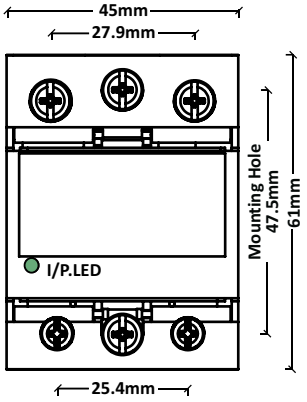
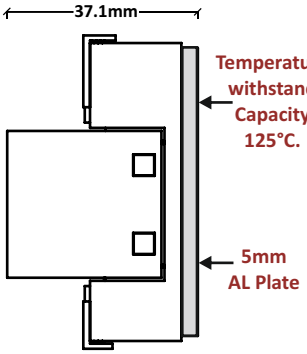
BS1F SERİSİ DC-DC SOLID STATE RELAY

OUTPUT DC CONTROL COOL POWER MOSFET & IGBT CONTROL TECHNOLOGY

PMDD (POWER MOSFET)





BS1F20D200M

SSR with 5mm Aluminium Plate

ORDERING FORMAT

PM : POWER MOSFET
IG : IGBT
D : DC Output
Control Input
00 : 4-32 VDC
D : DC Input
Output Voltage
Output Current Rating

PM: POWER MOSFET	
Output Voltage	Output Current Rating
30: 5-30 VDC	50 A
30: 5-30 VDC	100 A
60: 5-60 VDC	30 A
60: 5-60 VDC	60 A
85: 5-85 VDC	45 A
85: 5-85 VDC	90 A
200: 5-200 VDC	20 A
200: 5-200 VDC	30 A

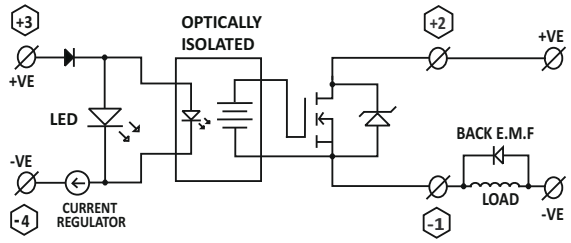
IG: IGBT	
Output Voltage	Output Current Rating
600: 5-600 VDC	10 A
600: 5-600 VDC	20 A
1200: 5-1200 VDC	10 A
1200: 5-1200 VDC	20 A

EXAMPLES

BS1F20D200M

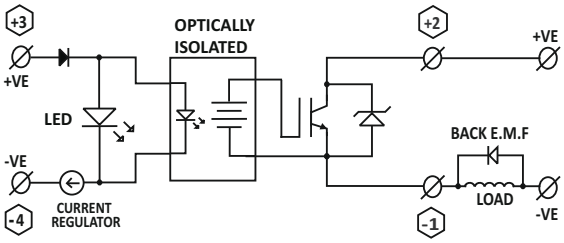
- Product Temperature withstand 125°C.
- PWM capacity 100 Hz.
- With easy open & lock IP 20 protection Flaps on I/P & O/P Terminals.
- Switching Speeds are Inherently Faster.
- No need to De-rate Power Handing Capacity.
- Input LED Green Indication.
- Isolated Drivers, Low Power Transient.
- N/O Configurations only.
- Reverse Polarity Protection on Input Side.
- Power (P_D) Increases with Case Temperature Increase.
- Junction Temperature Increases with R_{DS} Increase.

PMDD- POWER MOSFET DC TO DC



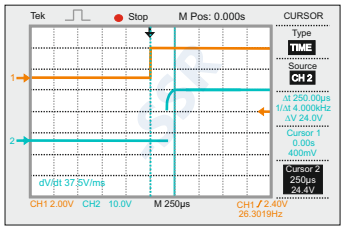
- Ultra Low ON state resistance - MOSFET
- RDS (ON) has Positive Temperature Co-efficient which aids in paralleled Power MOSFET device and Negative Temperature Co-efficient of Trans- Conductance so less susceptible for Thermal Runway.
- Voltage Range available from 30V to 200V (Low Voltage application)

IGBT- Insulated Gate Bipolar Transistor DC TO DC

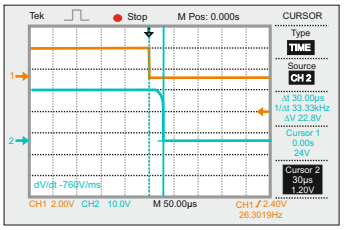


- Ultra Low Output Leakage current - IGBT
- Higher Short Circuit current rating (Isc).
- Voltage Range available from 600V to 1200V (High Voltage application)

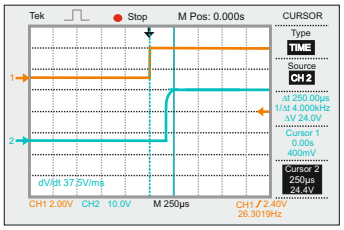
TURN ON Time 250µS Waveform of Power MOSFET



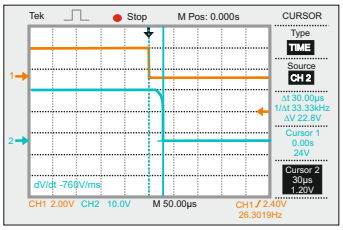
TURN OFF Time 30µS Waveform of Power MOSFET



TURN ON Time 250µS Waveform of IGBT



TURN OFF Time 30µS Waveform of IGBT



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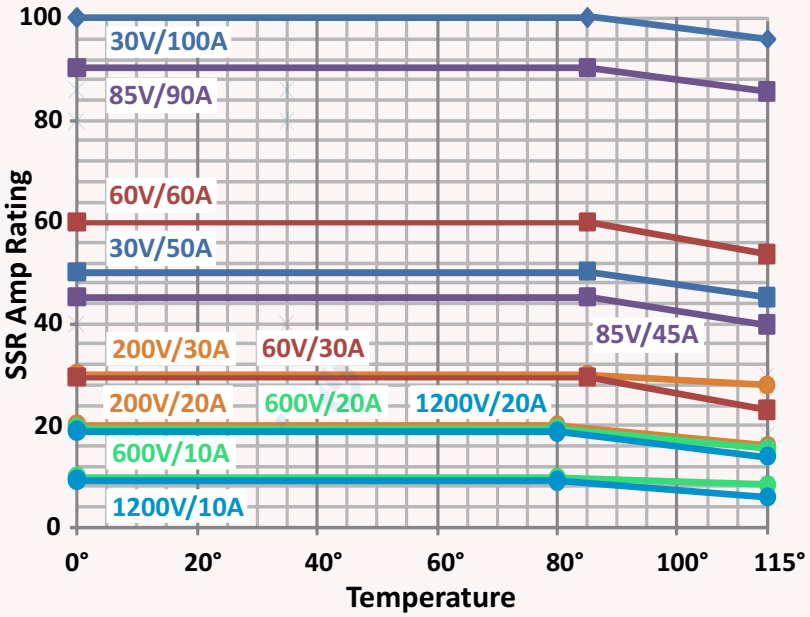
Max Barrier Layer Temperature (T_{max})

General Specification	
	< 125 °C
Ambient Temperature Range (T_{amb})	0-85 °C
SSR Storage Temperature Range (T_{st})	-40°C to 80°C
Input Terminal Screw Torque Range	Ƭ = 1.6 N.m (Max.)
Output Terminal Screw Torque Range	Ƭ = 2.5 N.m (Max.)
Housing Material	UL-94 V0 Grade
Base Plate	Aluminium
SSR Weight	100 grams
Control Input Electrical Wire Size (Max.)	4 mm²
Power Output Electrical Wire Size (Max.)	25 mm²
Test Standards:	ROHS,IP20

Input Technical Specifications			
Parameters	Unit	Type Selection	
		PMDD	IGBT
Control Voltage Range	V	4-32 VDC	4-32 VDC
Reverse Polarity Protection	-	YES	YES
Input Frequency Range(PWM)	Hz	Up to 100Hz	Up to 100Hz
Control Supply Current Consumption	mA	9-32 mA	9-32 mA
Input Impedance (Current Regulator Circuit Impedance)	Ω	0.5kΩ - 1kΩ	0.5kΩ - 1kΩ
Minimum Turn ON Voltage	VDC	3.5 VDC	3.5 VDC
Turn OFF Voltage	VDC	< 3.5 VDC	< 3.5 VDC
Control Input Status Indication	-	Green LED Indication	

THERMAL DERATING CURVE WITH HEAT SINK

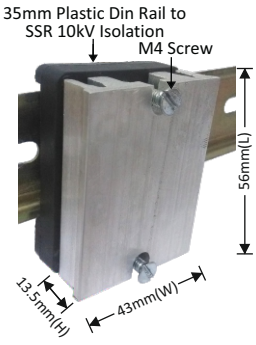


Output Technical Specifications @ 25°C Unless Specified - FOR POWER MOSFET									
Parameters	Symbol	Unit	30V / 50Amp	30V / 100Amp	60V / 30Amp	60V / 60Amp	85V / 45Amp	85V / 90Amp	200V / 20Amp	200V / 30Amp
Output Circuit - Switching Element			POWER MOSFET							
Operating Output DC Voltage Range	V	VDC	5-30	5-30	5-60	5-60	5-85	5-85	5-200	5-200
Maximum Drain To Source Break Down Voltage	I_D	Amp	50	100	30	60	45	90	20	30
Static Drain To Source ON Resistance	$V_{(BR)DSS}$	VDC	30	30	60	60	85	85	200	200
Safe Continuos Drain Current @ Tc=55°C with Suitable Heat Sink	$R_{DS(ON)}$	mΩ	1.6	0.8	4.1	2	2.8	1.4	15	7.5
On state Voltage Drop @ Rated Current	V_{DSS}	VDC	< 0.4	< 0.4	< 0.7	< 0.7	< 0.3	< 0.3	< 0.9	< 0.9
Pulse Drain Current(less than 60 µS)	I_{DM}	Amp	1000	2000	200	500	800	1600	100	300
Required minimum LOAD current	mA_{DC}	mA	3	3	3	3	3	3	3	3
SSR Turn ON Delay Time (Response Time)	$T_{D(ON)}$	µS	192	202	192	58	228	280	100	48
SSR Turn Off Delay Time	$T_{D(OFF)}$	µS	18	22	22	22	22	22	34	32
Minimum Isolation Resistance between Input Terminals (+I/P,-I/P) to Output Terminals (-O/P,+O/P) @ 500 VDC	Ω	GΩ	1	1	1	1	1	1	1	1
Isolation Voltage Input Terminals (+3,-4) to Output Terminals (-1,+2) for 1 Minute	V_{ISO}	kV	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Isolation Voltage Input & Output Terminal (+3,-4,-1,+2) to Body Isolation for 1 Minute	V_{ISO}	kV	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Junction Temperature	$T_{j(max.)}$	°C	125 °C							
Thermal Resistance Rθ (Junction To Case)	$R_{θ(j-c)}$	°C/W	1.65	0.45	0.7	0.1	3.1	1.15	0.7	0.9

Output Technical Specifications @ 25°C Unless Specified - FOR IGBT						
Parameters	Symbol	Unit	600V / 10Amp	600V / 20Amp	1200V / 10Amp	1200V / 20Amp
Output Circuit - Switching Element			IGBT			
Operating Output DC Voltage Range	V	VDC	5-600	5-600	5-1200	5-1200
Safe Continuos Collector Current @ Tc=55°C with Suitable Heat Sink	I_C	Amp	10	20	10	20
Maximum Collector To Emmiter Voltage	V_{CES}	VDC	600	600	1200	1200
Short Current	I_{SC}	Amp	75	75	75	75
On state Voltage Drop @ Rated Current	V_{CESAT}	VDC	< 1.8	< 1.8	< 2	< 2
Required minimum LOAD current	mA_{DC}	mA	3	3	3	3
SSR Turn ON Delay Time	$T_{D(ON)}$	µS	86	146	436	860
SSR Turn Off Delay Time	$T_{D(OFF)}$	µS	22	22	22	22
Minimum Isolation Resistance between Input Terminals (+I/P,-I/P) to Output Terminals (-O/P,+O/P) @ 500 VDC	Ω	GΩ	1	1	1	1
Isolation Voltage Input Terminals (+I,-I) to Output Terminals (-O/P,+O/P) for 1 Minute	V_{ISO}	kV	2.5	2.5	2.5	2.5
Isolation Voltage Input & Output Terminal (+I/P,-I/P,-O/P,+O/P) to Body Isolation for 1 Minute	V_{ISO}	kV	2.5	2.5	2.5	2.5
Maximum Junction Temperature	$T_{j(max.)}$	°C	125 °C			
Thermal Resistance Rθ (Junction To Case)	$R_{θ(j-c)}$	°C/W	0.7	0.35	0.3	0.2

TYPE OF HEATSINKS / CURRENT RATING / RθSA / SURFACE AREA / MECHANICAL DIMENSIONS / WEIGHT

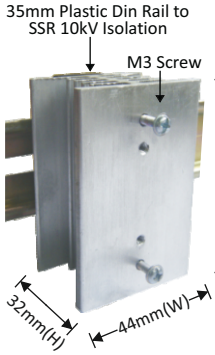
HEAT SINK TYPE "C-56" + DIN RAIL



TYPE "C-56"
Model 901-1 Nos.
Current upto 16Amp @40°C with Din Rail 42mm, Thermal Resistance
RθSA = 4°C/W
RθSA = 277.15 K/W
ΔT= 75°C
Surface Area:
353mm²x56mm
=19768mm³
43mm(W)x 56mm(L) x 13.5mm(H) + SSR

Inbuilt Heat Sink IN 901 SSR MODEL Weight : @ 57gms
No Separate Heat Sink available

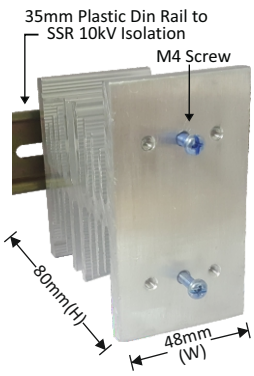
HEAT SINK TYPE "G-68" + DIN RAIL



TYPE "G-68"
Model 901-1 Nos.
Model 808-1 Nos.
Current upto 26Amp @40°C with Din Rail 22.5mm, Thermal Resistance
RθSA = 2.5°C/W
RθSA = 275.65 K/W
ΔT= 75°C
Surface Area:
491mm²X68mm
=33388 mm³
44mm(W) X 68mm(L) X 32mm(H) + SSR

Weight : @ 95gms

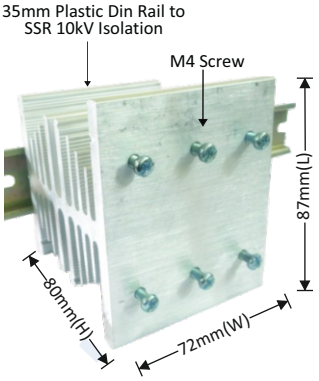
HEAT SINK TYPE "B-48" + DIN RAIL



TYPE "B-48"
Model 803-Upto 2 Nos.
Model 901-1 Nos.
Current upto 36Amp @40°C with Din Rail 42mm Thermal Resistance
RθSA = 1.17°C/W
RθSA = 274.32 K/W
ΔT= 75°C
Surface Area:
2630mm²X48mm
=126240 mm³
48mm(W) X 87mm(L) X 80mm(H) + SSR

Weight : @ 310gms

HEAT SINK TYPE "B-72" + DIN RAIL

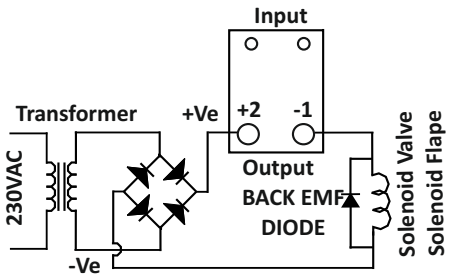


TYPE "B-72"
Model 803-Upto 3 Nos.
Model 901-1 Nos.
Current upto 60Amp @40°C with Din Rail 42mm Thermal Resistance
RθSA = 0.85°C/W
RθSA = 274 K/W
ΔT= 75°C
Surface Area:
2630mm²X72mm
=189360 mm³
72mm(W) X 87mm(L) X 80mm(H) + SSR

Weight : @ 500gms

Solenoid Valve / DC Load Application

For Power Mosfet

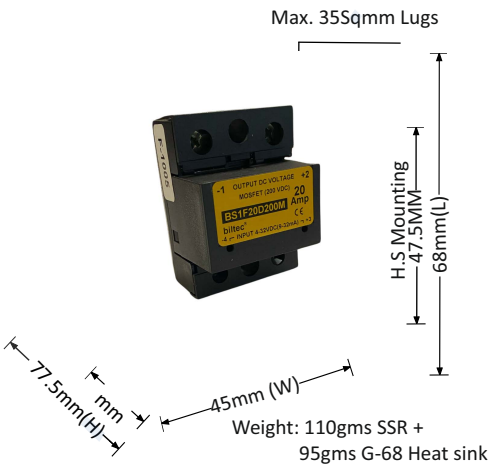


HEAT SINK SELECTION GUIDE

	PMDD								IGDD			
901 MODEL / HEAT SINK	**30V / 50Amp**	**30V / 100Amp**	**60V / 30Amp**	**60V / 60Amp**	**85V / 45Amp**	**85V / 90Amp**	**200V / 20Amp**	**200V / 30Amp**	**600V / 10Amp**	**600V / 20Amp**	**1200V / 10Amp**	**1200V / 20Amp**
C-56	20 Amp	-	20 Amp	-	20 Amp	-	10 Amp	-	-	-	-	-
G-68	30 Amp	-	30 Amp	-	30 Amp	-	20 Amp	30 Amp	10 Amp	-	10 Amp	-
B-48	50 Amp	-	-	60 Amp	45 Amp	60 Amp	-	-	-	20 Amp	-	20 Amp
B-72	-	100 Amp	-	-	-	90 Amp	-	-	-	-	-	-

* All above SSR Rating & Heat Sink Selections are considered on environment temperature @ 55°C

20AMP - MODEL BS1F



Weight: 110gms SSR + 95gms G-68 Heat sink

APPLICATIONS


Cost Efficient

Space Optimization


Timely Delivery


User Friendly


Minimizing Energy Cost


Long Term Reliability

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