Nov. 24, 2009
R121 added and
value of R120 increased
to move TRACK pin above
700mV in normal operation.

U101 thru U401 must have address pin currents properly trimmed,
parts delived Nov. 2009 did not

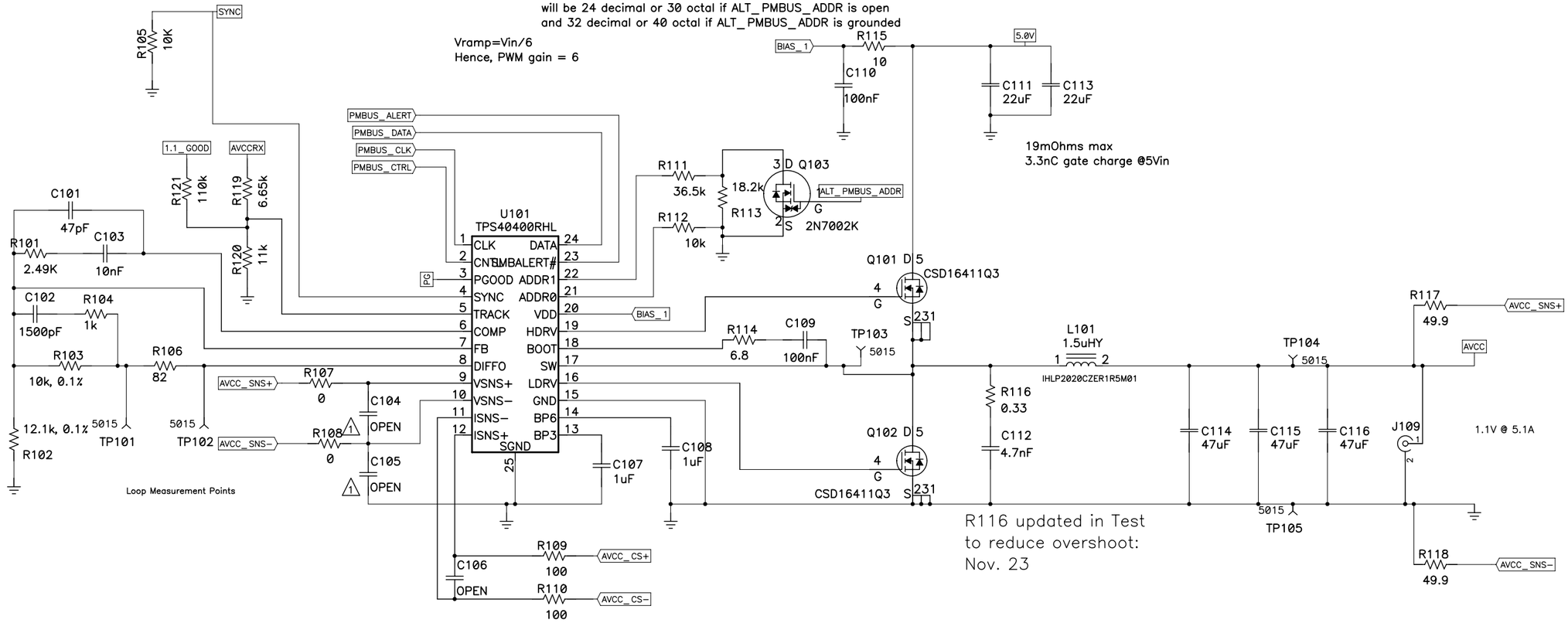
Switching losses
5Vin, 5.1A, 500kHz = 191mW
hi side cond. losses = 119mW
or total Q101 losses = 310mW

Q102 cond. losses: 386mW max
gate drive losses = 16.5mW

With resistor values shown
PMBus address for this channel
will be 24 decimal or 30 octal if ALT_PMBUS_ADDR is open
and 32 decimal or 40 octal if ALT_PMBUS_ADDR is grounded

Vramp=Vin/6
Hence, PWM gain = 6

19mOhms max
3.3nC gate charge @5Vin



R116 updated in Test
to reduce overshoot:
Nov. 23

For U101: TPS40400RHL must be version 4.1 or later

Modified from HPA351 rev E2 by Todd Bellefeuille

TEXAS INSTRUMENTS

Title	4 outputs off 5Vin with PMBus	
Size C	Number PMP5098	Rev C
Date June 1, 2011	Drawn by Josh Mandelcorn	
Filename PMP5098 revC.SCH	Sheet 1 of 5	

AVCC 1.1V 5.1A

Switching losses
5Vin, 3.45A, 500kHz = 129mW
hi side cond. losses = 117mW
or total Q201 losses = 246mW

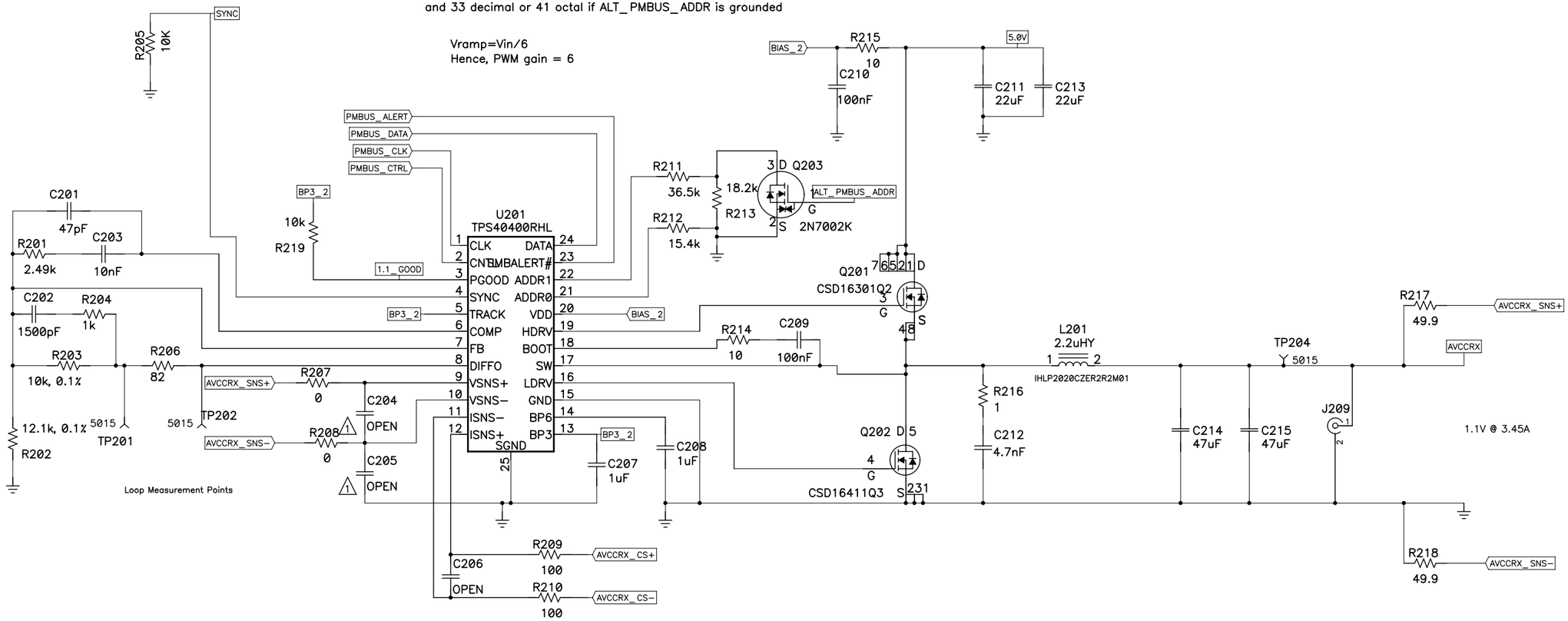
Q202 cond. losses: 176mW max
gate drive losses = 14mW

2.2nC gate charge
41mOhms Rds max

19mOhms max
3.3nC gate charge @5Vin

With resistor values shown
PMBus address for this channel
will be 25 decimal or 31 octal if ALT_PMBUS_ADDR is open
and 33 decimal or 41 octal if ALT_PMBUS_ADDR is grounded

Vramp=Vin/6
Hence, PWM gain = 6



For U201: TPS40400RHL must be version 4.1 or later

AVCCRX 1.1V 3.45A

TEXAS INSTRUMENTS

Title: 4 outputs off 5Vin with PMBus		
Size: C	Number: PMP5098	Rev: C
Date: June 1, 2011	Drawn by: Josh Mandelcorn	
Filename: PMP5098 revC.SCH	Sheet: 2 of 5	

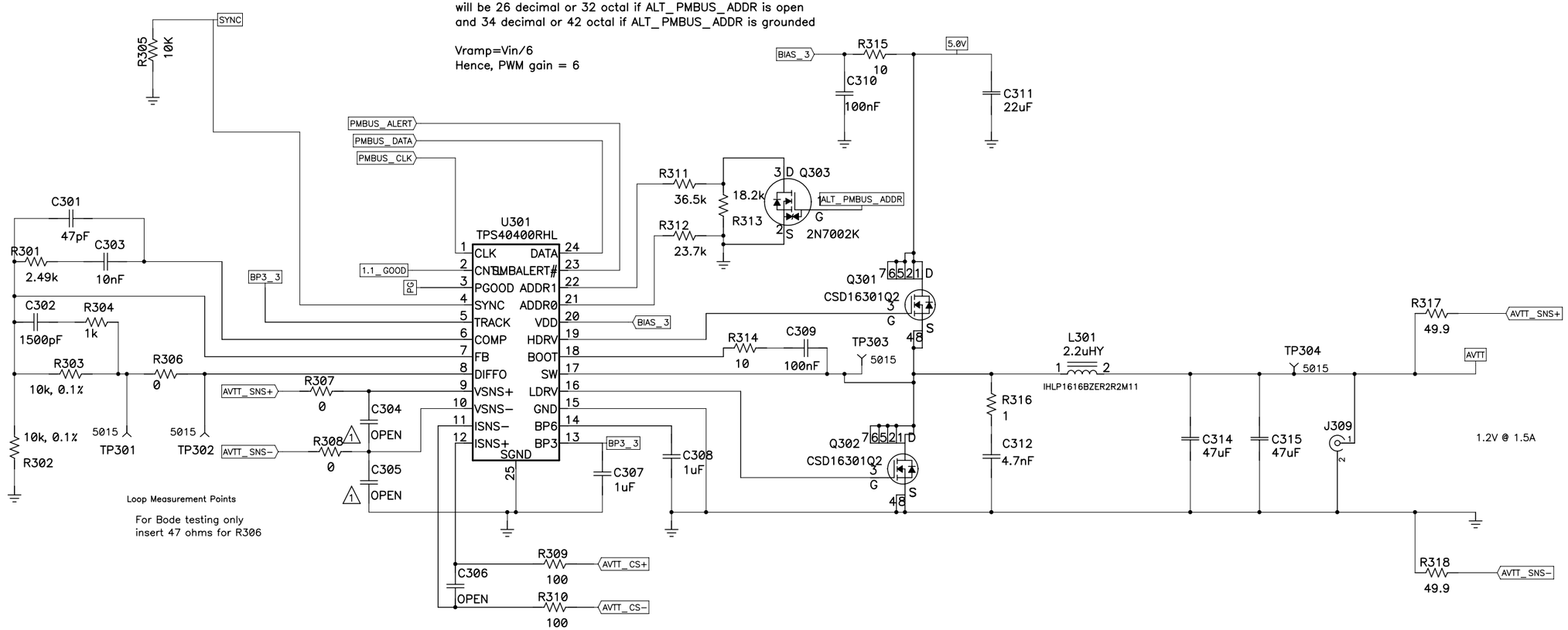
Switching losses
5Vin, 1.5A, 500kHz = 56mW
hi side cond. losses = 24mW
or total Q301 losses = 80mW

2.2nC gate charge
41mOhms Rds max

Q302 cond. losses: 70mW max
gate drive losses = 11mW

With resistor values shown
PMBus address for this channel
will be 26 decimal or 32 octal if ALT_PMBUS_ADDR is open
and 34 decimal or 42 octal if ALT_PMBUS_ADDR is grounded

Vramp=Vin/6
Hence, PWM gain = 6



Loop Measurement Points

For Bode testing only
insert 47 ohms for R306

For U301: TPS40400RHL must be version 4.0 or later

AVTT 1.2V 1.5A

TEXAS INSTRUMENTS

Title	4 outputs off 5Vin with PMBus		
Size C	Number PMP5098		Rev C
Date June 1, 2011		Drawn by Josh Mandelcorn	
Filename PMP5098 revC.SCH		Sheet 3 of 5	

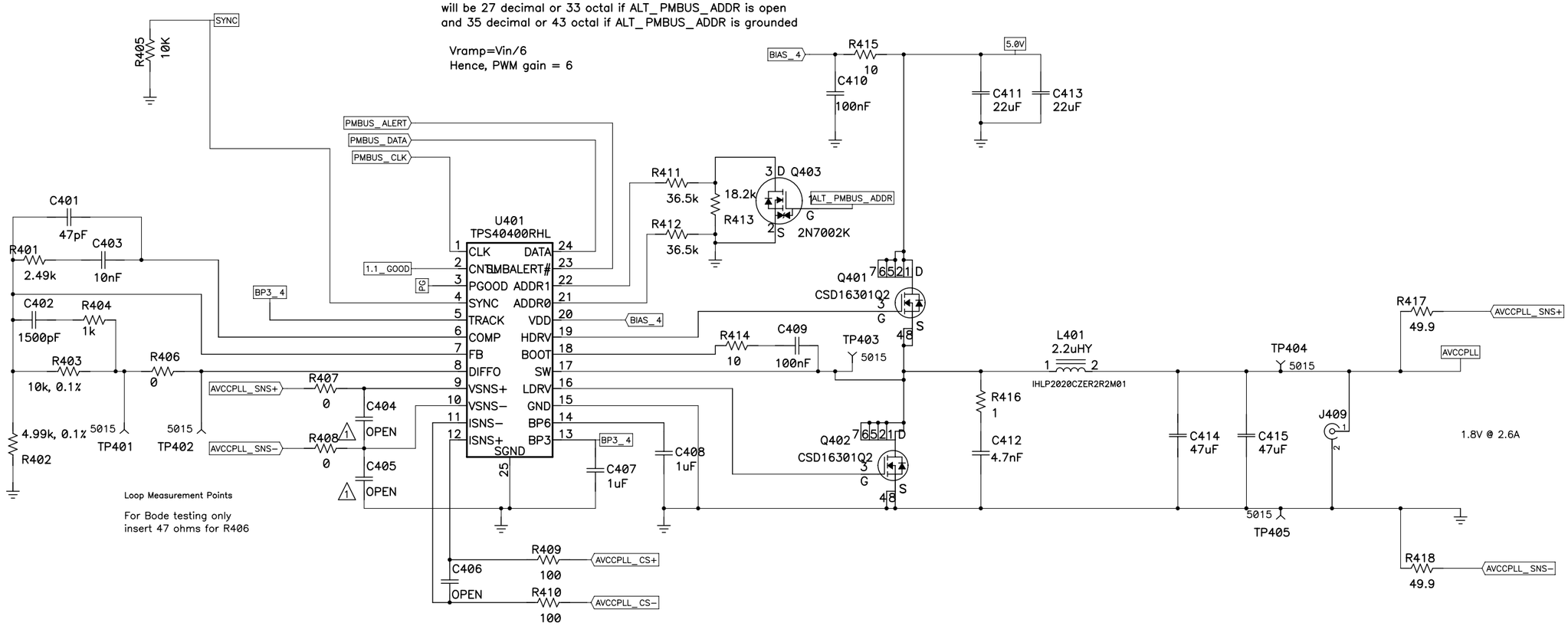
Switching losses
5Vin, 2.6A, 500kHz = 98mW
hi side cond. losses = 105mW
or total Q401 losses = 203mW

2.2nC gate charge
41mOhms Rds max

Q402 cond. losses: 177mW max
gate drive losses = 11mW

With resistor values shown
PMBus address for this channel
will be 27 decimal or 33 octal if ALT_PMBUS_ADDR is open
and 35 decimal or 43 octal if ALT_PMBUS_ADDR is grounded

Vramp=Vin/6
Hence, PWM gain = 6



For U401: TPS40400RHL must be version 4.0 or later

AVCCPLL 1.8V 2.6A

TEXAS INSTRUMENTS

Title: 4 outputs off 5Vin with PMBus		
Size: C	Number: PMP5098	Rev: C
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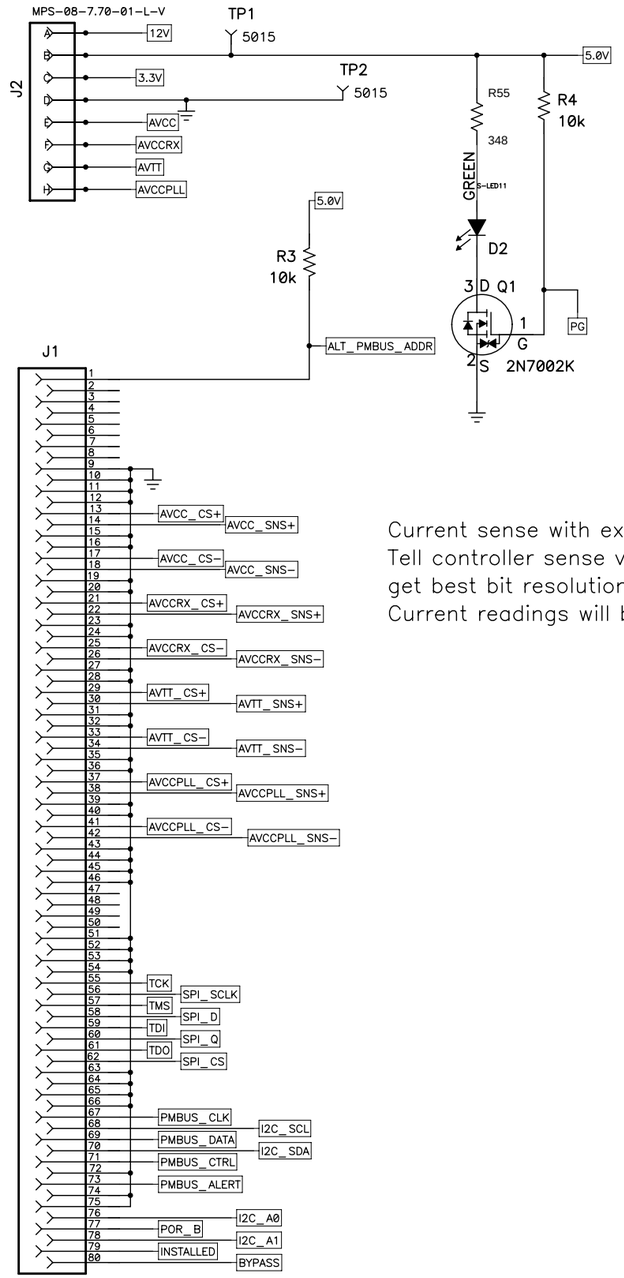
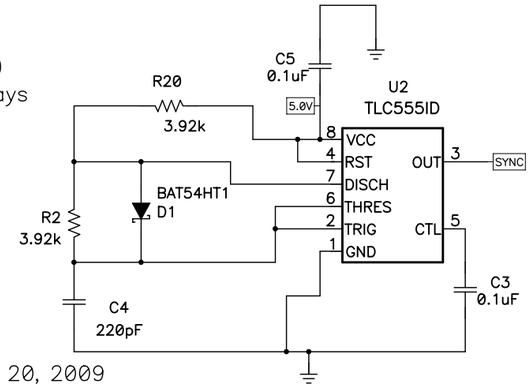
Filename: PMP5098 revC.SCH		Sheet 4 of 5

For signal names specific to each of the 4 channels:
The "MGTH" prefix has been removed.



Target 500kHz PWM
period = 0.7*C4*(R20+R2)
plus about 600nsec of delays

At 500kHz target internal
delays are significant and
need to be accounted for
in setting frequency



Nov. 20, 2009
R2, R20, C4 adjusted in Test
to get near 500kHz

Current sense with external 5mOhms sense resistors:
Tell controller sense value is 1.952mOhms to
get best bit resolution of 24.4mA per bit. (122uV per bit)
Current readings will be scaled by 62.5/24.4 or 5/1.952 or by 2.561

plan is to start up all channels
at 400kHz and sync up to 500kHz
from this TLC555

conn. & sync

TEXAS INSTRUMENTS

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Filename: PMP5098 revC.SCH		Sheet: 5 of 5	

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