

LAUREATE

FX TYPE: Overdrive

Based on the Nobels® ODR-1™

Enclosure Size: 125B

mbp Pro series

© 2021 [madbeanpedals](http://madbeanpedals.com)



Pro Series

The “**Pro**” series is a special category of madbeanpedals projects with unique features:

- They are designed with easy-of-build in mind. Minimal wiring required!
- Soft-touch bypass switching is included. The Pro series uses the same switching circuitry as the mbp Softie.
- The PCBs feature ENIG finish. This is the highest standard PCB finishing you will find in most commercially produced PCBs. The copper area has a thin layer of gold plating for superior conductivity and soldering. This process is more expensive and accounts for the higher price in the Pro series vs. the standard mbp projects.
- All Pro series projects will include the PIC and relay used in the soft touch switching circuitry.
- For now, the Pro series will also include both 6-pin and 2-pin style connectors for the I/O wiring. This may change in the future depending on availability. The connectors make removing the PCB a snap, should you need to.
- Some Pro series projects (like The Laureate) will include a faceplate as an optional purchase. This is pre-made artwork for the enclosure top and is professionally manufactured similar to PCBs. They are done on 0.8mm thick substrate, black solder mask and use a mixture of silk screen and copper for the artwork. Note: the faceplates have a silver finish, not gold.

Overview

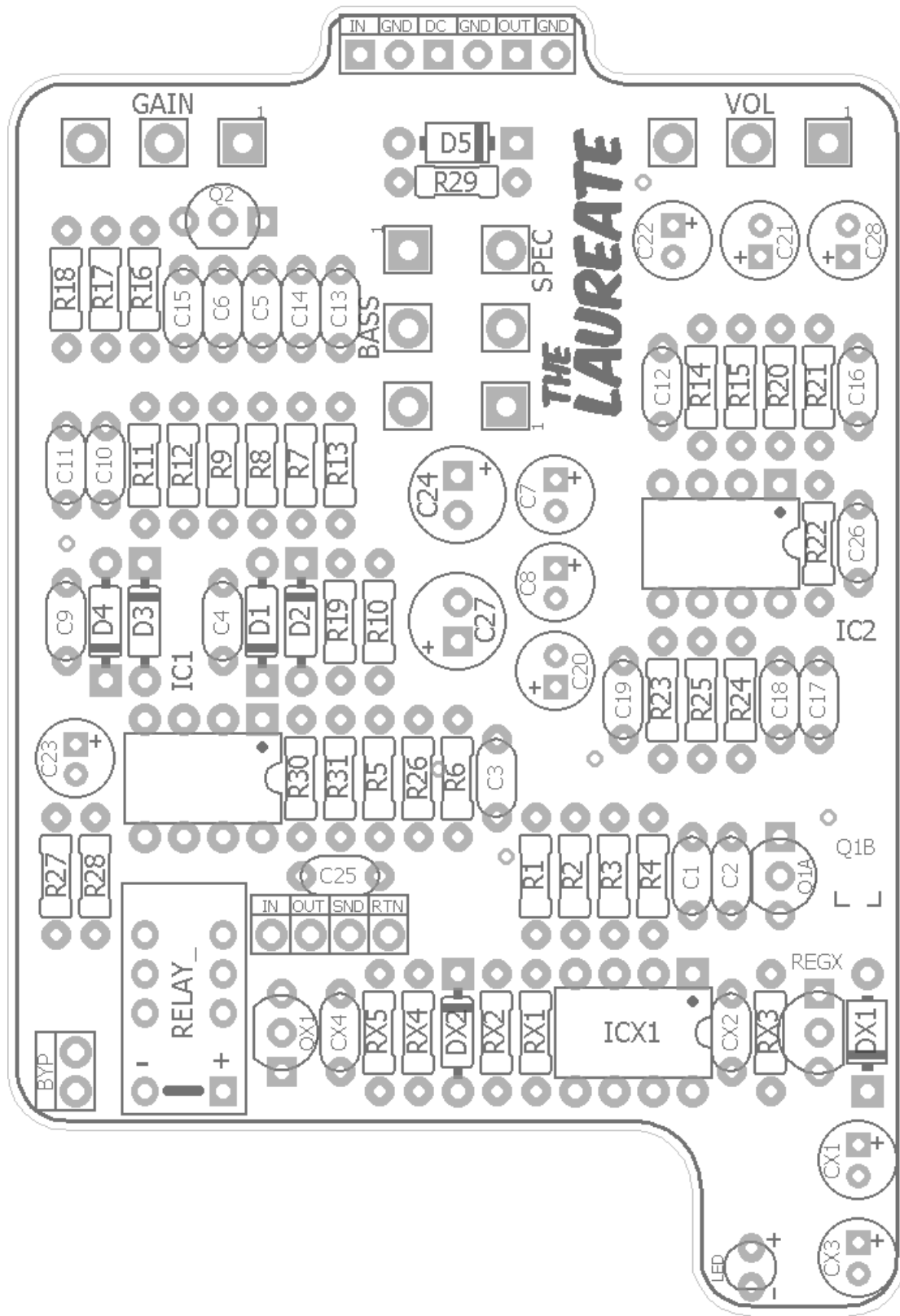
The ODR-1™ flew under my radar for a very long time. I knew of it, but never looked at the circuit or listened to many samples. Shows what I know! I became interested in it soon after seeing Brian Wampler’s video about his mini version, the [Belle Overdrive](#). His video provides a bit of history on the effect and an explanation to his approach with the Belle. The Laureate is not a clone of the Belle but not dissimilar, either. It’s mostly the stock ODR-1 but with the transistor switching replaced with a relay and an added bass roll-off.

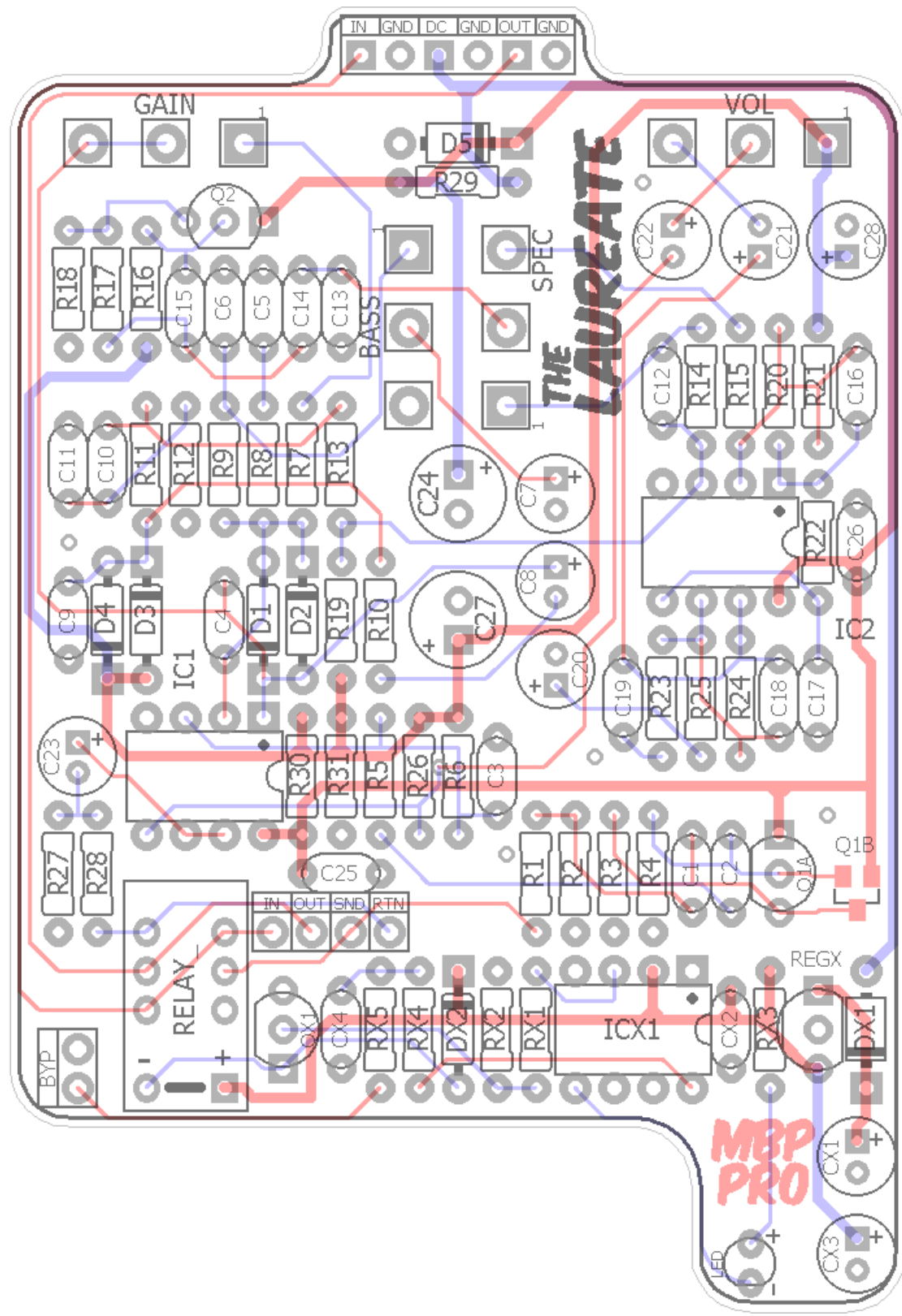
Controls

- **VOL** - Effect output level.
- **GAIN** - Total gain, from mild to medium overdrive.
- **SPEC** - Tone control (called Spectrum on the ODR-1). The tone control circuitry features an active mid boost with low pass cut when set CCW. This control is quite unique in the world of overdrives. Recognizable bones, but unusual.
- **BASS** - This control will roll off a large amount of bass frequencies when turned CW. It’s especially helpful at higher gain settings where the stock circuit gets somewhat overwhelmed with low end.

Terms of Use: You are free to use purchased **Laureate** circuit boards for both DIY and small commercial operations. You may not offer **Laureate** PCBs for resale or as part of a “kit” in a commercial fashion. Peer to peer re-sale is fine, though.

Technical assistance for your build(s) is available via the [madbeanpedals forum](http://madbeanpedals.com). Please go there rather than emailing me for assistance on [builds](#). This is because (1) I’m not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.





BOM				Shopping List	
Name	Value	Type	Rating	Value	QTY
RX1	2K	Metal Film	1/4W	1k	3
RX2	1M	Metal Film	1/4W	2K	1
RX3	1k	Metal Film	1/4W	1M	1
RX4	1k	Metal Film	1/4W	100pF	1
RX5	1k	Metal Film	1/4W	100n	1
CX1	10uF	Electrolytic	16v min.	10uF	2
CX2	100n	Film	16v min.	1N4001	1
CX3	10uF	Electrolytic	16v min.	1n914	1
CX4	100pF	Ceramic / MLCC	16v min.	2n3904	1
DX1	1N4001			78L05	1
DX2	1n914			LED	1
QX1	2n3904				
REGX	78L05	TO-92 style regulator			
LED	LED	any color	5mm		
ICX1	10f320	included w/ PCB			
RELAY	80-EC2	included w/ PCB			

This list is for the soft touch switching circuitry only. It will be the same for all of the Pro series projects and use the same naming convention.

Resistors		Caps		Diodes	
R1	33k	C1	100n	D1	1n914
R2	1M	C2	68n	D2	1n914
R3	1M	C3	22n	D3	1n914
R4	3k3	C4	120pF	D4	1n914
R5	2k7	C5	82n	D5	1N4001
R6	10k	C6	33n	Transistors	
R7	1k8	C7	2u2	Q1	2n5457
R8	820R	C8	2u2	Q2	2N5088
R9	1k5	C9	2n7	IC	
R10	12k	C10	82n	IC1	4558
R11	39k	C11	1n	IC2	4558
R12	12k	C12	22n	Pots	
R13	10k	C13	27n	SPEC	25kB
R14	5k1	C14	100n	VOL	50kA
R15	1k2	C15	8n2	BASS	50kA
R16	150k	C16	560pF	GAIN	250kA
R17	2k2	C17	8n2		
R18	3k3	C18	4n7		
R19	43k	C19	82n		
R20	20k	C20	1uF		
R21	10k	C21	2u2		
R22	4k7	C22	1uF		
R23	5k1	C23	3u3		
R24	22k	C24	100uF		
R25	1k2	C25	100n		
R26	150k	C26	100n		
R27	150k	C27	100uF		
R28	1k	C28	47uF		
R29	47R				
R30	15k				
R31	15k				

Value	QTY	Type	Rating	Value	QTY	Type	Rating
47R	1	Metal / Carbon Film	1/4W	1n	1	Film	25v. Min.
820R	1	Metal / Carbon Film	1/4W	2n7	1	Film	25v. Min.
1k	1	Metal / Carbon Film	1/4W	4n7	1	Film	25v. Min.
1k2	2	Metal / Carbon Film	1/4W	8n2	2	Film	25v. Min.
1k5	1	Metal / Carbon Film	1/4W	22n	2	Film	25v. Min.
1k8	1	Metal / Carbon Film	1/4W	27n	1	Film	25v. Min.
2k2	1	Metal / Carbon Film	1/4W	33n	1	Film	25v. Min.
2k7	1	Metal / Carbon Film	1/4W	68n	1	Film	25v. Min.
3k3	2	Metal / Carbon Film	1/4W	82n	3	Film	25v. Min.
4k7	1	Metal / Carbon Film	1/4W	100n	4	Film	25v. Min.
5k1	2	Metal / Carbon Film	1/4W	1uF	2	Electrolytic	25v. Min.
10k	3	Metal / Carbon Film	1/4W	2u2	3	Electrolytic	25v. Min.
12k	2	Metal / Carbon Film	1/4W	3u3	1	Electrolytic	25v. Min.
15k	2	Metal / Carbon Film	1/4W	47uF	1	Electrolytic	25v. Min.
20k	1	Metal / Carbon Film	1/4W	100uF	2	Electrolytic	25v. Min.
22k	1	Metal / Carbon Film	1/4W	1n914	4		
33k	1	Metal / Carbon Film	1/4W	1N4001	1		
39k	1	Metal / Carbon Film	1/4W	2n5457	1	or, MMBFJ201	
43k	1	Metal / Carbon Film	1/4W	2N5088	1		
150k	3	Metal / Carbon Film	1/4W	4558	2		
1M	2	Metal / Carbon Film	1/4W	25kB	1	PCB Right Angle	16mm
120pF	1	Ceramic / MLCC	25v. Min.	50kA	2	PCB Right Angle	16mm
560pF	1	Ceramic / MLCC	25v. Min.	250kA	1	PCB Right Angle	16mm

2n5457:

<http://smallbear-electronics.mybigcommerce.com/transistor-fet-2n5457/>

MMBFJ201 (surface mount alternative):

<http://smallbear-electronics.mybigcommerce.com/fairchild-on-semi-jfet-mmbfj201/>

16mm pots (25k Ω , 50k Ω , 250k Ω):

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/>

78L05 (5v regulator):

<http://smallbear-electronics.mybigcommerce.com/ic-78l05/>

Thinline DC Jack:

<http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/>

Mono Jacks:

<http://smallbear-electronics.mybigcommerce.com/lumberg-1-4-compact-shrouded-mono-jack/>

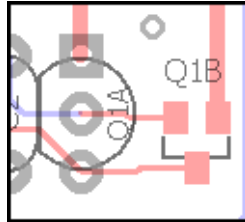
<http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-nys229/>

Momentary Switch:

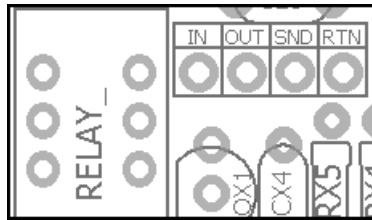
<http://smallbear-electronics.mybigcommerce.com/momentary-spst-no-soft-touch/>

<https://lovemyswitches.com/pro-grade-spst-momentary-foot-switch-normally-open-soft-touch-solder-lug/>

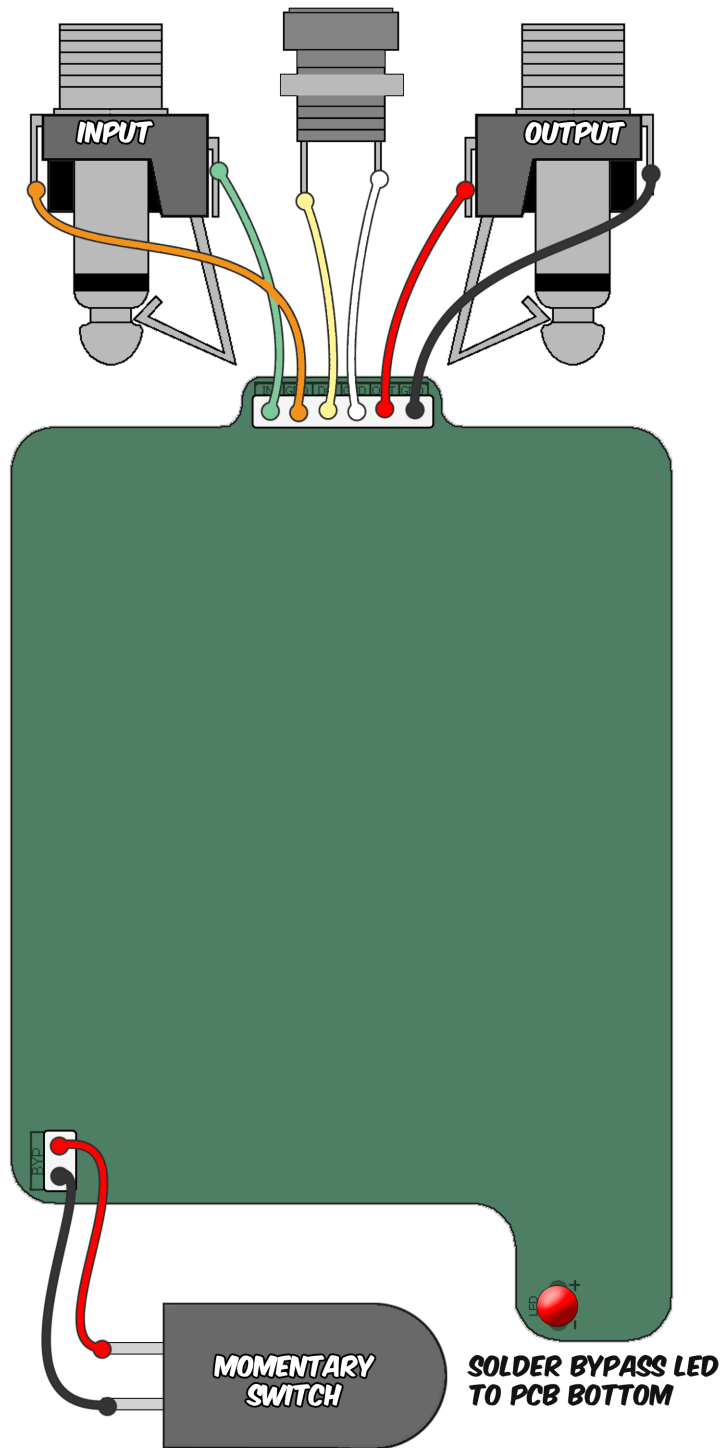
Q1 allows for either a through-hole (Q1A spot) 2N5457 or surface-mount (Q1B spot) J201. Just be sure you only use one of the options! This transistor is used as an input buffer, so either type of JFET will work fine with negligible tonal difference.



- The four pads shown below are audio probe points. If you run into trouble with your build, you can use an audio probe to check the INPUT, OUTPUT, SND (effect input) and/or RTN (effect output) for signal. Keep in mind that SND and RTN will only have signal when the switching is active!

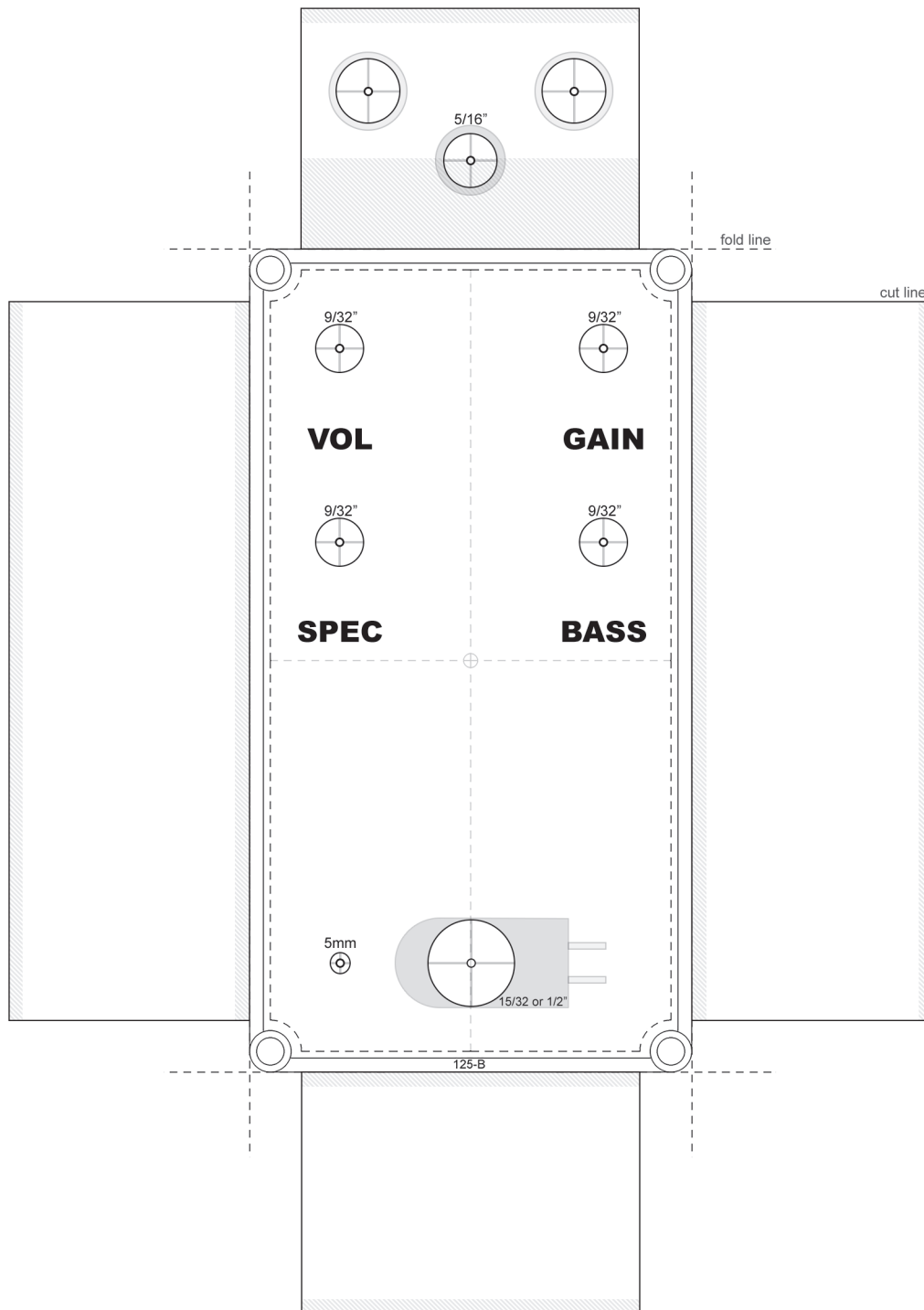


- Something interesting I learned on this project: On most circuits, you can be quite flexible with power decoupling on virtual ground (VB) because of the well regulated outputs we have on power supplies these days. I generally use a 10uF cap for decoupling out of habit. Turns out in some circumstances this can be a big problem and it was with the first Laureate prototype I built. With my standard 10uF cap I experienced really bad motorboating at higher gain settings. After scratching my head for an hour trying to debug the issue I found it was a result of using too small a value on virtual ground. Once I reverted to what the ODR-1 uses (a 100uF and 47uF in parallel and placing each relatively close to an IC) I was able to eliminate the problem completely. So, as you work on your own high gain circuits keep that feather in your cap in case you ever run into a similar issue.



All "mbp Pro series" projects will use this wiring unless otherwise noted.

Note: Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



- The drill spots are the same whether or not you are using the optional Laureate faceplate.
- If you do use the faceplate, it can be helpful to slightly overdrill the spots for the four pots and LED. This can help align the faceplate square with the enclosure top if your drilling is slightly off target.

Effect Mode		Bypass Mode	
2n3904	DC	2n3904	DC
C	ignore	C	4.98
B	0.8	B	0
E	0	E	0
78L05	DC	78L05	DC
In	8.66	In	8.66
G	0	G	0
Out	4.98	Out	4.98
PIC	DC	PIC	DC
1	ignore	1	ignore
2	4.98	2	4.98
3	4.84	3	0
4	3mV	4	2mV
5	56mV	5	4.98
6	ignore	6	ignore
7	0	7	0
8	4.93	8	4.96

IC1	4558	IC2	4558	Q1	2n5457
1	4.51	1	4.51	D	9.05
2	4.51	2	4.49	S	357mV
3	4.5	3	4.45	G	0
4	0	4	0		
5	4.44	5	4.51	Q2	2n5088
6	4.51	6	4.51	C	9.05
7	4.5	7	4.52	B	4.12
8	9.05	8	9.05	E	3.58

- 9.42vDC One Spot
- Current Draw OFF ~ 9mA
- Current Draw ON ~ 47mA



