

VFE_ICESCREAM

FX TYPE: Overdrive

Enclosure Size: 1590B

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Overview

[From the VFE website:](#)

The ICE SCREAM overdrive pedals are designed to push higher gain amps into meltdown. It all starts with a mid boost stage before the gain circuit. Tune the voicing of the mid boost with the MID knob, and then use the variable low and high cuts to further sculpt your tone to cut through the mix.

HOW THE ICE SCREAM CAME TO BE

"I was looking for an OD pedal with the flexible midrange control of the ST9, but the warm drive characteristics of the TS808; something that could push the front-end of a medium gain amp into a tight and punchy high-gain sound. With control over the cutoff frequencies inherent in this style of OD, and switchable clipping modes, Peter came up with an OD that exceeded my highest expectations.

The Ice Scream has rich, chocolately lows, warm, creamy mids, and a sprinkle of cool, minty highs. Add two scoops of unprecedented belligerence, and you have the Ice Scream; the perfect recipe for driving an amp into sweet, icy aggression. Awesome."

Controls

TONE: Active boost/cut of frequencies above the threshold set by the internal FREQ trimpot. Stock setting @ 3.2kHz.

DRIVE: Sets the gain in the drive section. From clean boost to a cascading layers of high gain saturation, there's more than enough range in this control to satisfy any of your tonal needs.

LEVEL: Sets the output level of The Scream. The max volume available is affected by the EQ and HCC settings.

SW1 (HCC): The internal DIP switch has 4 clipping configurations:

Asymmetrical 2 x 1 Top = on, bottom = on

Symmetrical 2 x 2 Top = on, bottom = off

Asymmetrical 3 x 1 Top = off, bottom = on

Diode Lift (clean) Top = off, bottom = off

MID: Shifts the focus of the mid boost stage, from full-bodied low mids to an aggressive, high mid attack.

HI CUT: Sets the amount of post-gain treble cut. Turn clockwise for a brighter & grittier top end, and pull it back for a smooth, warm drive tone.

LO CUT: Sets the amount of pre-gain bass cut. Turn clockwise for a big, fat bottom, or pull it back for a tight, punchy tone.

INTERNAL CONTROLS: The IMPED trimpot sets the input impedance of the circuit. The FREQ trimpot sets the cutoff frequency of the boost/cut for the TONE knob.

Terms of Use: You are free to use purchased **VFE_IceScream** circuit boards for both DIY and small commercial operations. You may not offer **VFE_IceScream** 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](#). 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.

Resistors		Caps		Diodes	
R1	1k	C1	220n	D1-D4	1n914
R2	100k	C2	1uF	LED	any
R3	100K	C3	47n	Transistors	
R4	1k	C4	120n	Q1	MPSA18
R5	1K	C5	220n	ICs	
LOW	see below	C6	33pF	IC1	4558
MIN	see below	MAX	see below	IC2	4558
MAX	see below	HI	see below	Switches	
R10	100k	C7	220n	SW1	2-pos DIP
R11	100R	C8	1uF	Trimmers	
VOL	see below	C9	100n	IMP	1M
R12	1k	C10	22uF	FREQ	500R
R13	470k	C11	100n	Pots	
R14	10k	PWR1 -6	100n	LEVEL	100kA
R15	10k			TONE	20kW
R16	100R			LOCUT	10kC
				HICUT	10kC
				DRIVE	1MD
				MID	10kC DualGang

Different versions
Included w/ purchase

Vanilla		Mint		Sherbet	
Resistors		Resistors		Resistors	
LOW	1k	LOW	1k	LOW	470R
MIN	10k	MIN	4k7	MIN	2k2
MAX	10k	MAX	4k7	MAX	2k2
VOL	4k7	VOL	2k2	VOL	1k
Caps		Caps		Caps	
MAX	100n	MAX	220n	MAX	47n
HI	47n	HI	47n	HI	100n

There are three different versions of the Ice Scream: Vanilla, Mint and Sherbet. Each version has slightly different values in key components which are listed above.

More on the different versions in the Notes section.

Value	QTY	Type	Rating	Spacing
100R	2	Metal / Carbon Film	1/8W	
1k	4	Metal / Carbon Film	1/8W	
10k	2	Metal / Carbon Film	1/8W	
100k	3	Metal / Carbon Film	1/8W	
470k	1	Metal / Carbon Film	1/8W	
100n	6	MLCC	25v min.	2.5mm
33pF	1	MLCC	25v min.	2.5mm
47n	1	Film	25v min.	5mm
100n	2	Film	25v min.	5mm
120n	1	Film	25v min.	5mm
220n	3	Film	25v min.	5mm
1uF	2	Film	25v min.	5mm
22uF	1	Electrolytic	25v min.	5mm
1n914	4			
LED	1	any	3 or 5mm	
MPSA18	1			
4558	2			
2-pos DIP	1	Dip Switch		
1M	1	Bourns 3362p		
500R	1	Bourns 3362p		
100kA	1	PCB Mount	16mm	
20kW	1	PCB Mount	16mm	
10kC	2	PCB Mount, Plastic Shaft	9mm	

This list is for all the components common to the three different versions. You will need to add to this list the specific components listed in the different versions (Vanilla, Mint and Sherbet).

The Shopping List also does not include the parts for the switching board. Please see that documentation for the needed components. The Ice Scream does use the charge pump option on the switching board for +/-9v.

33pF MLCC (2.5mm):

- <https://www.mouser.com/ProductDetail/80-C320C330J1G>

100n MLCC (2.5mm):

- <https://www.mouser.com/ProductDetail/80-C320C101J5G>

MPSA18:

- <http://smallbear-electronics.mybigcommerce.com/transistor-mps18/>
- <https://www.mouser.com/ProductDetail/610-MPSA18>

2-pos Dip:

- <http://smallbear-electronics.mybigcommerce.com/dip-switch-2-position/> **(currently sold out)**
- <https://www.mouser.com/ProductDetail/611-SDA02H1BD>
- <https://www.taydaelectronics.com/electromechanical/switches-key-pad/dip-switch/dip-switch-2-positions-gold-plated-contacts-top-actuated.html> **(currently sold out)**

Bourns 3362p (500R, 1M):

- <https://www.mouser.com/ProductDetail/652-3362P-1-501LF>
- <https://www.mouser.com/ProductDetail/652-3362P-1-105LF>
- <https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/500-ohm-trimmer-potentiometer-cermet-1-turn-3362p.html>
- <https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/1m-ohm-trimmer-potentiometer-cermet-1-turn-3362p.html>

16mm PCB Mounted Pots (100kA, 20kW):

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

The 10kC pots are really hard to get right now. I suggest using 10kB as a sub:

- <http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/>

In case they come back in stock:

- <https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/anti-log-reverse/10k-ohm-anti-log-taper-potentiometer-round-knurled-plastic-shaft-pcb-9mm.html>

As noted, the 1MD and dual 10kC pot are included with this project. The 1MD is a 1MA but with a tighter tolerance (10% vs 20%). The dual 10kC is a custom order by VFE which I was able to acquire. This dual gang pot is different than ones you have seen before in that it has only five legs instead of six. This is because the wipers of the two pots are joined together. So, the individual pots are *right and left* instead of top and bottom. Peter is quite serious about getting the right part for the job!

The 10kC pots are really hard to get ATM so 10kB is what I used in my build. Another alternative would be using a higher value C taper pot and putting a resistor across pins 1 and 3 of the pot to lower its total resistance. For example, with a 100kC you could put either a 10k or 12k in parallel to drop the pot's resistance to approximately 10k. How well this works in the circuit I cannot say, but math say it do.

I take a (very) small exception with the naming of the Hi and Lo Cut controls. With the Hi Cut the amount of treble content increases as you turn it CW which is somewhat counter-intuitive to what we might think of as "cut". Maybe "contour" would be a better name. I dunno. But, this is really minor.

With the Lo Cut, it does reduce lows as it is turned CW as one expects, however it also greatly reduces the volume, too. This is due to the minimal values of the "LOW" resistor in series with the Lo Cut pot. It results in some signal bleeding to ground as the pot is turned full up. Of course, the circuit itself has a lot of output (esp. when you turn up the Tone control). Still, it might be worth experimenting with higher values of the LOW resistor to see what kind of results are possible. I'm thinking 2k2 or 4k7.

I socketed all the components related to the variations and you can certainly do that as well. But, you might want to leave enough lead on your components so that you can solder one leg of each to its socket (after you picked your preferred version). This will keep those pesky resistors and caps from falling out when you are going hardcore in your doom rock cover of "Everyone Wants to Rule the World" at the local YMCA.

(just kidding you probably play much better gigs than that)

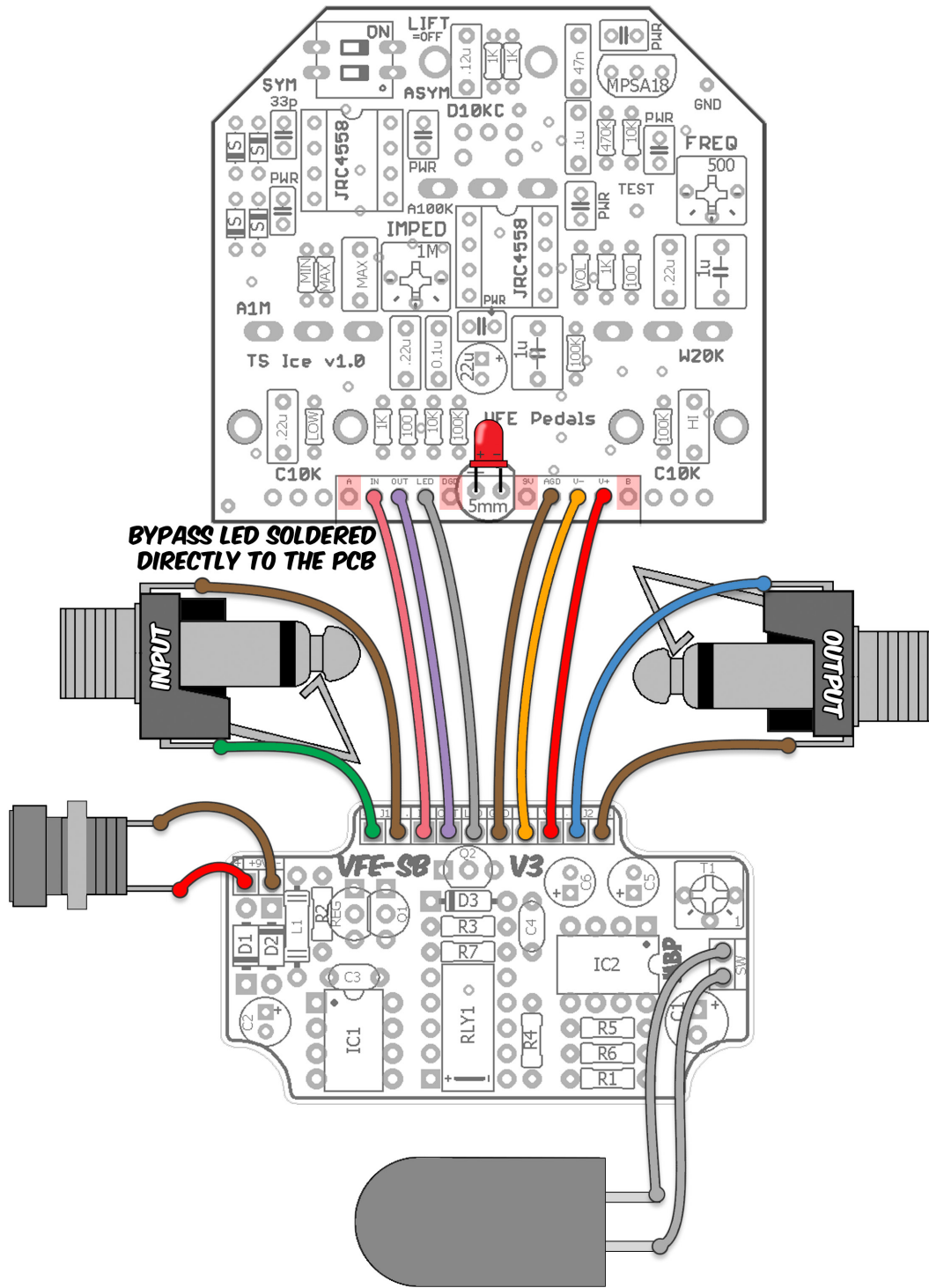
For a good explanation of the versions, forum member Aentons was kind enough to post a breakdown taken from Peter, himself.

<https://www.madbeanpedals.com/forum/index.php?topic=30859.0>

This part is noteworthy: *"The final run ... will also have the extended EQ and gain range of the sherbet version, but will be setup with the asymmetrical clipping of the mint version (clipping configuration can still be changed with internal DIP switches)."*



Control layout



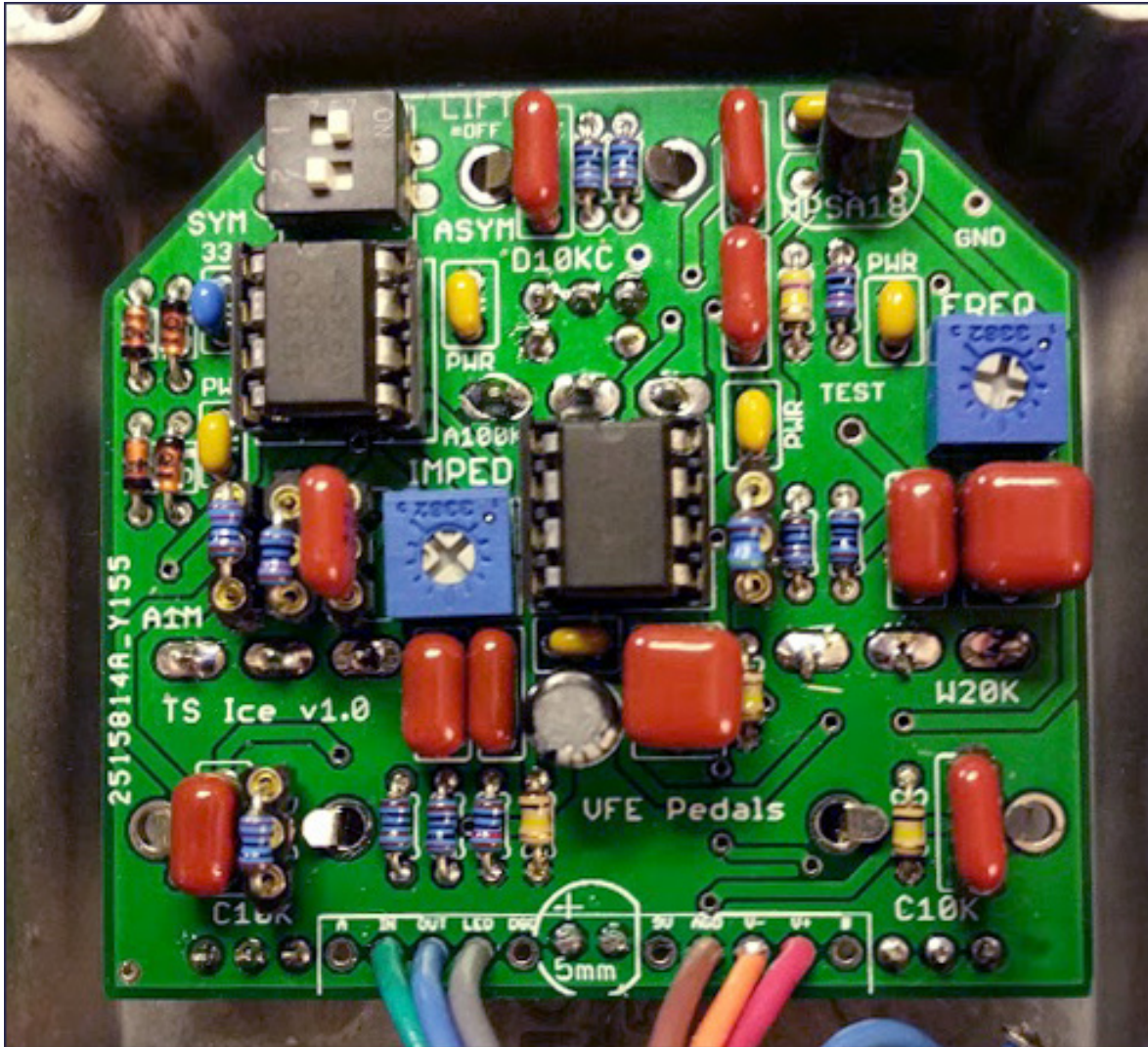
The Ice Scream uses the dual rail option on the Switching Board (+/-9v) so be sure to include those parts. Please see the switch board documentation for details.

The areas in the red square should be left unconnected.

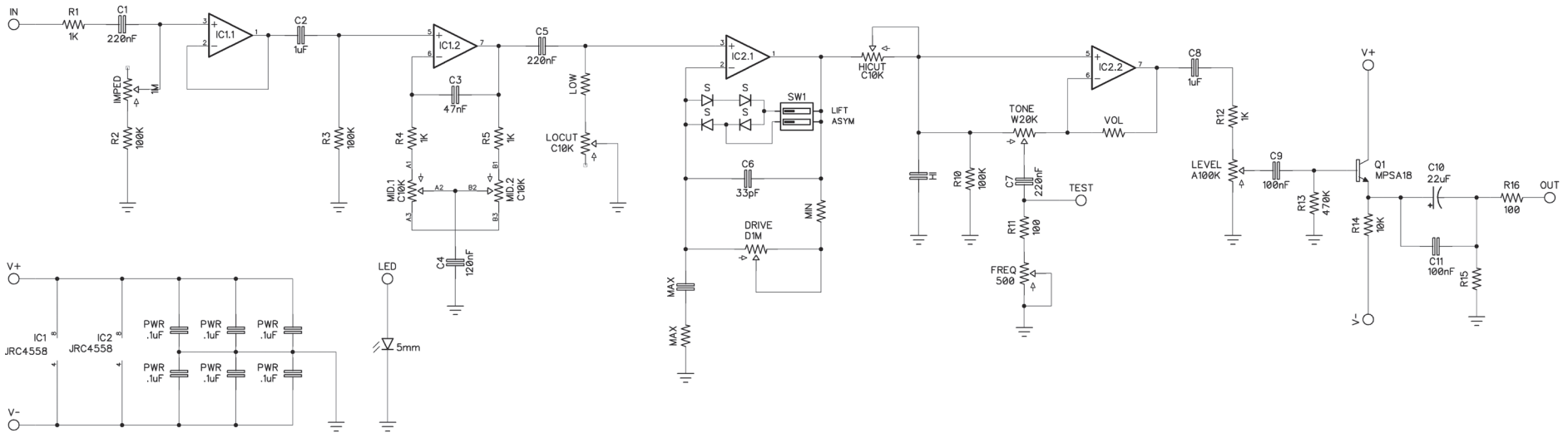
IC1	4558	IC1	4558	Q1	MPSA18
1	15mV	1	0	C	8.88
2	15mV	2	0	B	-367mV
3	15mV	3	0	E	-0.98
4	-8.6	4	-8.6		
5	0	5	0		
6	0	6	0		
7	0	7	0		
8	8.88	8	8.88		

All knobs set to their middle position.
 IC2 is the 4558 on the upper left of the PCB.

Current Draw: 20mA
 DC Supply: 9.42v One Spot



I left all the components related to the different versions socketed while I worked through which version I liked best. Once I settle on that I will solder one leg of each part to its socket (much easier than trying to remove them all!)



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Component Variations for Different "Flavors"

VANILLA
Resistors LOW = 1K, VOL = 4.7K, MIN = MAX = 10K
Capacitors MAX = 0.1uF, HI = 47nF

MINT
Resistors LOW = 1K, VOL = 2.2K, MIN = MAX = 4.7K
Capacitors MAX = 0.22uF, HI = 47nF

SHERBET
Resistors LOW = 470, VOL = 1K, MIN = MAX = 2.2K
Capacitors MAX = 0.47uF, HI = 0.1uF