SMD-6W Series

6W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3000 VDC
- Continuous Short Circuit Protection
- Efficiency up to 85%
- -40°C ~ 85°C Operation Temperature Range
- EMC filter meets EN55022 Class A without adding external components
- Non-conductive Black Plastic DIL24-pin case

The SMD series is a family of cost effective 6W single & dual output DC-DC converters. These converters combine Plastic case in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3000VDC input/output isolation voltage, continuous short circuit protection with automatic restart and high line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages are 12Vdc, 24Vdc and 48Vdc with output voltages of 3.3, 5, 12, 15, 24, ±3.3, ±5, ±12, ±15 and ±24 Vdc. Featuring high efficiency operation up to 85% and output voltage accuracy of ±2% maximum. Also, no additional components adding required to comply with EN55022 Class A.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified.

OUTPUT SPECIFICATIONS

Output Voltage Accuracy	±2%, max.
Output Voltage Blance (Dual Output)	±2%, max.
Output Current	See table, max.
Line Regulation	±0.5%, max.
Load Regulation (0% to 100%)	±1.2%, max.
Cross Regulation (Dual Output) **(1)**	±5%, max.
Ripple&Noise (20MHz Bandwidth)**(2)**	80mVpk-pk, max. Dual Output 24V:100mVpk-pk, max.
Over Load Protection	160% of Iout, typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	±0.02%/°C
Capacitive Load **(3)**	See table
Transient Recovery Time **(4)**	300μs, typ.
Transient Response Deviation **(4)**	±3%, max. Single Output 3.3V:±5%, max.

INPUT SPECIFICATIONS

Input Voltage Range		See table
Under Voltage Lockout		
12V Models	Module ON / OFF	8.5 Vdc / 7.0Vdc, typ.
24V Models	Module ON / OFF	16.5Vdc / 14.5Vdc, typ.
48V Models	Module ON / OFF	34.5Vdc / 30.0Vdc, typ.
Start up Time (Nominal Vin and constant resistive load)		20mS, typ.
Input Filter		Pi Type
Input Current (No-Load)		See table, max.
Input Current (Full-Load)		See table, typ.
Input Reflected Ripple Current **(5)**		20mApk-pk, typ.

EMC SPECIFICATIONS

Radiated Emissions	EN55022	CLASS A
Conducted Emissions	EN55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT	IEC 61000-4-4	Perf. Criteria A
Surge**(6)**	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

GENERAL SPECIFICATIONS

Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1500~3000Vdc
I/O Isolation Capacitance	1000 pF, typ.
I/O Isolation Resistance	1000MΩ, min.
Switching Frequency	330kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>800 Khrs
Safety Standard	UL/cUL 60950-1 , IEC/EN 60950-1
Safety Approvals	UL/cUL 60950-1 , IEC/EN 60950-1

PHYSICAL SPECIFICATIONS

Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Φ0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	13.0g
Dimensions	1.25"x0.8"x0.4"

ENVIRONMENT SPECIFICATIONS

Operating Temperature	-40°C~85°C(See Derating Curve) -40°C ~ +60°C (For 100% load)
Maximum Case Temperature	100°C
Storage Temperature	-55°C~125°C
Cooling	Nature Convection

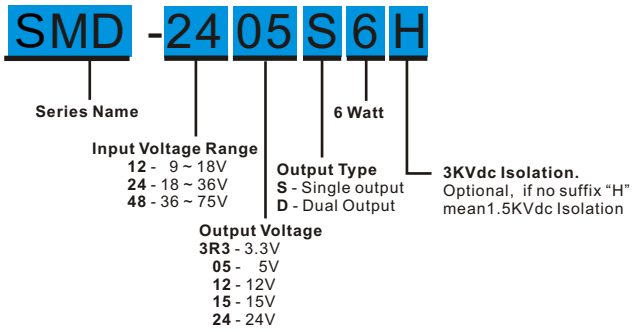
ABSOLUTE MAXIMUM RATINGS(7)

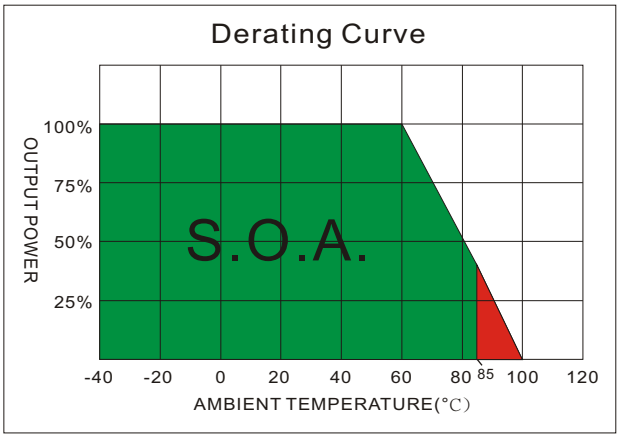
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Surge Voltage(100mS)	
12 Models	25 Vdc, max.
24 Models	50 Vdc, max.
48 Models	100 Vdc, max.
Soldering Temperature (1.5mm from case 10sec max.)	260°C, max.

SMD - 6W 2:1 Regulated Single & Dual output

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. Load (mA)	OUTPUT Current Full Load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
SMD-123R3S6	9-18	7	513	3.3	0	1400	76	470
SMD-1205S6	9-18	7	633	5	0	1200	80	470
SMD-1212S6	9-18	10	602	12	0	500	84	100
SMD-1215S6	9-18	10	595	15	0	400	85	100
SMD-1224S6	9-18	20	610	24	0	250	83	47
SMD-123R3D6	9-18	10	658	±3.3	0	±909	77	±220
SMD-1205D6	9-18	10	625	±5	0	±600	81	±220
SMD-1212D6	9-18	15	602	±12	0	±250	84	±100
SMD-1215D6	9-18	20	602	±15	0	±200	84	±100
SMD-1224D6	9-18	35	625	±24	0	±125	81	±47
SMD-243R3S6	18-36	7	260	3.3	0	1400	75	470
SMD-2405S6	18-36	7	316	5	0	1200	80	470
SMD-2412S6	18-36	7	301	12	0	500	84	100
SMD-2415S6	18-36	7	301	15	0	400	84	100
SMD-2424S6	18-36	10	305	24	0	250	83	47
SMD-243R3D6	18-36	7	329	±3.3	0	±909	77	±220
SMD-2405D6	18-36	7	316	±5	0	±600	80	±220
SMD-2412D6	18-36	10	305	±12	0	±250	83	±100
SMD-2415D6	18-36	15	301	±15	0	±200	84	±100
SMD-2424D6	18-36	20	309	±24	0	±125	82	±47
SMD-483R3S6	36-75	7	127	3.3	0	1400	77	470
SMD-4805S6	36-75	7	152	5	0	1200	83	470
SMD-4812S6	36-75	7	149	12	0	500	85	100
SMD-4815S6	36-75	7	149	15	0	400	85	100
SMD-4824S6	36-75	7	149	24	0	250	85	47
SMD-483R3D6	36-75	7	160	±3.3	0	±909	79	±220
SMD-4805D6	36-75	7	152	±5	0	±600	83	±220
SMD-4812D6	36-75	7	151	±12	0	±250	84	±100
SMD-4815D6	36-75	7	151	±15	0	±200	84	±100
SMD-4824D6	36-75	15	156	±24	0	±125	81	±47

Suffix "H" means 3000Vdc isolation

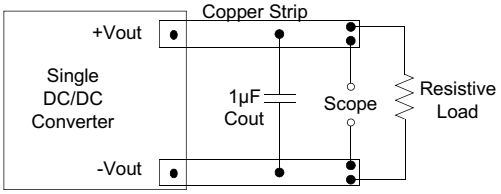
NOTE

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Ripple/Noise measured with a 1μF ceramic capacitor.
3. Tested by minimal Vin and constant resistive load.
4. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
5. Measured Input reflected ripple current with a simulated source inductance of 12μH and a source capacitor Cin(47μF, ESR<1.0Ω at 100KHz).
6. An external filter capacitor is required if the module has to meet IEC61000-4-5. The filter capacitor SCHMID-M suggest: Nippon chemi-con KY series, 220μF/100V.
7. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

TEST CONFIGURATIONS

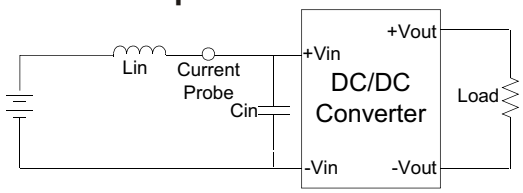
Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0μF) measurement.
The Scope measurement bandwidth is 0-20MHz.

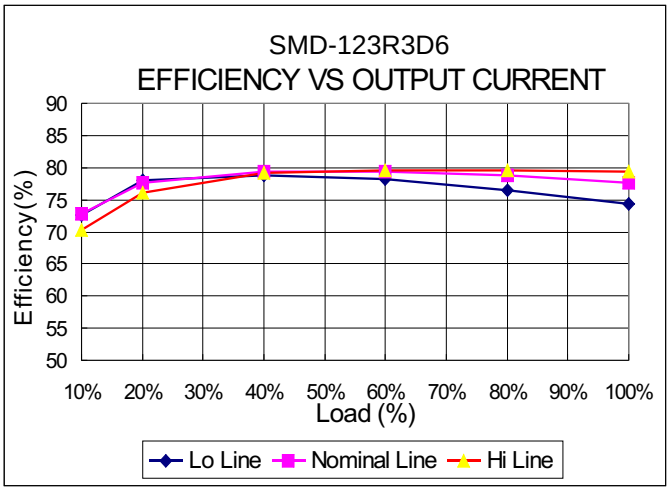


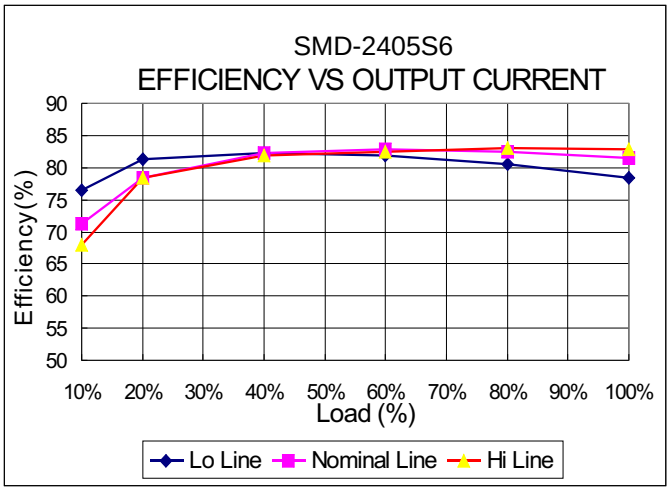
Input Reflected Ripple Current Test Step

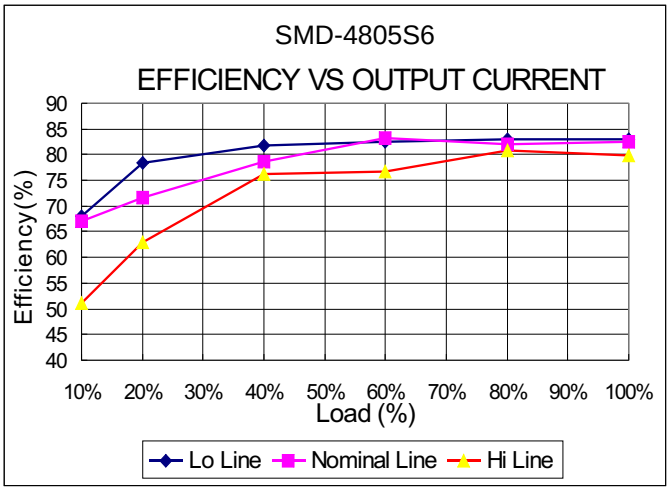
Input reflected ripple current is measured through a source inductor Lin(12μH) and a source capacitor Cin(47μF, ESR<1.0Ω at 100KHz) at nominal input and full load.

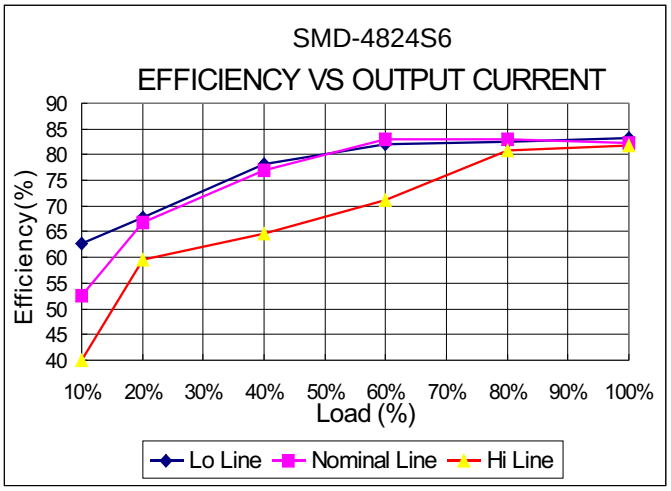


ELECTRICAL CHARACTERISTIC CURVES

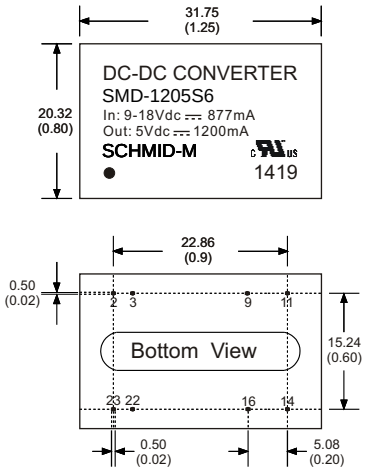


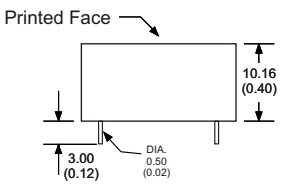






MECCHANICAL SPECIFICATIONS





24 Pin DIL Package
Non-Conductive Plastic

Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

(The Pin Connection of high isolation one is the same with normal one.)