



Test Procedure for the STK681-300GEVB Evaluation Board

Evaluation Board Setup

[Supply Voltage] Vcc1 (10 to 42V): Power Supply for DC motor
 Vcc2 (5V) : Power Supply for internal logic IC

[Operation Guide]

1. Motor Connection:
 Connect the motor to OUT1 and OUT2.
2. Initial Condition Setting:
 Set to signal condition IN1=H, IN2=H, and INH=L.
3. Power Supply:
 At first, supply DC voltage to Vcc2(5.0V).
 Next, supply DC voltage to Vcc1.
4. Set to Forward or Reverse signal condition with INH=Low.
 Turn "High" INH signal.
 Output current flows between OUT1 and OUT2.
5. Motor Operation

[Setting the current limit using the Vref pin]

Without external resistance R3, output current is limited to I_{max}.

You can limit to below I_{max} by installing R3.

As for I_{max} of STK681-310, 0.42V is generated with 5V, internal resistance 82k (R1) and 7.5k (R2), then I_{max}=4.2A is designed by comparing with internal current sensing resistor R_s.

In case of without external resistance R3

$$I_{\max} = (V_{cc2} \times R2 / (R1 + R2)) \div R_s$$

	R1	R2	R _s
STK681-300	82kΩ	5.1kΩ	0.1Ω
STK681-310	82kΩ	7.5kΩ	0.1Ω
STK681-320	82kΩ	5.1kΩ	0.056Ω

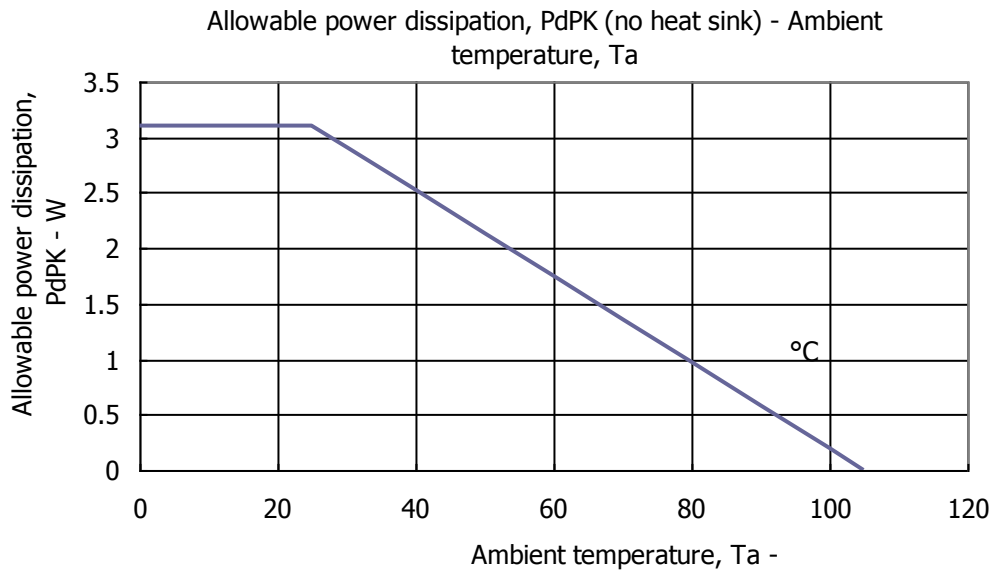
Including external resistance R3

$$I_o = ((V_{cc2} \times (R2 \times R3) / (R2 + R3)) / (R1 + (R2 \times R3) / (R2 + R3))) \div R_s$$

If you mount external resistor R3=7.5k, for instance, you can limit to 2.1A, which is half of I_{max} (4.2A) of STK681-310.



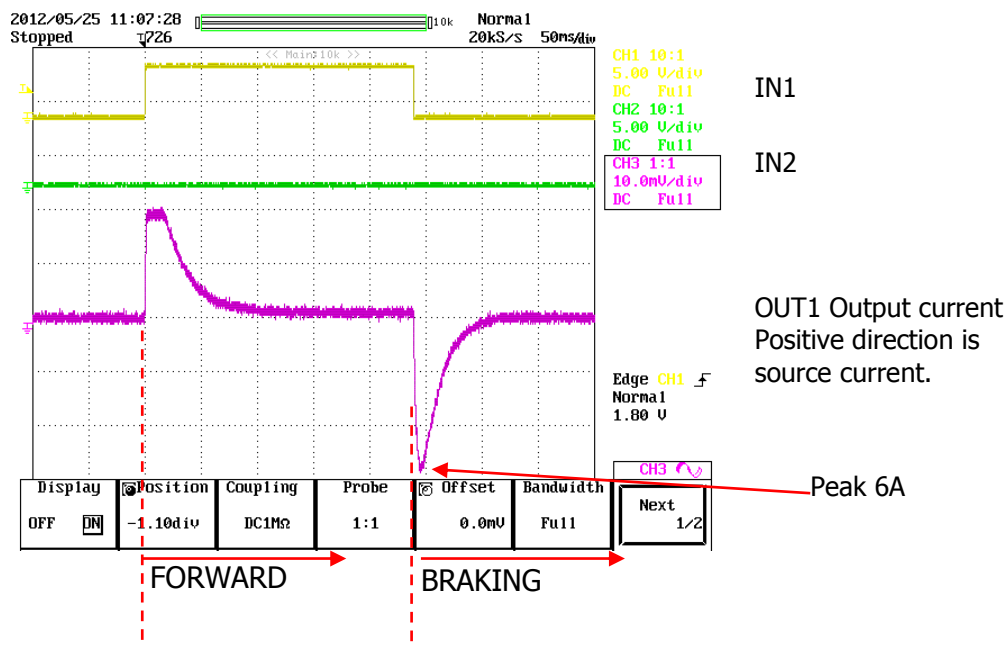
Allowable power dissipation (Reference value)



Waveform example

STK681-310(Current limit 4.2A setting)

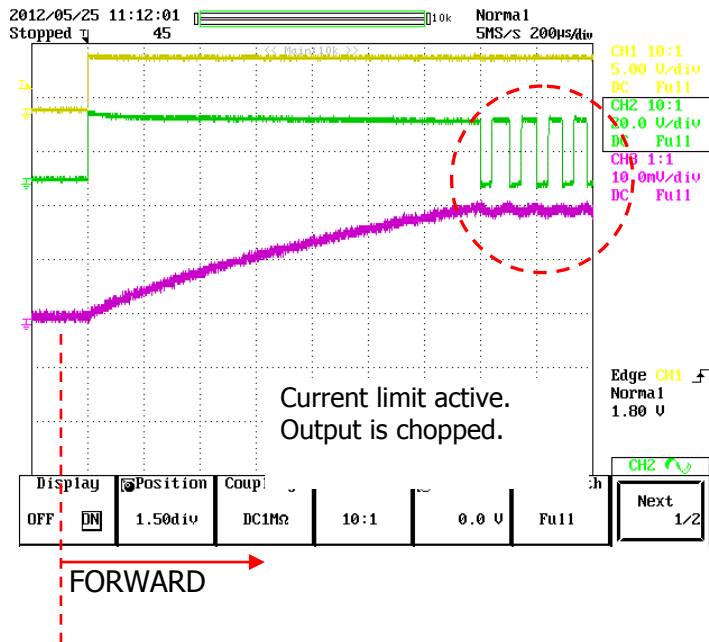
IN1 and IN2; 5V/div, Output current; 2A/div





STK681-310(Current limit 2A setting)

IN1 5V/div, OUT1 20V/div, Output current; 2A/div



IN1

OUT1

OUT1 Output current
Positive direction is
source current.

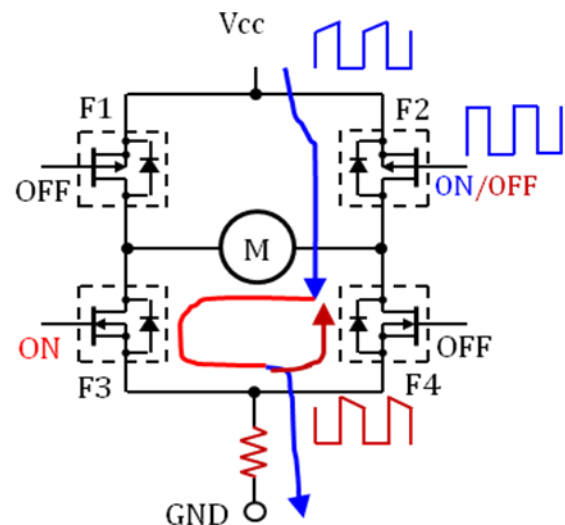
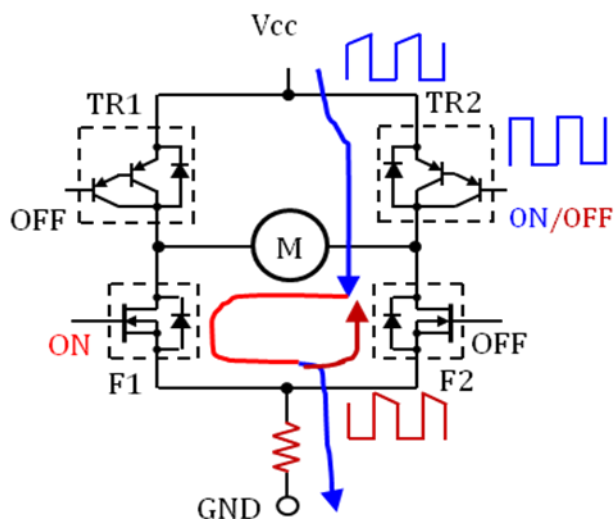
Current control is slow decay.

STK681-300, 310 and 320 control Bipolar Transistor or MOSFET at High side by constant-current PWM control system.

Current control enters Slow decay mode.

STK681-300, 310

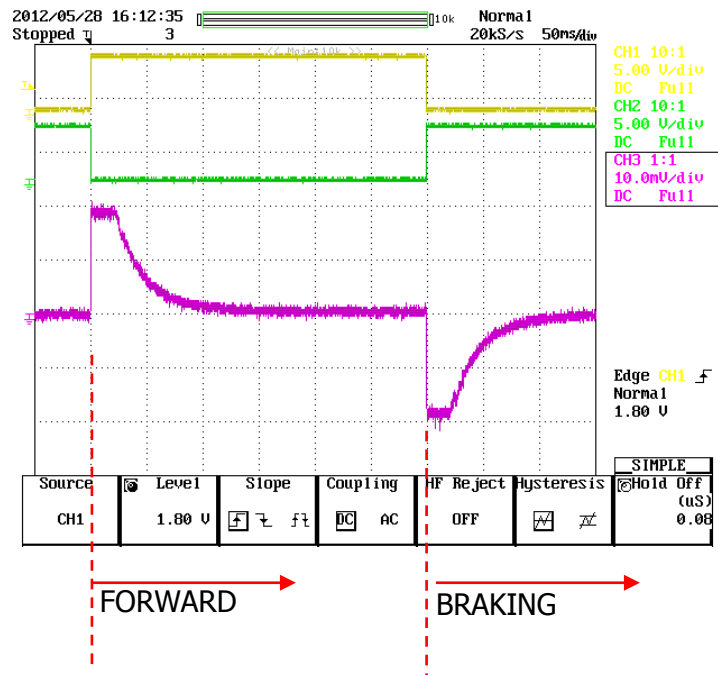
STK681-320





STK681-310(Current limit 4.2A setting)

IN1 and IN2; 5V/div, Output current; 2A/div



IN1

IN2

OUT1 Output current
Positive direction is
source current.