DC-DC CONVERTERS

REGULATED, 4:1 WIDE INPUT RANGE, 1 WATT

EXTRA SMALL 0.52” X 0.36” X 0.40” SMD OR DIP PACKAGE

DSB(H)1 SERIES

FEATURES

- 4:1 Wide Input Voltage Range
- Extra Small SMD or DIP Package: 0.52” × 0.36” × 0.40”
- No Minimum Load Required
- Continuous Short Circuit Protection
- 3000Vdc Input to Output Isolation Available
- Safety Meets UL60950-1, EN60950-1 & IEC60950-1
- CE Mark
- Compliant to RoHS II and Reach

SELECTION GUIDE (SINGLE) All specifications are typical at nominal input, full load and 25°C, unless otherwise noted.

DSB” prefix=SMD Type. For DIP type, use prefix “DSH” instead of “DSB

Input Voltage Range Vdc	Output Voltage Vdc	Output Current at Full Load mA	Input Current at No Load mA	Efficiency %	Model Number	Maximum Capacitor Load µF
4.5 - 18	3.3	300	15	77	DSB(H)1-12S33	1680
4.5 - 18	5	200	20	79	DSB(H)1-12S5	820
4.5 - 18	12	90	20	81	DSB(H)1-12S12	470
4.5 - 18	15	70	20	81	DSB(H)1-12S15	330
4.5 - 18	24	45	25	80	DSB(H)1-12S24	160
9 - 36	3.3	300	10	76	DSB(H)1-24S33	1680
9 - 36	5	200	10	78	DSB(H)1-24S5	820
9 - 36	12	90	10	81	DSB(H)1-24S12	470
9 - 36	15	70	10	81	DSB(H)1-24S15	330
9 - 36	24	45	10	80	DSB(H)1-24S24	160
18 - 75	3.3	300	5	75	DSB(H)1-48S33	1680
18 - 75	5	200	5	78	DSB(H)1-48S5	820
18 - 75	12	90	5	81	DSB(H)1-48S12	470
18 - 75	15	70	6	81	DSB(H)1-48S15	330
18 - 75	24	45	6	80	DSB(H)1-48S24	160
4.5 - 18	±5	±100	25	77	DSB(H)1-12-5	±470
4.5 - 18	±12	±45	25	80	DSB(H)1-12-12	±330
4.5 - 18	±15	±35	25	81	DSB(H)1-12-15	±220
9 - 36	±5	±100	10	77	DSB(H)1-24-5	±470
9 - 36	±12	±45	10	80	DSB(H)1-24-12	±330
9 - 36	±15	±35	10	81	DSB(H)1-24-15	±220
18 - 75	±5	±100	6	77	DSB(H)1-48-5	±470
18 - 75	±12	±35	6	80	DSB(H)1-48-12	±330
18 - 75	±15	±45	6	81	DSB(H)1-48-15	±220

HIGH VOLTAGE (HVPS) Condatas AG

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DSB(H)1 SERIES

Input Specifications

Operating input voltage range, Vdc	4.5 Min., 12 Typ., 18 Max.	12Vin(nom)
	9 Min., 24 Typ., 36 Max.	24Vin(nom)
	18 Min., 48 Typ., 75 Max.	48Vin(nom)
Start up time, ms		Constant resistive load
	5 Min., 10 Max.	Power up
	5 Min., 10 Max.	Remote ON/OFF
Input surge voltage, Vdc		1 second, max.
	25 Max.	12Vin(nom)
	50 Max.	24Vin(nom)
	100 Max.	48Vin(nom)
Input filter		Capacitor type
Input Reflected Ripple Currect[1], mAp-p	15 Typ.	12Vin(nom)
	10 Typ.	24Vin(nom)
	5 Typ.	48Vin(nom)
Remote ON/OFF	Ctrl pin applied current via 1kΩ	
	Open or high impedance	DC-DC ON
	2 Min., 3 Typ., 4 Max.	DC-DC OFF
	2.5 Max.	Remote off input current

Output Specifications

Voltage accuracy, %	±1.0	
Line regulation, %		Low Line to High Line at Full Load
	±0.2	
Load regulation, %		No Load to Full Load
	±1.0	Single
	±1.0	Dual
		10% Load to 90% Load
	±0.5	Single
	±0.8	Dual
Cross regulation, %	±5	Asymmetrical load 25%/100%FL, Dual
Ripple and noise, mVp-p	30 Typ.	Measured by 20MHz bandwidth
Temperature coefficient, %/°C	±0.02 Max.	
Transient response recovery time, µs	500 Typ.	25% load step change
Short circuit protection	Continuous, automatics recovery	

General Specifications

Isolation voltage, Vdc	1 minute	Standard	1600 Min.		
		Suffix “H”	3000 Min.		
Isolation resistance, GΩ	500Vdc		1 Min.		
Isolation capacitance, pF		Standard			50 Max.
		Suffix “H”			50 Max.
Switching frequency, kHz			100 Min.		
Design meet safety standard	UL60950-1, EN60950-1, IEC60950-1				

Environmental Specifications

Operating ambient temperature, °C	Without derating	-40 Min.		+90 Max.
	With derating	+90 Min.		+105 Max.
Storage temperature range, °C		-55 Min.		+125 Max.
Thermal shock		MIL-STD-810F		
Vibration		MIL-STD-810F		
Relative humidity		5% to 95% RH		
Lead-free reflow solder process		IPC J-STD-020D		
Moisture sensitivity level (MSL)		IPC J-STD-033B Level 2		

Physical Specifications

Dimensions	0.52" × 0.36" × 0.40"
Case material	Non-conductive, black, plastic
Base material	Non-conductive, black, plastic
Potting material	Silicone (UL94 V-0)
Weight	2.7g (0.10oz)
MTBF	8.401×10^6 hrs, MIL-HDBK-217F, Full load

EMC Specifications

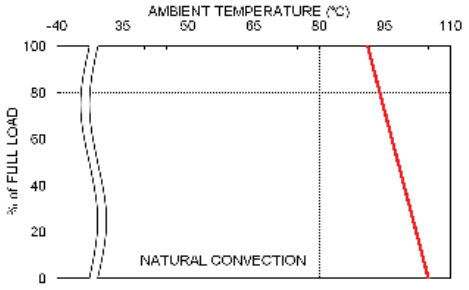
Specifications	Conditions		Level
EMI[1]	EN55022		Class A
			Class B
ESD	EN61000-4-2	Air ±8kV and Contact ±6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10V/m	Perf. Criteria A
Fast transient[2]	EN61000-4-4	±2kV	Perf. Criteria A
Surge[2]	EN61000-4-5	±1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6	10Vr.m.s	Perf. Criteria A

Note:

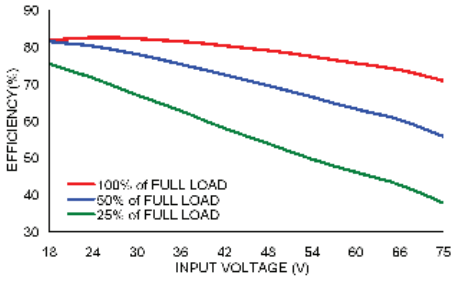
1. The standard modules meet IMA Class A or Class B and input reflected ripple current with external components. For further information, please contact Polytron Devices, Inc.
2. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor suggests: Nippon chemi-con KY series, 220 μF/100V.

CAUTION: This power module is not internally fused. An input line fuse must always be used.

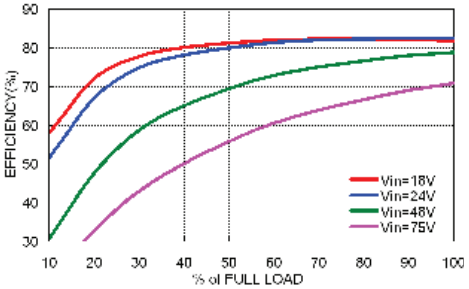
Characteristic Curve



DSB(H)1-48S5 Derating Curve



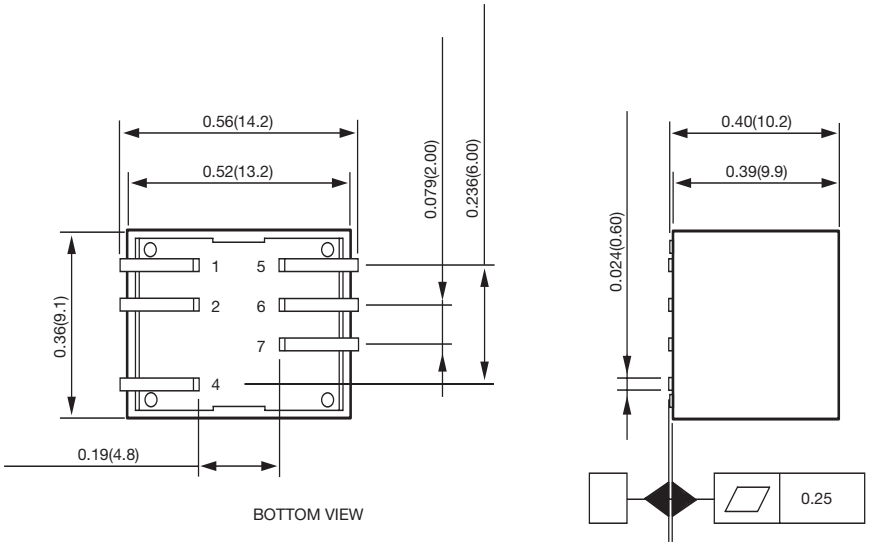
DSB(H)1-48S5 Efficiency vs. Input Voltage



DSB(H)1-48S5 Efficiency vs. Output Current

Mechanical Drawing

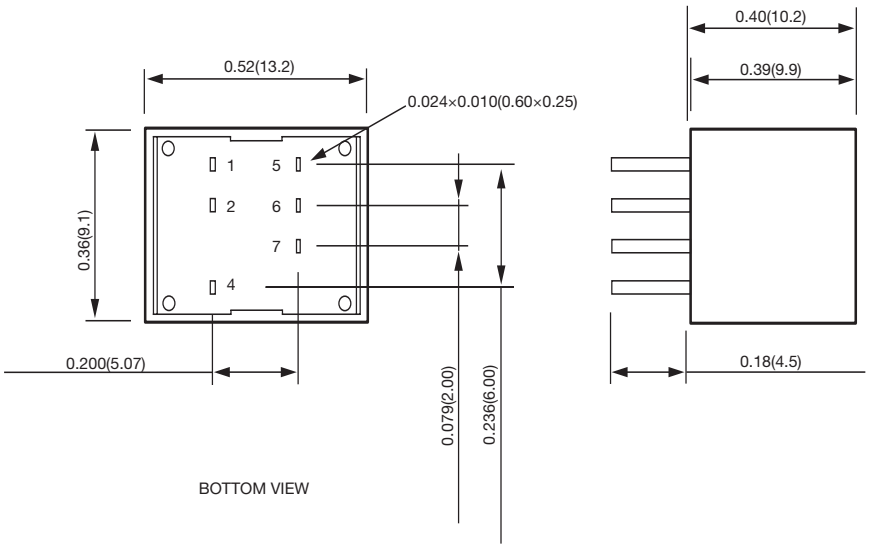
DSB1 SMD Type



PIN CONNECTION

PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	Ctrl	Ctrl
5	NC	-Vout
6	-Vout	Common
7	+Vout	+Vout

DHB1 DIP Type



1. All dimensions in inch (mm)
2. Tolerance: x.xx±0.02 (x.x±0.5)x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)