMPANY. IT IS SUBJECT TO RETURN UPON DEMAND AND MAY NOT BE REPRODUCED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION OF TENNANT COMPANY.		REV	ECO	BY/DATE	
SCALE: N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED			OrCAD Center			
DWN: XXXXXX	XX-XXX-XXXX		METRIC TOLERANCES	INCH EQUIVALENT	GENERAL NOTES DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.				
MDR: XXXXXX	XX-XXX-XXXX		LINEAR	+/- X.XX					+/- X.XX
DES: XXXXXX	XX-XXX-XXXX		SLOT WIDTH	N/A					N/A
XXXXXX			HOLE DIA	N/A					N/A
PART NAME:	PCB CIRCUITBOARD [T5]			ANGULAR	N/A	N/A	DNG PART NUMBER		
			MACH SURFACES	N/A	N/A	SIZE	1073765		
SHEET 1 OF 8									

CHIP SELECT DECODER



DECOUPLING, +5V

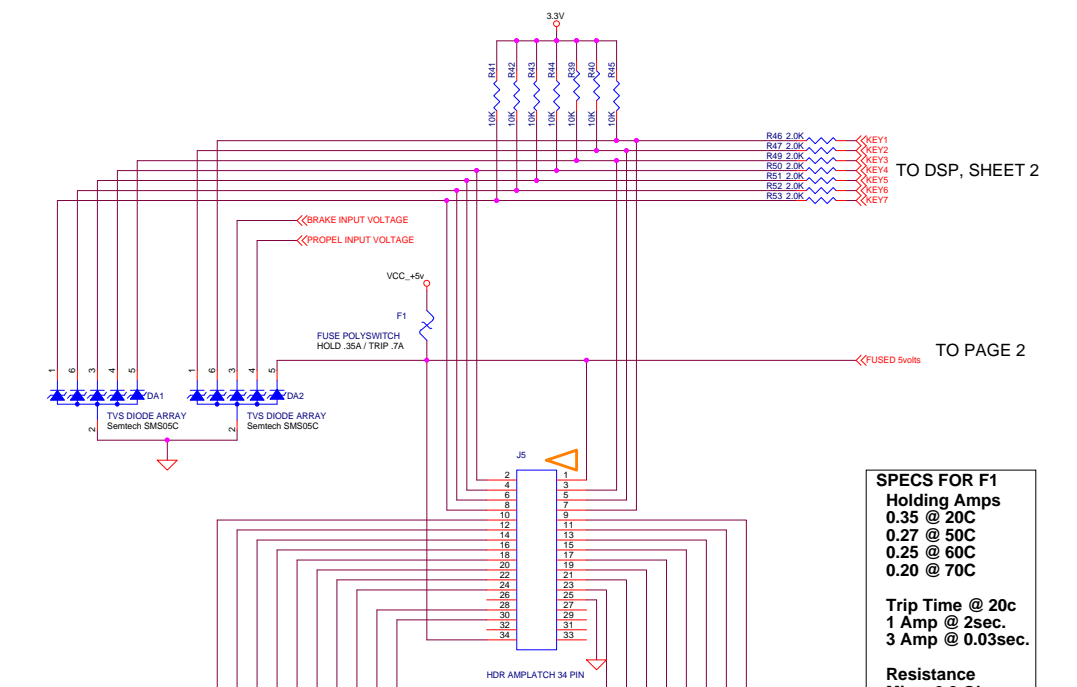
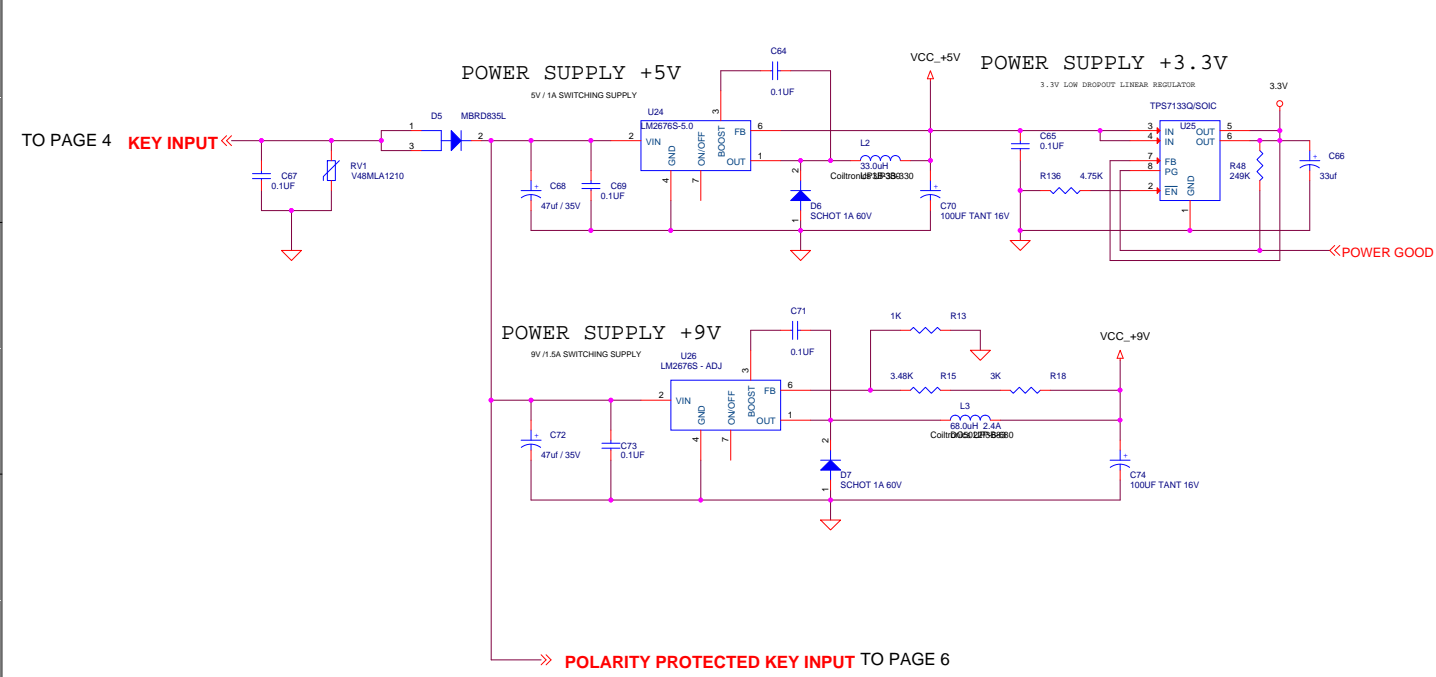


DECOUPLING, +3.3V



MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION	
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SCALE: N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED	F	GXXXX
DWN: XXXXXX	XXXXXXX	XX-XX-XXXX	METRIC TOLERANCES	REV	ECO
MDR: XXXXXX	XXXXXXX	XX-XX-XXXX	LINEAR	BY/DATE	
DES: XXXXXX	XXXXXXX	XX-XX-XXXX	SLOT WIDTH	OrCAD Center	
PART NAME: PCB CIRCUITBOARD [T5]			HOLE DIA	TENNANT	
			ANGULAR	GENERAL NOTES	
			MATCH SURFACES	DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.	
				DWG	PART NUMBER
				D	1073765
				ST2E	

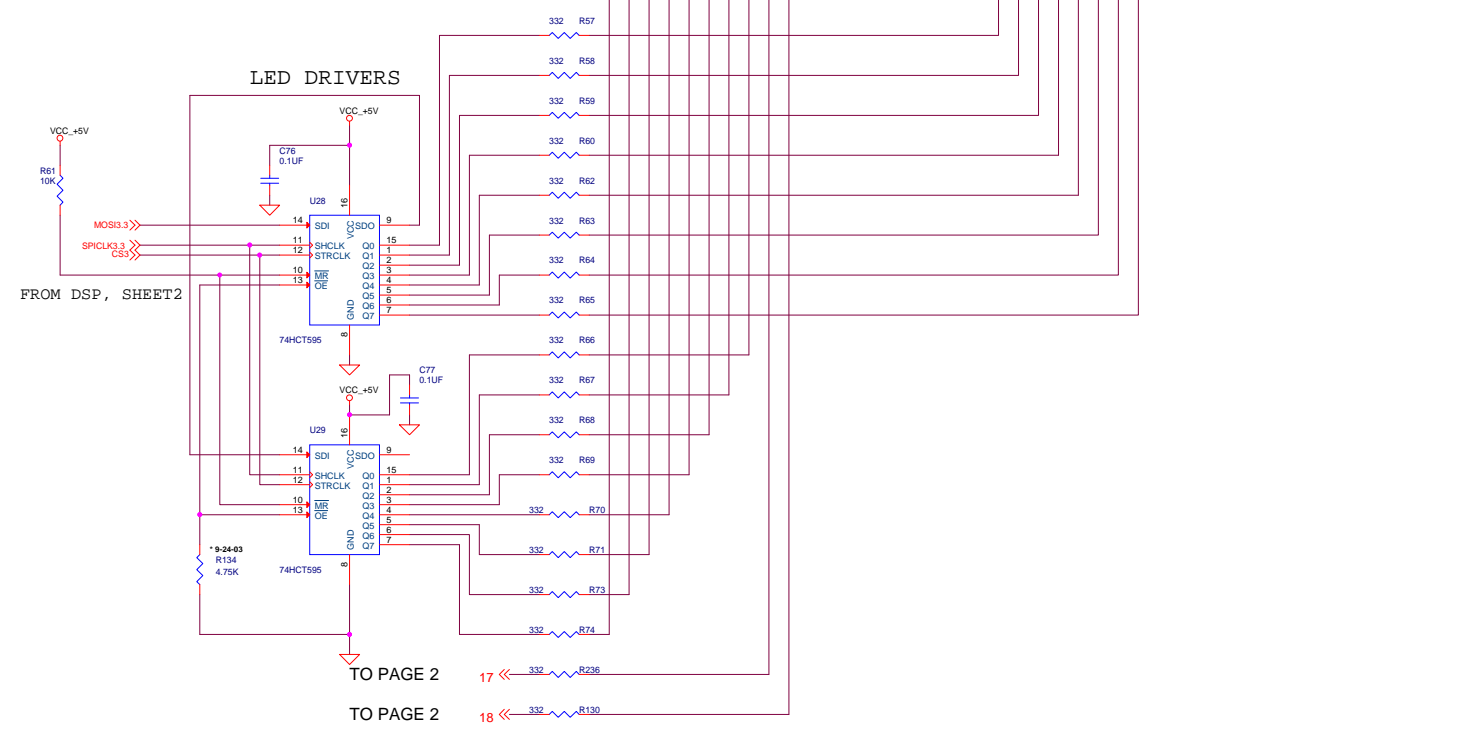
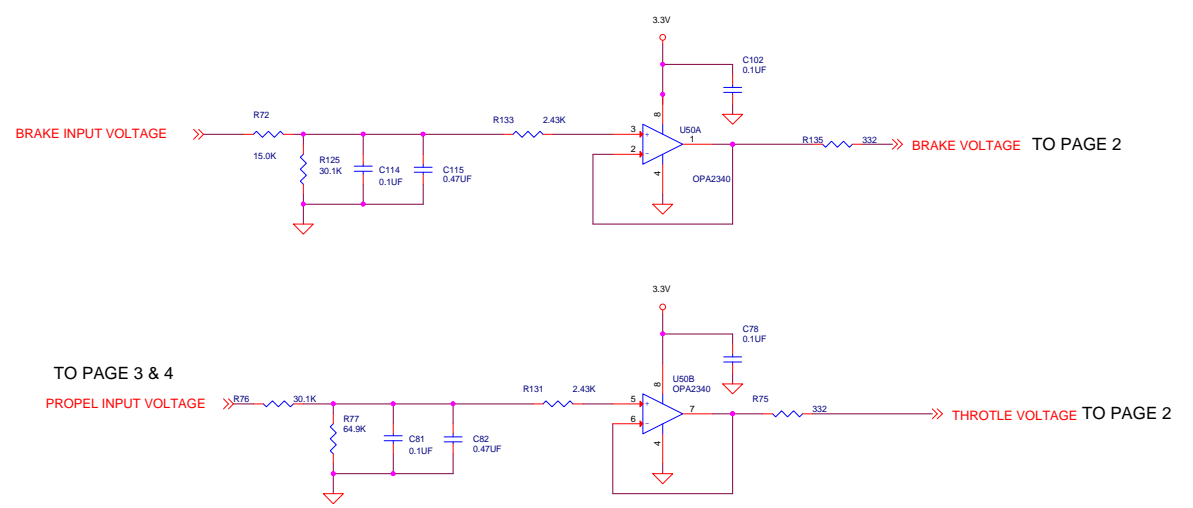
SHEET 2 OF 8



SPECS FOR F1
 Holding Amps
 0.35 @ 20C
 0.27 @ 50C
 0.25 @ 60C
 0.20 @ 70C

Trip Time @ 20c
 1 Amp @ 2sec.
 3 Amp @ 0.03sec.

Resistance
 Min = 0.3 Ohms
 Max = 1.3 Ohms



MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		F	GXXXX	RFM/08-08-2005	
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SCALE:	N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED		OrCAD Center TENNANT			
DWN:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	METRIC TOLERANCES	INCH EQUIVALENT				
MDR:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	SLOT WIDTH	N/A				N/A
DES:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	HOLE DIA	N/A				N/A
PART NAME: PCB CIRCUITBOARD [T5]		SHEET 3 OF 8		GENERAL NOTES		DWG	PART NUMBER		
				DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.		SIZE	1073765		

If output is used for Main Contactor, D16 must be used.
 *Use D16 for flyback, when high side of load is connected to "1AMP LOWD"
 *Use D21 for flyback, when high side of load is connected to "FLYBACK / FUSED POWER"

TO PAGE 2
 FAULT1
 CS2
 MISO5
 MOSI5
 SPICLK5
 ALL TO PAGE 2

(VCOMP RANGE (0.25 - 3.0 VOLTS) MUST BE RELTIVE TO SINGLE POINT GND.)

DO NOT POPULATE

TRACES FROM FETS Q1 - 12 DRAIN TO J6 MUST HAVE 10 AMP CAPACITY.
 CONNECT TO POWER GROUND PLAIN MOSFET'S SOURCE PIN 15 OF U34 & 35 C85, C88, R91, R100

CONN 35POS V AMPSEAL

1	DIGITAL INPUT 1 ODOMETER PULSE
2	EXTRA DIGITAL INPUT
3	FUSED 5volts
4	WATER SOLENOID
5	MAIN CONTACTOR
6	UNUSED OUTPUT 5 AMP
7	SEAT SWITCH
8	REC. FULL
9	SQUEEGEE ACTUATOR B
10	HORN SWITCH
11	FORWARD SWITCH
12	SQUEEGEE ACTUATOR A
13	FLYBACK / FUSED POWER
14	FLYBACK PATH
15	1AMP LOWB
16	1AMP LOWD
17	1AMP LOWD
18	CHARGER INTERLOCK
19	UNUSED OUTPUT 1 AMP
20	REC. FULL
21	HEAD ACTUATOR B
22	HEAD ACTUATOR A
23	REVERSE SWITCH
24	HEAD ACTUATOR A
25	FAST PUMP
26	UNUSED
27	ELECT BRAKE
28	1AMP LOWD
29	UNUSED
30	ANALOG OUT 1
31	ANALOG OUT 2
32	ANALOG OUT 3
33	BRAKE INPUT VOLTAGE
34	PROPEL INPUT VOLTAGE
35	SENSOR RETURN

LOCATE L5 NEXT TO U35.

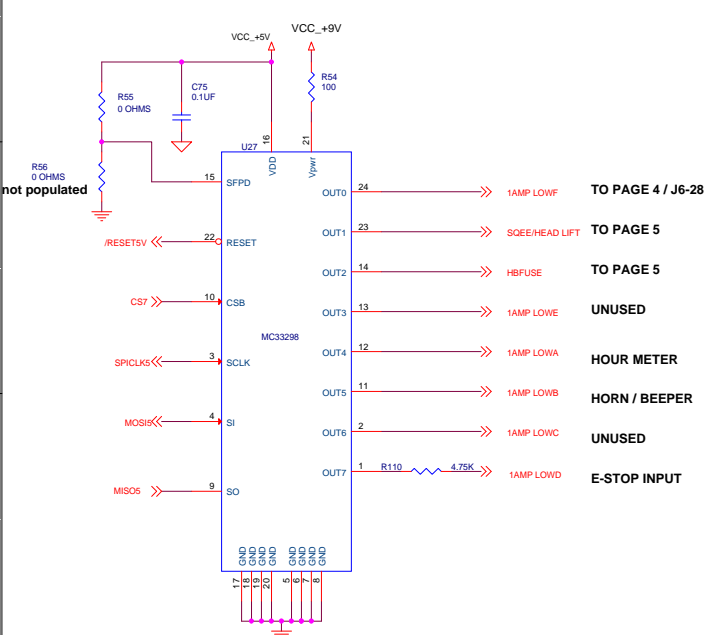
NEW Grounding path for "SENSOR GROUND RETURN".
 J5-35 through ferrite to power ground, instead of directly to GND_POWER

LOCATE L6 NEXT TO U35.

NEW Grounding path for "SIGNAL GROUND PLAIN".
 Will place footprint near U35 to minimize effects of noise introduced between, TPIC46L01 PIN 15 and Central Ground (Stud).

L4 IS LOCATED NEAR U64

ORIGINAL Grounding path for "SIGNAL GROUND PLAIN".

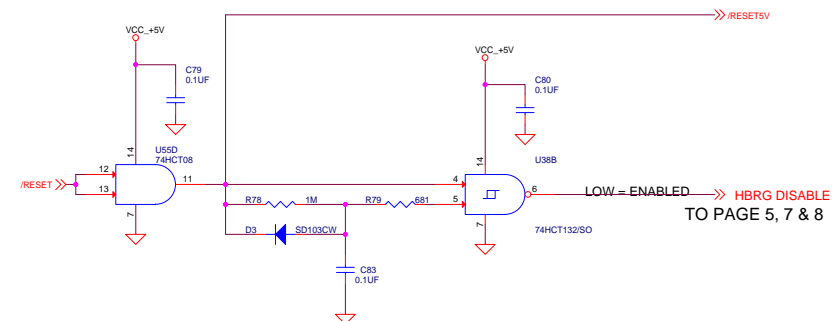


(VCOMP RANGE (0.25 - 3.0 VOLTS) MUST BE RELTIVE TO SINGLE POINT GND.)

DO NOT POPULATE

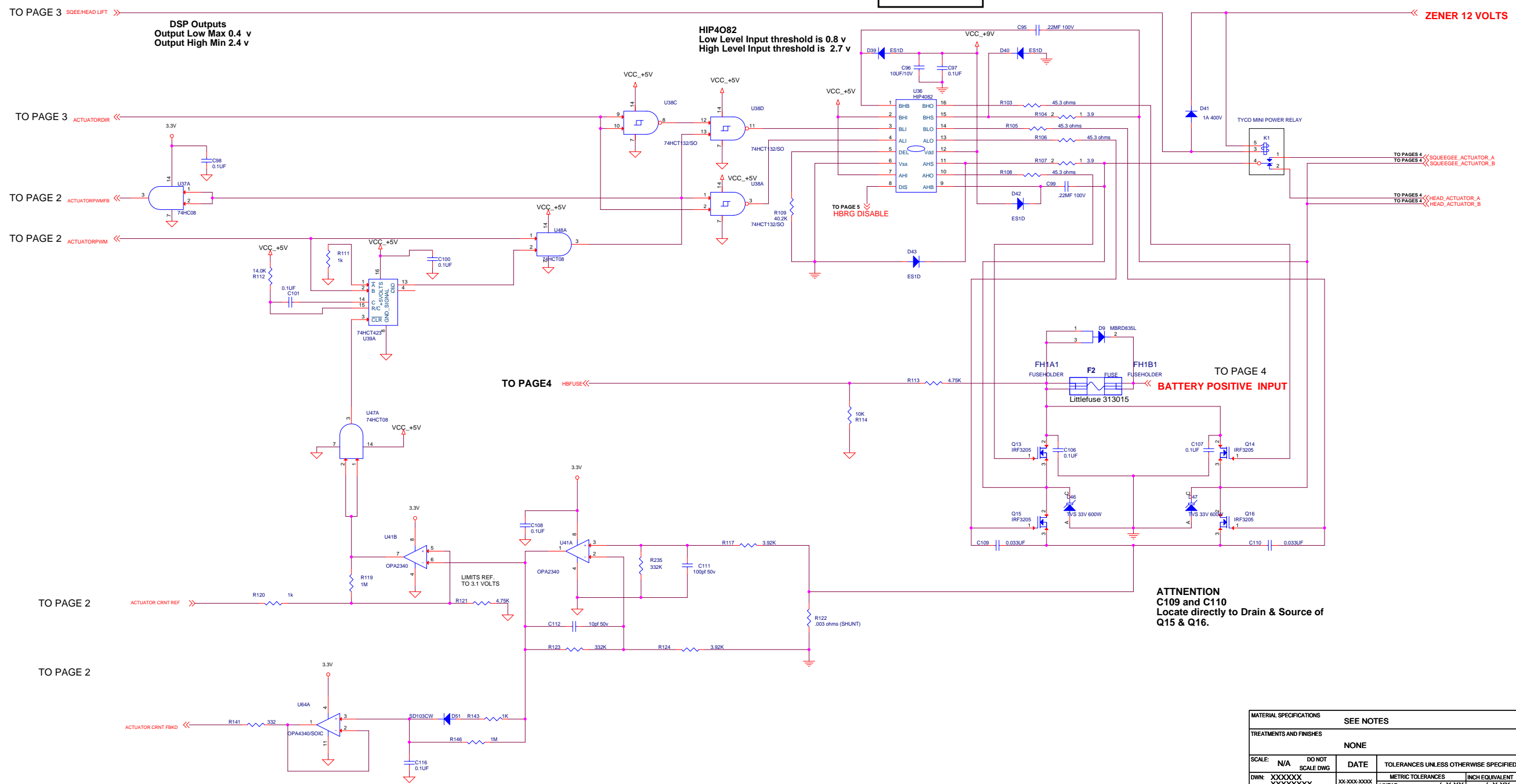
MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		F	GXXXX	RFM/08-08-2005
TREATMENTS AND FINISHES		NONE		THE INFORMATION IN THIS DOCUMENT IS PROPERTY OF TENNANT COMPANY. IT IS SUBJECT TO RETURN UPON DEMAND AND MAY NOT BE REPRODUCED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION OF TENNANT COMPANY		REV	ECO	BY/DATE
SCALE:	N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED	GENERAL NOTES			
DWN:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	METRIC TOLERANCES	LINEAR	±/- X.XXX	±/- X.XX	DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.
MDR:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	SLOT WIDTH	N/A	N/A		
DES:	XXXXXX	XXXXXXXXXX	XX-XX-XXXX	HOLE DIA	N/A	N/A		
PART NAME:	PCB CIRCUITBOARD [T5]			ANGULAR	N/A	N/A		
SHEET 4 OF 8						DWG D	PART NUMBER	1073765

5V RESET & H-BRIGE DISABLE



TO PAGE 5, 7 & 8

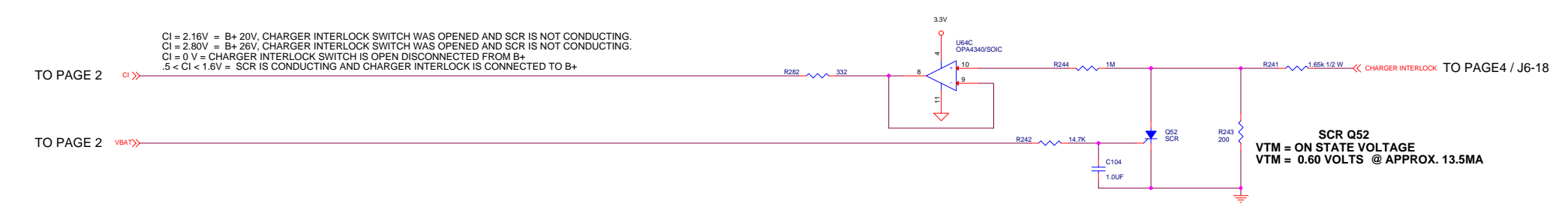
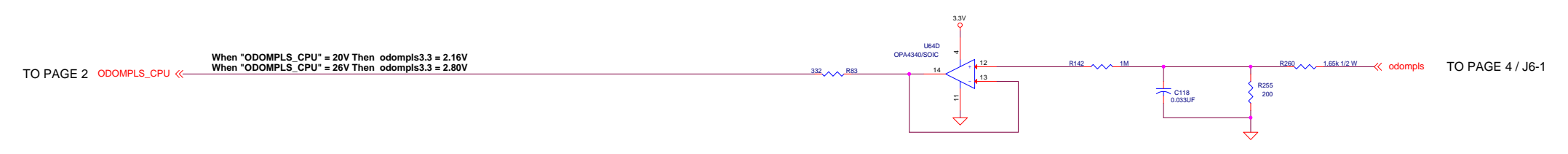
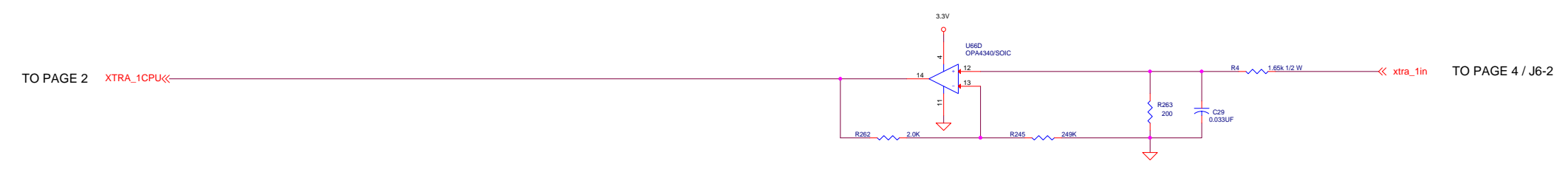
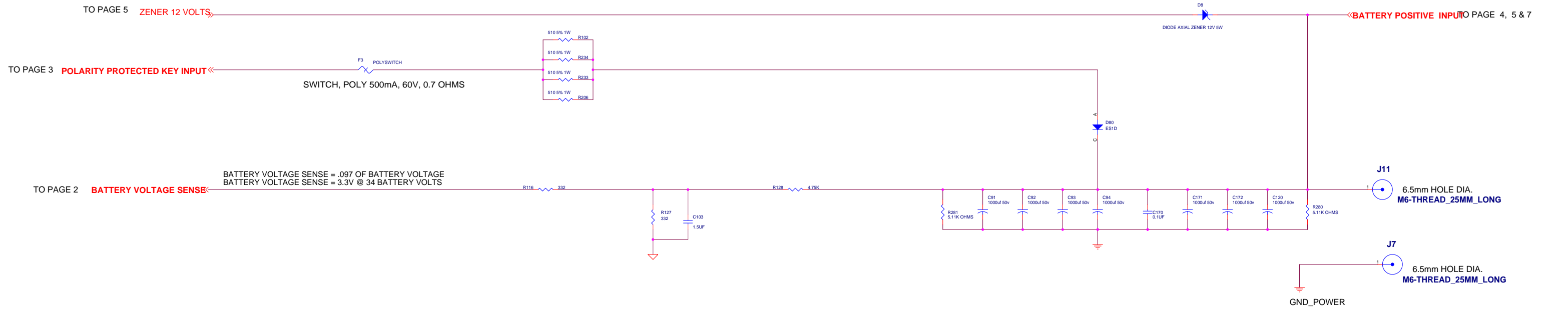
LOCATE C96 & C97 CLOSE TO PINS 6 & 12. ALSO CONNECT DIRECTLY TO PINS 6 & 12.



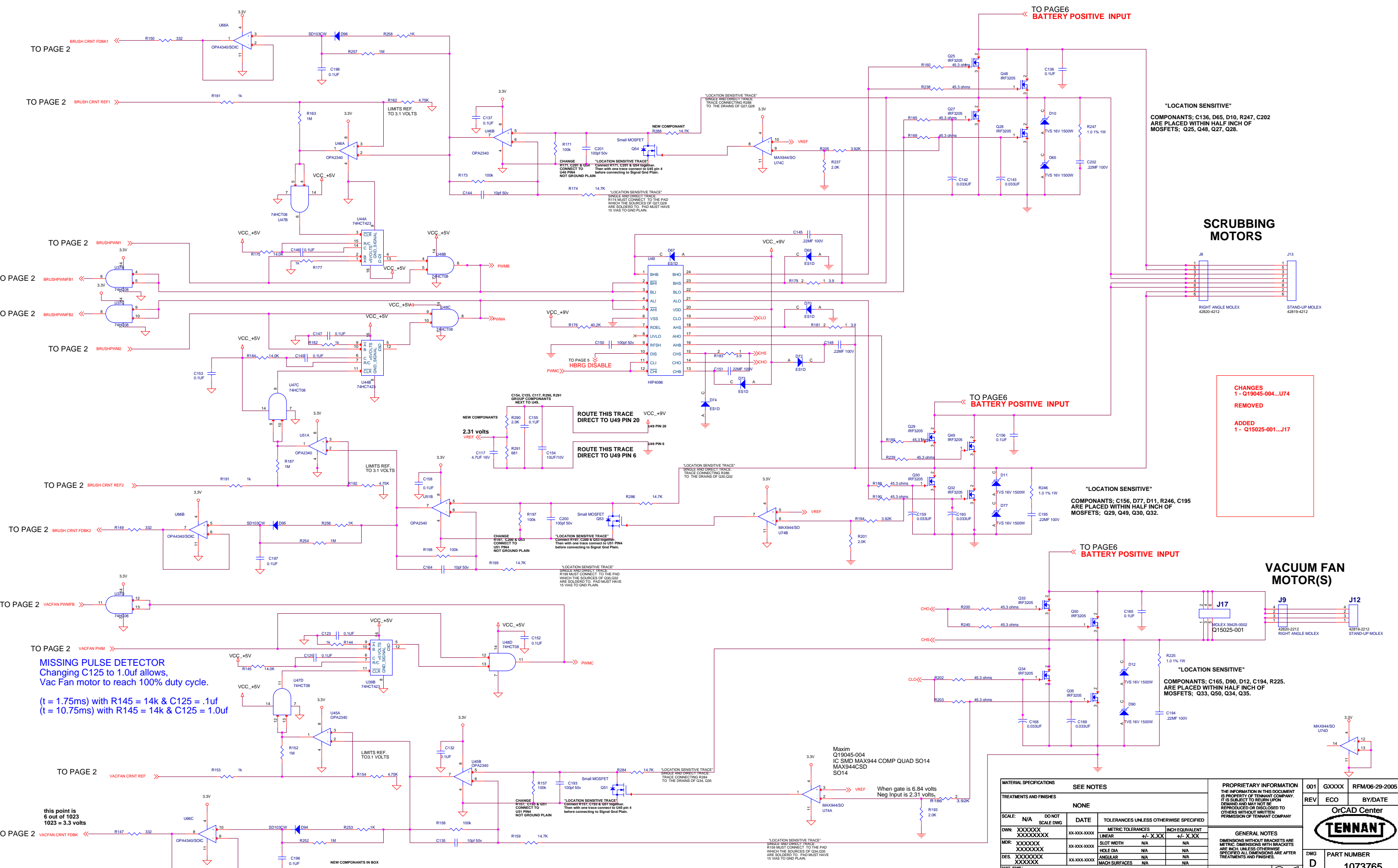
ACTUATOR LIFT / LOWER SQUEEGEE / BRUSH

ATTENTION C109 and C110 Locate directly to Drain & Source of Q15 & Q16.

MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		F	GXXXX	RFM/08-08-2005			
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SCALE:	N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED		OrCAD Center TENNANT GENERAL NOTES DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.					
DWN:	XXXXXX	XXXXXXX	XX-XX-XXXX	METRIC TOLERANCES	INCH EQUIVALENT				DWG	PART NUMBER	
MDR:	XXXXXX	XXXXXXX	XX-XX-XXXX	LINEAR	+/- X.XX				SIZE	1073765	
DES:	XXXXXX	XXXXXXX	XX-XX-XXXX	SLOT WIDTH	N/A						
PCB CIRCUITBOARD [T5]				SHEET 5 OF 8							



MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		F	GXXXX	RFM/08-08-2005	
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SCALE: N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED		OrCAD Center TENNANT				
DWN: XXXXXX	XXXXXXXXXX	XX-XXX-XXXX	METRIC TOLERANCES	INCH EQUIVALENT					
MDR: XXXXXX	XXXXXXXXXX	XX-XXX-XXXX	LINEAR	+/- X.XX					+/- X.XX
DES: XXXXXX	XXXXXXXXXX	XX-XXX-XXXX	SLOT WIDTH	N/A					N/A
PART NAME: PCB CIRCUITBOARD [T5]		SHEET 6 OF 8		DWG D		PART NUMBER 1073765			



TO PAGE 2 BRUSH CRNT FDBK1

TO PAGE 2 BRUSH CRNT REF1

TO PAGE 2 BRUSH PWM1

TO PAGE 2 BRUSH PWMFB1

TO PAGE 2 BRUSH PWMFB2

TO PAGE 2 BRUSH PWM2

TO PAGE 2 BRUSH CRNT REF2

TO PAGE 2 BRUSH CRNT FDBK2

TO PAGE 2 VACFAN PWMFB

TO PAGE 2 VACFAN PWM

TO PAGE 2 VACFAN CRNT REF

TO PAGE 2 VACFAN CRNT FDBK

MISSING PULSE DETECTOR
 Changing C125 to 1.0uf allows, Vac Fan motor to reach 100% duty cycle.
 (t = 1.75ms) with R145 = 14k & C125 = .1uf
 (t = 10.75ms) with R145 = 14k & C125 = 1.0uf

this point is 6 out of 1023
 1023 = 3.3 volts

"LOCATION SENSITIVE"
 COMPONENTS: C136, D65, D10, R247, C202
 ARE PLACED WITHIN HALF INCH OF
 MOSFETS; Q25, Q48, Q27, Q28.

**SCRUBBING
 MOTORS**

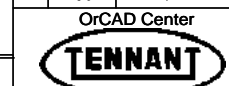
CHANGES
 1 - Q19045-004...U74
 REMOVED
 ADDED
 1 - Q15025-001...J17

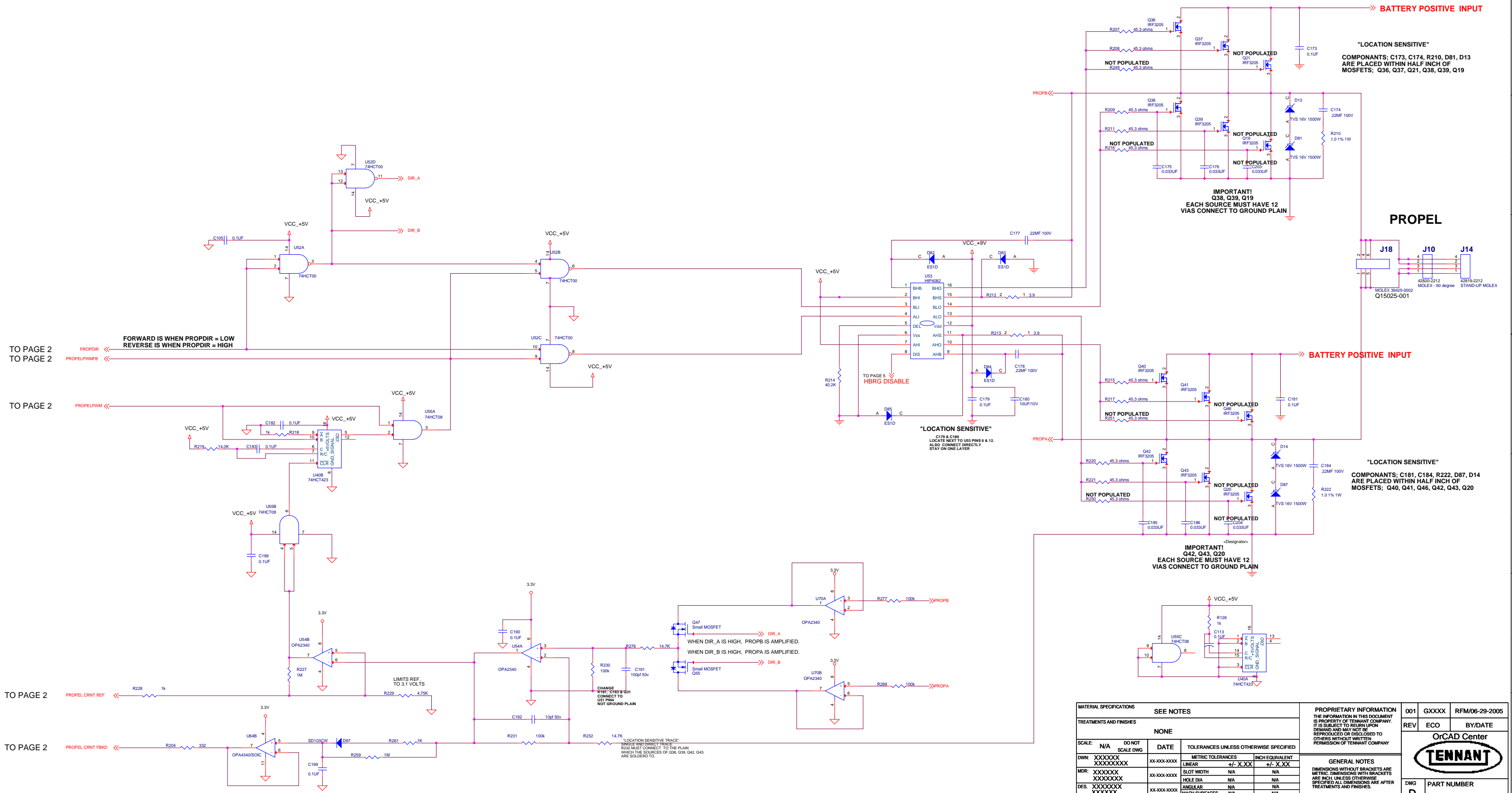
"LOCATION SENSITIVE"
 COMPONENTS: C156, D77, D11, R246, C195
 ARE PLACED WITHIN HALF INCH OF
 MOSFETS; Q29, Q49, Q30, Q32.

**VACUUM FAN
 MOTOR(S)**

"LOCATION SENSITIVE"
 COMPONENTS: C165, D90, D12, C194, R225.
 ARE PLACED WITHIN HALF INCH OF
 MOSFETS; Q33, Q50, Q34, Q35.

MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		001	GXXXX	RFM/06-29-2005
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SCALE:	N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED				
DWN:	XXXXXX	XXXXXXX	XXXX-XXX-XXXX	METRIC TOLERANCES	+/- X.XX			
MDR:	XXXXXX	XXXXXXX	XX-XXX-XXXX	SLOT WIDTH	N/A			
DES:	XXXXXX	XXXXXXX	XX-XXX-XXXX	HOLE DIA	N/A			
				ANGULAR	N/A			
				MACH SURFACES	N/A			
PART NAME: PROWLER CIRCUIT BOARD				GENERAL NOTES		DWG		
				DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.		PART NUMBER		
				SHEET 7 OF 8		1073765		





TO PAGE 2
TO PAGE 2

TO PAGE 2

TO PAGE 2

TO PAGE 2

MATERIAL SPECIFICATIONS		SEE NOTES		PROPRIETARY INFORMATION		001	GXXXX	RFM/06-29-2005			
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SCALE:	N/A	DO NOT SCALE DWG	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED	OrCAD Center TENNANT GENERAL NOTES DIMENSIONS WITHOUT BRACKETS ARE METRIC. DIMENSIONS WITH BRACKETS ARE INCH. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES.						
DWN:	XXXXXX	XXXXXXX	XX-XX-XXXX	METRIC TOLERANCES					+/- X.XX	INCH EQUIVALENT	+/- X.XX
MDR:	XXXXXX	XXXXXXX	XX-XX-XXXX	SLOT WIDTH					N/A	N/A	N/A
DES:	XXXXXX	XXXXXXX	XX-XX-XXXX	HOLE DIA					N/A	N/A	N/A
	XXXXXX	XXXXXXX	XX-XX-XXXX	ANGULAR					N/A	N/A	N/A
PART NAME: PROWLER CIRCUIT BOARD				SHEET 8 OF 8		DWG	PART NUMBER				
						D	1073765				