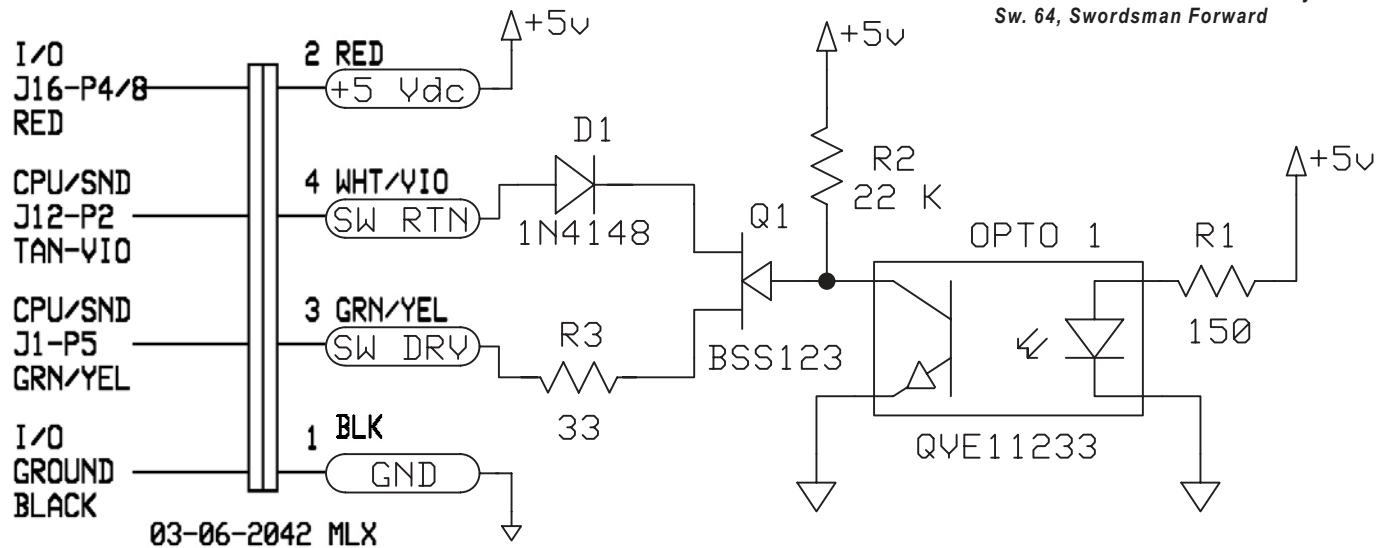
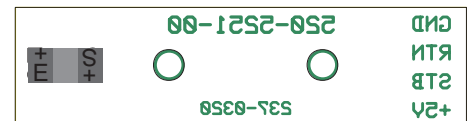
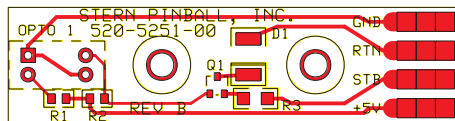
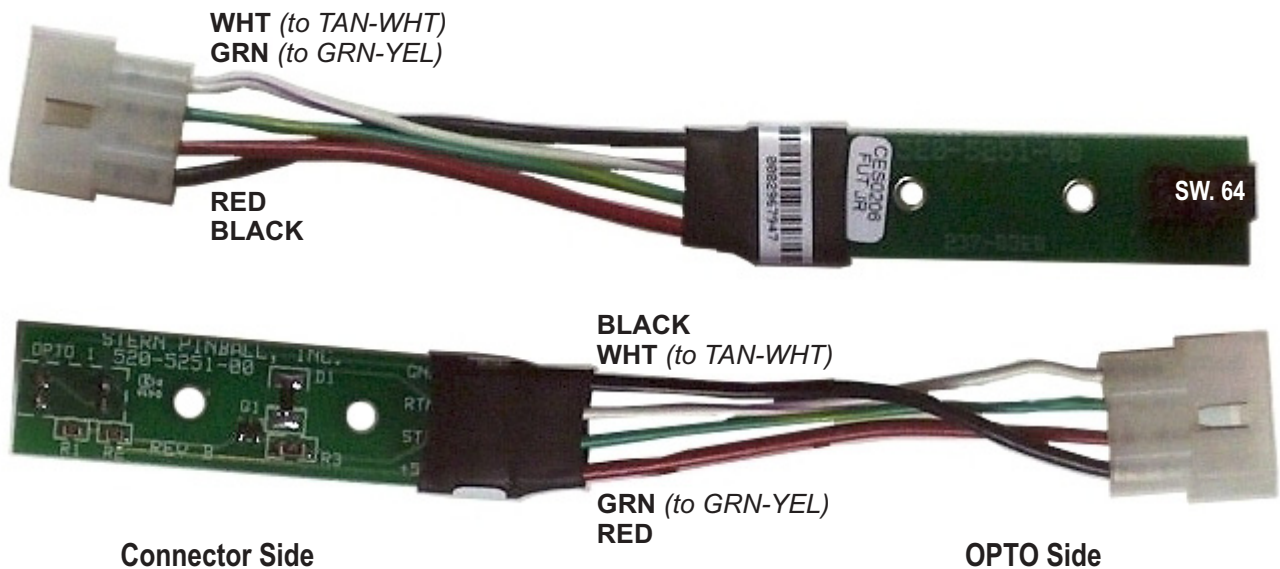


# OPTO Interrupter (520-5251-00) Schematic & Wiring (for OPTO Switch 64)

*U-Shaped OPTO  
Located on the Swordsman Assembly  
Sw. 64, Swordsman Forward*



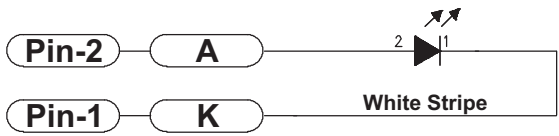
## OPTO Interrupter (520-5251-00) Component Layout & Parts



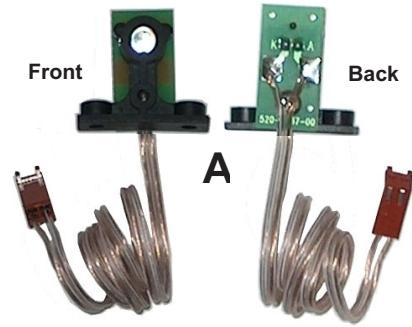
ITEM	QTY.	SPI PART NR.	(MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
—	1	<b>520-5251-00</b>	Ref. Only 237-0350	<b>OPTO "U" Interruptor PCB</b>	<b>Complete PCB Assembly (Rev. C)</b>
1	1			R1	Resistor, 150 Ω
2	1			R2	Resistor, 22K Ω
3	1			R3	Resistor, 33 Ω
4	1			Q1	Transistor, BSS123
5	1			D1	Diode, 1N4148
6	1	112-6003-00	225-0007940	OPTO 1	OPTO, Slotted QVE11233
7	1	045-5002-04	(055-5022-06)	GND, RTN, STR, +5V	Conn., 4-Pin Molex (Male Lugs required)

If a part is required where a part number is not provided, call Technical Support (see back of cover).

# Playfield Switches OPTO Transceiver PCBs (500-6775-01) Schematic



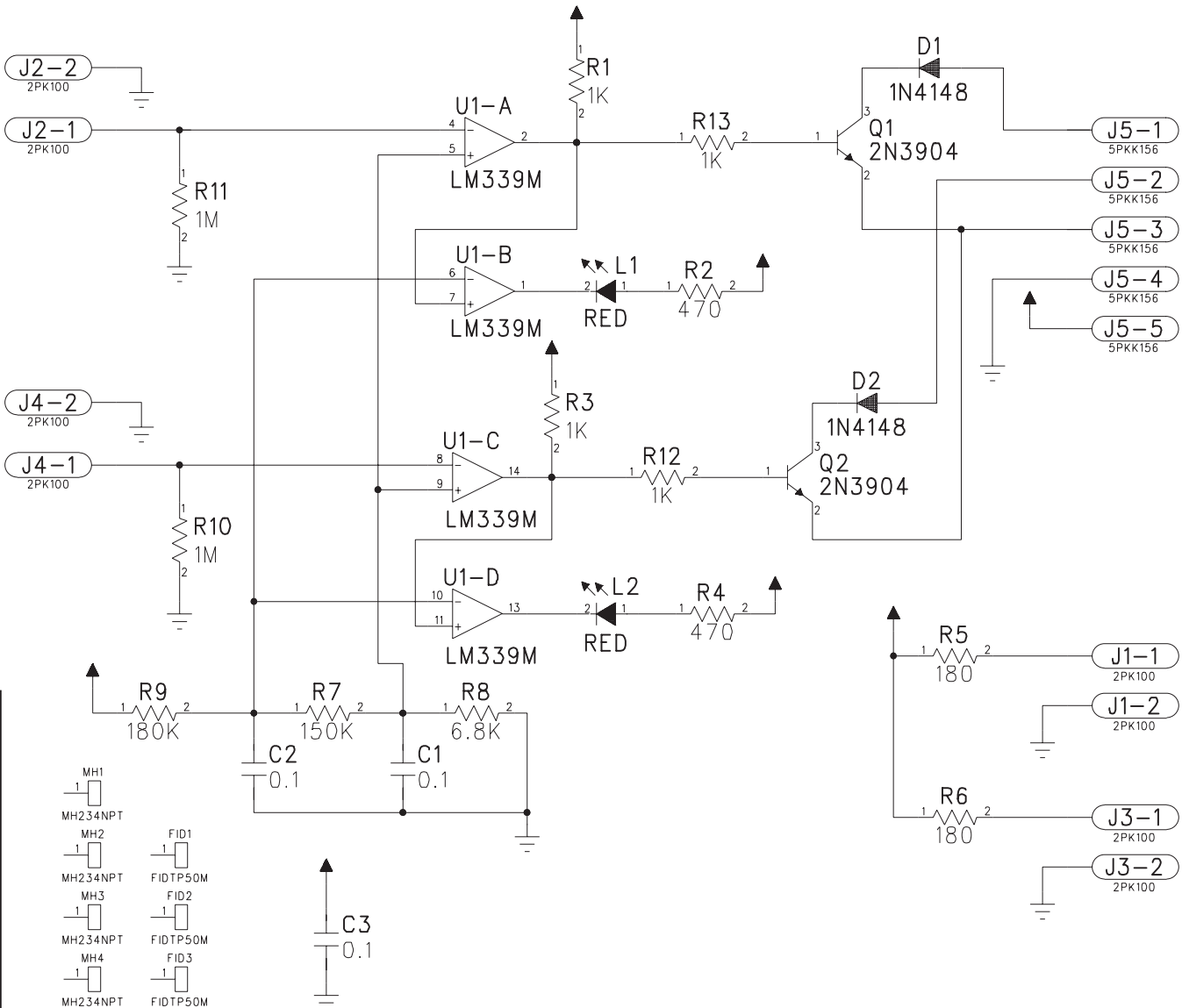
**Mini PCB  
OPTO 15" Lead  
(Black Bracket)  
500-6775-01**



## Playfield Switches OPTO Transceiver PCBs (500-6775-01) Component Layout & Parts

ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION
<b>A, B &amp; D</b>	<b>2 pair</b>	<b>500-6775-01</b>	<b>Mini OPTO Transceiver PCB Assembly (Items A PCB + B + C)</b>	
<b>A</b>	1	520-5237-00	<b>Mini OPTO Transceiver PCB</b>	(includes Items A-1 – A-3)
A-1	1	545-6092-00		Black Bracket (Plastic) Holder
A-2	1	237-5909-00		#4-40 X 1/4 PPH Screw
A-3	1	<b>165-5052-00</b>		<b>LED (Ultra Bright Red)</b>
<b>B</b>	1	<b>601-5023-15</b>	K, A	15" Speaker Wire (1-Side White Stripe)
<b>D</b>	1	045-5020-02	Note White Strip to Pin-1	2-Pin Cn., .100 KK Cmp Trm Molex 08-50-0113

# Playfield OPTO Transmitter / Receiver Amplifier PCB (520-5239-01) Schematic

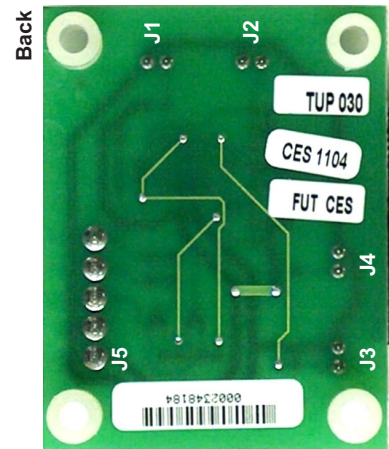
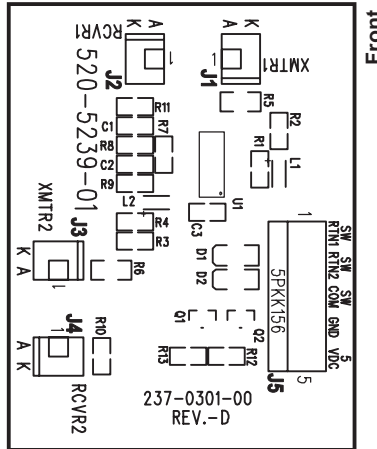
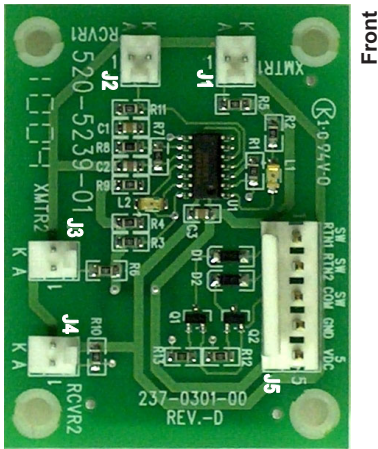


**Sec. 5: PCBs**



# Playfield OPTO Transmitter/Receiver Amplifier PCB (520-5239-01-ASY) Component Layout & Parts

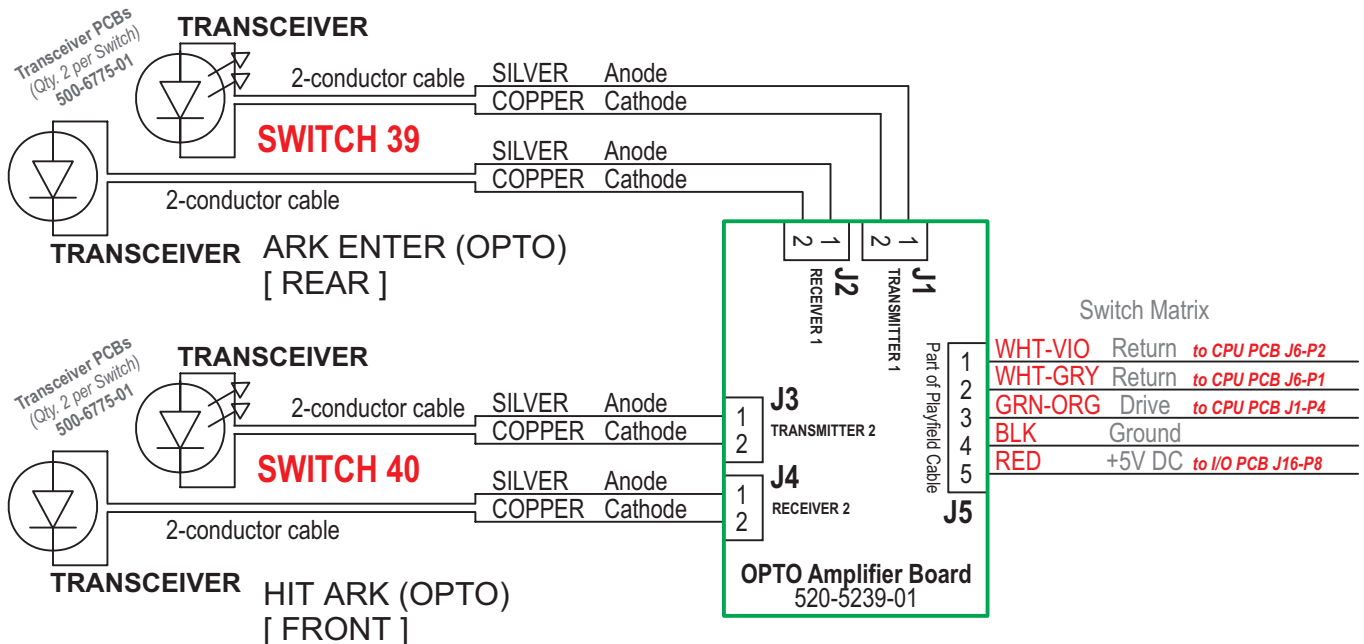
(for OPTO Switches 39 & 40)



ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
1	1	520-5239-01-ASY	OPTO Transmitter/Receiver Amplifier PCB	(incl. Items 1-14 + Item 15 spacers) Resistor SMT 805, 150K $\Omega$ 1/10W 5%
2	2		R7	Resistor SMT 805, 180 $\Omega$ 1/10W 5%
3	1		R5, R6	Resistor SMT 805, 180K $\Omega$ 1/10W 5%
4	4		R9	Resistor SMT 805, 180K $\Omega$ 1/10W 5%
5	4	<i>If a part is required where a part number is not provided, call Technical Support (see back of cover).</i>	R1, R3, R12, R13	Resistor SMT 805, 1K $\Omega$ 1/10W 5%
6	2		R10, R11	Resistor SMT 805, 1M $\Omega$ 1/10W 5%
7	2		R2, R4	Resistor SMT 805, 470 $\Omega$ 1/10W 5%
8	1		R8	SResistor SMT 805, 6.8K $\Omega$ 1/10W 5%
9	3		C1, C2, C3	Cap.-SMT Cer. .1uF 50v 10% X7R
10	2		D1, D2	Diode, 1N4148W, 100v, 350MW
11	2		Q1, Q2	Transistor, MMST3904, NPN, 40v, .02A
12	1		U1	LM339M, Low Power Offset QUA
13	4	Mfg. 22-23-2021	J1, J2, J3, J4	Conn. 2-Pin, 0.1 Header (1 Row, VT, Tin)
14	1	Mfg. 640445-5	J5	Conn. 5-Pin, .156 Header (1 Row, VT, Tin)
15	2	Mfg. APT3216SURC	L1, L2	LEDD-SMT, Red 1206
	4	254-5007-02	corners	Spacer, 1/4" Sif. Rtn. (.153" ID X 9/32" OD X 3/8")

## Playfield OPTO Transmitter/Receiver Amplifier PCB (520-5239-01) Wiring (General)

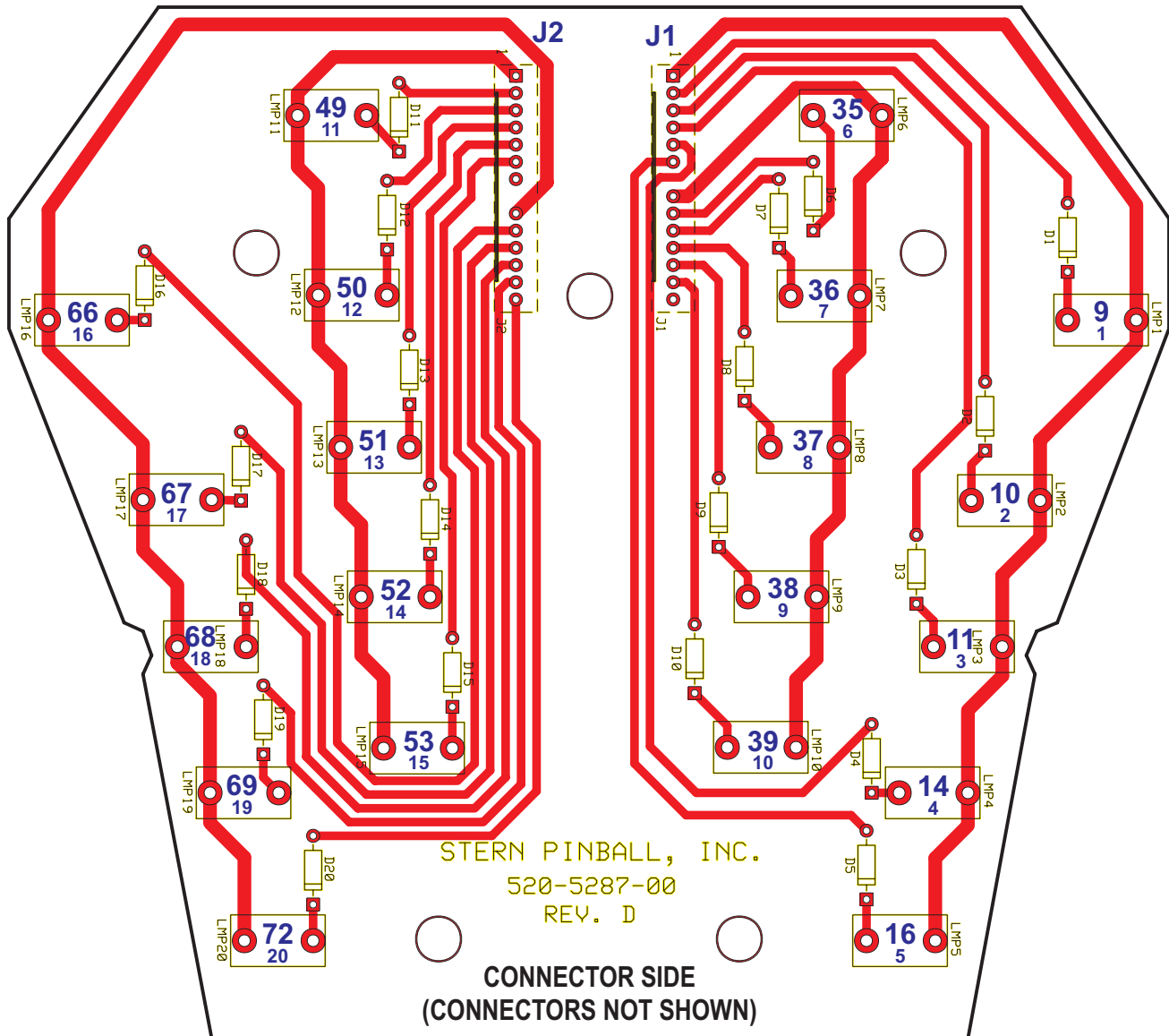
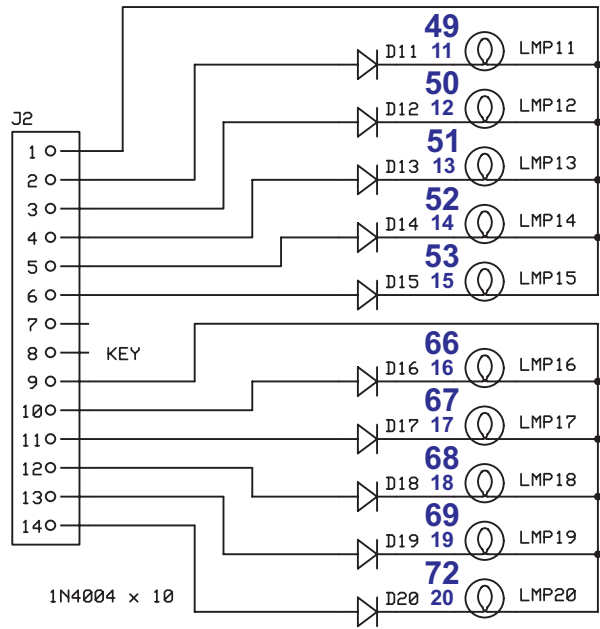
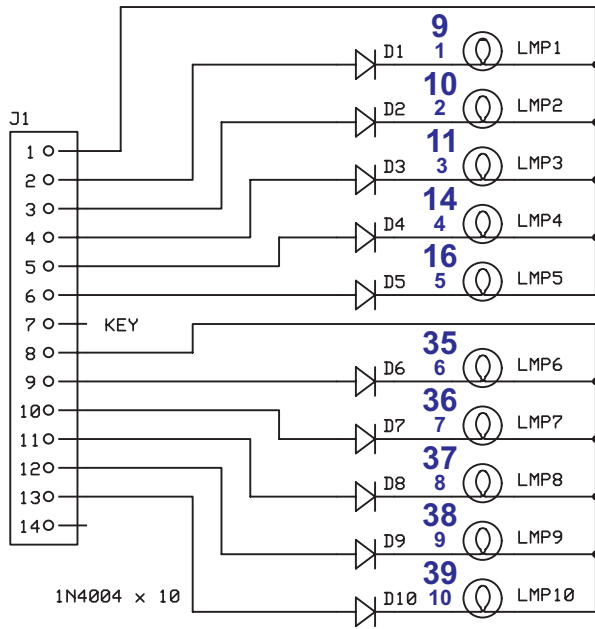
(OPTO Switches 39 & 40)



Sec. 5: PCBs



# Lamp (X20 #555 Wedge Base Bulbs) PCB (520-5287-00) Schematic



Sec. 5: PCBs



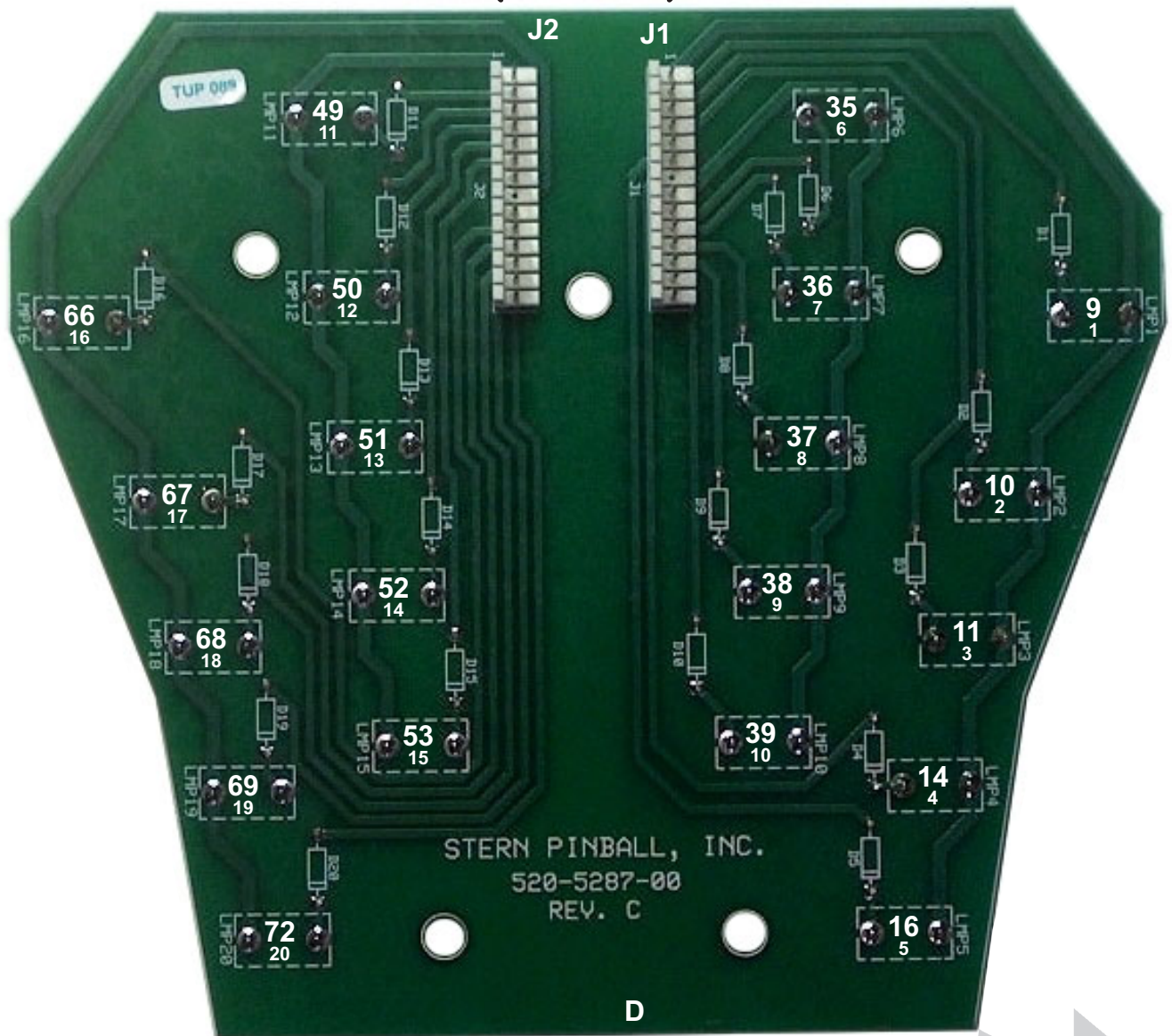
# Lamp (X20 #555 Wedge Base Bulbs) PCB (520-5287-00) Wiring

## CONN. J2 (KEY P8, N/U P7):

- PIN 1, LMP11 – LMP15 (GND I/O RED-VIO J12-P8)**
- PIN 2, LMP11 = 49 (Lamp Matrix) YEL-BRN J13-P9
- PIN 3, LMP12 = 50 (Lamp Matrix) YEL-RED J13-P8
- PIN 4, LMP13 = 51 (Lamp Matrix) YEL-ORG J13-P7
- PIN 5, LMP14 = 52 (Lamp Matrix) YEL-BLK J13-P6
- PIN 6, LMP15 = 53 (Lamp Matrix) YEL-GRN J13-P5
- PIN 09, LMP16 – LMP20 (GND I/O RED-WHT J12-P10)**
- PIN 10, LMP16 = 66 (Lamp Matrix) YEL-RED J13-P9
- PIN 11, LMP17 = 67 (Lamp Matrix) YEL-ORG J13-P8
- PIN 12, LMP18 = 68 (Lamp Matrix) YEL-BLK J13-P6
- PIN 13, LMP19 = 69 (Lamp Matrix) YEL-GRN J13-P5
- PIN 14, LMP20 = 72 (Lamp Matrix) YEL-GRY J13-P1

## CONN. J1 (KEY P7, N/U P14):

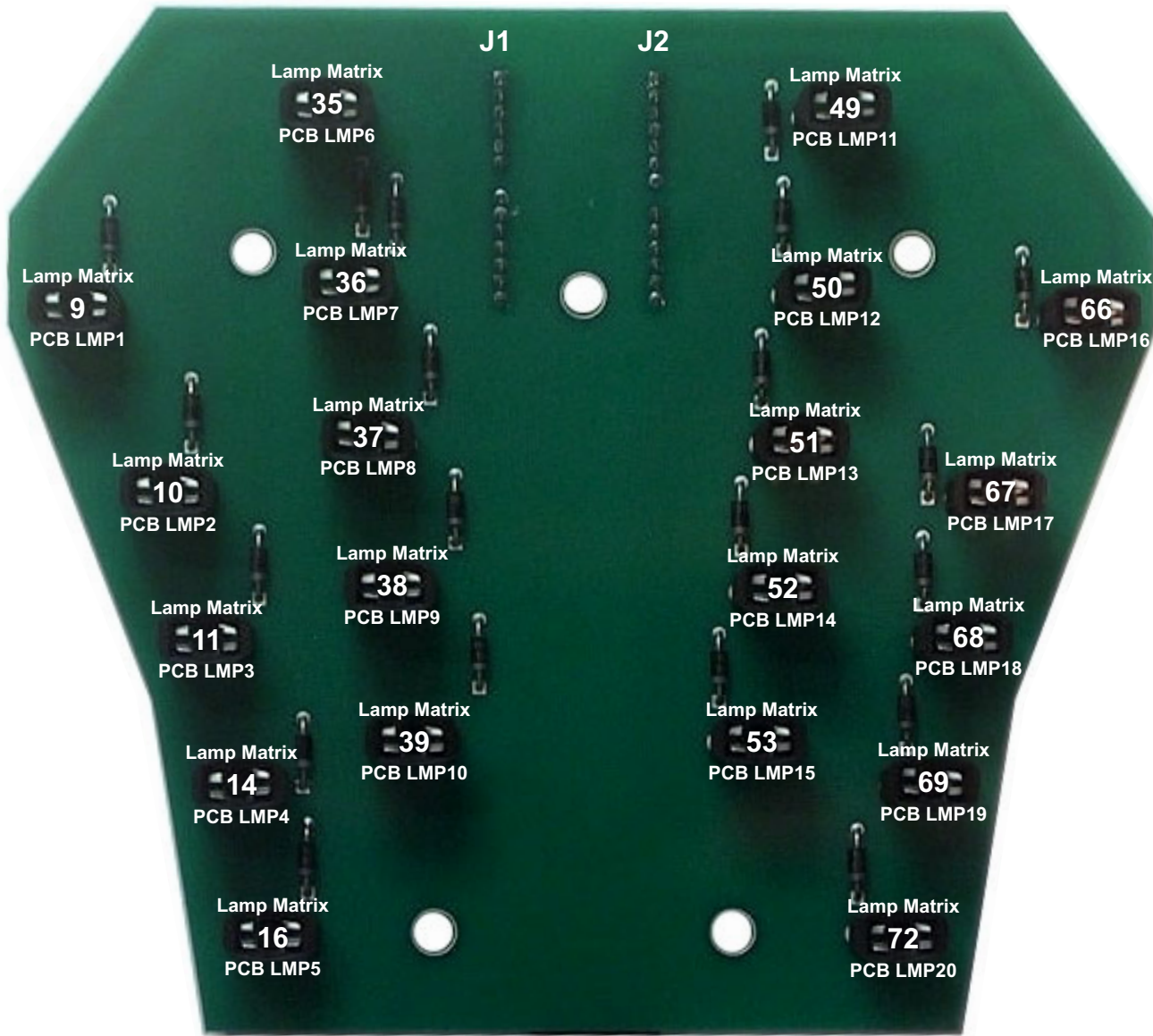
- PIN 1, LMP1 – LMP5 (GND I/O RED-BLK J12-P2)**
- PIN 2, LMP 1 = 9 (Lamp Matrix) YEL-BRN J13-P9
- PIN 3, LMP 2 = 10 (Lamp Matrix) YEL-RED J13-P8
- PIN 4, LMP 3 = 11 (Lamp Matrix) YEL-ORG J13-P7
- PIN 5, LMP 4 = 14 (Lamp Matrix) YEL-BLU J13-P4
- PIN 6, LMP 5 = 16 (Lamp Matrix) YEL-GRY J13-P1
- PIN 8, LMP6 – LMP10 (GND I/O RED-GRN J12-P5)**
- PIN 9, LMP 6 = 35 (Lamp Matrix) YEL-ORG J13-P7
- PIN 10, LMP 7 = 36 (Lamp Matrix) YEL-BLK J13-P6
- PIN 11, LMP 8 = 37 (Lamp Matrix) YEL-GRN J13-P5
- PIN 12, LMP 9 = 38 (Lamp Matrix) YEL-BLU J13-P4
- PIN 13, LMP10 = 39 (Lamp Matrix) YEL-VIO J13-P3



For Lamp (X20 #555) PCB Component Layout & Parts, see opposite pages.

Sec. 5: PCBs

Lamp (X20 #555 Wedge Base Bulbs) PCB (520-5287-00) Component Layout & Parts



COMPONENT SIDE  
(SOCKETS & DIODES / BULBS NOT SHOWN or INCLUDED)

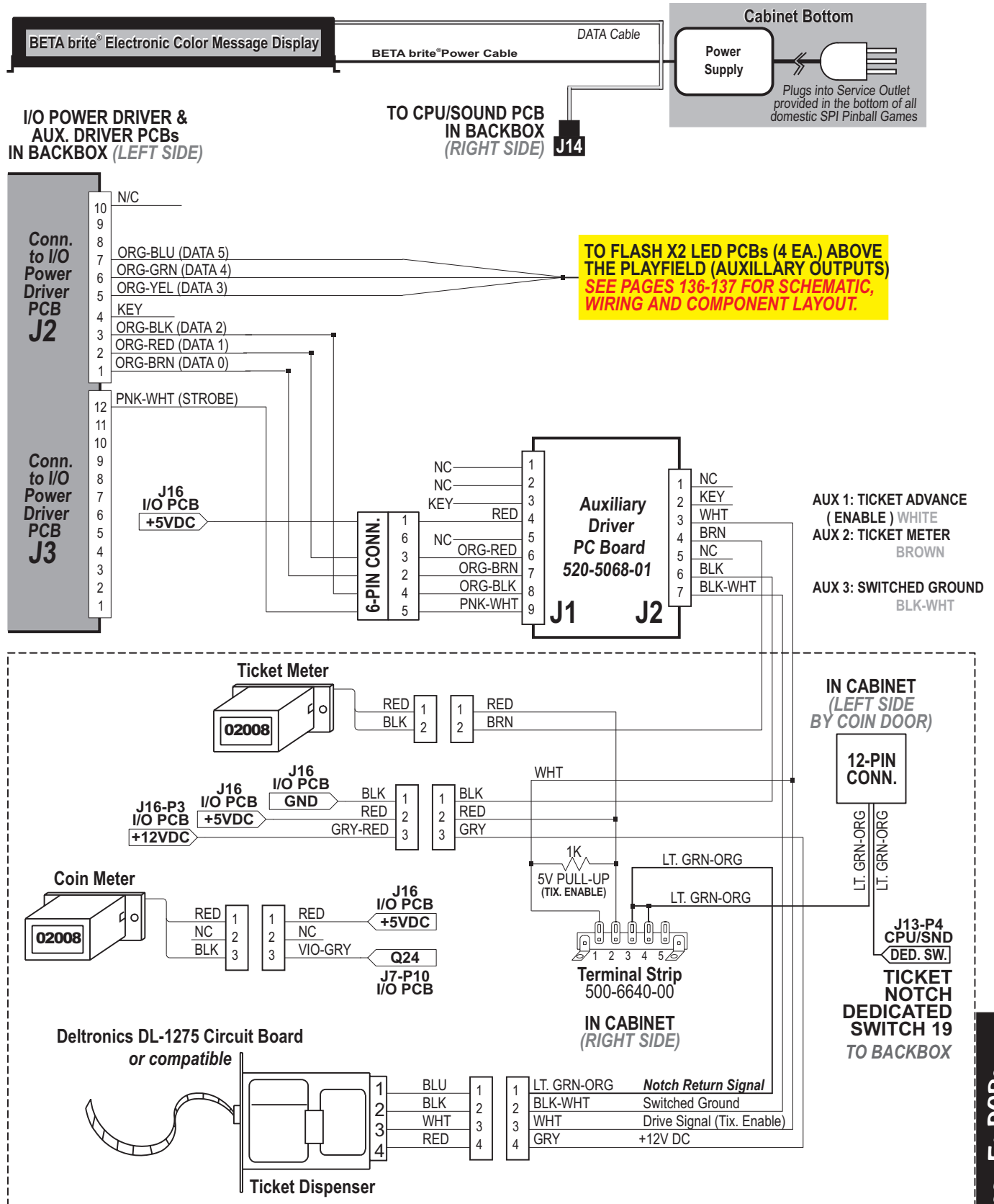
Sec. 5: PCBs

ITEM	QTY.	SPI PART NR. (MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
—	1	520-5287-00	Lamp (X20 #555 Wedge Base) PCB	PCB Assembly (may include spacers) <b>(Will Not Include Bulbs!)</b>
1	20	112-5003-00	D1-D20	Diode, 1N4001
2	20	077-5207-01	LMP1-LMP20	Wedge Base Socket, Vertical Solder
Ref.	5	254-5007-06	n/a	1" Slf. Rtn. Plastic Spacer White
<b>Not Included :</b>				
Ref.	20	165-5002-00	LMP1-LMP20	#555 Wedge Base Bulb (Clear)
Ref.	5	232-5007-00	n/a (securing hardware)	#6 X 1-1/2" PPH (Zinc)

If a part is required where a part number is not provided, call Technical Support (see back of cover).

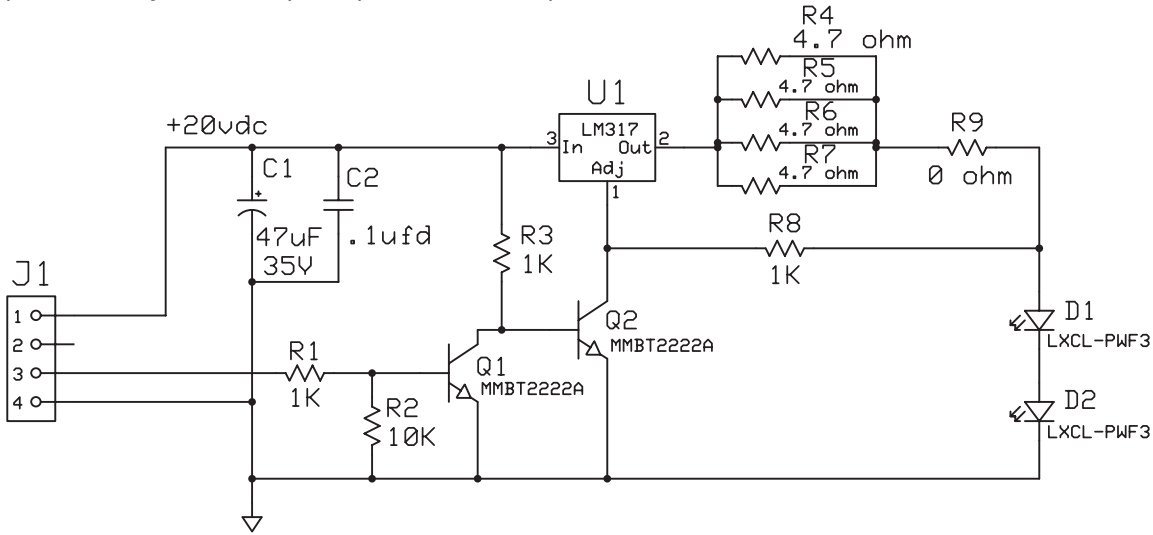


# Auxiliary (3X Transistor) Driver PCB (in Backbox) with the Coin/Ticket Meter and Ticket Dispenser Wiring Diagram

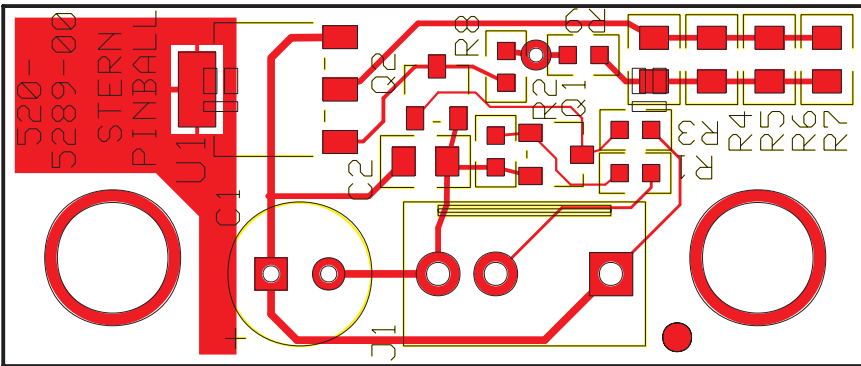


Sec. 5: PCBs

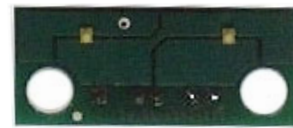
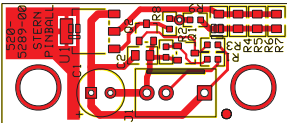
**LED (X2 Flash) PCB (520-5289-00) Schematic**  
 (for Auxiliary Flashers (LEDs) #36, #37 & #38)



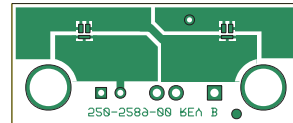
**LED (X2 Flash) PCB (520-5289-00) Component Layout & Parts**



Connector/Component Side



LED FLASH X2 Side



Sec. 5: PCBs

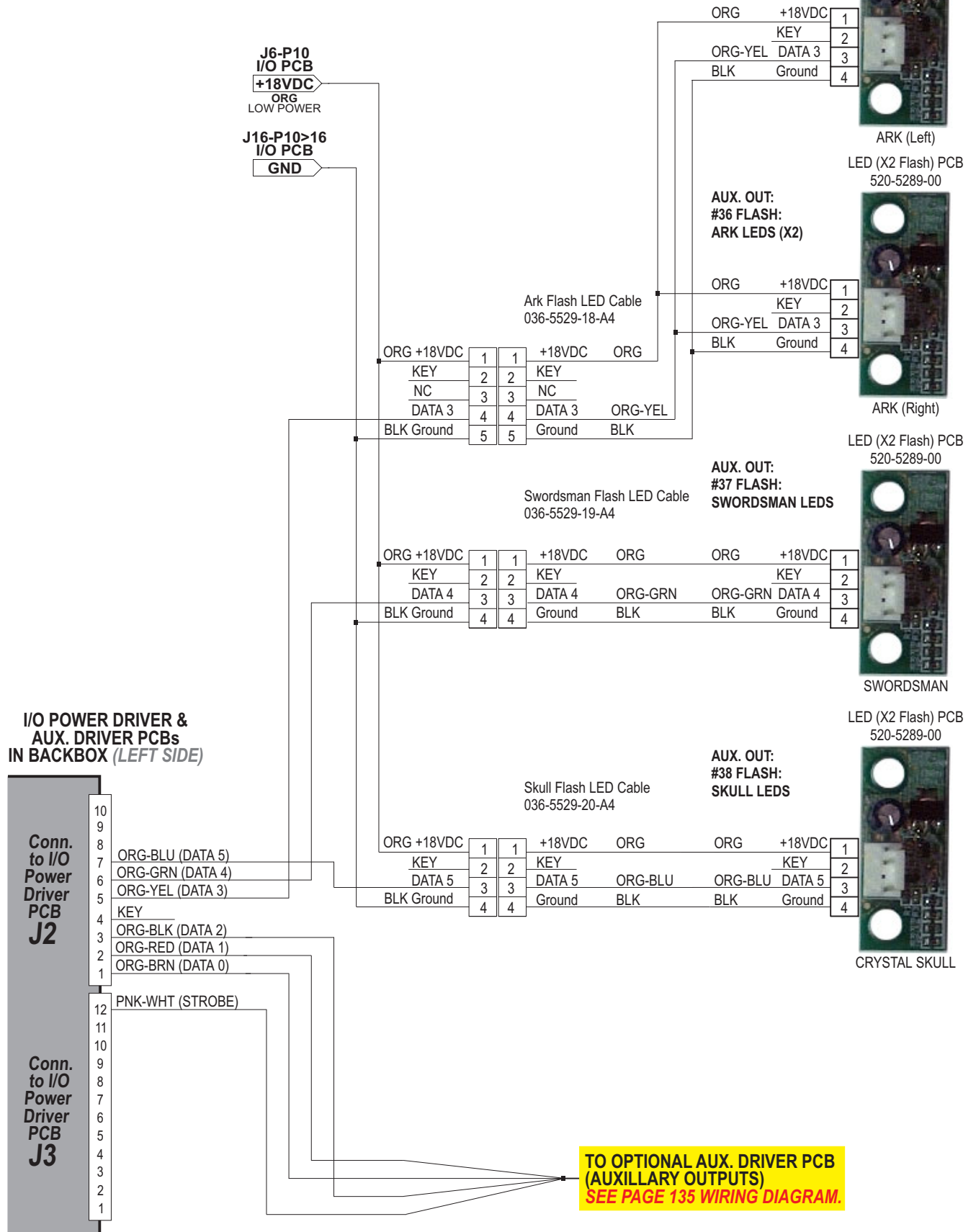
ITEM	QTY.	SPI PART NR. (MFG. P.N.)	REF-DESIGNATOR	DESCRIPTION (SMT = Surface Mount)
1	4	520-5289-00	LED (X2 Flash) PCB	Complete PCB Assembly (may include spacers)
2	3		R1, R3, R8	Resistor, 1K Ω
3	1		R2	Resistor, 10K Ω
4	4		R4, R5, R6, R7	Resistor, 4.7 Ω
5	1		R9	Resistor, 0 Ω
6	2		Q1, Q2	Transistor, MMBT2222A
7	2		D1, D2	Super Bright LED, LXCL-PWF3
8	1		U1	IC, LM317
9	1		C1	Capacitor 47uF 35V
Ref.	2	254-5007-02	n/a	Capacitor .1uF 1/4" Slf. Rtn. Plastic Spacer White

If a part is required where a part number is not provided, call Technical Support (see back of cover).



# LED (X2 Flash) PCB (520-5289-00) Wiring (for Auxiliary Flashers (LEDs) #36, #37 & #38)

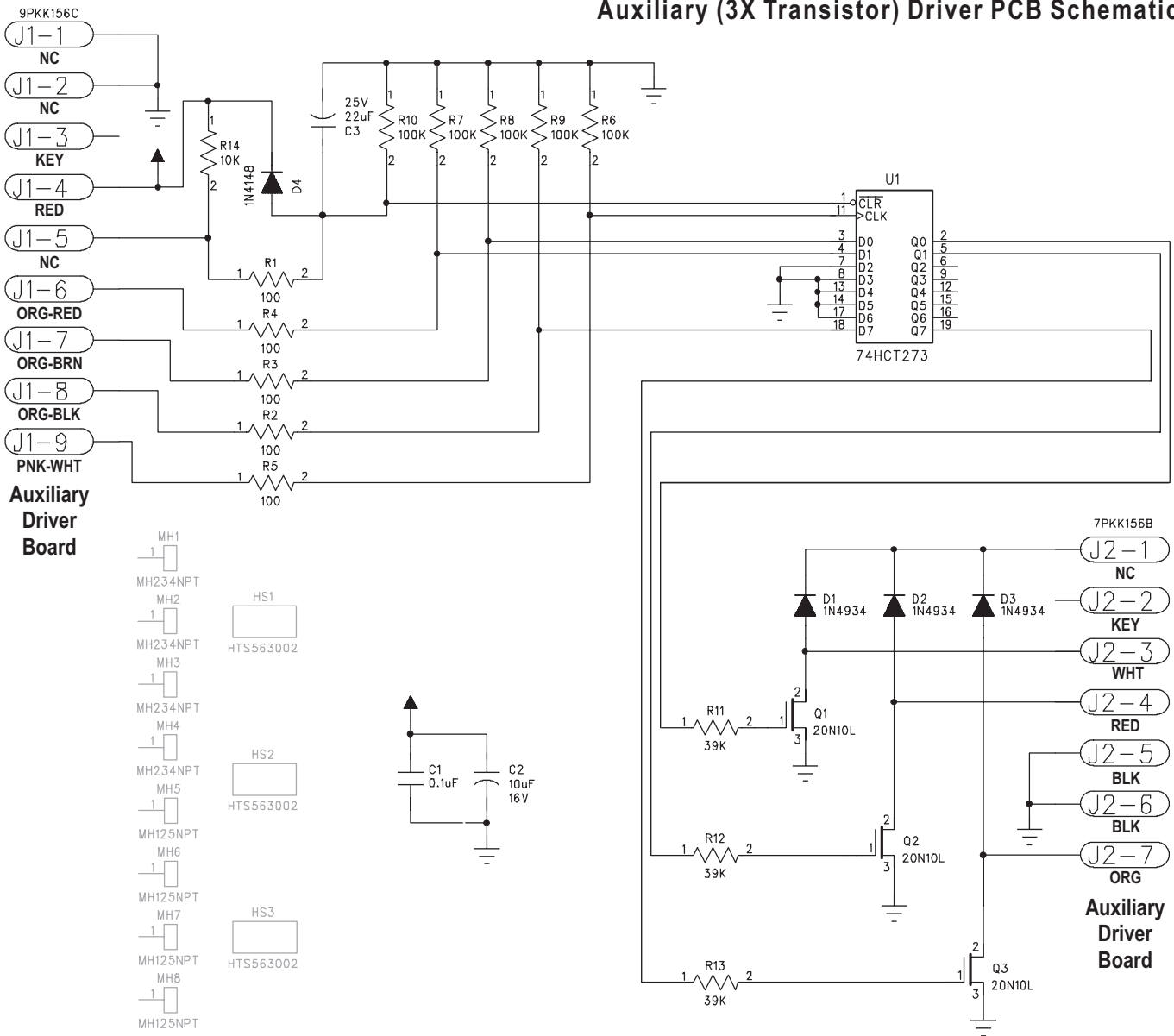
LED (X2 Flash) PCB  
520-5289-00



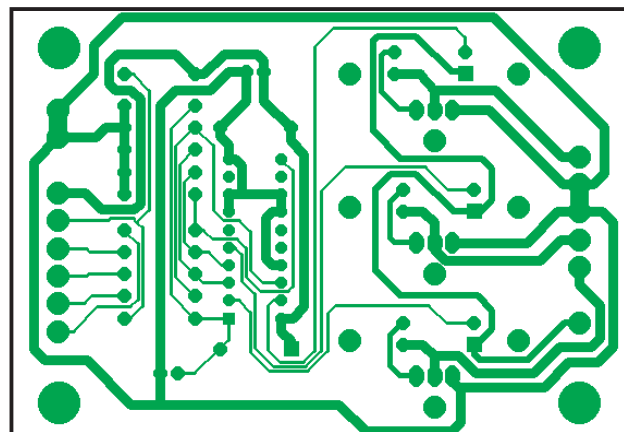
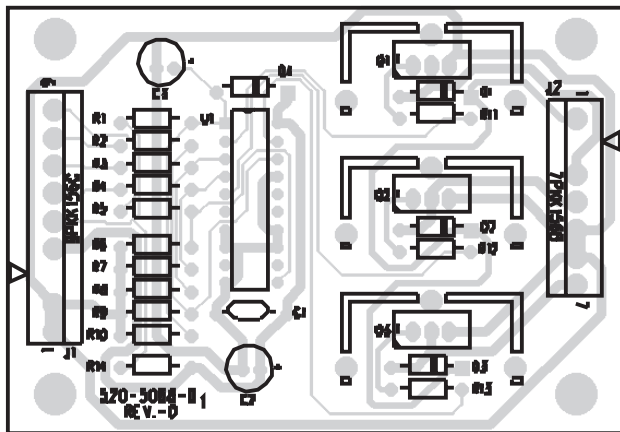
Sec. 5: PCBs



# Auxiliary (3X Transistor) Driver PCB Schematic



## Auxiliary (3X Transistor) Driver PCB Component Layout



Sec. 5: PCBs

ITEM	QTY	PART NUMBER	REF-DESIGNATOR	DESCRIPTION
—	1	520-5068-01	Aux. / Solenoid Expander PCB (x3 Transistor)	Complete PCB Assembly

