Background – LM5050-1 Leakage Concerns

- Issue happens when IN is left open/GND and OUT+VS are externally supplied
- The leakage is due to a parasitic transistor break down in the reverse comparator input block of the design.
- There will be no reliability concern due to the leakage through this parasitic transistor path.
- To eliminate this current:
  - Disconnect the Vs supply

  OR

  - Place a transistor in series with GND. See customer schematic on last page with this added.

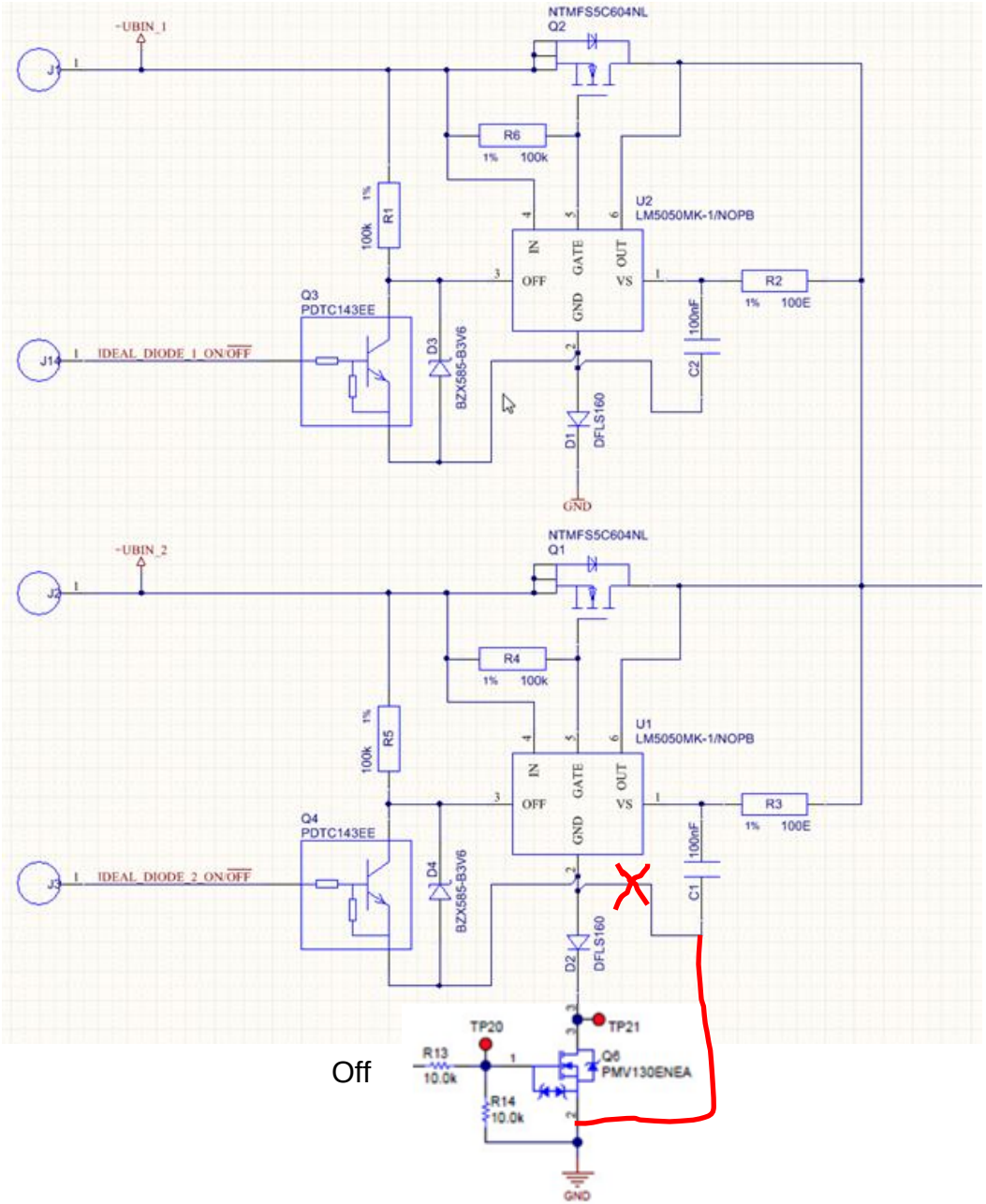
Bench Testing

1. A leakage current ~3mA to 3.5mA range is observed when VOUT=VS is applied externally with VIN floating/grounded. A current of ~370uA flows through VS pin and remaining current flows through the OUT pin

2. It is found that under this condition the current coming out of IN pin is around 45uA. If IN pin is left floating, VIN=GATE voltage increases and gets clamped at ~8.35V.

3. Forcing VIN=0 has very less impact on the leakage current

4. Forcing VS=0 removes all leakage current from VOUT



Off

Can be repeated on top circuit.

D1 and D2 are for reverse voltage, not needed on circuits that don't require this.