



DESCRIPTION

The AG2113A is a high voltage, high speed power MOSFET and IGBT driver with independent high and low side referenced output channels based on the P_SUB P_EPI process.

The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high-side configuration which operates up to 700V.

Logic inputs are compatible with standard CMOS or LSTTL output, down to 3.3V logic. The output drivers feature a high pulse current buffer stage designed for minimum driver cross-conduction. Propagation delays are matched to simplify use in high-frequency applications.

AG2113A is available in a SOP16 package.

ORDERING INFORMATION

Package Type		Part Number	
SOP16 SPQ: 3,000pcs/Reel		M16	AG2113AM16R
			AG2113AM16VR
Note		V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products			

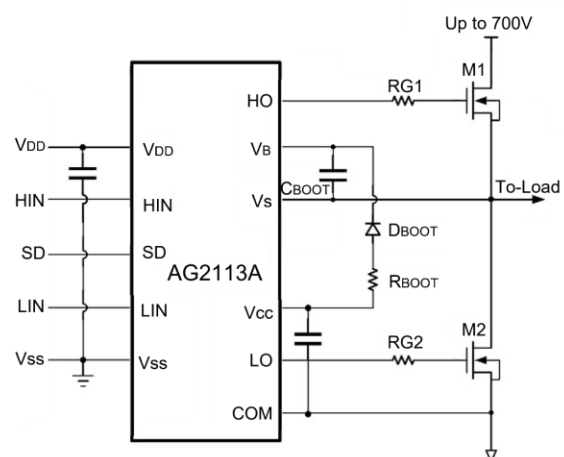
FEATURES

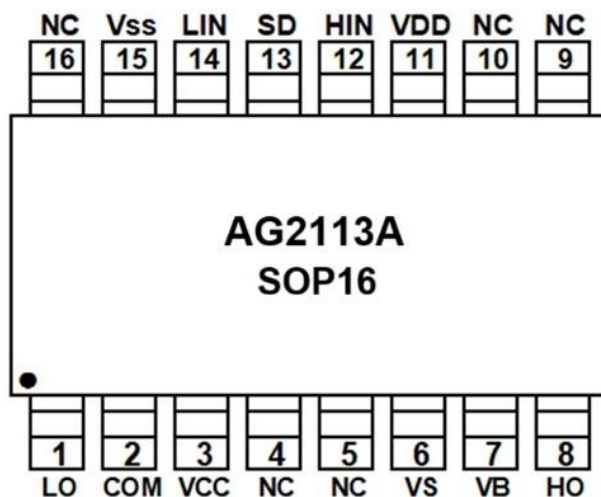
- Fully operational to +700V
- 3.3V, 5V and 15V logic compatible
- Floating channel designed for bootstrap operation
- Gate drive supply ranges from 10V to 20V
- UVLO for both channels
- Output Source / Sink Current Capability 4.0A / 4.0A (Typ.)
- Separate logic supply ranges from 5.0V to 20V
- -9V negative Vs ability
- Logic and power ground $\pm 5V$ offset
- Matched propagation delay for both channels
- Available in an SOP16 package.

APPLICATION

- High and medium-power motor driver
- Power MOSFET or IGBT driver
- Lighting ballast
- Full/Half Bridge Converters

TYPICAL APPLICATION CIRCUIT



**PIN DESCRIPTION**

SOP16, M16

Top View

Pin #	Symbol	Function
1	LO	Low side gate drive output, in phase with LIN
2	COM	Low side return
3	V _{CC}	Low side supply
4	NC	Not Connected
5	NC	Not Connected
6	V _S	High side floating supply return
7	V _B	High side floating supply
8	HO	High side gate drive output, in phase with HIN
9	NC	Not Connected
10	NC	Not Connected
11	V _{DD}	Logic supply
12	HIN	Logic input for high side gate driver output (HO), in phase
13	SD	Logic input for shutdown
14	LIN	Logic input for low side gate driver output (LO), in phase
15	V _{SS}	Logic ground
16	NC	Not Connected



ABSOLUTE MAXIMUM RATINGS

V _B , High Side Floating Supply	-0.3V ~ +725V
V _S , High Side Floating Supply Return	V _B -25V ~ V _B +0.3V
V _{HO} , High Side Gate Drive Output	V _S -0.3V ~ V _B +0.3V
V _{CC} , Low Side and Main Power Supply	-0.3V ~ +25V
V _{LO} , Low Side Gate Drive Output	-0.3V ~ V _{CC} +0.3V
V _{DD} , Logic supply	V _{SS} -0.3V ~ V _{SS} +25V
V _{SS} , Logic ground	-5V ~+5V
V _{IN} , Logic input (HIN.LIN.SD)	V _{SS} -0.3V ~ V _{CC} +0.3V
dV _S /dt, Allowable Offset Supply Voltage Transient	50V/ns
ESD, HBM Model	1.5kV
ESD, Machine Model	500V
P _D , Package Power Dissipation @ T _A ≤25°C	SOP16 0.625W
R _{thJA} , Thermal Resistance Junction to Ambient	SOP16 200°C/W
T _J , Junction Temperature	150°C
T _S , Storage Temperature	-55°C~+150°C
T _L , Lead Temperature (Soldering, 10 seconds)	300°C

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Max.	Units
High Side Floating Supply	V _B	V _S +10	V _S +20	V
High Side Floating Supply Return	V _S	-9	700	V
High Side Gate Drive Output Voltage	V _{HO}	V _S	V _B	V
Low Side Supply	V _{CC}	10	20	V
Low Side Gate Drive Output Voltage	V _{LO}	0	V _{CC}	V
Logic Supply	V _{DD}	V _{SS} +3	V _{SS} +20	V
Logic Ground	V _{SS}	-5	5	V
Logic Input Voltage (HIN & LIN &SD)	V _{IN}	0	V _{CC}	V
Ambient Temperature	T _A	-40	125	°C

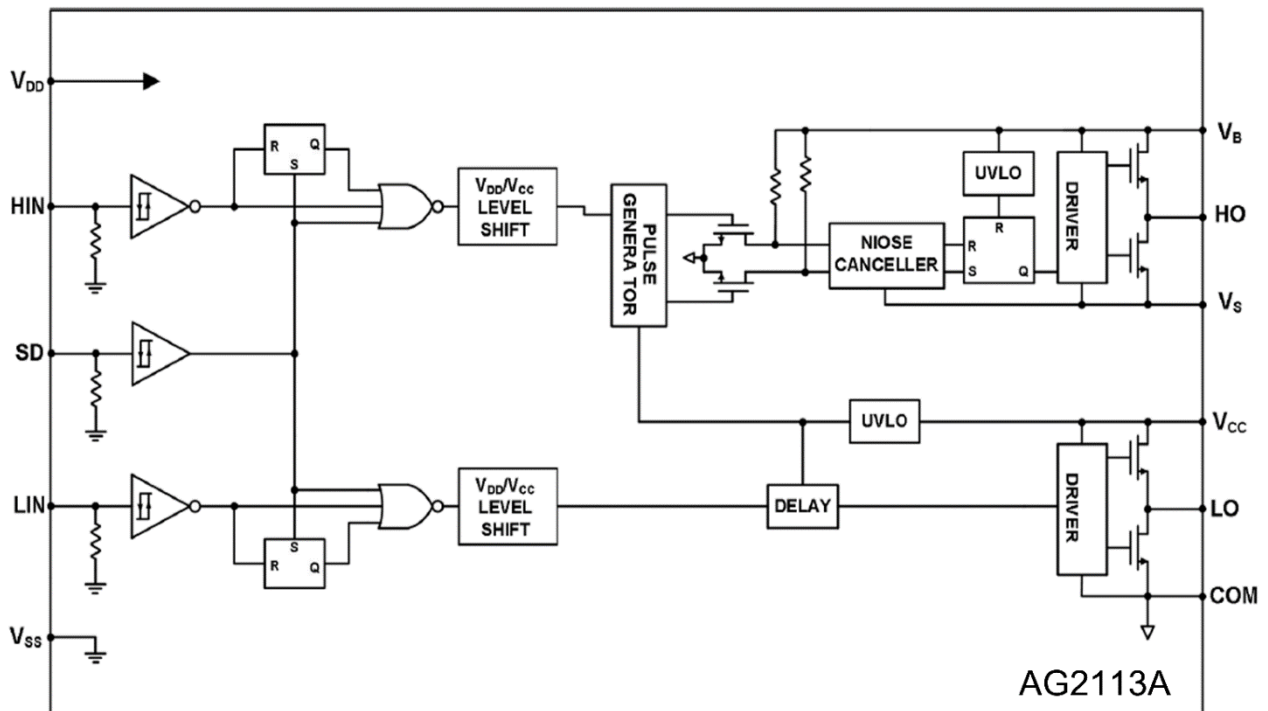
**ELECTRICAL CHARACTERISTICS**

V_{BIAS} (V_{CC} , V_{BS}) = 15V, C_L = 1000pF and T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Dynamic						
Turn-On Propagation Delay	t _{on}	V _S =0V	-	130	200	ns
Turn-Off Propagation Delay	t _{off}	V _S =700V	-	130	200	
Shutdown Propagation Delay	t _{sd}	V _S =700V	-	130	200	
Turn-On Rise Time	t _R		-	25	35	
Turn-Off Fall Time	t _F		-	17	25	
Delay Matching (t _{ON} , t _{OFF})	MT		-	-	10	
Static						
Logic “1” (IN) Input Voltage	V _{IH}	V _{CC} =10V to 20V	9.5	-	-	V
Logic “0” (IN) Input Voltage	V _{IL}	V _{CC} =10V to 20V	-	-	6.0	
High Level Output Voltage, V _{BIAS} - V _O	V _{OH}	I _o =0A	-	-	1.4	
Low Level Output Voltage, V _O	V _{OL}	I _o =0A	-	-	0.1	
Quiescent V _{DD} Supply Current	I _{QDD}	V _{IN} =0V or V _{DD}	-	15	30	μA
Quiescent V _{CC} Supply Current	I _{QCC}	V _{IN} =0V or V _{DD}	-	120	240	
Quiescent V _{BS} Supply Current	I _{QBS}	V _{IN} =0V or V _{DD}	-	70	120	
Leakage Current from V _S (700V) to GND	I _{LK}	V _B =V _S =700V	-	-	50	
Logic “1” Input Bias Current	I _{IN+}	V _{IN} =V _{DD}	-	20	40	
Logic “0” Input Bias Current	I _{IN-}	V _{IN} =0V	-	-	2	V
V _{BS} Supply UVLO Threshold	V _{BSUV+}		8.0	8.9	9.8	
	V _{BSUV-}		7.4	8.2	9.0	
V _{BS} Supply under voltage lockout hysteresis	V _{BSUVHYS}		-	0.7	-	
V _{CC} Supply UVLO Threshold	V _{CCUV+}		8.0	8.9	9.8	
	V _{CCUV-}		7.4	8.2	9.0	
V _{CC} Supply under voltage lockout hysteresis	V _{CCUVHYS}		-	0.7	-	
Output High Short Circuit Pulsed Current	I _{o+}	V _O =0V V _{IN} =V _{DD} PW ≤ 10μs	3.0	4.0	-	A
Output Low Short Circuit Pulsed Current	I _{o-}	V _O =15V V _{IN} =V _{DD} PW ≤ 10μs	3.0	4.0	-	



BLOCK DIAGRAM





TYPICAL APPLICATION CIRCUIT

Fig.1 Input & Output Timing Diagram

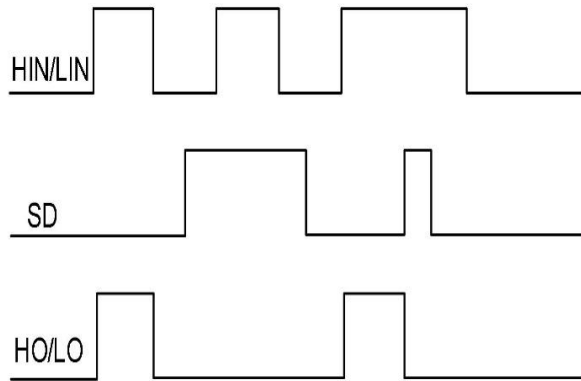


Fig.2 Switching Time Waveform Definition

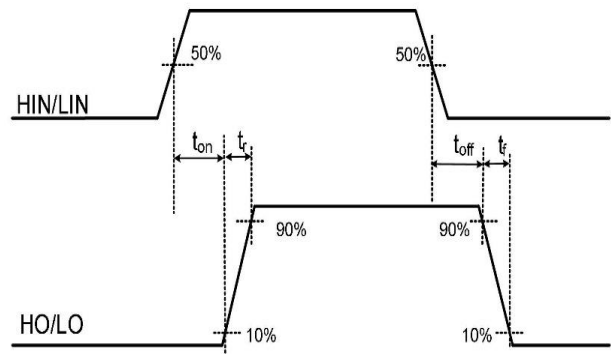


Fig.3 Shutdown Waveform Definition

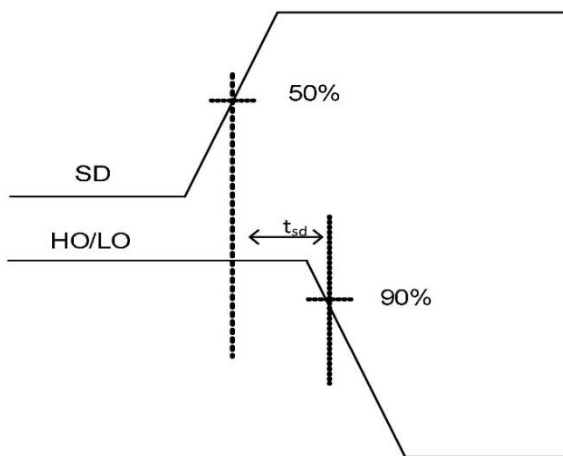
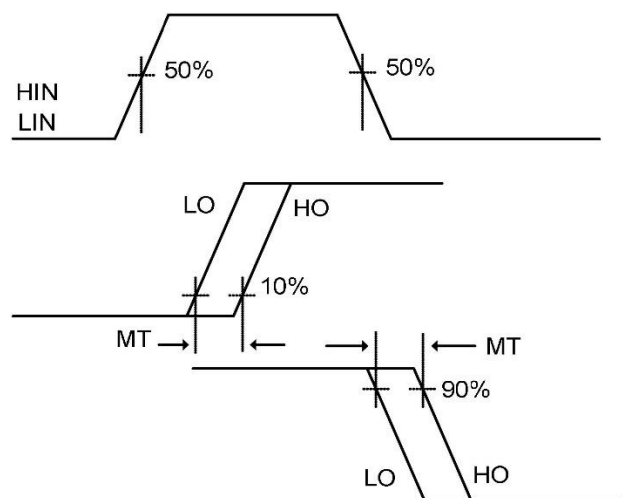


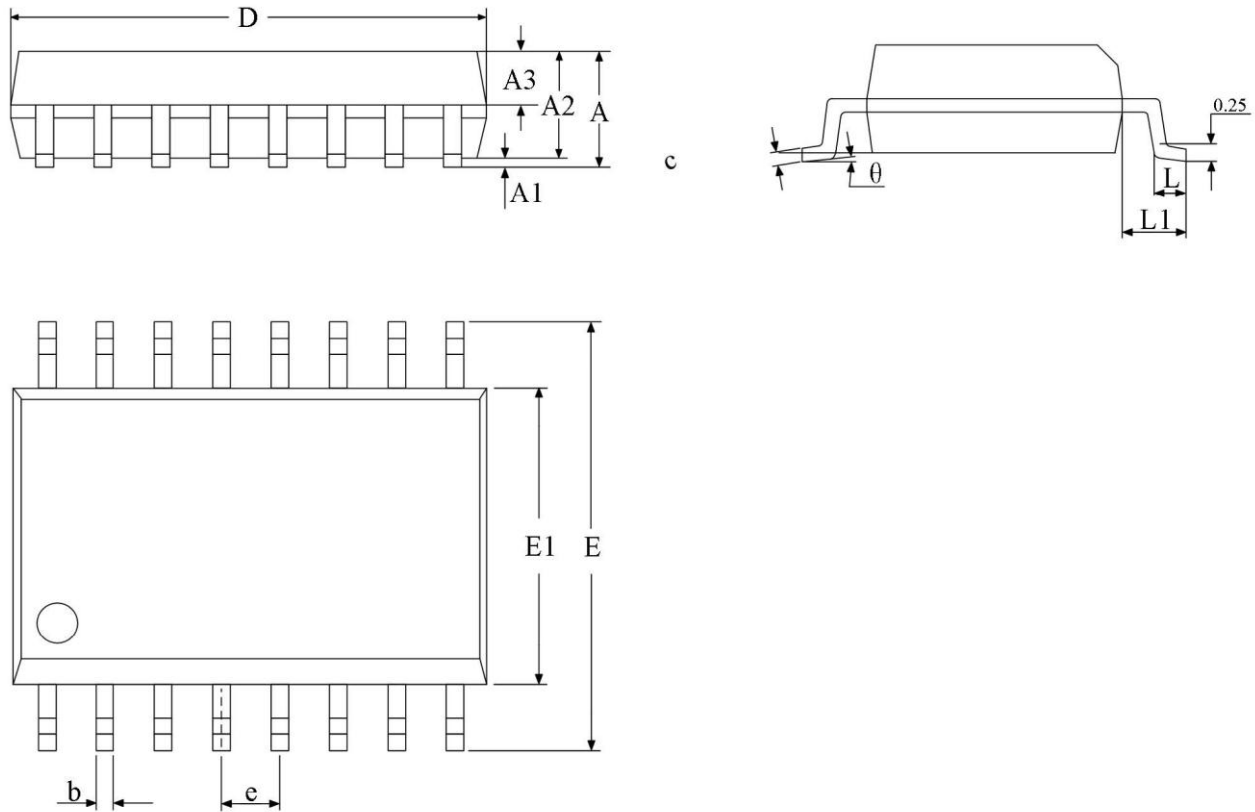
Fig.4 Delay Waveform Definition





PACKAGE INFORMATION

Dimension in SOP16 (Unit: mm)



Symbol	Min.	Max.
A	2.350	2.650
A1	0.100	0.300
A2	2.250	2.350
A3	0.970	1.100
b	0.350	0.430
D	10.200	10.400
E	10.100	10.500
E1	7.400	7.600
e	1.270 BSC	
L	0.550	0.850
L1	1.400 BSC	
θ	0°	8°



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