

KGA4115

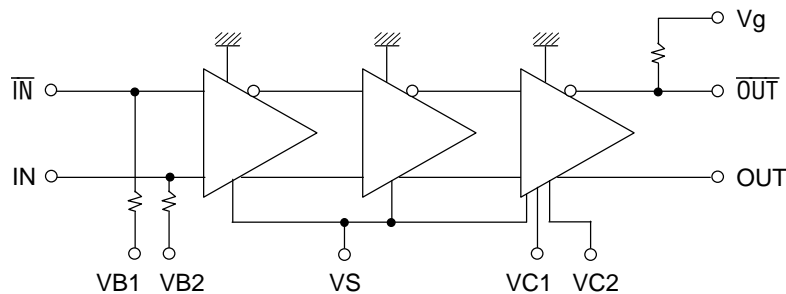
Preliminary

10 Gbps EA Modulator Driver IC

FEATURES

- High Output Voltage: Maximum Amplitude > 2.7 Vpp
- X-Point Control Function
- Output Amplitude Control Function
- Output Bias Control Function

FUNCTION DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	VS	-6.5	0.3	V	
X-Point Control Voltage	VB1	VS - 4.8 (Min. -6.5)	VS + 2.4 (Max. 0.3)	V	
Output Amplitude Control Voltage	VC1	-6.5	VS + 1.2 (Max. 0.3)	V	
Output Bias Control Voltage	VC2	-6.5	VS + 2.4 (Max. 0.3)	V	
Operating Temperature at the Back Side of the Chip	Ts	-10	100	°C	
Storage Temperature	Tst	-40	125	°C	

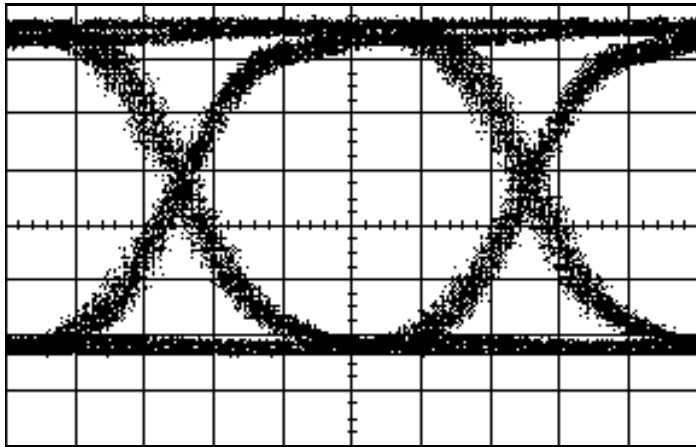
RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	VS	-5.5		-5.0	V
X-Point Control Voltage	VB1	VS + 0.8		VS + 2.2	V
Output Amplitude Control Voltage	VC1	VS		VS + 1.0	V
Output Bias Control Voltage	VC2	VS		VS + 2.2	V
Operating Temperature at the Back Side of the Chip	Ts	0		75	°C
Input Interface	AC coupled (External blocking capacitor is required)				
Output Interface	DC coupled				

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Current	I _{ss}	including bias current = 20 mA			285	mA
Voltage Offset	V _o (ofs)	50 Ω load, bias current = 20 mA	-1		0	V
Input Amplitude	V _{in}		0.5		1	V _{pp}
Output Amplitude (Max)	V _o (Max)	50 Ω load	2.7			V _{pp}
Output Amplitude (Min)	V _o (Min)	50 Ω load			2.1	V _{pp}
Output Low Voltage (Min)	V (LO)	50 Ω load			-3	V
Output High Voltage (Min)	V (HI)	50 Ω load			-1	V
X-Point Control	X _p	NRZ, 50 Ω load	20		80	%
X-Point Stability	Del (X _p)	0 to 75°C 50 Ω load			10	%
Output Rise/Fall Time	T _r /T _f	50 Ω load 20%/80%			40	ps
Input Return Loss	S ₁₁	100 kHz–10 GHz		15		dB

TYPICAL CHARACTERISTICS

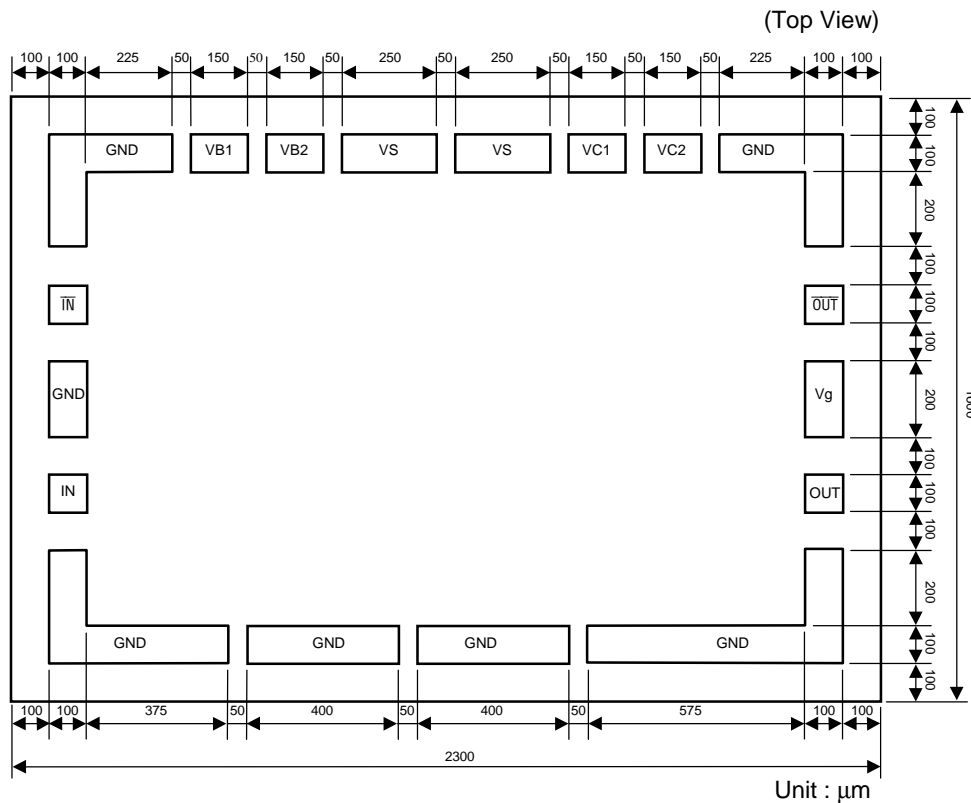


V: 500 mV/div, H: 20 ps/div

Input Signal:
 10 Gb/s, PN31, PRBS, 0.5 Vpp
 (through a Bessel Filter of $f_c = 7.5$ GHz)

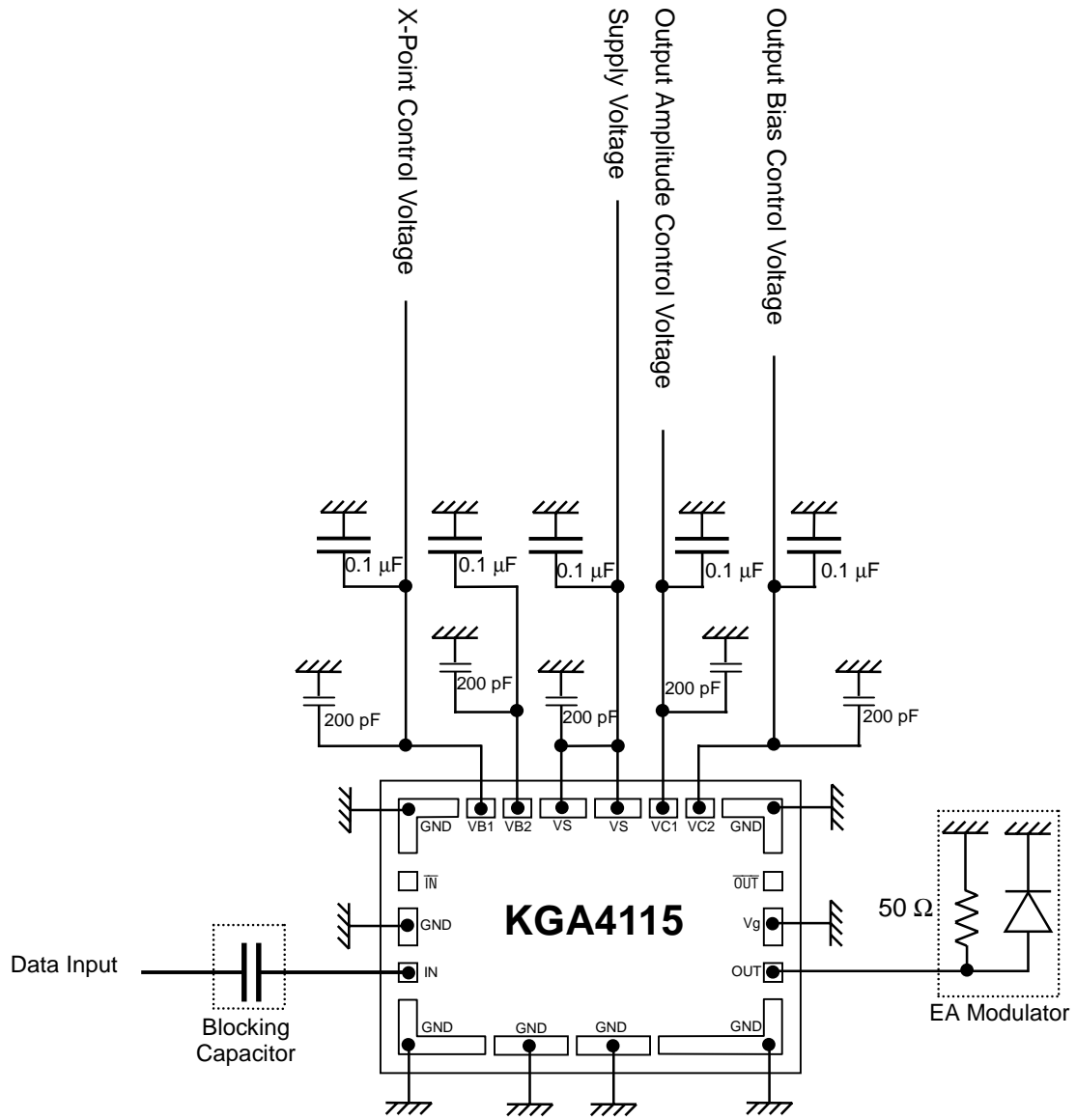
Output Amplitude : 2.8 Vpp
Rise Time (20–80%) : 28.9 ps
Fall Time (20–80%) : 28.9 ps

PAD ARRANGEMENT



- IN : Signal Input Port
- OUT : Signal Output Port
- VB1 : Input-bar Termination Port
and Cross Point Control Port
(External capacitor is required)
- VC1 : Output Amplitude Control Port
- VS : Supply Voltage Port
- Vg : Output-bar Internal Termination Port
(If you don't use output-bar, please connect Vg to GND, but if you use output-bar, Vg is opened.)
- $\overline{\text{IN}}$: Signal Input-bar Port
- $\overline{\text{OUT}}$: Signal Output-bar Port
- VB2 : Input Termination Port
(External capacitor is required)
- VC2 : Output Bias Current Control Port

TYPICAL APPLICATION



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