High Voltage Full Bridge Drive IC SLA2402M

Features

- One Package Full Bridge Driver Consisted of High Voltage IC and Power MOS FETs (4 pieces)
- High Voltage Driver which accepts direct connection to the input signal line
- External components such as high voltage diodes and capacitors are not required

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit	Conditions
Power source voltage *	V_M	500	V	
Input voltage	V_{IN}	15	V	
Output voltage	V_O	500	V	
Output current	I_O	15	A	$P_W \leqq 250\mu s$
Power dissipation	P_D	5 (Ta=25°C)	W	Without heatsink
Storage temperature	Tstg	–40 to +125	°C	
Operation temperature	Topr	–40 to +105	°C	

* Power GND (D terminal) to -HV (-HV terminal) voltage.

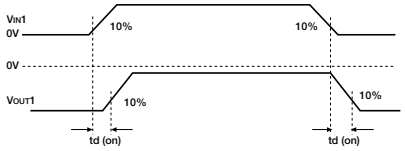
Electrical Characteristics

Parameter	Symbol	Ratings min	Ratings typ	Ratings max	Unit	Conditions
Power MOS FET output breakdown voltage	BV_{OUT}	500			V	I_O=100μA
Power MOS FET output leakage voltage	$I_{OUT\ (off)}$			100	μA	V_O=500V
High-side Power MOS FET output on-state voltage	$V_{OUT\ (on)}1$	0.28	0.4	0.52	V	I_O=0.4A, V_{IN}=10V
	$V_{OUT\ (on)}2$	1.4	2.0	2.6	V	I_O=2A, V_{IN}=10V
Low-side Power MOS FET output on-state voltage	$V_{OUT\ (on)}1$	0.28	0.4	0.52	V	I_O=0.4A, V_{GL}=10V
	$V_{OUT\ (on)}2$	1.4	2.0	2.6	V	I_O=2A, V_{GL}=10V
Quiescent circuit current	$I_{CC}1$			3.0	mA	V_{CC}=4.5 to 15V
	$I_{CC}2$			4.0	mA	V_{CC}=10V, V_M=400V
Operating circuit current	$I_{CC}3$			4.0	mA	V_{CC}=10V, V_M=400V
Input voltage (High level)	V_{IH}	0.8V_{CC}			V	V_{CC}=4.5 to 15V
Input voltage (Low level)	V_{IL}			0.2V_{CC}	V	V_{CC}=4.5 to 15V
Delay time *	$t_{d\ (on)}$		1.4		μs	V_{CC}=10A, V_{IN}=10V, V_M=85A, I_O=0.41A
	$t_{d\ (off)}$		3.3		μs	
	Δt			2.5	μs	
Operating voltage	V_{CC}			15	V	–40 to +105°C

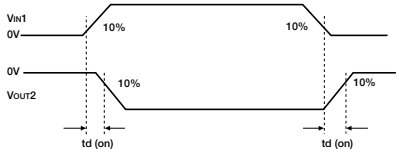
* About delay time

Signal input waveform vs output waveform

① Highside switch turn-on, turn-off

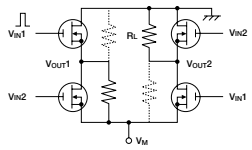


② Lowside switch turn-on, turn-off



* Δt: Δt=td (on) – td (off)

Measurement Circuit



Conditions

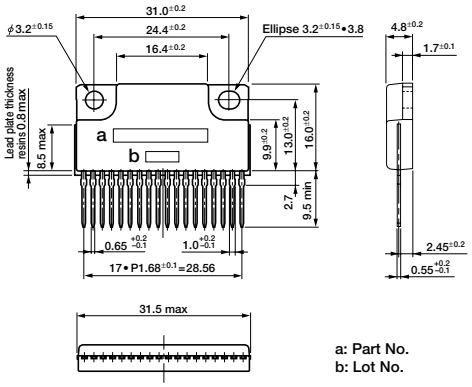
V_{CC}=10V, V_{IN}=10V (pulse)

V_M=85V

I_O=0.41A (R_L=207Ω)

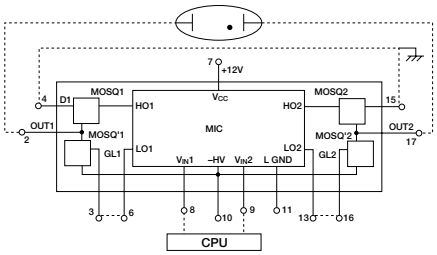
* When pulse signal is inputted to V_{IN1}, R_L on solid line is ON and dotted line R_L is off.
On the contrary, when pulse signal is inputted to V_{IN2}, R_L on dotted line is ON and dotted line R_L is off.

External Dimensions (unit: mm)



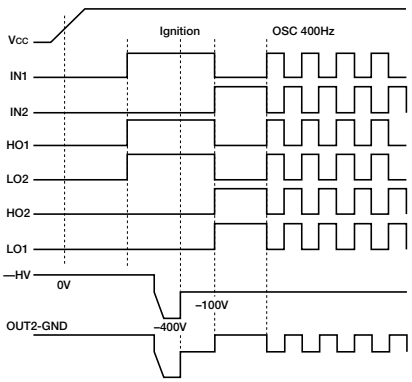
a: Part No.
b: Lot No.

Block Diagram



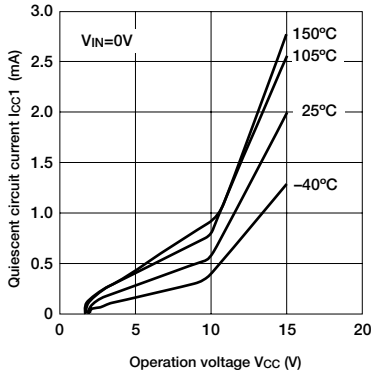
* Dotted Line: Outside Connection

Timing Chart

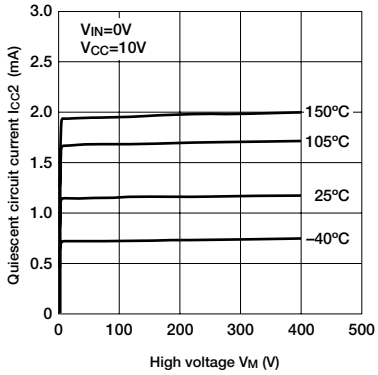


Electrical Characteristics

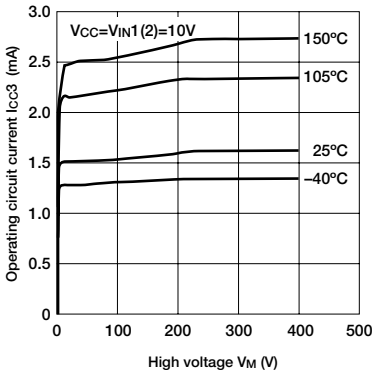
■ Quiescent circuit current



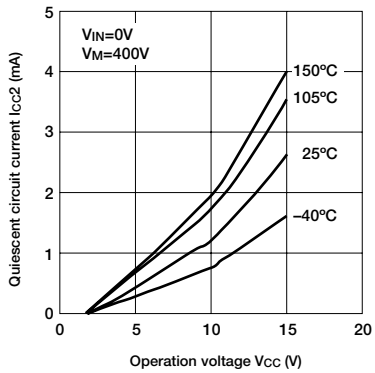
■ Quiescent circuit current supplied high voltage



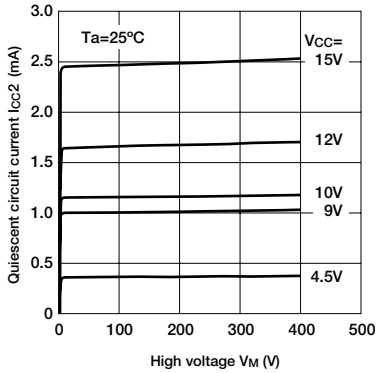
■ Operating circuit current



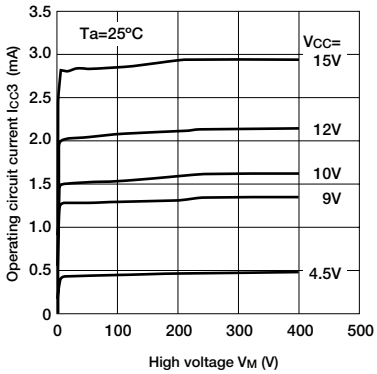
■ Quiescent circuit current supplied high voltage



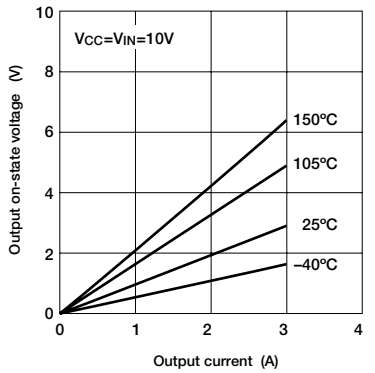
■ Quiescent circuit current



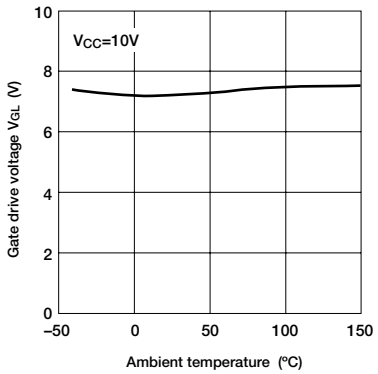
■ Operating circuit current



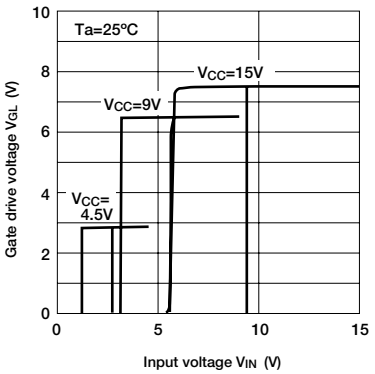
■ Output on-state voltage



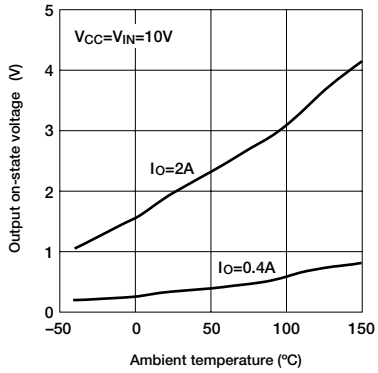
■ Gate drive voltage



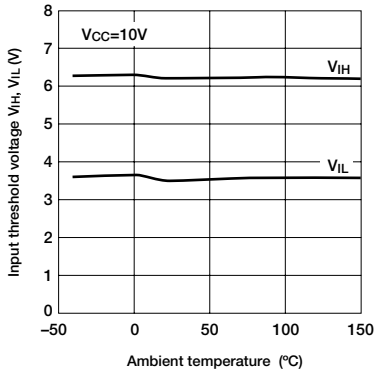
■ Gate drive voltage



■ Output on-state voltage

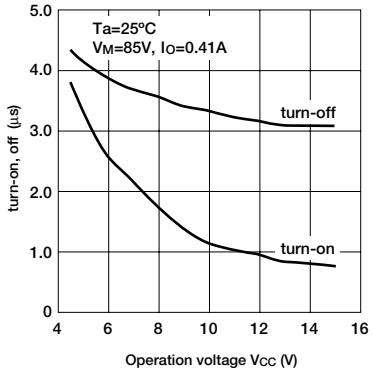


■ Input threshold voltage

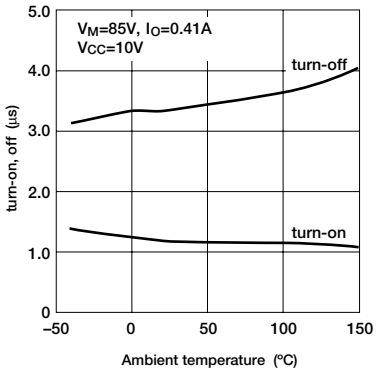


Electrical Characteristics

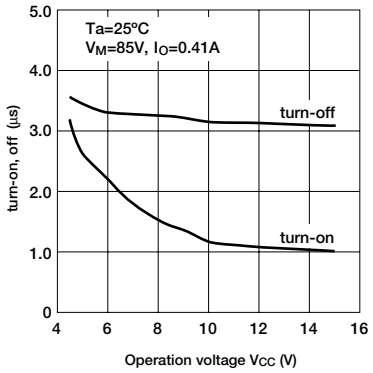
■ High side switch turn-on, off



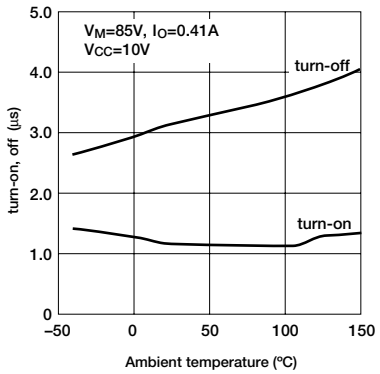
■ High side switch turn-on, off



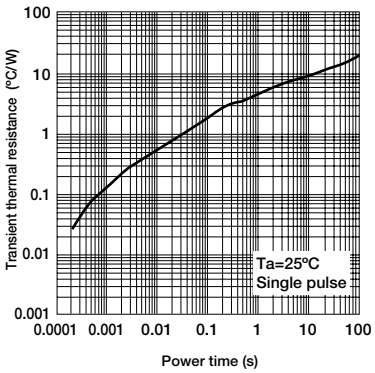
■ Low side switch turn-on, off



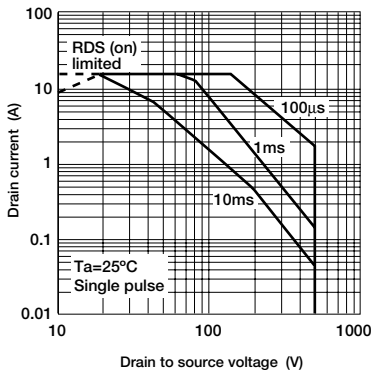
■ Low side switch turn-on, off



■ Transient thermal resistance characteristics



■ Safe operating area (Power MOS FET)



■ Power derating curve