GAPTEC®
GREEN TECHNOLOGY

6S8W_3RP Series

6W - Dual/Single Output - Wide Input - Isolated & Regulated DC-DC Converter

DC-DC Converter 6 Watt

- **Highest power density in SIP8 package**
- **Low profile (L*W*H=21.8*9.2*11.1 mm)**
- **2:1 wide input voltage range**
- **Isolation 3000VDC**
- **High Efficiency up to 88%**
- **Short circuit protection (SCP; (automatic recovery)**
- **External On/Off control**
- **Internal SMD construction**
- **RoHS Compliance**
- **Internal PI-Filtering**

The 6S8W_ series is an excellent performance and high power density design. Wide 2:1 input voltage ranges: 4.5V-9V, 9V-18V, 18V-36V and 36V-75V.

The highest efficiency allows -40°C to +85°C operating temperatures.The very low stand-by (no-load) input power consumption 50mW typ,makes them an ideal solution for application in battery-powered equipment and instrumentation.

These products apply to:
1) Where the voltage of the input power supply is wide range (voltage range≤2:1)
2) Where isolation is necessary between input and output (isolation voltage≤3000VDC)
3) Where the regulation of the output voltage and the output ripple noise are demanded

Common specifications

Short circuit protection*:	Continuous, automatic recovery
Temperature rise at full load:	40°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C
Operation case temperature:	+110°C MAX
Storage temperature range:	-55°C ~+125°C
Storage humidity range:	< 95%
Lead temperature range:	300°C MAX, 1.5mm from case for 10 sec
No-load power consumption:	Vin=Nominal 50mW TYP / 150mW MAX
Temperature coefficient:	- 40°C to +85°C ambient 0.02 %/°C TYP
Operating Frequency:	200kHz MIN
Efficiency at Full Load:	79% MIN/88% MAX
Case material:	Non-conductive black plastic [UL94-V0]
MTBF (MIL-HDBK 217F):	+25°C: 1319x10^3 hours +71°C: 159x10^3 hours
Weight:	4.7g

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 second	3000			VDC
Isolation resistance	500VDC, input to output	15			GΩ
Isolation capacitance	Input/Output, 100KHz			30	pF

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output accuracy	Nominal Vin and full load		±2		%
Line regulation	Vin=min to max, full load		±0.5		%
Load regulation	20% to 100% full load		±0.5		%
Minimum load			0		%
Temperature drift (Vout)	Refer to recommended circuit			±0.03	%/°C
Output Ripple & Noise	20MHz Bandwidth			60	mVp-p
Remote Power OFF (leave open if not used)	Device ON				open or <0.8 VDC
(15 VDC max.)	Device OFF Device OFF (Stand by input current)				CTRL>1.5VDC 0.5mA max.

Model selection:
WCT_xxyyN##O**
W=Watt; **C=** Case; **T=**Type; ****=** Voltage Variation (omitted ± 10%);
xx= Vin; **yy=** Vout; **N=** Numbers of Output; **##=** Isolation (kVDC);
O= output regulation

Example:
6S8W_1205S3RP
6= 6Watt; S8= SIP8; W= wide input; 9-18Vin; 5Vout; S=Single Output; 3=3000VDC; R=Regulated Output P=Short Curcuit Protection

Note:
1. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test methods of indications are based on corporate standards.

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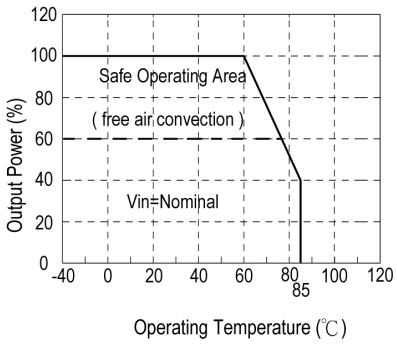
6S8W_3RP Series

6W - Dual/Single Output - Wide Input - Isolated & Regulated
DC-DC Converter

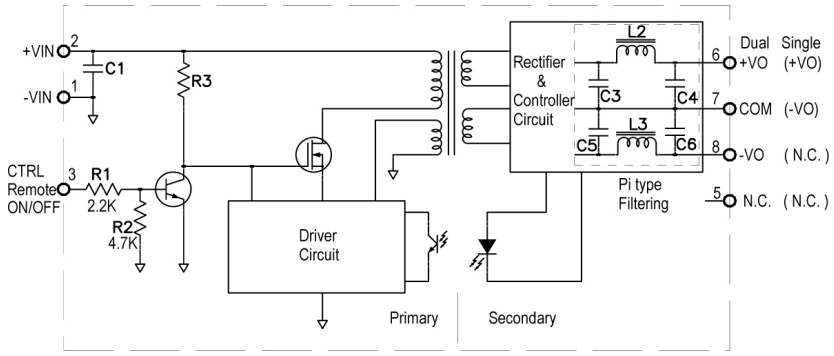
Part Number	Input Voltage [VDC]			Output Voltage [VDC]	Output Current [mA, max.]	Efficiency [%, typ.]	Capacitive Load [max.]
	Nominal	Range	Max (100 msec.max.)				
6S8W_0503S3RP	5	4.5-9	15	3.3	1300	79	1000
6S8W_0505S3RP	5	4.5-9	15	5	1200	81	1000
6S8W_0509S3RP	5	4.5-9	15	9	666	82	680
6S8W_0512S3RP	5	4.5-9	15	12	500	84	470
6S8W_0515S3RP	5	4.5-9	15	15	400	85	330
6S8W_1203S3RP	12	9-18	25	3.3	1300	81	1000
6S8W_1205S3RP	12	9-18	25	5	1200	84	1000
6S8W_1209S3RP	12	9-18	25	9	666	85	680
6S8W_1212S3RP	12	9-18	25	12	500	87	470
6S8W_1215S3RP	12	9-18	25	15	400	87	330
6S8W_2403S3RP	24	18-36	45	3.3	1300	81	1000
6S8W_2405S3RP	24	18-36	45	5	1200	84	1000
6S8W_2409S3RP	24	18-36	45	9	666	86	680
6S8W_2412S3RP	24	18-36	45	12	500	87	470
6S8W_2415S3RP	24	18-36	45	15	400	88	330
6S8W_4803S3RP	48	36-75	85	3.3	1300	81	1000
6S8W_4805S3RP	48	36-75	85	5	1200	84	1000
6S8W_4809S3RP	48	36-75	85	9	666	85	680
6S8W_4812S3RP	48	36-75	85	12	500	87	470
6S8W_4815S3RP	48	36-75	85	15	400	87	330
6S8W_0505D3RP	5	4.5-9	15	±5	±600	81	±470
6S8W_0512D3RP	5	4.5-9	15	±12	±250	84	±100
6S8W_0515D3RP	5	4.5-9	15	±15	±200	85	±47
6S8W_1205D3RP	12	9-18	25	±5	±600	84	±470
6S8W_1212D3RP	12	9-18	25	±12	±250	86	±100
6S8W_1215D3RP	12	9-18	25	±15	±200	86	±47
6S8W_2405D3RP	24	18-36	45	±5	±600	84	±470
6S8W_2412D3RP	24	18-36	45	±12	±250	88	±100
6S8W_2415D3RP	24	18-36	45	±15	±200	88	±47
6S8W_4805D3RP	48	36-75	85	±5	±600	84	±470
6S8W_4812D3RP	48	36-75	85	±12	±250	88	±100
6S8W_4815D3RP	48	36-75	85	±15	±200	88	±47

Typical characteristics

Derating graph

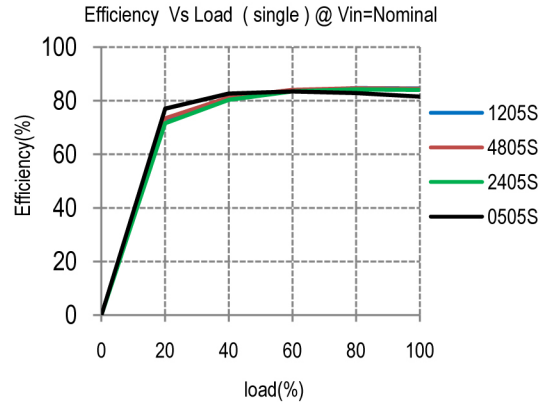


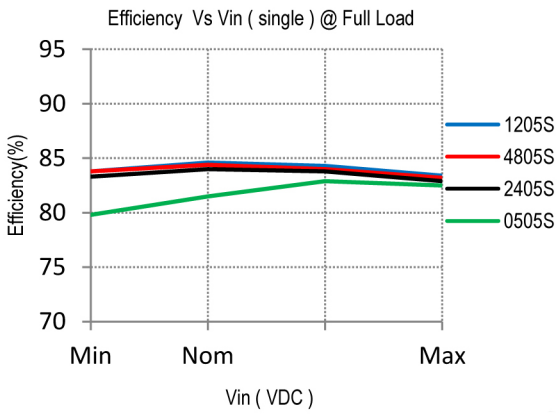
Functional block diagram

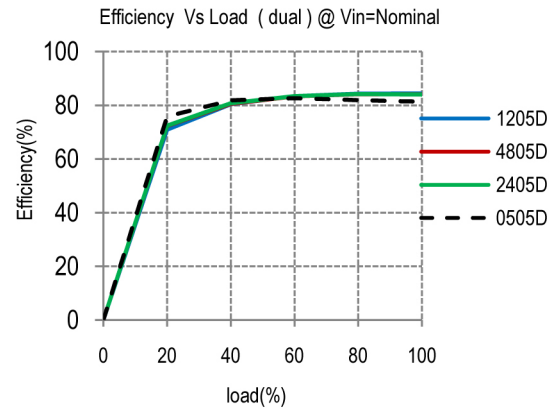


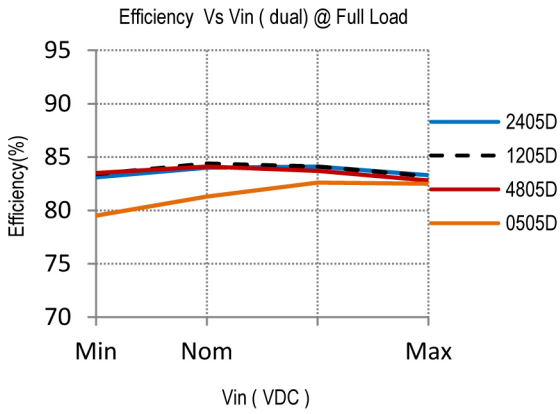
Input Voltage	C1 Values
4.5~9VDC	22uF/16V
9~18VDC	10uF/25V
18~36VDC	4.7uF/50V
36~75VDC	2.2uF/100V

Efficiency





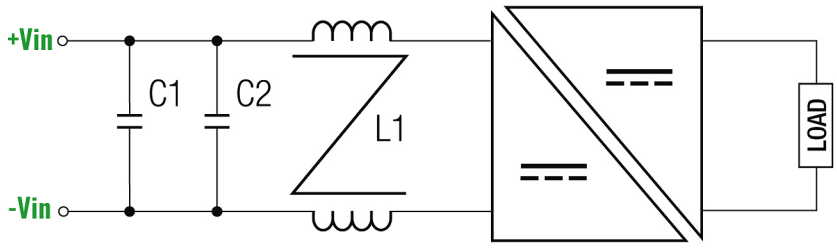




EMC filtering

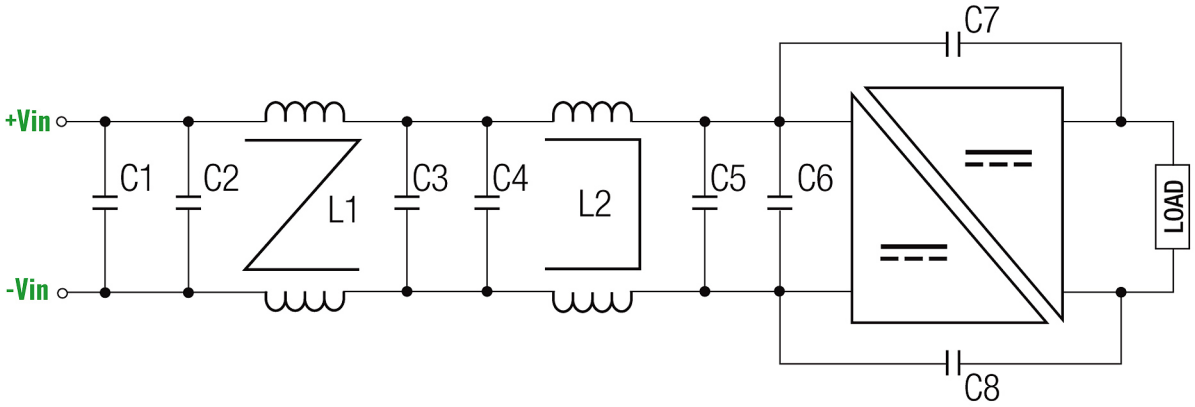
EMC Filtering - Suggestions for EN55022 Class A

Model	C1	C2	L1
6S8W_05xx	22µF	N/A	1µH
6S8W_12xx	4.7µF		2.2µH
6S8W_24xx			6.8µH
6S8W_48xx	2.2µF	2.2µF	10µH

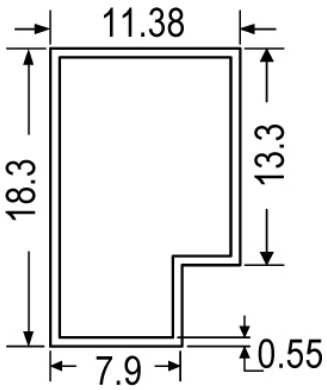


EMC Filtering - Suggestions for EN55022 Class B

Model	C1	C2	L1	C3	C4	L2	C5	C6	C7	C8
6S8W_05xx	22µF	N/A	1µH	10µF	N/A	200µH	10µF	N/A	47pF	100pF
6S8W_12xx	10µF		6.8µH					4.7µF		
6S8W_24xx	4.7µF		10µH	4.7µF			4.7µF	N/A	33pF	220pF
6S8W_48xx	2.2µF	2.2µF	22µH	2.2µF	2.2µF	600µH	1µF		47pF	680pF



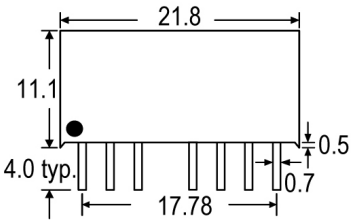
Tube outline

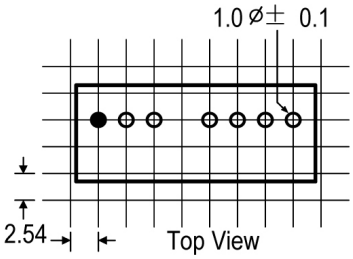


Note:
Unit: mm
General tolerances: ±0.50mm

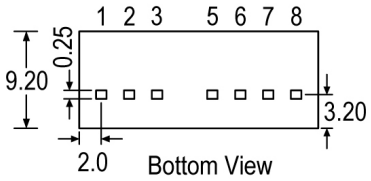
L=520mm ±2mm
Tube quantity: 23pcs

Mechanical dimensions/footprint





Recommended Footprint Details



XX.X ± 0.25 mm

XX.XX ± 0.15 mm

Pin Connections

Pin#	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	CTRL	CTRL
5	NC	NC
6	+Vout	+Vout
7	-Vout	COM
8	NC	-Vout

NC=No Connection
CTRL=Remote ON/OFF Control