Changes: -00 to -01:
 * Clamp diodes on op-amp input.
 * Add cap on XMEGA reset pin
 * Route PULSEIN to XMEGA pin to monitor pulse length
 * Add buffer on PULSEIN pin
 * Check PULSEIN pin routing
 * Check GND plane, break maybe

 * Fix VSSA connects to MOSFET Drain
 * Drain resistor changed from 2x 120K to 2x 200k
 * Fix op-amp feedback connections on current monitor
 * Add LED on front panel driven by "charge" signal
 * Remove U7
 * Reduce adjustable voltage range
 * Fix power jack footprint
 * Change to single pushbutton P/N KSC741J LFS
 * Change current-limiting resistor values (measure = 0.02, limiter = 0.1)
 * Add 32MHz oscillator
 * Change R64 to 2k2
 * Add fan controller
 * Increase inductor current handling capability

Changes -01 to -02:
 * Internal release/ Version Numbering

Changes: -02 to 03:
 * Dump/clamp diode P/N change for faster diode
 * Remove +/-15V DC-DC, change measurement circuitry to be like 10x probe tip
 * Change DB15 to RJ11 style connector
 * Add SMA for pulse-in, with 50 ohm option, use LVDS for routing closer to XOR gate
 * Add termination on internal digital signals
 * Add slow/fast MOSFET rise-time circuit
 * Change bleed resistor values again (200K - > 300K for slow bleed, 33K -> 120K for fast bleed)
 * Change bleed NPN to MOSFET (due to potentially exceeding Vce rating of NPN)

Changes -03 to -04:
 * Fix LVDS P/N pin swap
 * PCB completely rerouted
 * Fix missing PULSEIN connection to XMEGA
 * Add LDO to generate MOSFET bootstrap as regulated 16V supply

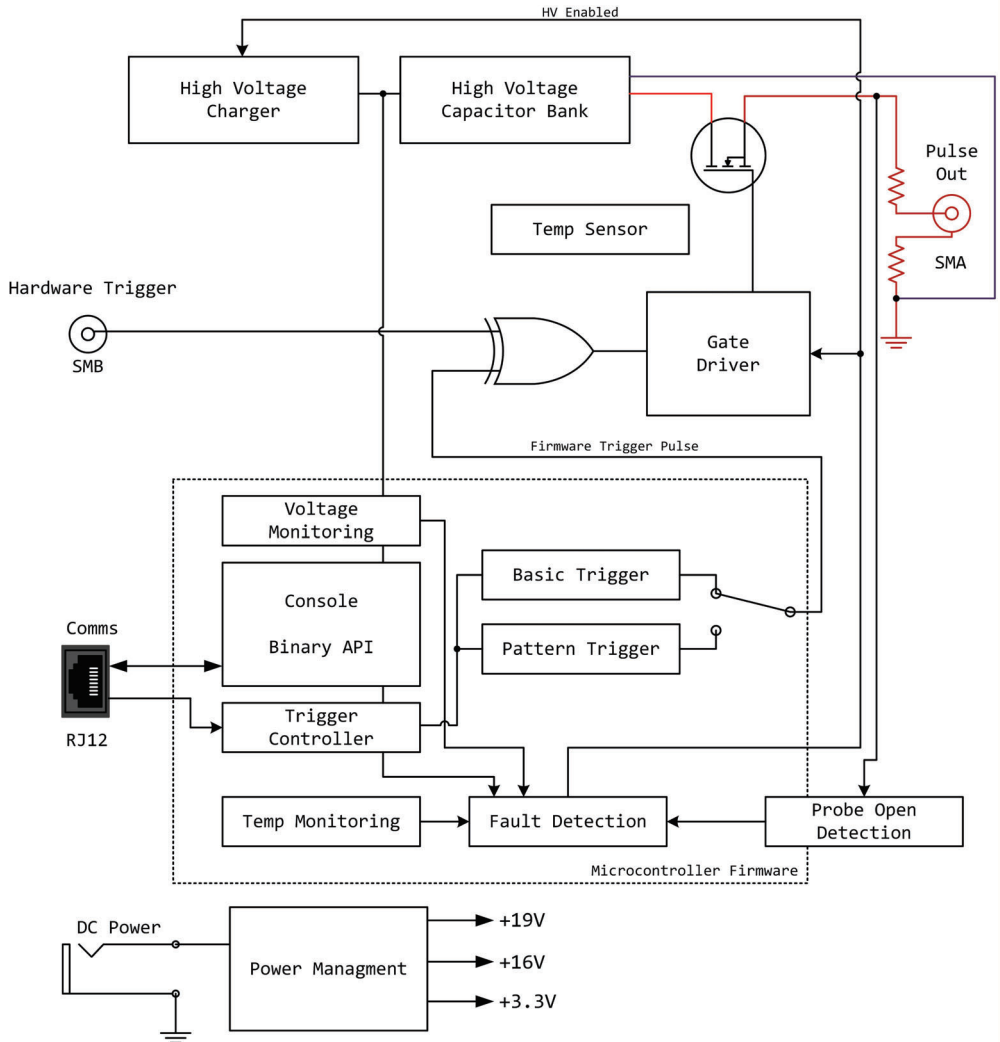
Changes -04 to -05:
 * Change input to 19V
 * Add ferrite beads on MOSFET gate
 * Change LDO type to lower-dropout, smaller footprint
 * Change input rev-pol MOSFET to T/H for better layout

Changes -05 to -06:
 * Change MOSFET driver to include PNP switch-off transistor
 * Layout improvements
 * Addition of ESD blocking diodes on dirty signals

Changes -06 to 07:
 * Improve saftey factor of power measurement capacitors (2x caps in series)
 * Fix resistor values around detection of charge finished
 * Change MOSFET P/N for relay (and other switches) which has 30V rating instead of 20V
 * Change feedback resistors (1K5 --> 1K8)
 * Change SMA on PULSE-IN to SMB (avoid same connector as HV)

Changes in 07A (Production, no PCB changes):
 * Change HV feedback resistors to 820K due to supply issues (also change HV feedback as needed)
 * Change PDZ12B to PDZ10B due to supply issues
 * Change 20:1 v-mon capacitor + saftey resistor value tuning
 * Change R12: 36K --> 39K
 * Change R18,R22: 270K --> 220K (prevent UV lockout during intense pulse firing)

Changes in 07B (Production):
 * Change R1 to 1k4 (firmware was built assuming 1k4, incorrectly specified as 1k3 in latest 07A release)



SUBS:

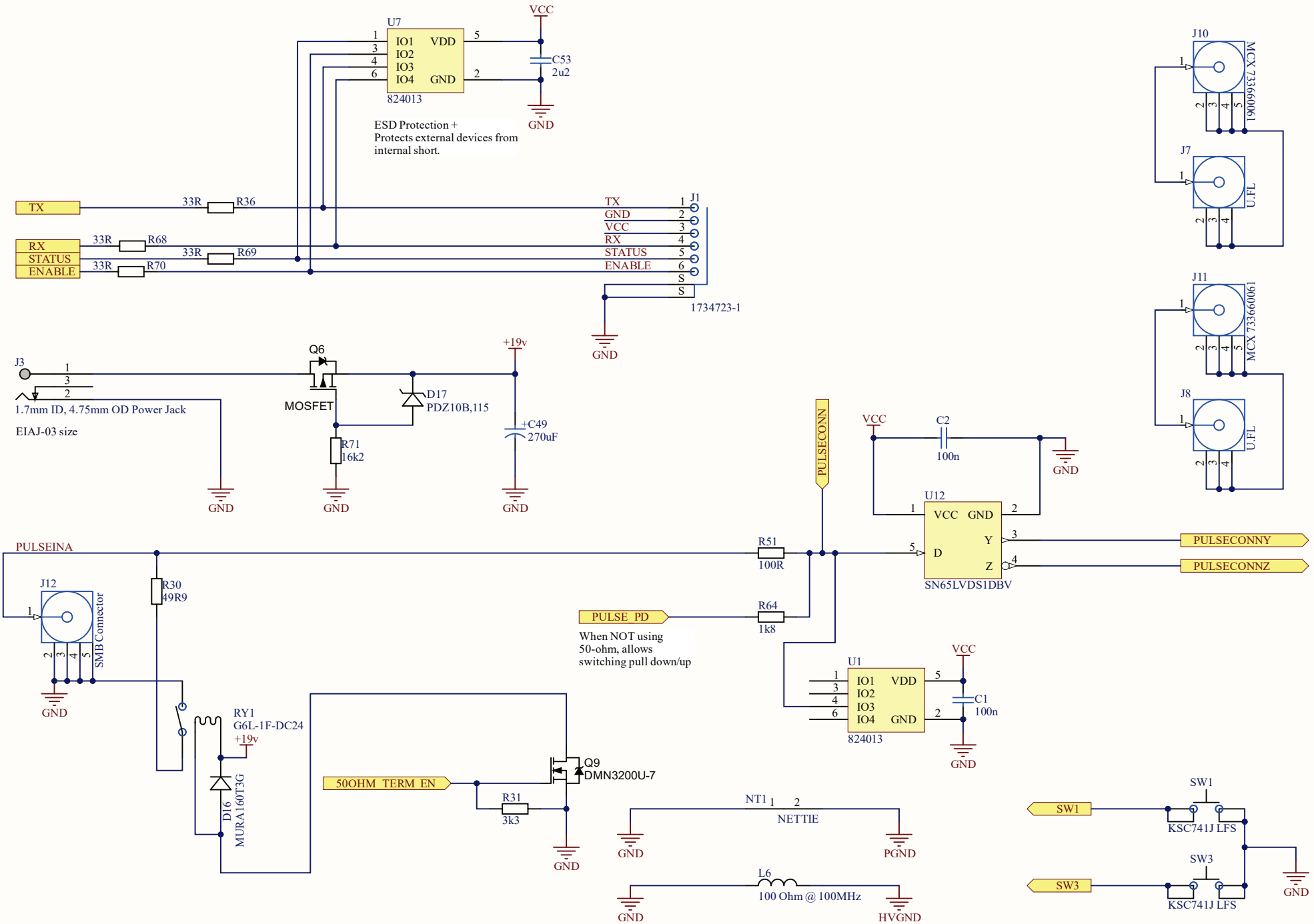
PDZ10B,115 <--> PDZ12B,115

For 750K/820K HV resistors (sub ALL):

R1	1k4	1k4
R2	820k	750k
R24	820k	750k
R27	82k	30k
R41	820k	750k
R42	820k	750k

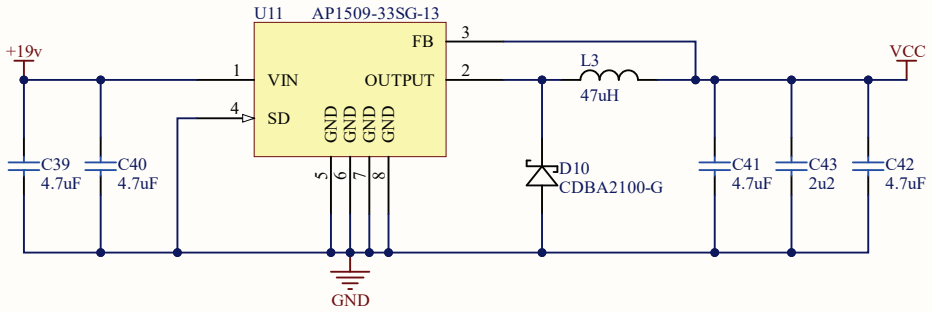
Lead Designer: Colin O'Flynn

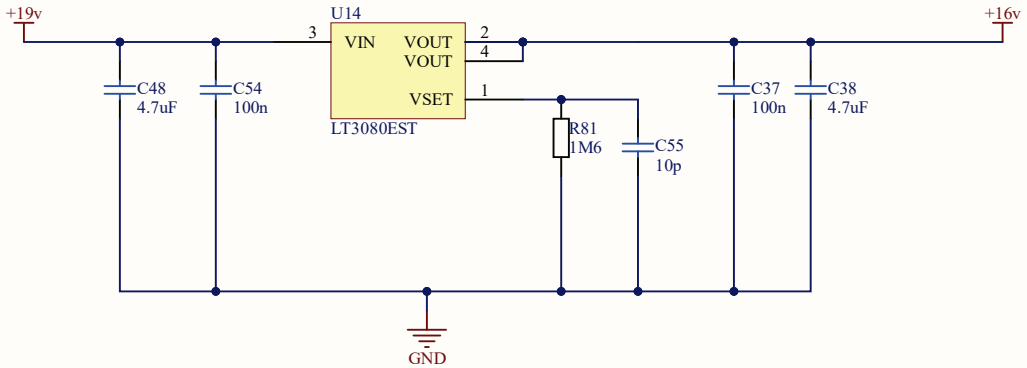
Title: Title Page		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:01 PM	Sheet 1 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520 titlepage.SchDoc			

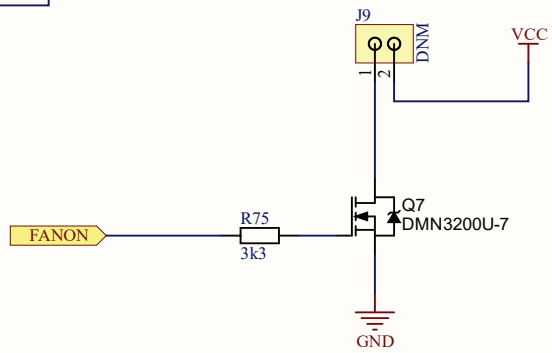


BOMITEM1	BOMITEM2	BOMITEM3	BOMITEM4	BOMITEM5	BOMITEM6	BOMITEM7
BOM	BOM	BOM	BOM	BOM	BOM	BOM
1455C1201RD	PLP2-125	PLP2-125	PLP2-125	PLP2-125	PLP2-125	

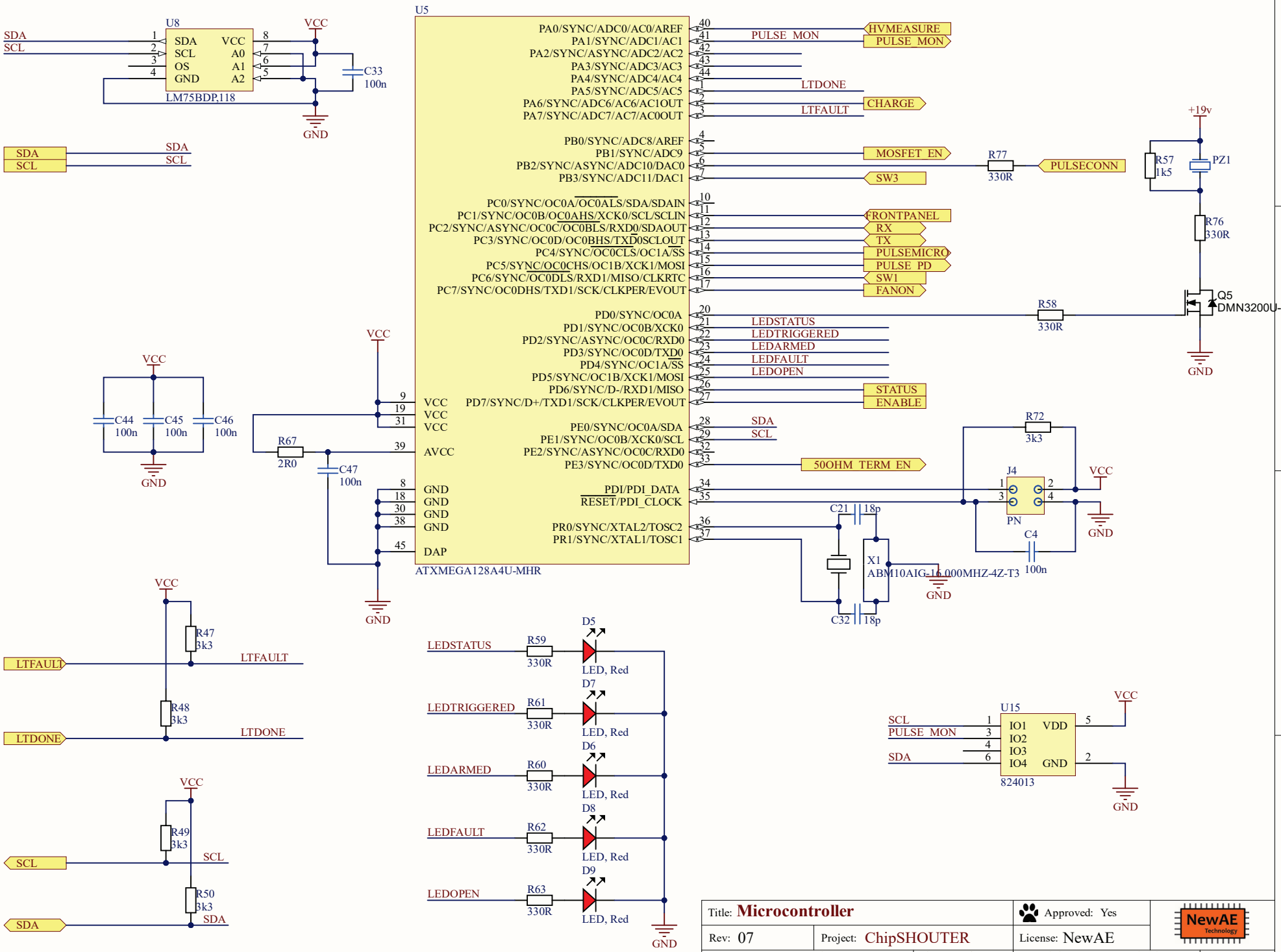
Title: **Rear Connectors, Power, Mechanical**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:01 PM	Sheet2 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520 connectors.SchDoc			



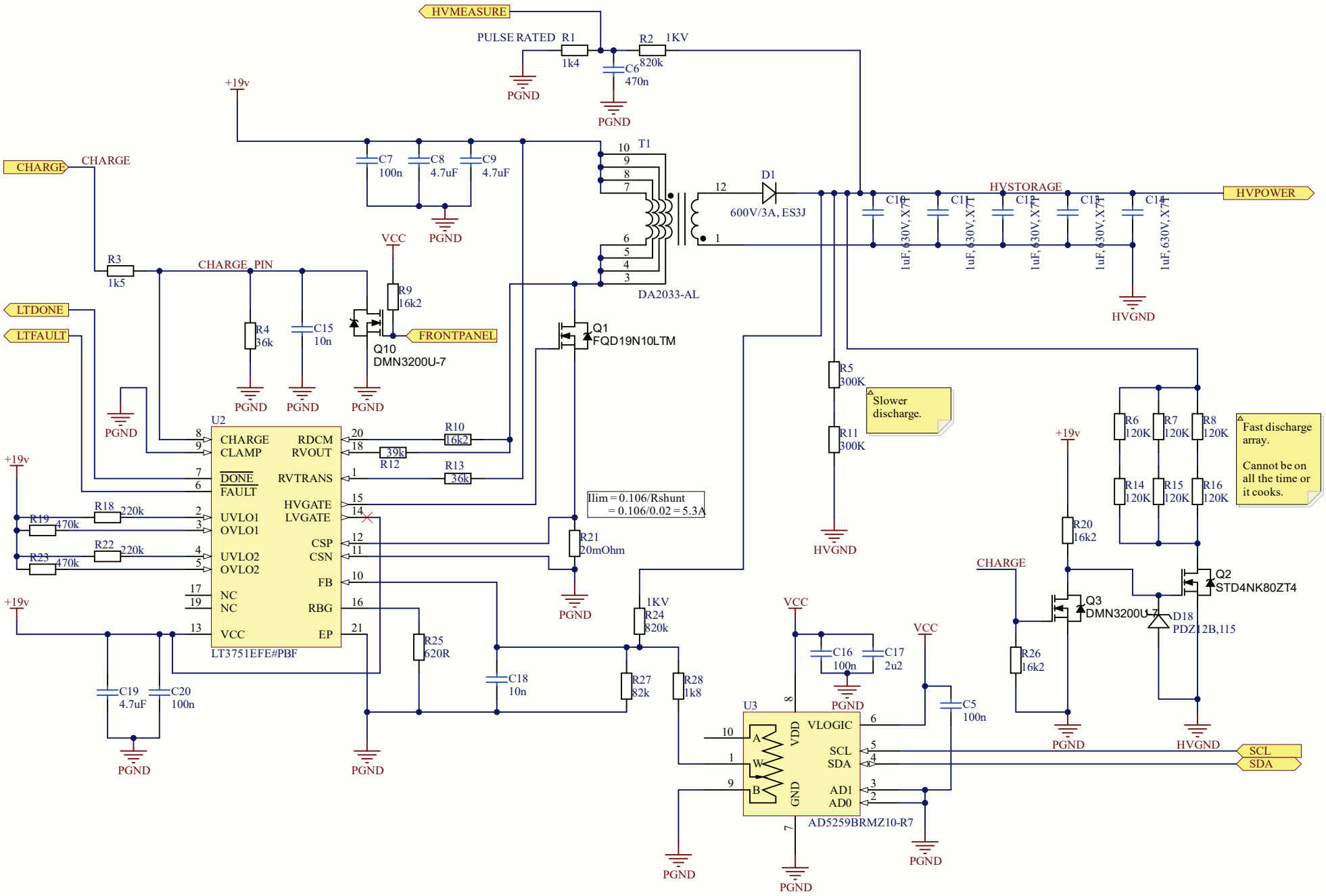




Title: **Power Regulators**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12 Time: 1:38:01 PM	Sheet3 of 8	Copyright © NewAE Technology Inc.	NewAE.com
File: cw520_power.SchDoc			

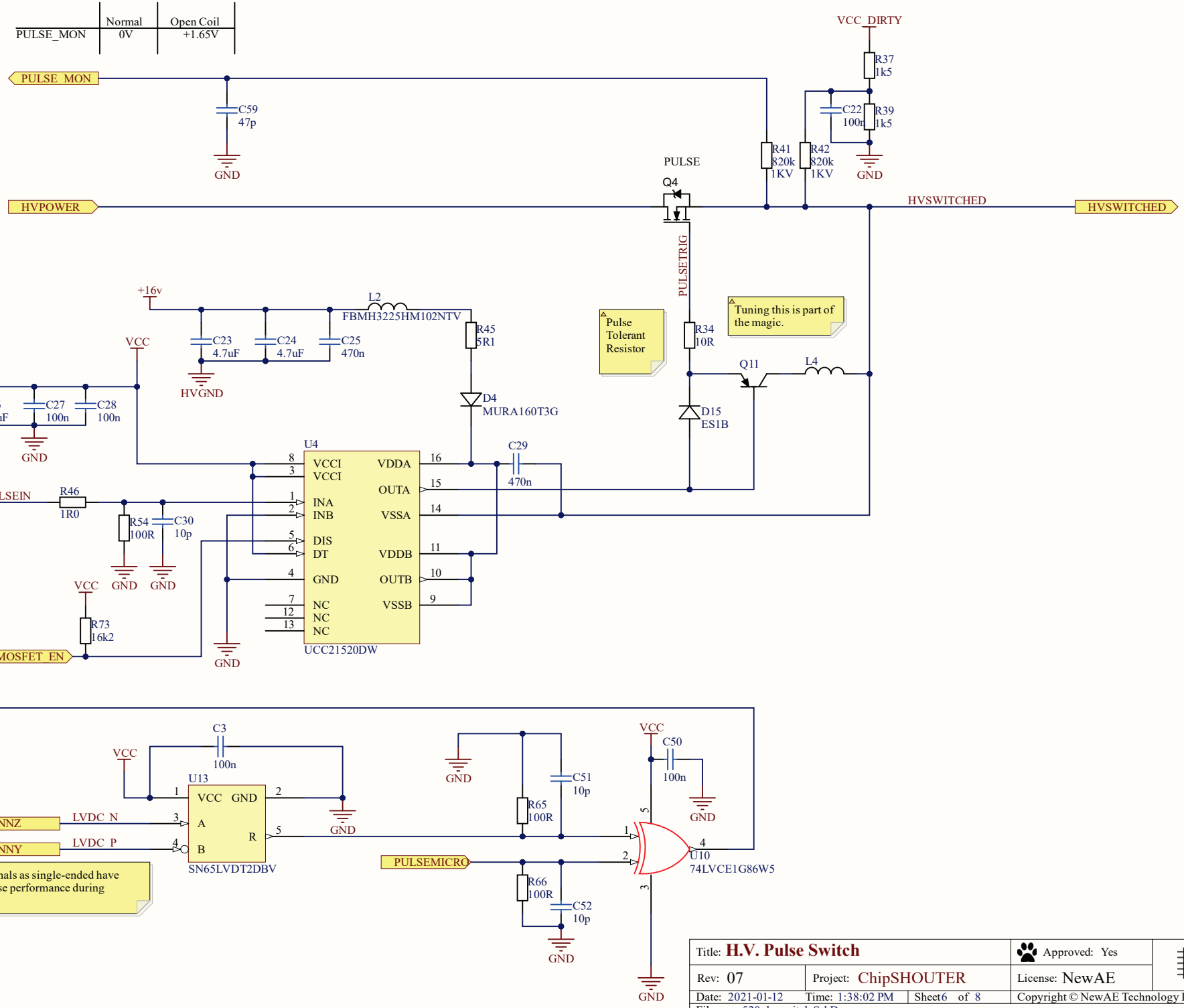


Title: **Microcontroller**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:01 PM	Sheet4 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520 microcontroller.SchDoc			

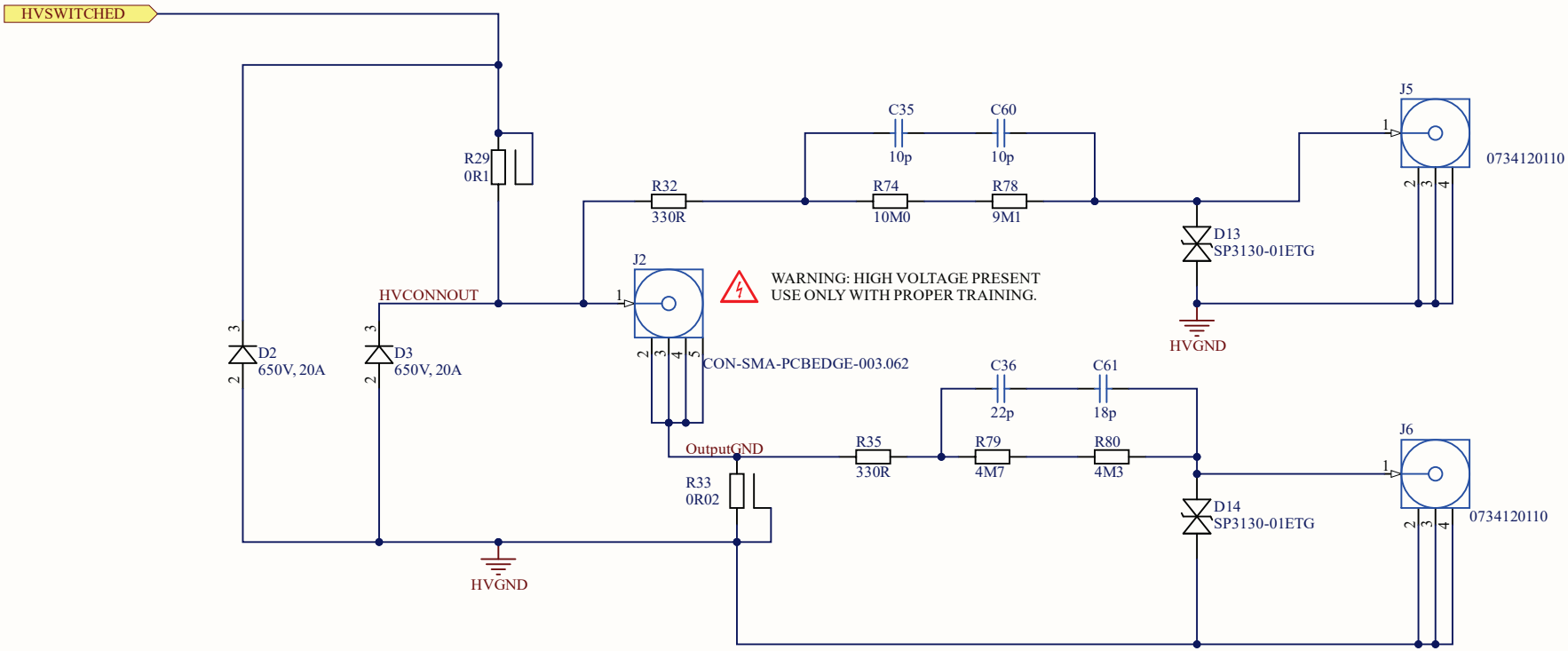


Title: **H.V. Generator**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:02 PM	Sheet5 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520_hvcharger.SchDoc			

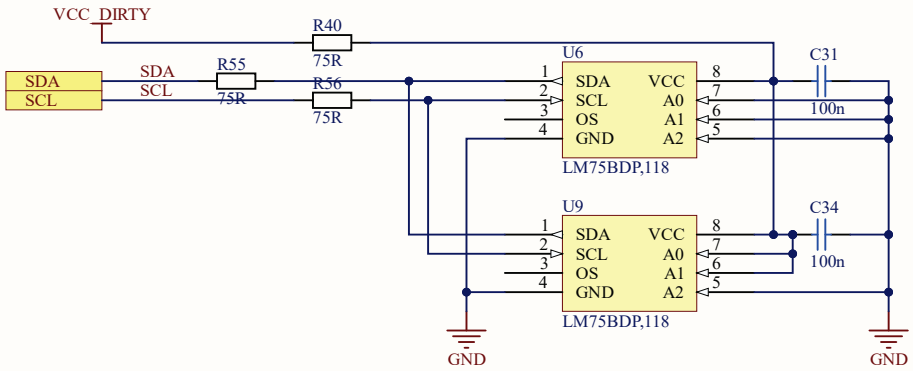
PULSE_MON	Normal	Open Coil
	0V	+1.65V



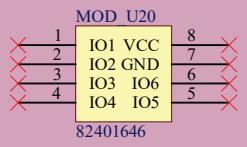
Title: **H.V. Pulse Switch**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:02 PM	Sheet6 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520_hvswitch.SchDoc			



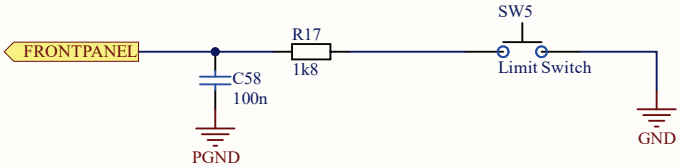
Title: **H.V. Connector, Measuring Buffers**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:02 PM	Sheet 7 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520_hvconnector.SchDoc			

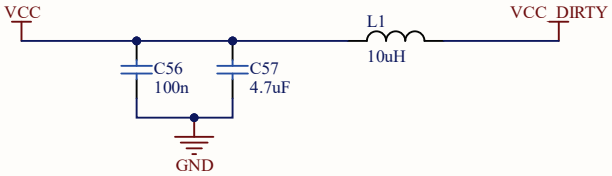


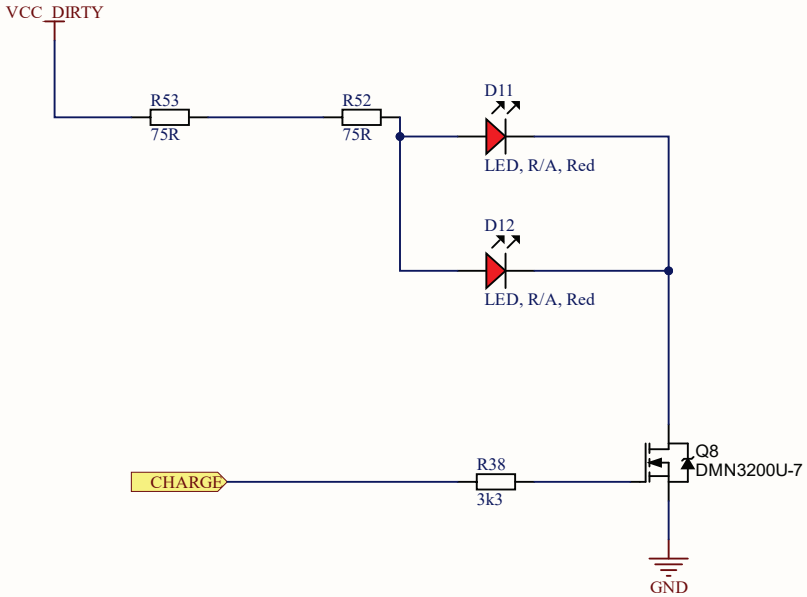
MANUFACTURING NOTE



MOD_U20 is soldered piggy-back on U6.
Bend leads down to make connection.
Pin-1 alignment is same on piggy-back device.







Title: **Interlock Switch, LED**		Approved: Yes	NewAE Technology
Rev: 07	Project: ChipSHOUTER	License: NewAE	
Date: 2021-01-12	Time: 1:38:02 PM	Sheet 8 of 8	Copyright © NewAE Technology Inc. NewAE.com
File: cw520_saftey.SchDoc			