GAPTEC®
GREEN TECHNOLOGY

2S7BE_6U Series

2W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter 2 Watt

- High efficiency up to 86%
- 6000VDC isolation
- SIP package
- Low ripple and noise
- Operating temperature: -40°C to +85°C
- International standard pinout
- EMI complies with EN55032 Class B

The 2S7BE_6U series meet reinforced insulation requirements. They are specially designed for applications where require compact size, high isolation, low isolation capacitor and low leakage current power. They are widely used in electricity, IGBT drivers and so on.

These products apply to:
1) Where the voltage of the input power supply is fixed (voltage variation ≤ ±10%)
2) Where isolation is necessary between input and output (isolation voltage 6000VDC)
3) Where do not has high requirement of line regulation and the ripple & noise of the output voltage;

Such as: Collection and isolation, High voltage collection circuit, IGBT-driven circuits, etc.

RoHS compliant | c UL us (pending) | CE

Common specifications

Short circuit protection:	1 sec. MAX
Cooling:	Nature convection
Operation temperature range:	-40°C – +85°C
Storage temperature range:	-40°C – +125°C
Case temperature:	100°C MAX
Lead temperature:	260°C MAX, 1.5mm from case for 10 sec
Storage humidity range:	< 95%
MTBF (MIL-HDBK-217F@25°C):	>1,121 Mhours
Safety standard:	designed to meet IEC 60950-1
Case material:	Plastic [UL94-V0]
Weight:	2.3g
Dimensions:	19.3x6.1x9.9mm

Input specifications

Item	Test condition	Min	Typ	Max	Units
Input voltage range				±10	%
Input surge voltage (1sec. max.)	• 3.3V input • 5VDC input • 12VDC input • 15VDC input • 24VDC input • 48VDC input			6 7 15 18 28 54	VDC VDC VDC VDC VDC VDC
Reflected Ripple Current*			20		mApk-pk
Input filter	Capacitor				

* Reflected ripple current measured with a simulated source inductance of 12µH and a source capacitor Cin(47µF, ESR<1.0Ω at 100KHz).

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	6000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance			60		pF

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy				±3	%
Line regulation	For Vin change of ±1%			±1.2	%
Load regulation	20% to 100% load • 3.3V output • Others			 20 10	 % %
Temperature coefficient	100% full load		±0.02		%/°C
Ripple & Noise	20MHz Bandwidth			75	mVp-p
Switching frequency	Full load, nominal input		80		KHz

EMC specifications

EMI	CE*	EN55032	CLASS B
EMI	RE	EN55032	CLASS B
EMS	ESD	IEC/EN61000-4-2	perf. Criteria A
EMS	RS	IEC/EN61000-4-3	perf. Criteria A
EMS	EFT**	IEC/EN61000-4-4	perf. Criteria A
EMS	Surge**	IEC/EN61000-4-5	perf. Criteria A
EMS	CS	IEC/EN61000-4-6	perf. Criteria A
EMS	PFMF	IEC/EN61000-4-8	perf. Criteria A

* Input filter components are required to help meet conducted emissions Class B, also see section EMI filter on page 4.
** An external filter capacitor is required if the module has to meet IEC61000-4-4/ IEC61000-4-5, also see section EFT/Surge filter on page 4.

Example:
2S7BE_0505D6U
2= 2Watt; S7= SIP7; B= Pinning; E= Cost effective; 5Vin; 5Vout; D= Dual Output; 6= 6kVDC; U= Unregulated Output

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2S7BE_6U Series

2W - Single/Dual Output DC-DC Converter - Fixed Input - Isolated & Unregulated

Single Output

Part Number	Input Voltage [V]	Output Voltage [VDC]	Input current [mA] No load	Input current [mA] Full load	Output current [mA]	Capacitive load [µF, max]	Efficiency [%, typ]
2S7BE_0303S6U	3.3	3.3	26	797	400	470	76
2S7BE_0305S6U	3.3	5	30	797	400	470	76
2S7BE_0309S6U	3.3	9	30	758	222.2	470	80
2S7BE_0312S6U	3.3	12	35	748	166.7	470	81
2S7BE_0315S6U	3.3	15	40	777	133.3	470	78
2S7BE_0324S6U	3.3	24	35	767	83.3	470	79
2S7BE_0503S6U	5	3.3	30	367	400	470	72
2S7BE_0505S6U	5	5	30	512	400	470	78
2S7BE_0509S6U	5	9	30	500	222.2	470	80
2S7BE_0512S6U	5	12	30	487	166.7	470	82
2S7BE_0515S6U	5	15	30	487	133.3	470	82
2S7BE_0524S6U	5	24	30	487	83.3	470	822
2S7BE_1203S6U	12	3.3	36	169	400	470	65
2S7BE_1205S6U	12	5	20	216	400	470	77
2S7BE_1209S6U	12	9	20	208	222.2	470	80
2S7BE_1212S6U	12	12	20	203	166.7	470	82
2S7BE_1215S6U	12	15	20	203	133.3	470	82
2S7BE_1224S6U	12	24	20	208	83.3	470	80
2S7BE_2403S6U	24	3.3	10	76	400	470	72
2S7BE_2405S6U	24	5	10	105	400	470	79
2S7BE_2409S6U	24	9	10	104	222.2	470	80
2S7BE_2412S6U	24	12	10	102	166.7	470	80
2S7BE_2415S6U	24	15	10	101	133.3	470	82
2S7BE_2424S6U	24	24	10	104	83.3	470	80
2S7BE_4803S6U	48	3.3	6	45	400	470	60
2S7BE_4805S6U	48	5	6	54	400	470	77
2S7BE_4809S6U	48	9	6	54	222.2	470	77
2S7BE_4812S6U	48	12	6	53	166.7	470	78
2S7BE_4815S6U	48	15	6	53	133.3	470	78
2S7BE_4824S6U	48	24	6	55	83.3	470	75

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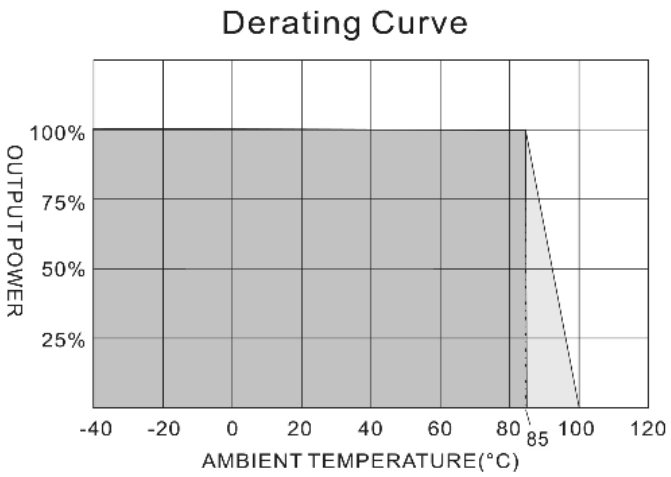
Dual Output

Part Number	Input Voltage [V]	Output Voltage [VDC]	Input current No load [mA, max]	Input current Full load [mA, typ]	Output current [mA]	Capacitive load [µF, max]	Efficiency [%, typ]
2S7BE_0303D6U	3.3	±3.3	25	797	±200	±220	76
2S7BE_0305D6U	3.3	±5	40	777	±200	±220	78
2S7BE_0309D6U	3.3	±9	40	797	±111.1	±220	76
2S7BE_0312D6U	3.3	±12	45	777	±83.3	±220	78
2S7BE_0315D6U	3.3	±15	45	777	±66.67	±220	78
2S7BE_0324D6U	3.3	±24	45	767	±41.67	±220	79
2S7BE_0503D6U	5	±3.3	30	406	±200	±220	65
2S7BE_0505D6U	5	±5	30	555	±200	±220	72
2S7BE_0509D6U	5	±9	30	519	±111.1	±220	77
2S7BE_0512D6U	5	±12	30	512	±83.3	±220	78
2S7BE_0515D6U	5	±15	30	500	±66.67	±220	80
2S7BE_0524D6U	5	±24	30	500	±41.67	±220	80
2S7BE_1203D6U	12	±3.3	20	164	±200	±220	67
2S7BE_1205D6U	12	±5	20	222	±200	±220	75
2S7BE_1209D6U	12	±9	20	216	±111.1	±220	77
2S7BE_1212D6U	12	±12	20	203	±83.3	±220	82
2S7BE_1215D6U	12	±15	20	203	±66.67	±220	82
2S7BE_1224D6U	12	±24	20	203	±41.67	±220	82
2S7BE_2403D6U	24	±3.3	10	80	±200	±220	68
2S7BE_2405D6U	24	±5	10	111	±200	±220	75
2S7BE_2409D6U	24	±9	10	104	±111.1	±220	80
2S7BE_2412D6U	24	±12	10	101	±83.3	±220	82
2S7BE_2415D6U	24	±15	10	101	±66.67	±220	82
2S7BE_2424D6U	24	±24	10	101	±41.67	±220	82
2S7BE_4803D6U	48	±3.3	6	45	±200	±220	60
2S7BE_4805D6U	48	±5	6	57	±200	±220	73
2S7BE_4809D6U	48	±9	6	54	±111.1	±220	77
2S7BE_4812D6U	48	±12	6	52	±83.3	±220	80
2S7BE_4815D6U	48	±15	6	52	±66.67	±220	80
2S7BE_4824D6U	48	±24	6	52	±41.67	±220	80

Typical characteristics



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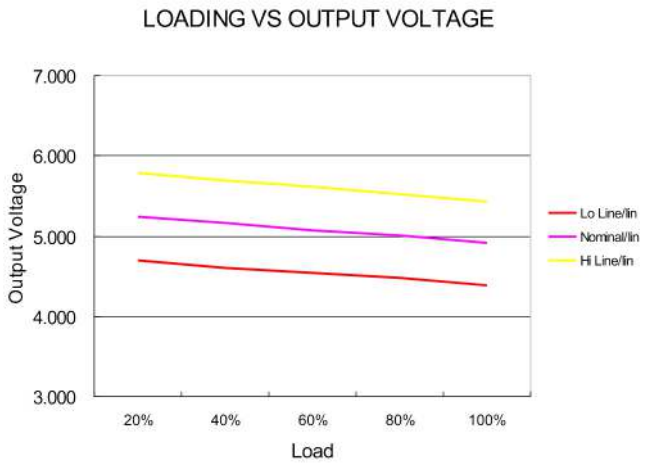
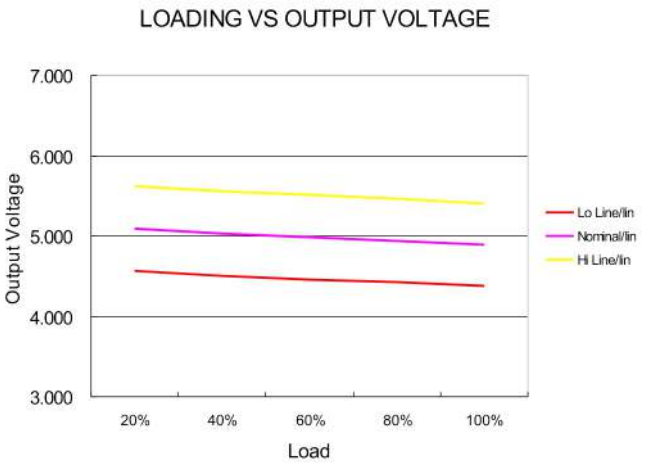
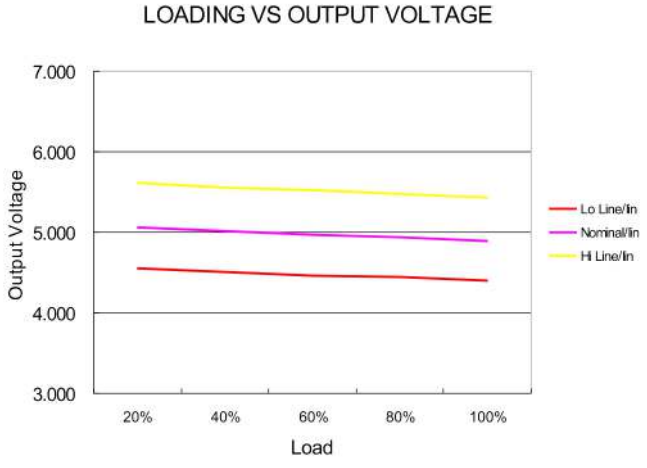


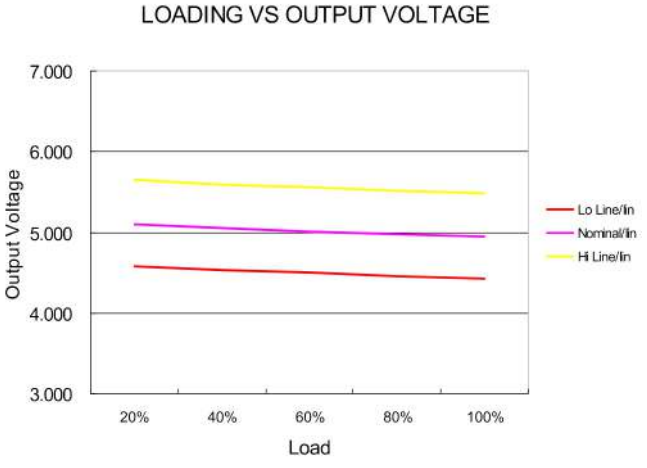
2S7BE_05yy type



2S7BE_12yy type

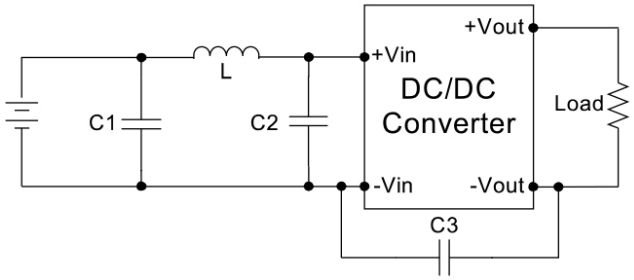


2S7BE_24yy type



2S7BE_48yy type

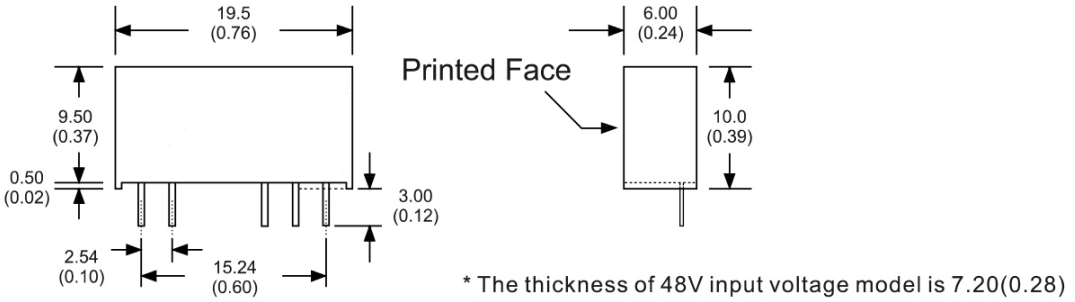
EMI filter



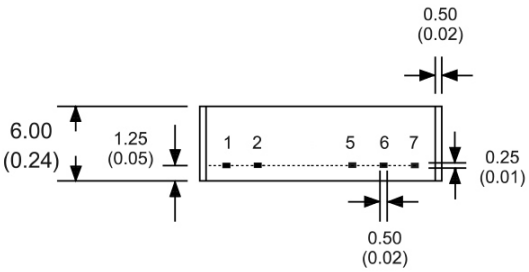
Model	C1	L	C2	C3
2S7BE_03xx6U	1210, 2.2µF/100V	18µH		
2S7BE_05xx6U	1210, 2.2µF/100V	18µH		
2S7BE_12xx6U	1210, 2.2µF/100V	18µH		
2S7BE_15xx6U	1210, 2.2µF/100V	18µH		
2S7BE_24xx6U	1210, 2.2µF/100V	18µH	1210, 2.2µF/100V	1206, 470pF/2KV
2S7BE_48xx6U	Electrolytic capacitor, 10µF/100V	18µH	1210, 2.2µF/100V	1206, 470pF/2KV

Input filter components (C1, L, C2, C3) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Mechanical dimensions



* The thickness of 48V input voltage model is 7.20(0.28)



Pin connections		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	N.P.	Common
7	+Vout	+Vout

All dimensions are typical in mm (inch)
Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
Pin pitch and length tolerance: ±0.35 (±0.014)
Case tolerance: ±0.5 (±0.02)