

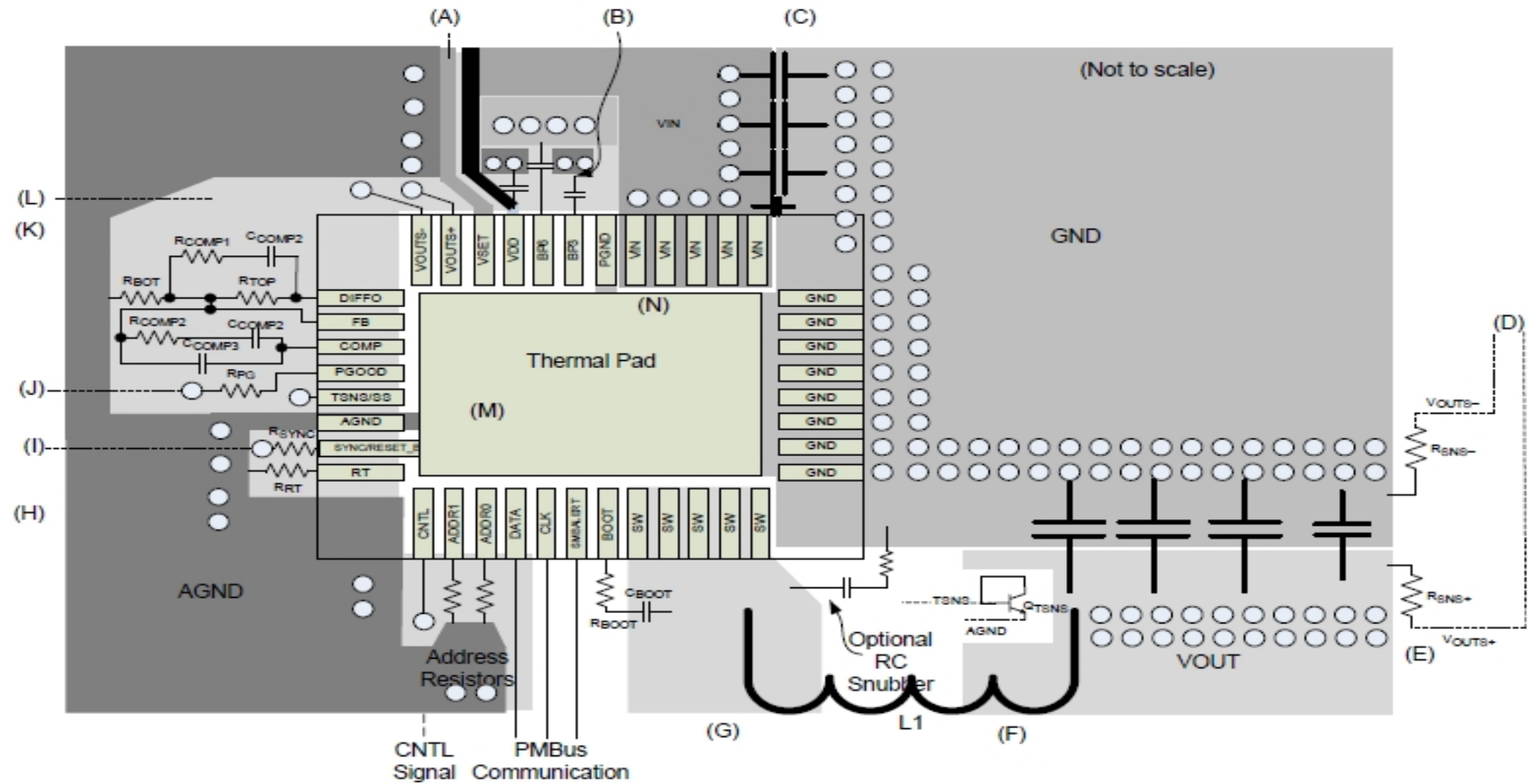
66AK2H14 ARM+DSP
Smart Reflex
0.8V – 1.1V

LAYOUT NOTES:

Place the LM10011 close to the regulator feedback pin to minimize the FB trace length.

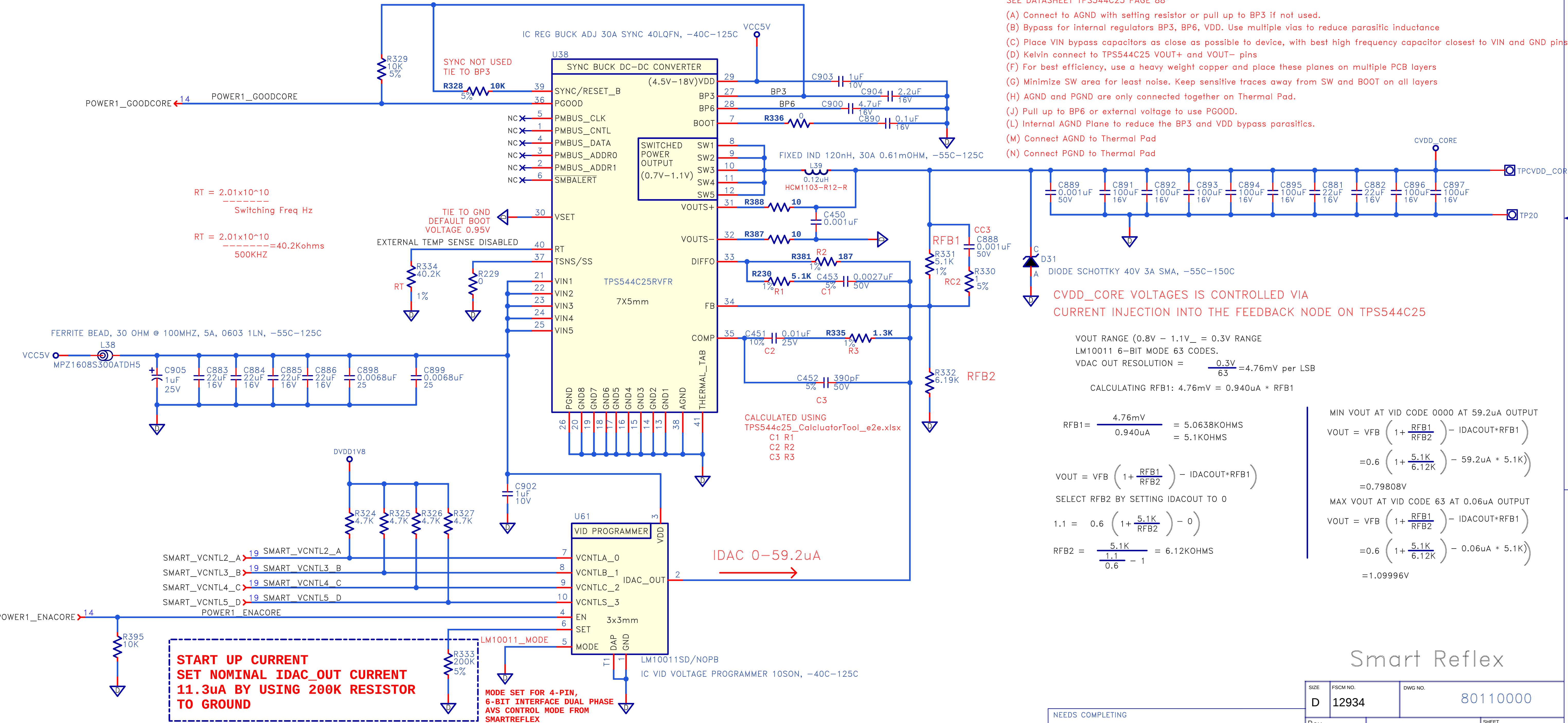
The high-current path from the board input to the load and the return path should be parallel and close to each other to minimize loop inductance.

The ground connections for the various components around the LM10011 should be connected directly to each other, and to the LM10011 GND pins, and then connected to the system ground at one point. Do not connect the various component grounds to each other through the high-current ground line.



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- (A) Connect to AGND with setting resistor or pull up to BP3 if not used.
- (B) Bypass for internal regulators BP3, BP6, VDD. Use multiple vias to reduce parasitic inductance
- (C) Place VIN bypass capacitors as close as possible to device, with best high frequency capacitor closest to VIN and GND pins
- (D) Kelvin connect to TPS544C25 VOUT+ and VOUT- pins
- (F) For best efficiency, use a heavy weight copper and place these planes on multiple PCB layers
- (G) Minimize SW area for least noise. Keep sensitive traces away from SW and BOOT on all layers
- (H) AGND and PGND are only connected together on Thermal Pad.
- (J) Pull up to BP6 or external voltage to use PGOOD.
- (L) Internal AGND Plane to reduce the BP3 and VDD bypass parasitics.
- (M) Connect AGND to Thermal Pad
- (N) Connect PGND to Thermal Pad



VOUT RANGE (0.8V – 1.1V₋ = 0.3V RANGE
LM10011 6-BIT MODE 63 CODES.
VDAC OUT RESOLUTION = $\frac{0.3V}{63} = 4.76mV$ per LSB
CALCULATING RFB1: $4.76mV = 0.940uA * RFB1$

$$RFB1 = \frac{4.76mV}{0.940uA} = 5.0638KOHMS = 5.1KOHMS$$

$$VOUT = VFB \left(1 + \frac{RFB1}{RFB2} \right) - IDACOUT * RFB1$$

SELECT RFB2 BY SETTING IDACOUT TO 0

$$1.1 = 0.6 \left(1 + \frac{5.1K}{RFB2} \right) - 0$$
$$RFB2 = \frac{5.1K}{\frac{1.1}{0.6} - 1} = 6.12KOHMS$$

MIN VOUT AT VID CODE 0000 AT 59.2uA OUTPUT
 $VOUT = VFB \left(1 + \frac{RFB1}{RFB2} \right) - IDACOUT * RFB1$
 $= 0.6 \left(1 + \frac{5.1K}{6.12K} \right) - 59.2uA * 5.1K$
 $= 0.79808V$
MAX VOUT AT VID CODE 63 AT 0.06uA OUTPUT
 $VOUT = VFB \left(1 + \frac{RFB1}{RFB2} \right) - IDACOUT * RFB1$
 $= 0.6 \left(1 + \frac{5.1K}{6.12K} \right) - 0.06uA * 5.1K$
 $= 1.09996V$

Smart Reflex

NEEDS COMPLETING

SIZE	FSCM NO.	DWG NO.
D	12934	80110000
Rev	AAAA	08/28/2018:09:18
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