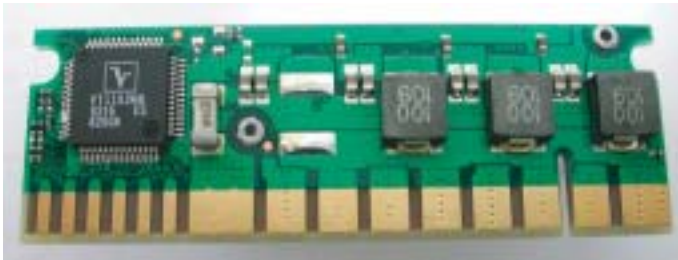


### HIGH-EFFICIENCY, LOW-VOLTAGE SWITCHING REGULATOR MODULE



#### MODEL SELECTION

Part Number	Vin(Vdc)	Vout(Vdc)	IMAX
API2VR20-30	11.04 - 12.96	1.1 - 1.85	52A

#### GENERAL DESCRIPTION

The AcBel 52A single output module is a new non-isolated high performance DC/DC converter designed to power advanced DSPs. This module provides a compact, low cost, highly efficient, fast, accurate, and reliable power delivery module for emerging low-output voltage applications. The input voltage ranges are from 11.04V to 12.96V and the output voltage ranges are from 1.1V to 1.85V. The maximum load current is 52A. This module is applied to DSP power supplies, graphics cards, FPGAs, telecom line cards, datacom equipment, broadband communications ASICs and general purpose point of load regulation.

#### OPERATION

The AcBel 52A single output module is a high-frequency stepdown switching regulator module optimized for applications requiring small size, high efficiency, and low output voltages.

The following sections describe specific features of the module in greater detail.

#### OUTPUT ENABLE

Pin 1 is used to enable or disable the output voltage. The output voltage is disabled by pulling this pin LOW. The output voltage is enabled by pulling this pin HIGH.

#### FEATURES AND BENEFITS

- ▶ Miniature Size
- ▶ Multiphase Technology
- ▶ PWM Switching Frequency : 0.8~1.3MHz
- ▶ High Power Density
- ▶ High Efficiency
- ▶ Excellent Control with > 100A/us Step Load Transient Response
- ▶ Soft Start
- ▶ Under Voltage Lockout
- ▶ Over Voltage Protection
- ▶ Current Limit/Short Circuit Protection
- ▶ Power Good Pin Available
- ▶ Output Enable Pin Available

#### APPLICATIONS

- ▶ DSP Power Supplies
- ▶ Graphics Cards
- ▶ FPGAs
- ▶ Telecom Line Cards
- ▶ Datacom Equipment
- ▶ Broadband Communications ASICs
- ▶ General Purpose Point of Load Regulation
- ▶ Microprocessors
- ▶ Low Voltage Distributed Power System

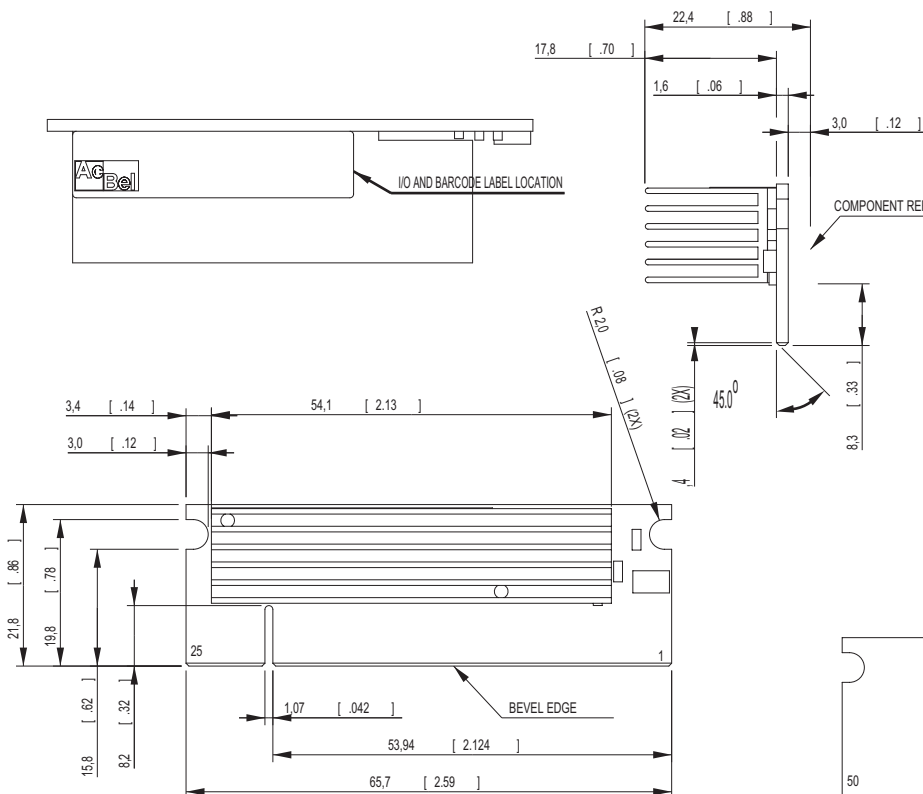
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#### SPECIFICATIONS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>IN</sub>	Input Voltage Range:	V <sub>IN</sub> = 11.04V to 12.96V	11.04	12	12.96	V
V <sub>OUT</sub>	Output Voltage Range:		1.1	1.475	1.85	V
I <sub>MAX</sub>	Maximum Output Current				52	A
ΔV <sub>OUT</sub>	Output Voltage Regulation					
	Line Regulation					mV
	Load Regulation					mV
	Output Ripple	22μF×27 + 1μF×4			60	mV p-p
I <sub>LIM</sub>	Peak Current Limit			112	A	
SR <sub>OUT</sub>	Output Slew Rate			0.3	A/μS	
Eff	Efficiency	T <sub>c</sub> = 25° C , V <sub>ID</sub> = 1.475 V	78			%
T <sub>OP</sub>	Operation Temp. Range					°C
T <sub>ST</sub>	Storage Temp. Range					°C

#### PACKAGE DRAWING

#### PIN-OUT INFORMATION



Pin	Function
1	OE
2	SEL 0
3	SEL 1
4	V <sub>NOM</sub>
5	SENSE +
6	SENSE -
7, 8, 9	VDD
10,11,14,15,18,19,22,23	GND
12,13,16,17,20,21,24,25	V <sub>OUT</sub>
26,27,30,31,34,35,38,39	V <sub>OUT</sub>
28,29,32,33,36,37,40	GND
41	Present detect
42,43,44	VDD
45	V <sub>ID</sub> 4
46	V <sub>ID</sub> 3
47	V <sub>ID</sub> 2
48	V <sub>ID</sub> 1
49	V <sub>ID</sub> 0
50	PWR Good

