

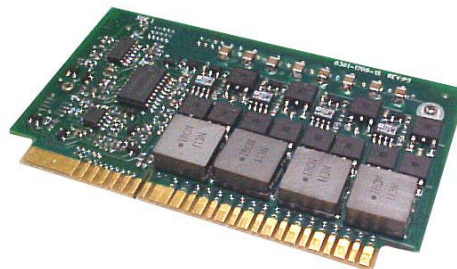
## NON-ISOLATED DC/DC CONVERTERS

4.5 –15V Input / Programmable Output / 60A VRM 9.0

**bel**  
POWER PRODUCTS

### G7NB-60E180 PRELIMINARY

- High efficiency means less power dissipation
- Remote on/off
- Wide input range (4.5 – 15V)
- 2-Wire Remote sense
- 5 bit VID digital voltage programming.
- Single wire current sharing



### Description

The G7NB-60E Series is a non-isolated step down DC/DC converters providing up to 60A of output current and designed to be compatible to the Intel VRM 9.0 specification. Standard features include current share, remote on/off, over current protection, remote sense and a power good signal. Optional features include adjustable undervoltage lockout, output current monitor and output trim. This product also makes use of adaptive positioning to improve transient response performance. These products may be used almost anywhere low-voltage silicon is being employed and a nominal 5V or 12V source is available. Typical applications include file servers, work stations and other computing applications.

### Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage Range	4.5 VDC		14.4 VDC	Output current is derated to 40A at 5V input due to connector rating for Vin pins.
Input Current (disabled)		17mA		
Input Current (full load)			11A	
Reflected Ripple Current			400mA rms	With 100uF, 25mOhm capacitor and 200nH of input inductance.

### Output Specifications

Parameter	Min	Typ	Max	Notes
Voltage Adjustability	-15%		+15%	
Output Current	0A		60A	
Set Point Accuracy	1.81V	1.83	1.85	no load, excluding Adaptive positioning, VID 00000
Adaptive Positioning (Droop Impedance)		1 mOhm		
Ripple and Noise		20mV		pk-pk, 0 to 20MHz Bandwidth Full load with two external 560uF oscon capacitors on output.
Turn on Time		8mS	16mS	
Transient Response Deviation Settling Time		90mV 175uS		di/dt = 5A/uS Load step =50% of max load.
Remote Sense Compensation		±0.3VDC		
Output Capacitance	1200uF		20,000uF	For applications requiring higher or lower output capacitance please consult factory.

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## General Specifications

Parameter	Specification
Switching Frequency	800kHz typical (fixed)
Dimensions	inches mm
	3.8 x 2.3 x .57 96.5 x 58.4 x 14.4
Weight	TBD
Operating Temperature	0°C to 70°C
Non-Operating Temperature	-40°C to 100°C
Protection Features	
Over current	110% to 170% max Io
Undervoltage	UVLO Vin < 9.5V
Remote On/Off	Active High
Efficiency (full load)	
1.85V output	86%

## Pin Connections

Row A		Row B	
Pin	Function	Pin	Function
1	VIN+	62	VIN-
2	VIN+	61	VIN-
3	VIN+	60	VIN-
4	VIN+	59	VIN-
5	Reserved	58	VRM-pres
6	key	57	VID4
7	VID3	56	VID2
8	VID1	55	VID0
9	TRIM	54	Ishare
10	PWRGD	53	OUTEN
11	VO-sen-	52	VO-sen+
12	UVLO_SET	51	Reserved
13	VO-	50	VO+
14	VO+	49	VO+
15	VO-	48	VO-
16	VO+	47	VO+
17	VO-	46	VO-
18	VO+	45	VO+
19	VO-	44	VO-
20	VO+	43	VO+
21	VO-	42	VO-
22	VO+	41	VO+
23	VO-	40	VO-
24	VO+	39	VO+
25	VO-	38	VO-
26	VO+	37	VO+
27	VO-	36	VO-
28	VO+	35	VO+
29	VO-	34	VO-
30	VO+	33	VO+
31	VO-	32	VO-

## Voltage Identification (VID) Code

VID4	VID3	VID2	VID1	VID0	Vo (VDC)
1	1	1	1	1	Output Off
1	1	1	1	0	1.1
1	1	1	0	1	1.125
1	1	1	0	0	1.15
1	1	0	1	1	1.175
1	1	0	1	0	1.2
1	1	0	0	1	1.225
1	1	0	0	0	1.25
1	0	1	1	1	1.275
1	0	1	1	0	1.3
1	0	1	0	1	1.325
1	0	1	0	0	1.35
1	0	0	1	1	1.375
1	0	0	1	0	1.4
1	0	0	0	1	1.425
1	0	0	0	0	1.45
0	1	1	1	1	1.475
0	1	1	1	0	1.5
0	1	1	0	1	1.525
0	1	1	0	0	1.55
0	1	0	1	1	1.575
0	1	0	1	0	1.6
0	1	0	0	1	1.625
0	1	0	0	0	1.65
0	0	1	1	1	1.675
0	0	1	1	0	1.7
0	0	1	0	1	1.725
0	0	1	0	0	1.75
0	0	0	1	1	1.775
0	0	0	1	0	1.8
0	0	0	0	1	1.825
0	0	0	0	0	1.85

Notes:

- Mechanical key between pins 11 & 12 and 51 & 52
- Pin 6 is electrical key.

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