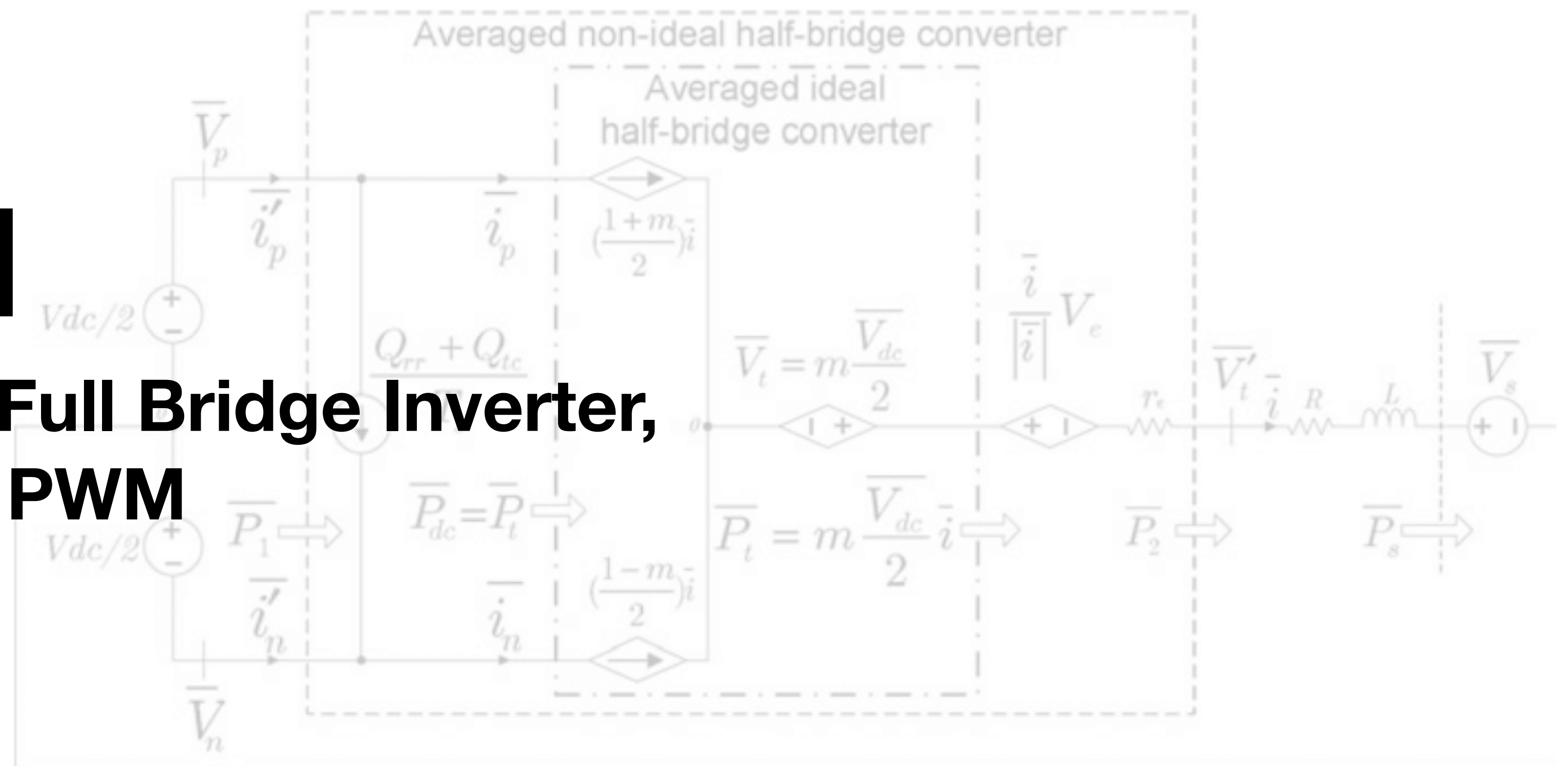


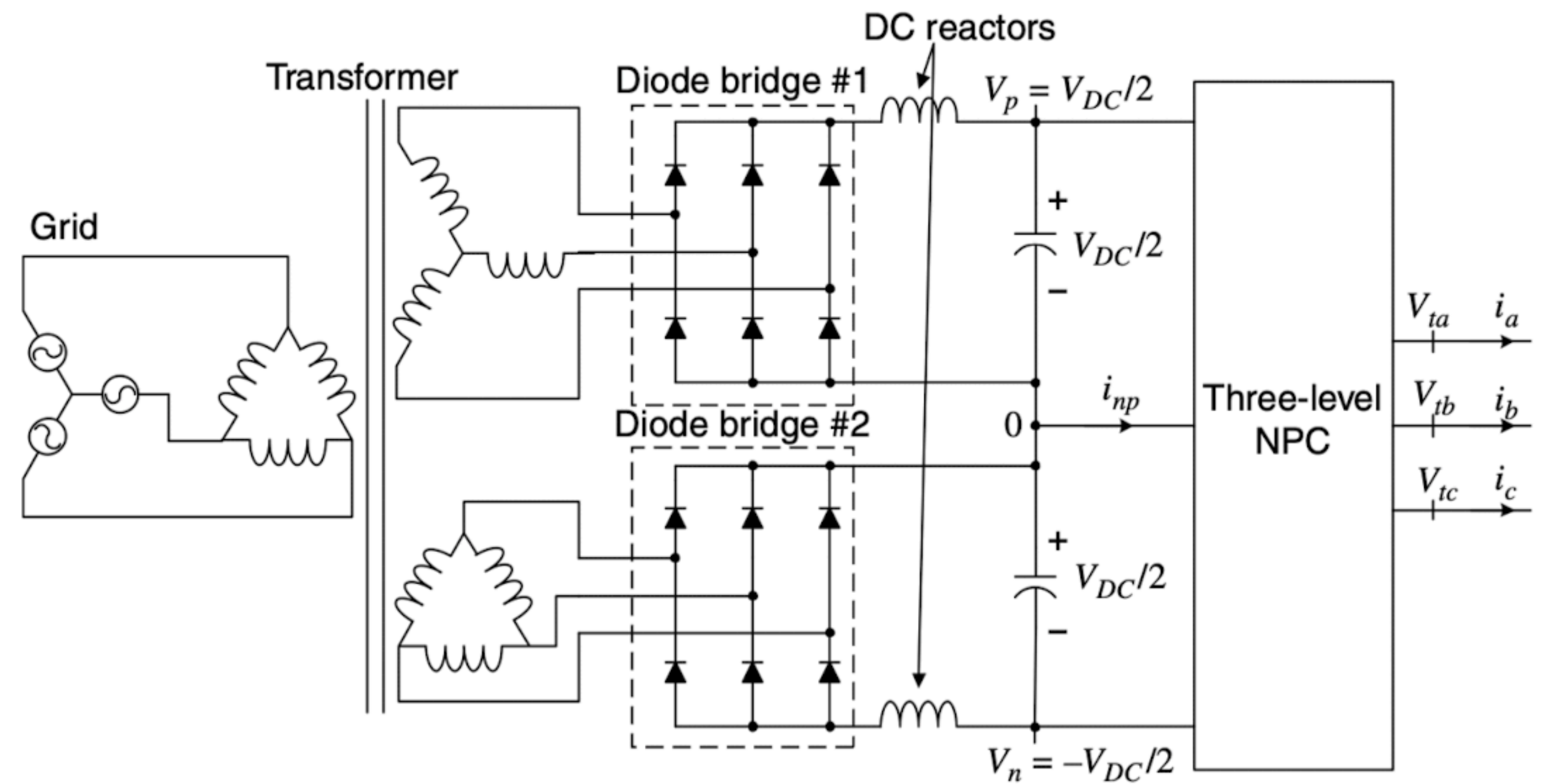
Inverters II

Half-Bridge Inverter, Full Bridge Inverter, Bipolar and Unipolar PWM



인버터

- DC 전압이 AC로 바꾸는 회로
- V_{ref} 과 $V_{carrier}$ 이 필요
- PWM에 의해서 작동
- Single Phase, 3-Phase
- Single Phase 종류:
 - Half Bridge 인버터
 - Full Bridge 인버터

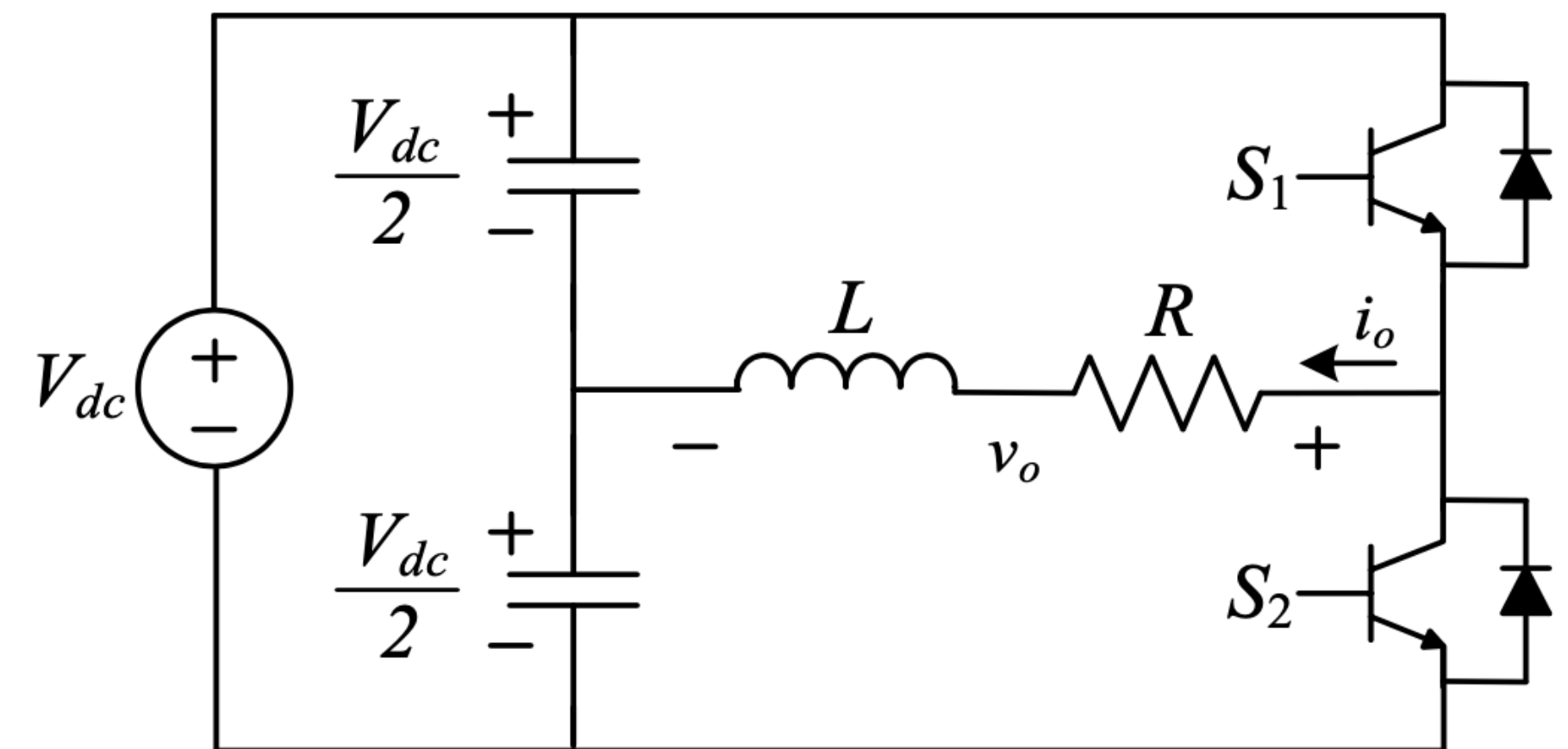


Half Bridge Inverter

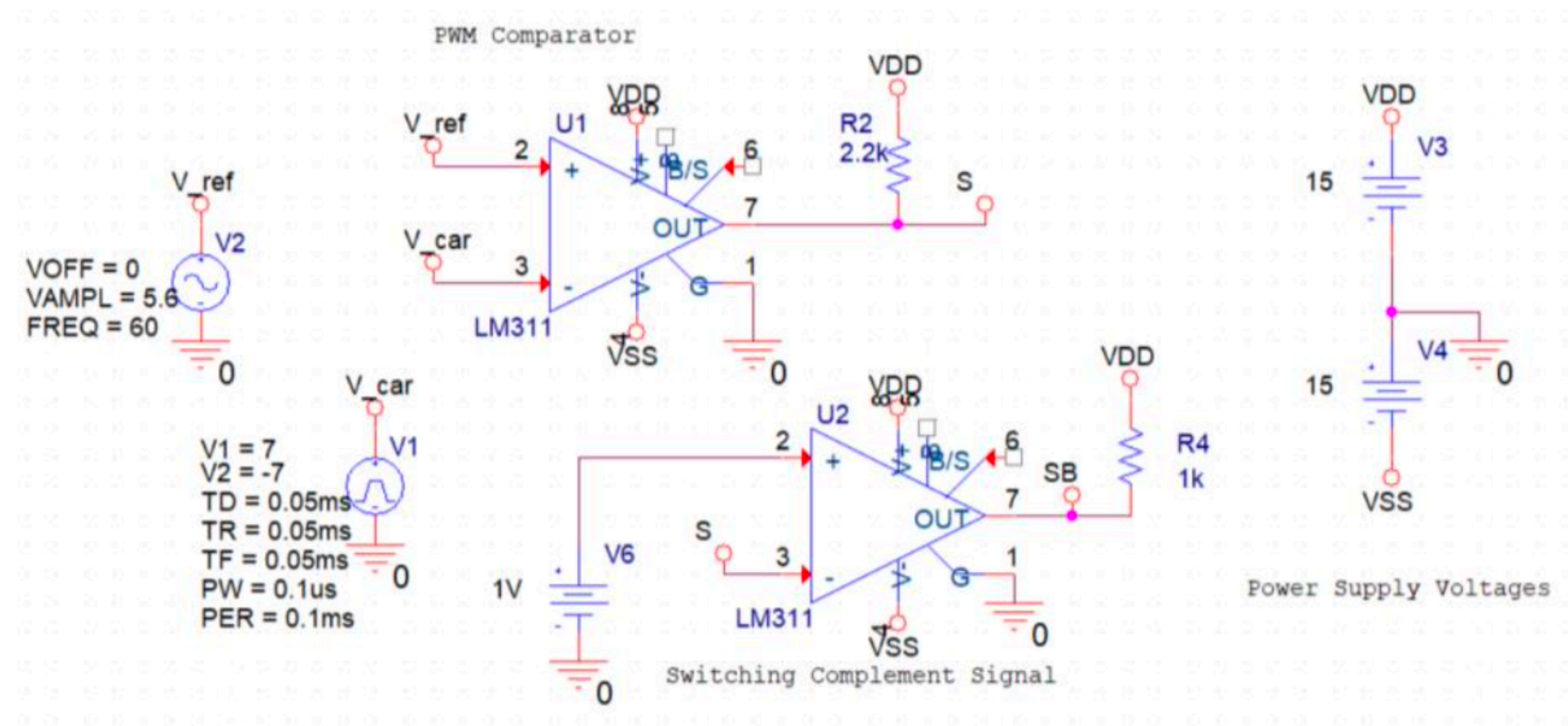
- 2개의 스위치를 사용함
- 설계: 간단함
- THD%: 낮음
- 출력 전압이 제한됨
 - 최대 전압: $V_{dc}/2$ 이상 안 됨.

S_1 is on when $v_{ref} > v_{tri}$

S_2 is on when $v_{ref} < v_{tri}$

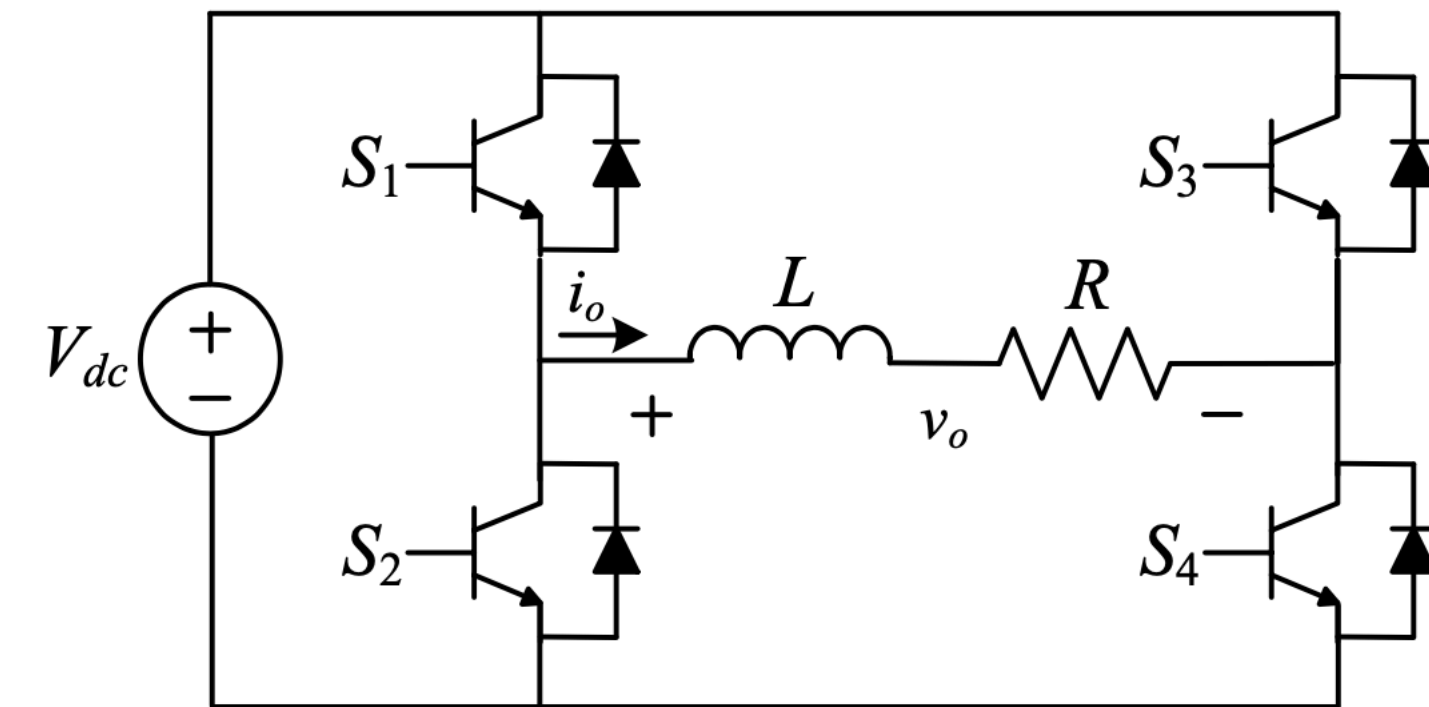


Half Bridge Inverter 설계



Full Bridge Inverter

- 4개의 스위치를 사용한다
- THD%: PWM 방법에 따라 다르다
- 설계: Half-bridge에 비해 더 복잡하다
- 출력 전압이 VDC까지 올라갈 수 있다
- PWM 방법:
 - Bipolar
 - Unipolar



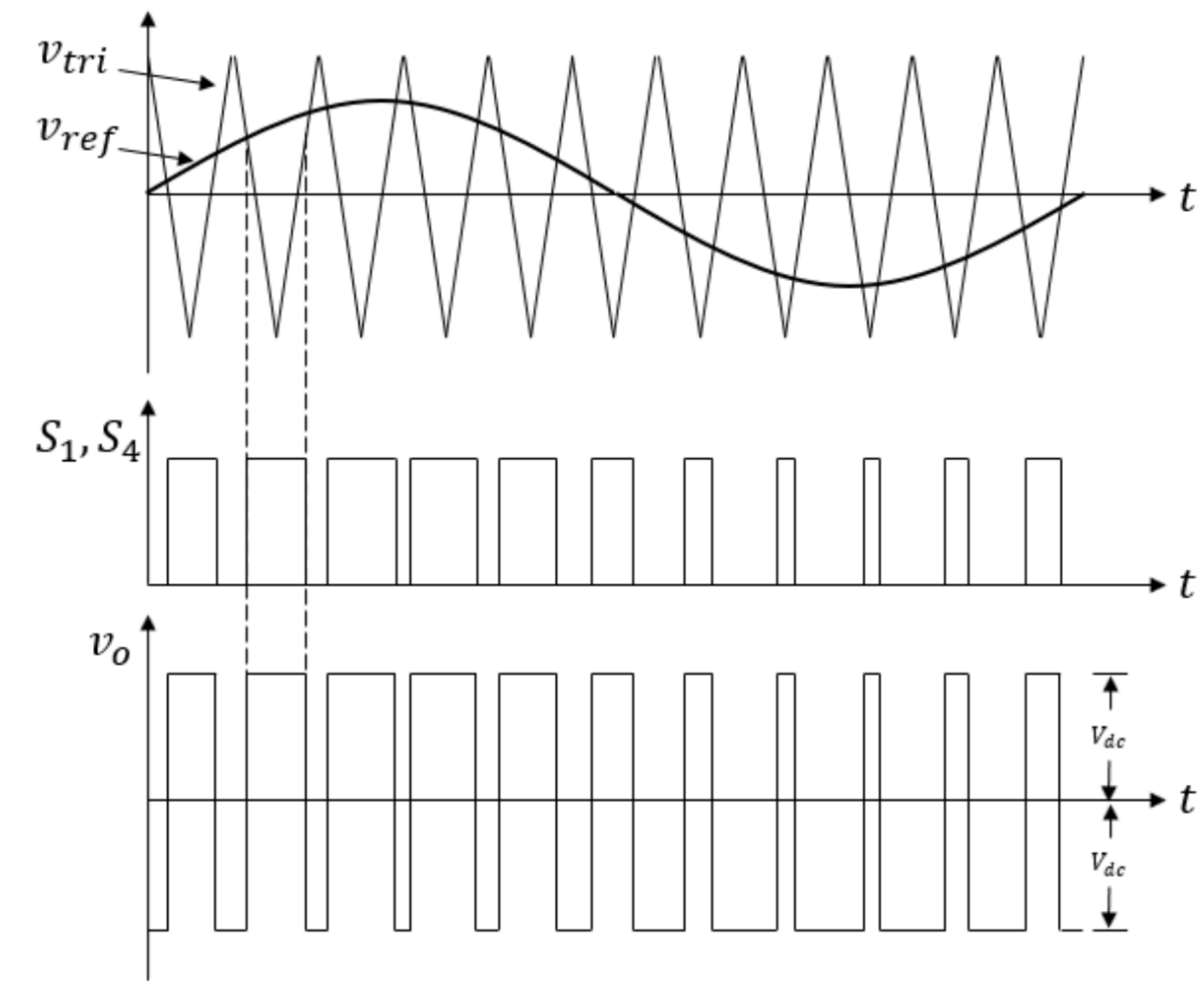
Full Bridge Inverter

Bipolar PWM

- 출력 전압: +VDC, -VDC
- 설계: 거의 간단하다
- THD%: Half-Bridge보다 더 높다.
- PWM 회로
 - Half-bridge와 비슷하다

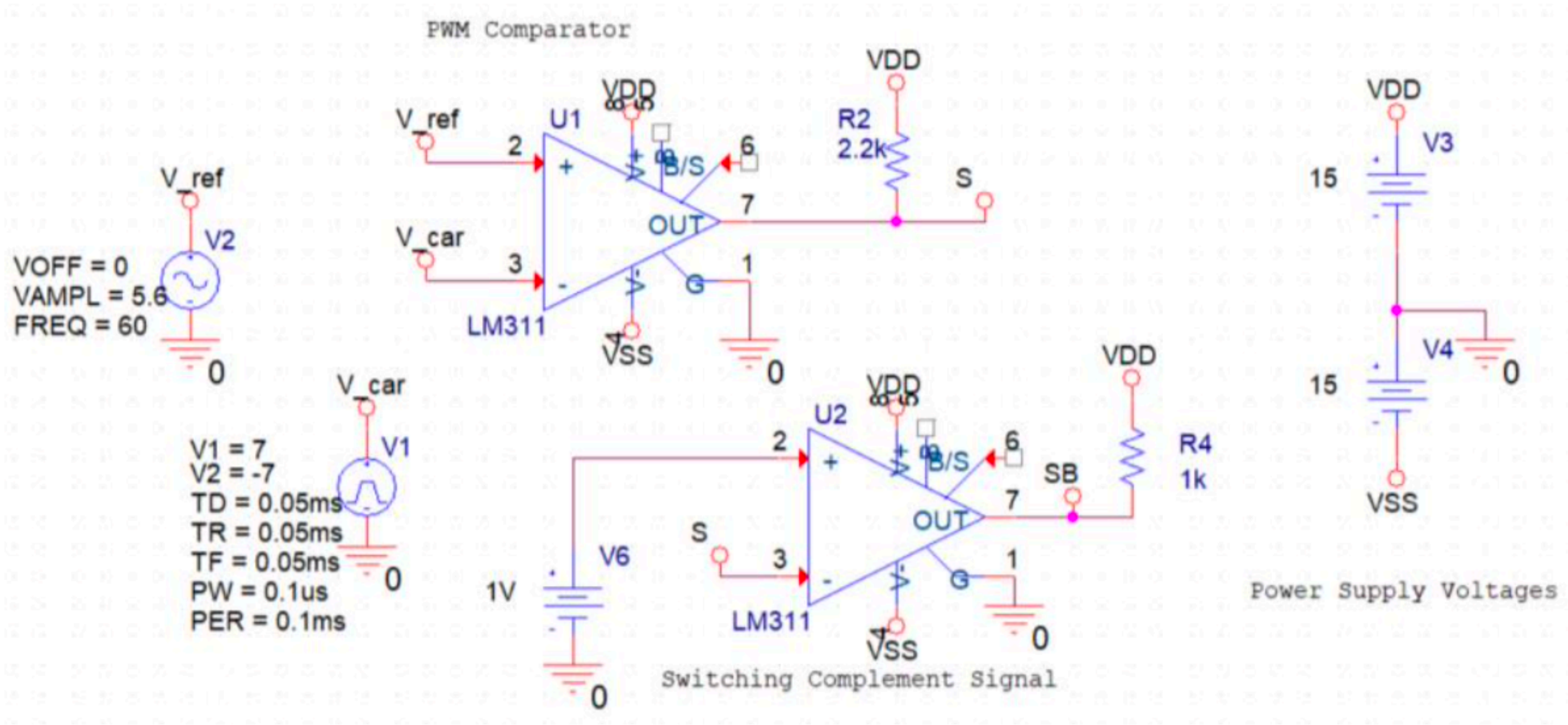
S_1 and S_4 are on when $v_{ref} > v_{tri}$

S_2 and S_3 are on when $v_{ref} < v_{tri}$



Full Bridge Inverter

Bipolar PWM 설계



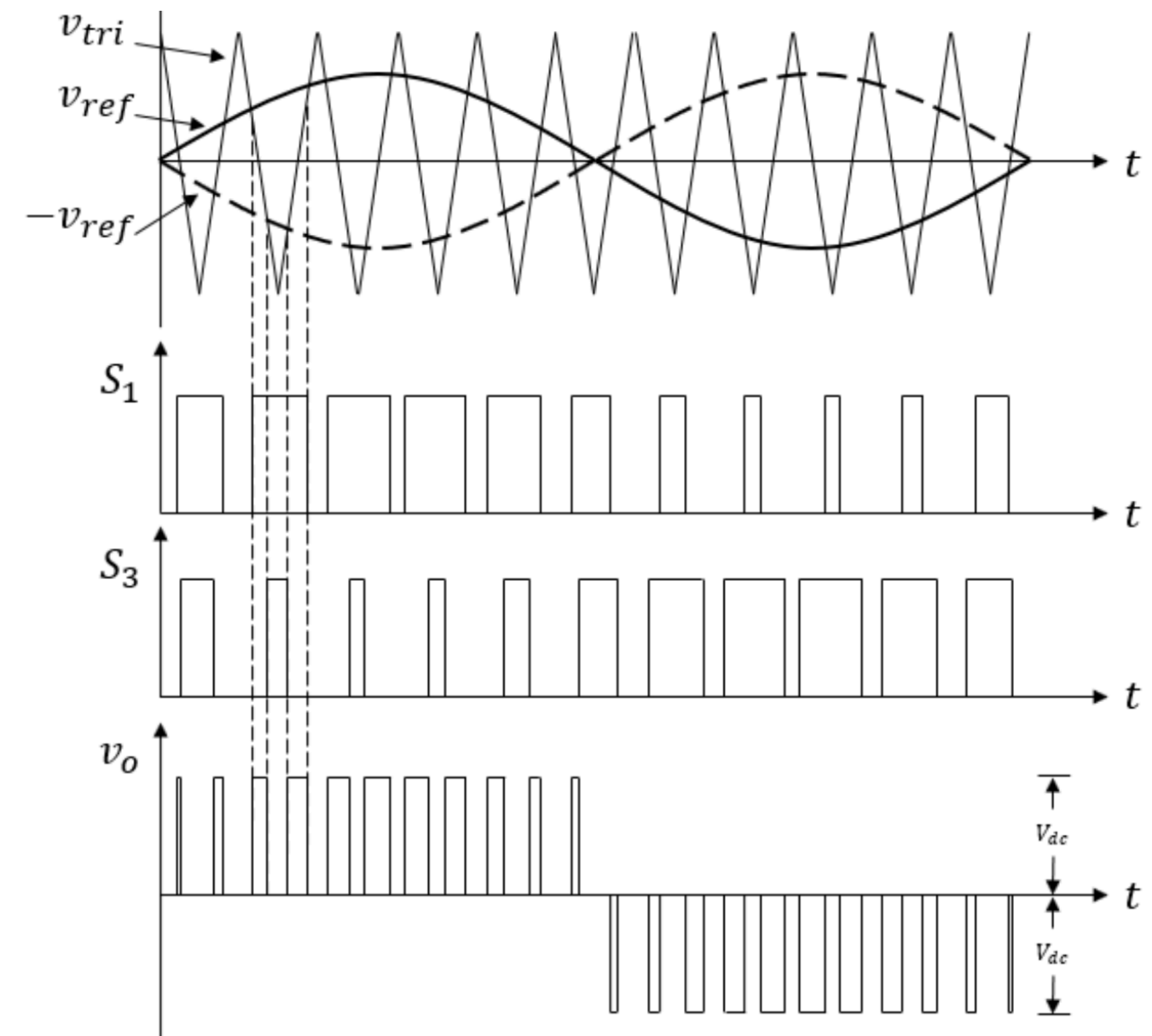
Full Bridge Inverter

Unipolar PWM

- 출력 전압: +VDC, -VDC, 0V
- 설계: 복잡하다
- THD%: Bipolar보다 낮다
- PWM 회로
 - 복잡하다

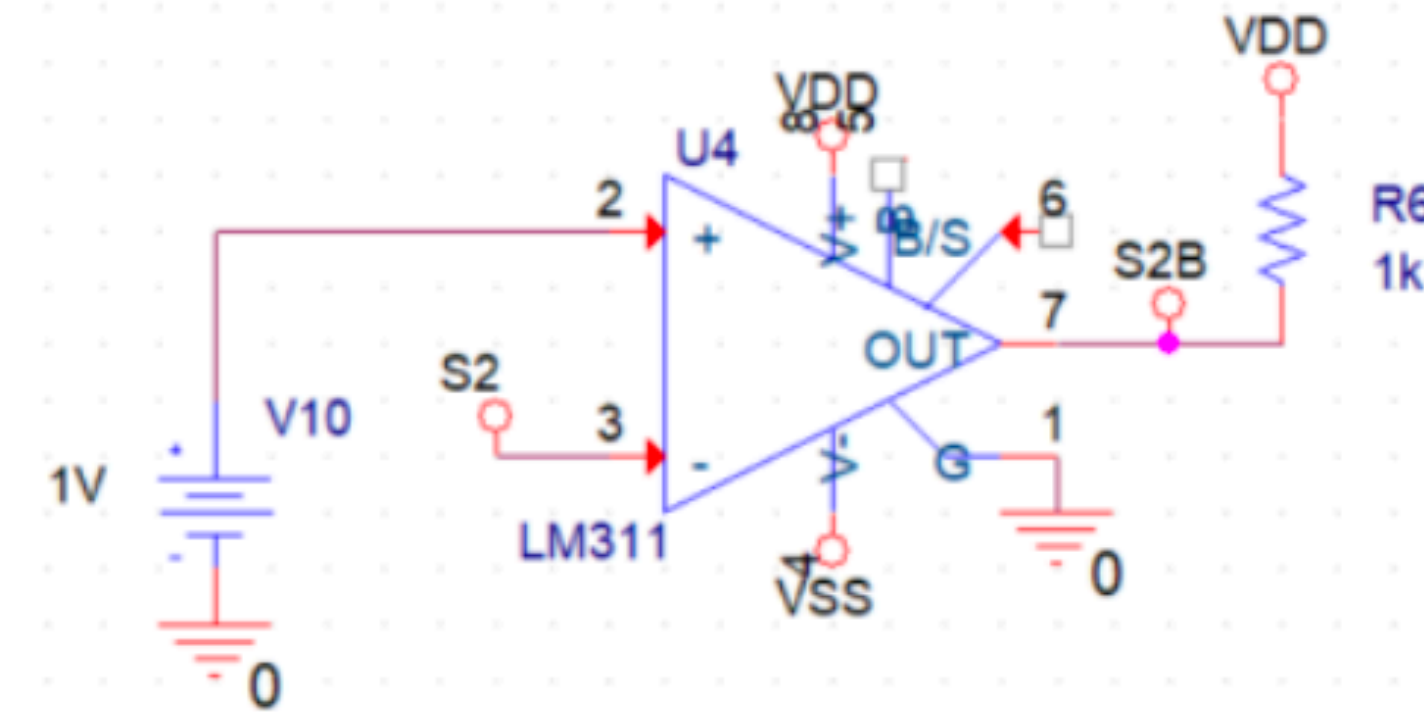
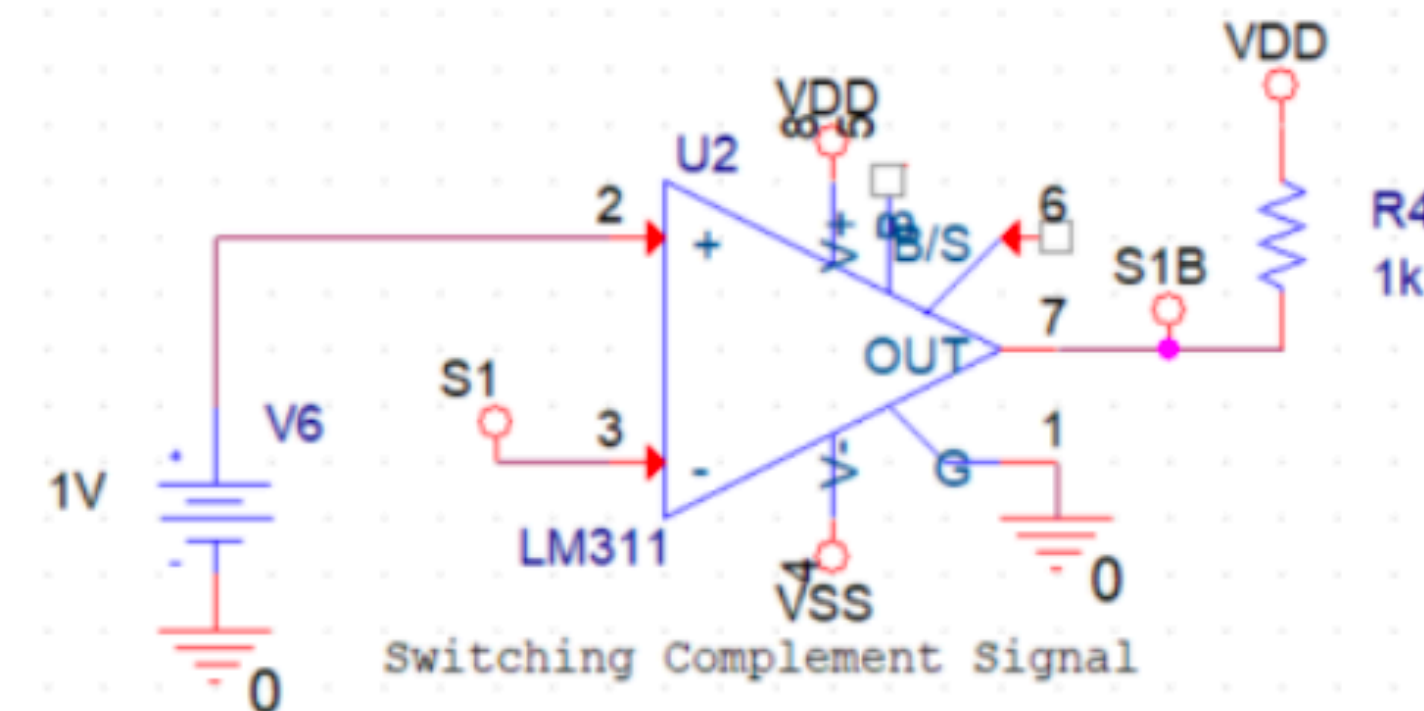
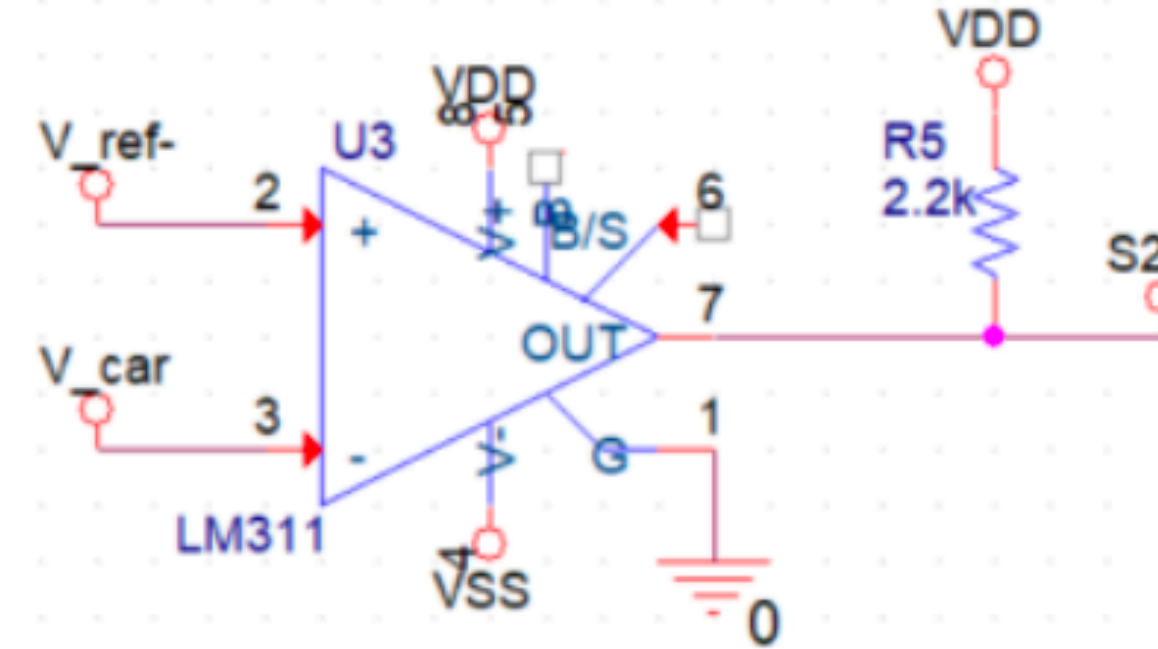
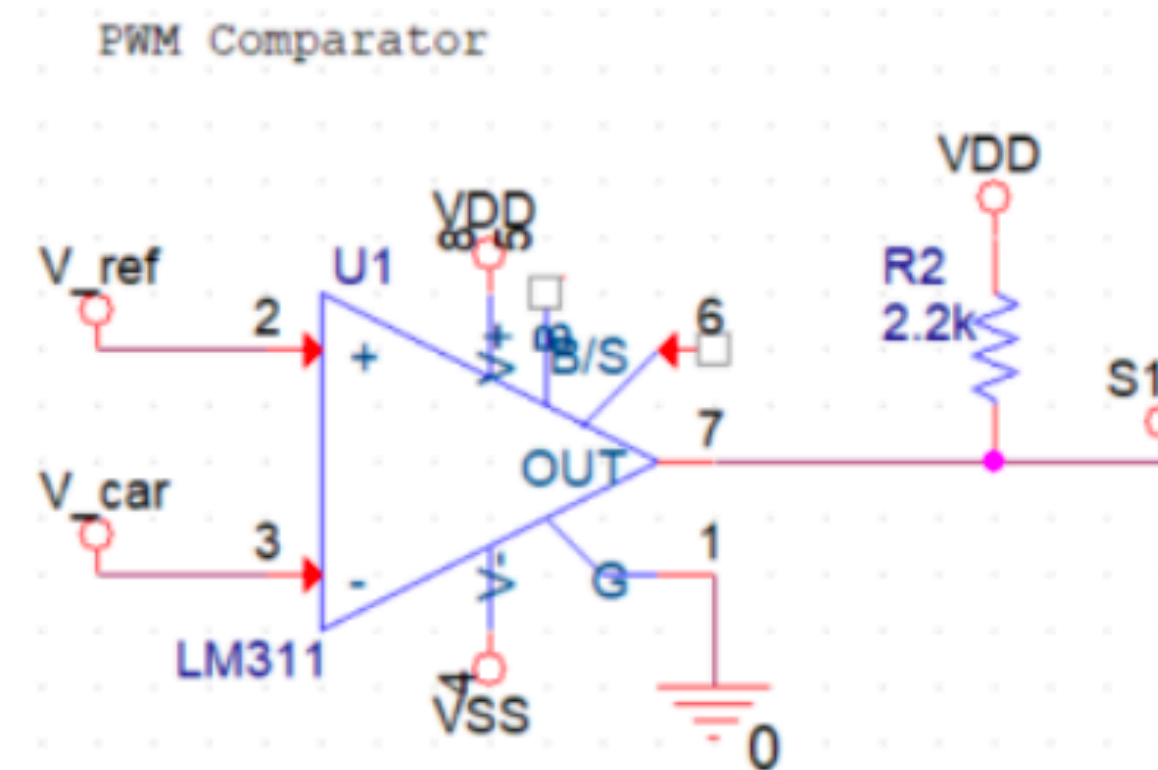
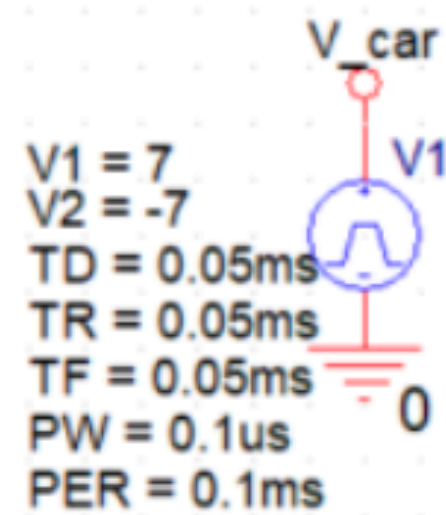
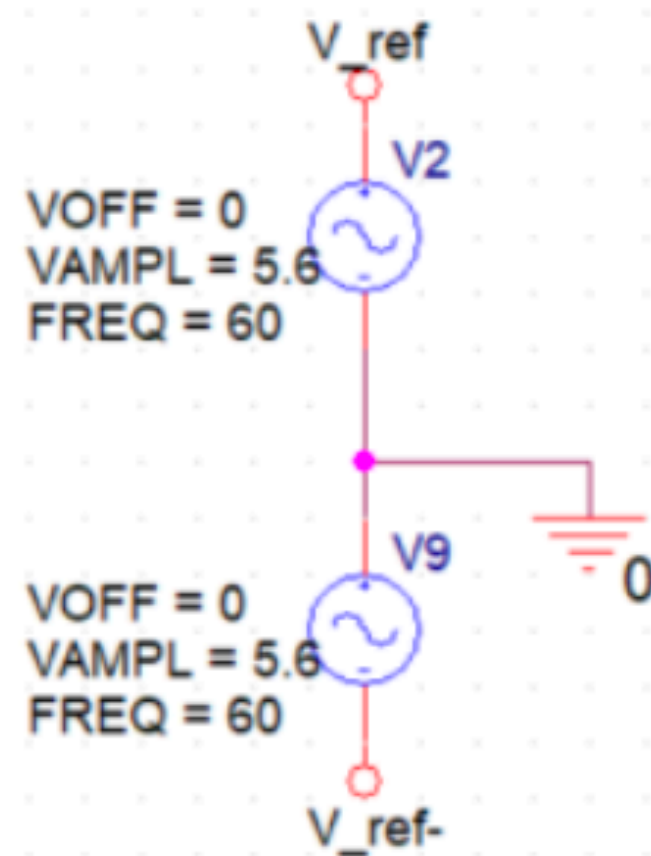
S_1 is on when $v_{ref} > v_{tri}$ S_3 is on when $-v_{ref} > v_{tri}$

S_2 is on when $v_{ref} < v_{tri}$ S_4 is on when $-v_{ref} < v_{tri}$



Full Bridge Inverter

Unipolar PWM 설계



Voltage Regulator

- 입력 전압이 흔들려도 일정한 DC 전압을 출력한다.

