



**NEW**

**10NS-800-DR**  
**High Speed High Current Driver**

**Description**

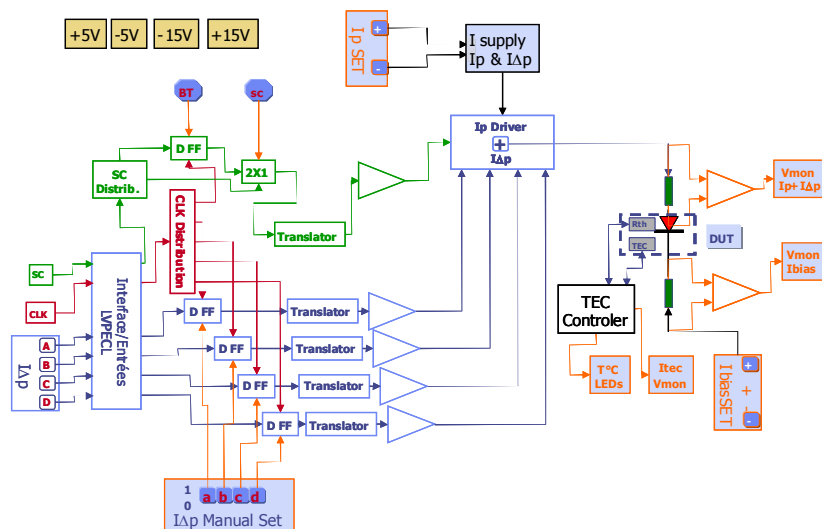
The **10NS-800DR** is a high speed current driver board capable of delivering 800mA in 10ns to an optoelectronic laser or amplifier. The board accepts Butterfly packaged devices with TEC operating parameters up to 2.3V and 3A. The anode and cathode of the optoelectronic device have to be floating (not connected to case). The input control signals are in LVPECL logic, accessible via SMA or 14 pins connector. The current is send to the device when the "Signal Control" is set at logical level one, and trigged on the positive transition of the "Clock" signal. Drive current can be dynamically adjusted thanks to a 4 bits digital control command. Power supply voltages are +/- 5V and +/-15V. The board is equipped with its own heat sink.

**Features**

- High speed,  $t_r = 10ns$  typ.
- 800mA drive capability
- On demand current dynamic setting
- Pre bias
- Peak current adjustment
- Manual or dynamic current control
- Synchronization of current switching and level adjustment
- TEC management
- Current monitoring
- Temperature monitoring
- Equipped with heat sink
- 171 x 200 x50 mm

**Applications**

- Laser driver
- Optical amplifier driver
- Fiber system
- Optical switching



**FUNCTIONNAL BLOCK DIAGRAM**

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VLI 0005 AA xx DS Rev0.1 VectraWave Proprietary information subject to change with



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**Typical Characteristics** (ambient 25°C with heat sink)

**Medium current setting** optoelectronic device serial resistance =3.2 Ohm

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	Comment
Positive supply voltage 1	+VDD			+5		V	
Positive supply voltage 2	+VCC			+15		V	
Negative supply voltage 1	-VDD			-5		V	
Negative supply voltage 2	-VCC			-15		V	
Input signal level Low	VxL		1490		1675	mV	Note 1
Input signal level High	VxH		2075		2420	mV	Note 1
Bias current	Ibias	DC pre biasing	0		50	mA	Note 2
Minimum peak Low current	IpL	ABCD=0000 SW7 @ Low	90		220	mA	Note 3
Minimum peak High current	IpH	ABCD=0000 SW7 @ High	90		350	mA	Note 3
Max peak Low current	IpL+ΔIpL	ABCD=1111 SW7 @ Low	140		350	mA	Note 3
Max peak High current	IpH+ΔIpH	ABCD=1111 SW7 @ High	140		560	mA	Note 3
Rise time	Tr	From Ibias to Ip		15	20	ns	Note 4
Fall time	Tf	From Ip to Ibias		15	20	ns	Note 4

Note 1 : LVPECL logic level

Note 2 : manual adjustment with button Ibias Set +/-

Note 3 : ABCD set the added current +ΔIp above Ip. The switch SW7 on board defines 2 working conditions: low current or high current. Current dynamics may be adapted on demand to reach IpH+ΔIpH = 800mA.

Note 4 : measured on resistive load

Environment Parameters		Symbols	Min	Max	Units
Operating temperature	Under air flow	T <sub>op</sub>	0	+45	°C
Storage temperature		T <sub>stg</sub>	- 40	+85	°C

**Absolute maximum ratings**

Maximum ratings	Symbols	Min	Max	Units
Positive supply voltage 1	+VDD	4.75	5.25	V
Positive supply voltage 2	+VCC	14.25	15.75	V
Negative supply voltage 1	-VDD	-5.25	-4.75	V
Negative supply voltage 2	-VCC	-15.75	-14.25	V
Input signals		0	3.1	V

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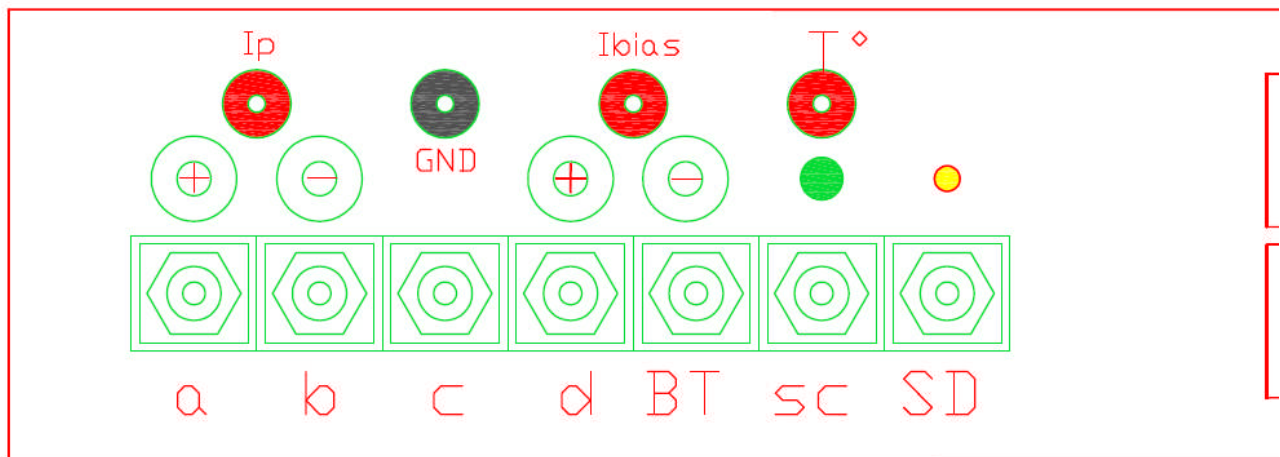


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**Front panel controls**

Name	Symbol	Function
Test Button	BT	Active when in "1" position : allow a,b,c and d manual setting, Ip manual setting, Ip monitoring and CW current drive ( $I_p + \Delta I_p$ )
Trig enable	sc	Disable Clk trigger function when in logical "1".
Manual A set	a	Defines A ( $\Delta I_p$ ) value for testing, when BT = "1".
Manual B set	b	Defines B ( $\Delta I_p$ ) value for testing, when BT = "1".
Manual C set	c	Defines C ( $\Delta I_p$ ) value for testing, when BT = "1".
Manual D set	d	Defines D ( $\Delta I_p$ ) value for testing, when BT = "1".
Current monitoring	Ip	Access to a voltage value image of the current (total)
Ip setting +	Ip +	Pushing the Ip+ button will increase the Ip value (64 steps)
Ip setting -	Ip -	Pushing the Ip- button will decrease the Ip value (64 steps)
Ground	GND	Ground reference for Ip and T°C voltage
Bias current monitoring	Ibias	Access to a voltage value image of the bias current Ibias
Ibias setting +	Ibias +	Pushing the Ibias+ button will increase the Ibias value (64 steps)
Ibias setting -	Ibias -	Pushing the Ibias- button will decrease the Ibias value (64 steps)
Temperature monitoring	T°	Access to a voltage value image of the optoelectronic device. LED color code : green = 25°C, blue <24°C, red >26°C
Stand by	SD	Stand by mode, no control, no current, low power consumption.



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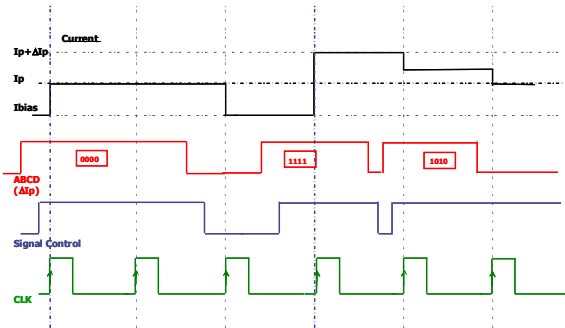
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Signals description

Signal	Symbol	Function
Signal Control	SC	Automatic mode (sc switch at 0): "1" level allows current $I_p$ to pass in optoelectronic device, triggered on positive transition of Clock signal. Logical "0" level stops the current. Semi-automatic mode (sc switch at 1): No trigger function of Clock signal. A "1" level allows current $I_p$ to pass in optoelectronic device. Logical "0" level stops the current.
Clock	Clk	Active on positive transition. On automatic mode, synchronizes SCI, A, B, C and D signals.
Amplitude control A	A	Bit 1 - LSB (among 4) defining current increase $\Delta I_p$ above $I_p$ .
Amplitude control B	B	Bit 2 (among 4) defining current increase $\Delta I_p$ above $I_p$ .
Amplitude control C	C	Bit 3 (among 4) defining current increase $\Delta I_p$ above $I_p$ .
Amplitude control D	D	Bit 4 - MSB (among 4) defining current increase $\Delta I_p$ above $I_p$ .

Truth table and chronogram

Input Signals (LVPECL)						Switchs Front Panel						I (Current)
SC	A	B	C	D	CLK	BT	sc	a	b	c	d	
0	X	X	X	X	X	0	0	0	0	0	0	$I_{bias}$
1	0	0	0	0	↓	0	0	0	0	0	0	$I_{bias} + I_p$
1	A	B	C	D	↓	0	0	0	0	0	0	$I_{bias} + I_p + \Delta I_p$
X	X	X	X	X	X	1	X	0	0	0	0	$I_{bias} + I_p$
X	X	X	X	X	X	1	X	a	b	c	d	$I_{bias} + I_p + \Delta I_p$
0	X	X	X	X	X	0	1	0	0	0	0	$I_{bias}$
1	0	0	0	0	X	0	1	0	0	0	0	$I_{bias} + I_p$
1	A	B	C	D	X	0	1	0	0	0	0	$I_{bias} + I_p$
1	A	B	C	D	↓	0	1	0	0	0	0	$I_{bias} + I_p + \Delta I_p$



Current dynamics

Figures 1 and 2 show the  $I_p$  and  $\Delta I_p$  maximum current dynamics for two different board settings.

$I_p$  is set manually between  $I_{pL}$  and  $I_{pH}$  using  $I_{p+}$  /  $I_{p-}$  buttons. The  $I_p$  value is automatically stored in a non volatile memory. Current value can be monitored through a test point (connect a volt meter).

On board switch "SW7" splits the current dynamic in two parts, with a ratio of 2 for the maximum current.

Figures 1 and 2 bellow show the current  $I_p + \Delta I_p$  (mA) as function of  $I_p$  and  $\Delta I_p$  commands.

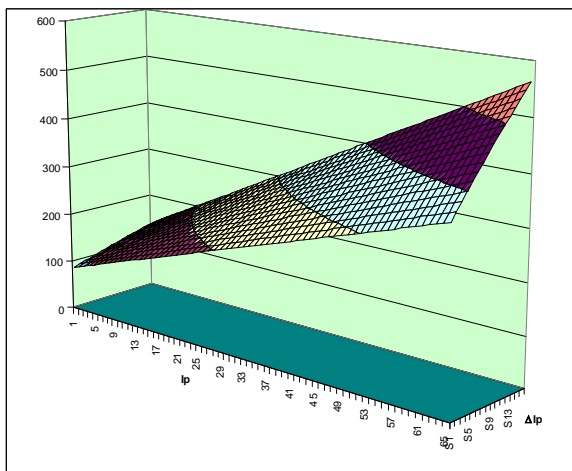


Fig 1 : Medium current setting dynamics

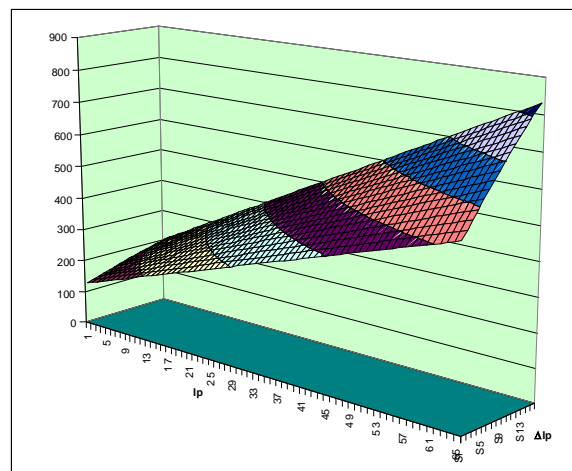


Fig 2 : High current setting dynamics

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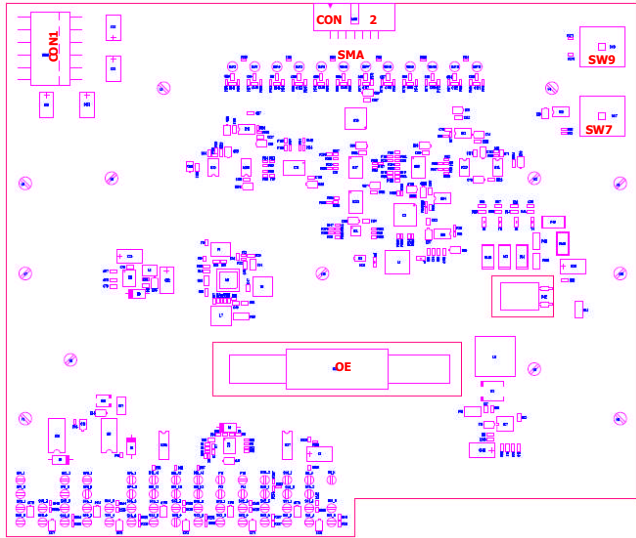
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CON1	Power supply connector (6pins)
CON2	Signal connector (14 pins)
SMA	SMA signal connectors 2x6
SW7	Current dynamic setting Low/High
SW9	TEC current and voltage setting Low/High
OE	Optoelectronic device

OE is fixed on heat sink with four 2mm screws.

**Handling**

This product is sensitive to electrostatic discharge and should not be handled except at a static free workstation. Take precautions to prevent ESD; use wrist straps, grounded work surfaces and recognized anti-static techniques when handling the **10NS-800DR** module.

Care should be taken to avoid supply transient and over voltage. Over voltage above the maximum specified in absolute maximum rating section may cause permanent damage to the device.



**Ordering information**

Product code	Max peak current
VLI 00005 AA	560 mA
VLI 00005 AD	800 mA

**End Document**

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