

# RS5/RD5-R10/RD10

1.0 Watt 2:1 regulated  
single & dual output



ELECTRONIC COMPONENTS



- 8 Pin SIP8 / 16 Pin DIP16 package
- Wide 2:1 input range
- 1000 VDC isolation, up to 3000 VDC
- Continuous short circuit protection
- Efficiency up to 77%
- -40°C~85°C operation temperature range
- Metal case, Remote On/Off optional

## OUTPUT SPECIFICATIONS

Voltage accuracy	± 2%
Line regulation	± 0.5%
Load regulation (From 25% to 100% Load)	± 1%
Ripple & Noise (20 MHz bandwidth) (1)	80 mV pk-pk
Short circuit protection	Indefinite (automatic recovery)
Temperature coefficient	± 0.02%/°C
Capacitor load (2)	See table

## INPUT SPECIFICATIONS

Voltage range	See table
Max. input current	See table
No-load input current	See table
Input filter	Capacitors
Input reflected ripple current (3)	35 mA pk-pk

## GENERAL SPECIFICATIONS

Efficiency	See table
I/O isolation voltage (3 sec.)	
Input / output	1000 ~ 3000 VDC
Metal case / input & output	1000 VDC
I/O isolation capacitance	60 pF typ.
I/O isolation resistance	1000 M Ohm
Switching frequency	100~650 kHz
Humidity	95% rel. H
Reliability calculated MTBF (MIL-HDBK-217F)	> 2.732 Mhrs.
Safety standard (designed to meet)	IEC 60950-1:2001
Remote on/off (CTRL)	see note 11

## PHYSICAL SPECIFICATIONS

Case material	Non-conductive black plastic (UL94V-0 rated)
	Nickel-coated copper
Pin material	SIP > Alloy42 solder-coated
	DIP > Ø 0.5 mm brass solder-coated
Potting material	Epoxy (UL94V-0 rated)
Weight	SIP > 4.5 g, DIP > 6 g
Metal case	SIP > 6.5 g, DIP > 8 g
Dimensions	SIP > 0.86" x 0.36" x 0.44"
	DIP > 0.92" x 0.55" x 0.40"

## ENVIRONMENT SPECIFICATIONS

Operating temperature (See derating curve)	-40°C~ 85°C
Maximum case temperature	100°C
Storage temperature	-40°C~125°C
Cooling	Nature convection

## ABSOLUTE MAXIMUM RATINGS (4)

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

Input voltage (100 mS)	
5 modes	-0.7 ~ 12 VDC
12 modes	-0.7 ~ 24 VDC
24 modes	-0.7 ~ 40 VDC
48 modes (SIP)	-0.7 ~ 80 VDC

Lead soldering temperature 260°C  
(1.5 mm from case 10 sec.)

All specifications typical at  $T_a = 25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified.

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, we accept no responsibility for consequences arising from printing errors or inaccuracies. Subject to change without notice.

## NOTE

- 1) Ripple / Noise measured with 20 MHz bandwidth.
- 2) Tested by nominal  $V_{in}$  and constant resistive load.
- 3) Measured input reflected ripple current with a simulated source inductance of 12µH.
- 4) Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
- 5) Operation under no-load conditions will not damage these devices. However they may not meet all listed specifications.
- 6) It's necessary to add minimum capacitor in output for some models. Please check single model datasheet for detail value.
- 7) It is needed to add 100 µF capacitor in output end to keep the Ripple & Noise spec.
- 8) MCU (Master Control Unit) >  
The MCU Pin voltage is referenced to  $-V_{in}$  (Pin 1)  
ON: 0~0.8 VDC max.  
(Short circuit Pin 1 and Pin 3) or open circuit  
OFF: 5.0 VDC  
OFF idle current: 5.0 mA typ.

### Connection example



The models listed are just for standard type. If you need a special specification product, please contact our service.  
Phone: +49 69 984047-0, mail to: info@rsg-electronic.de or use the forms on www.rsg-electronic.de („Kontakt“).

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## NUMBER STRUCTURE

RS5/RD5 - XX	XX	R/RD 10	A	X***
<b>Name/Package</b> RS5=SIL8 RD5=DIL16	<b>Output</b> 03=3.3V 05=5V 09=9V 12=12V 15=15V 24=24V	<b>Power</b> 10=1.0W	<b>Code</b> internal	<b>Isolation</b> 1=1.0 kVDC 3=3.0 kVDC
<b>Input</b> 05=4.5-9V 12=9-18V 24=18-36V 48=36-72V	<b>Type</b> R=Single regulated RD=Dual regulated			

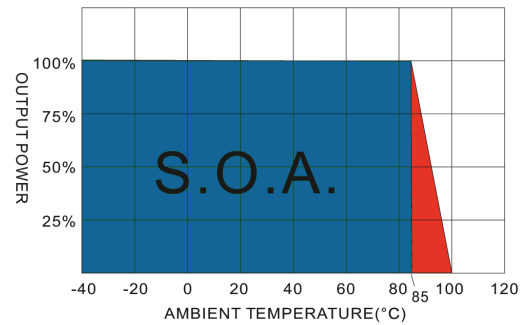
Options:

Please add suffix „M“ for Metal case.

Please add suffix „C“ for Remote Control function.

Please add suffix „T“ for TRACO TMR series pin-compatible version.

## DERATING CURVE



## MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μF)
RS5-0503R10AX	4.5-9	15 / 298	3.3	303	67	3300
RS5-0505R10AX	4.5-9	15 / 298	5	200	67	3300
RS5-0509R10AX	4.5-9	40 / 285	9	111	70	470
RS5-0512R10AX	4.5-9	55 / 285	12	83	70	470
RS5-0515R10AX	4.5-9	55 / 285	15	67	70	470
RS5-0524R10AX	4.5-9	70 / 294	24	42	68	220
RS5-1203R10AX	9-18	15 / 119	3.3	303	70	3300
RS5-1205R10AX	9-18	15 / 115	5	200	72	3300
RS5-1209R10AX	9-18	15 / 108	9	111	77	470
RS5-1212R10AX	9-18	15 / 108	12	83	77	470
RS5-1215R10AX	9-18	15 / 108	15	67	77	470
RS5-1224R10AX	9-18	15 / 114	24	42	73	220
RS5-2403R10AX	18-36	8 / 59	3.3	303	70	3300
RS5-2405R10AX	18-36	8 / 57	5	200	72	3300
RS5-2409R10AX	18-36	8 / 55	9	111	75	470
RS5-2412R10AX	18-36	8 / 55	12	83	75	470
RS5-2415R10AX	18-36	8 / 55	15	67	75	470
RS5-2424R10AX	18-36	8 / 55	24	42	75	220
RS5-4803R10AX	36-72	6 / 31	3.3	303	66	3300
RS5-4805R10AX	36-72	6 / 30	5	200	68	3300
RS5-4809R10AX	36-72	6 / 29	9	111	70	470
RS5-4812R10AX	36-72	6 / 29	12	83	70	470
RS5-4815R10AX	36-72	6 / 29	15	67	70	470
RS5-4824R10AX	36-72	6 / 30	24	42	68	220
RD5-0503R10AX	4.5-9	15 / 298	3.3	303	67	3300
RD5-0505R10AX	4.5-9	15 / 298	5	200	67	3300
RD5-0509R10AX	4.5-9	40 / 285	9	111	70	470
RD5-0512R10AX	4.5-9	55 / 285	12	83	70	470
RD5-0515R10AX	4.5-9	55 / 285	15	67	70	470
RD5-0524R10AX	4.5-9	70 / 294	24	42	68	220
RD5-1203R10AX	9-18	15 / 119	3.3	303	70	3300
RD5-1205R10AX	9-18	15 / 115	5	200	72	3300
RD5-1209R10AX	9-18	15 / 108	9	111	77	470
RD5-1212R10AX	9-18	15 / 108	12	83	77	470
RD5-1215R10AX	9-18	15 / 108	15	67	77	470
RD5-1224R10AX	9-18	15 / 114	24	42	73	220

# RS5/RD5-R10/RD10

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single & dual output

## MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load ( $\mu$ F)
RD5-2403R10AX	18-36	8 / 59	3.3	303	70	3300
RD5-2405R10AX	18-36	8 / 57	5	200	72	3300
RD5-2409R10AX	18-36	8 / 55	9	111	75	470
RD5-2412R10AX	18-36	8 / 55	12	83	75	470
RD5-2415R10AX	18-36	8 / 55	15	67	75	470
RD5-2424R10AX	18-36	8 / 55	24	42	75	220
RD5-4803R10AX	36-72	6 / 31	3.3	303	66	3300
RD5-4805R10AX	36-72	6 / 30	5	200	68	3300
RD5-4809R10AX	36-72	6 / 29	9	111	70	470
RD5-4812R10AX	36-72	6 / 29	12	83	70	470
RD5-4815R10AX	36-72	6 / 29	15	67	70	470
RD5-4824R10AX	36-72	6 / 30	24	42	68	220
RS5-0503RD10AX	4.5-9	15 / 285	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RS5-0505RD10AX	4.5-9	15 / 270	$\pm$ 5	$\pm$ 100	74	$\pm$ 1000
RS5-0509RD10AX	4.5-9	20 / 270	$\pm$ 9	$\pm$ 56	74	$\pm$ 220
RS5-0512RD10AX	4.5-9	20 / 266	$\pm$ 12	$\pm$ 42	75	$\pm$ 220
RS5-0515RD10AX	4.5-9	40 / 285	$\pm$ 15	$\pm$ 33	70	$\pm$ 220
RS5-0524RD10AX	4.5-9	70 / 298	$\pm$ 24	$\pm$ 21	67	$\pm$ 100
RS5-1203RD10AX	9-18	15 / 119	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RS5-1205RD10AX	9-18	15 / 115	$\pm$ 5	$\pm$ 100	72	$\pm$ 1000
RS5-1209RD10AX	9-18	15 / 109	$\pm$ 9	$\pm$ 56	76	$\pm$ 220
RS5-1212RD10AX	9-18	15 / 109	$\pm$ 12	$\pm$ 42	76	$\pm$ 220
RS5-1215RD10AX	9-18	15 / 112	$\pm$ 15	$\pm$ 33	74	$\pm$ 220
RS5-1224RD10AX	9-18	40 / 124	$\pm$ 24	$\pm$ 21	67	$\pm$ 1000
RS5-2403RD10AX	18-36	8 / 59	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RS5-2405RD10AX	18-36	8 / 59	$\pm$ 5	$\pm$ 100	70	$\pm$ 1000
RS5-2409RD10AX	18-36	8 / 54	$\pm$ 9	$\pm$ 56	76	$\pm$ 220
RS5-2412RD10AX	18-36	8 / 54	$\pm$ 12	$\pm$ 42	77	$\pm$ 220
RS5-2415RD10AX	18-36	8 / 55	$\pm$ 15	$\pm$ 33	75	$\pm$ 220
RS5-2424RD10AX	18-36	20 / 59	$\pm$ 24	$\pm$ 21	70	$\pm$ 100
RS5-4803RD10AX	36-72	6 / 30	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RS5-4805RD10AX	36-72	6 / 30	$\pm$ 5	$\pm$ 100	70	$\pm$ 1000
RS5-4809RD10AX	36-72	6 / 28	$\pm$ 9	$\pm$ 56	74	$\pm$ 220
RS5-4812RD10AX	36-72	6 / 27	$\pm$ 12	$\pm$ 42	76	$\pm$ 220
RS5-4815RD10AX	36-72	6 / 29	$\pm$ 15	$\pm$ 33	72	$\pm$ 220
RS5-4824RD10AX	36-72	12 / 30	$\pm$ 24	$\pm$ 21	70	$\pm$ 100
RD5-0503RD10AX	4.5-9	15 / 285	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
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RD5-0512RD10AX	4.5-9	20 / 266	$\pm$ 12	$\pm$ 42	75	$\pm$ 220
RD5-0515RD10AX	4.5-9	40 / 285	$\pm$ 15	$\pm$ 33	70	$\pm$ 220
RD5-0524RD10AX	4.5-9	70 / 298	$\pm$ 24	$\pm$ 21	67	$\pm$ 100
RD5-1203RD10AX	9-18	15 / 119	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RD5-1205RD10AX	9-18	15 / 115	$\pm$ 5	$\pm$ 100	72	$\pm$ 1000
RD5-1209RD10AX	9-18	15 / 109	$\pm$ 9	$\pm$ 56	76	$\pm$ 220
RD5-1212RD10AX	9-18	15 / 109	$\pm$ 12	$\pm$ 42	76	$\pm$ 220
RD5-1215RD10AX	9-18	15 / 112	$\pm$ 15	$\pm$ 33	74	$\pm$ 220
RD5-1224RD10AX	9-18	40 / 124	$\pm$ 24	$\pm$ 21	67	$\pm$ 1000



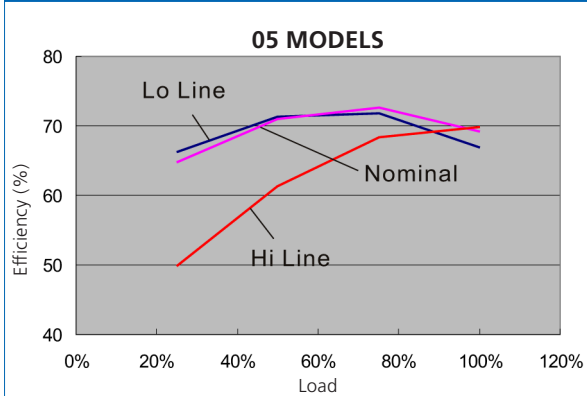
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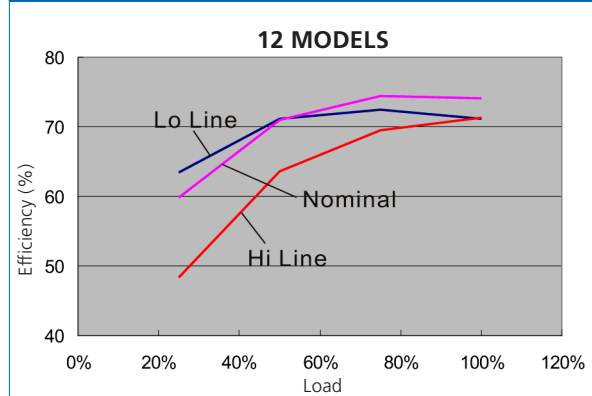
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Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load ( $\mu$ F)
RD5-2403RD10AX	18-36	8 / 59	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RD5-2405RD10AX	18-36	8 / 59	$\pm$ 5	$\pm$ 100	70	$\pm$ 1000
RD5-2409RD10AX	18-36	8 / 54	$\pm$ 9	$\pm$ 56	76	$\pm$ 220
RD5-2412RD10AX	18-36	8 / 54	$\pm$ 12	$\pm$ 42	77	$\pm$ 220
RD5-2415RD10AX	18-36	8 / 55	$\pm$ 15	$\pm$ 33	75	$\pm$ 220
RD5-2424RD10AX	18-36	20 / 59	$\pm$ 24	$\pm$ 21	70	$\pm$ 100
RD5-4803RD10AX	36-72	6 / 30	$\pm$ 3.3	$\pm$ 152	70	$\pm$ 1000
RD5-4805RD10AX	36-72	6 / 30	$\pm$ 5	$\pm$ 100	70	$\pm$ 1000
RD5-4809RD10AX	36-72	6 / 28	$\pm$ 9	$\pm$ 56	74	$\pm$ 220
RD5-4812RD10AX	36-72	6 / 27	$\pm$ 12	$\pm$ 42	76	$\pm$ 220
RD5-4815RD10AX	36-72	6 / 29	$\pm$ 15	$\pm$ 33	72	$\pm$ 220
RD5-4824RD10AX	36-72	12 / 30	$\pm$ 24	$\pm$ 21	70	$\pm$ 100

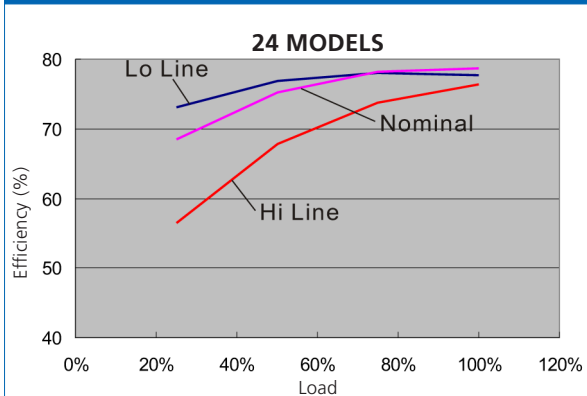
### EFFICIENCY VS OUTPUT CURRENT 05



### EFFICIENCY VS OUTPUT CURRENT 12



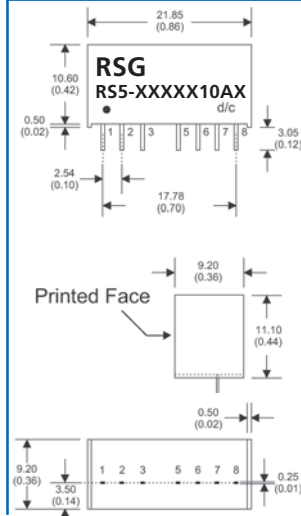
### EFFICIENCY VS OUTPUT CURRENT 24



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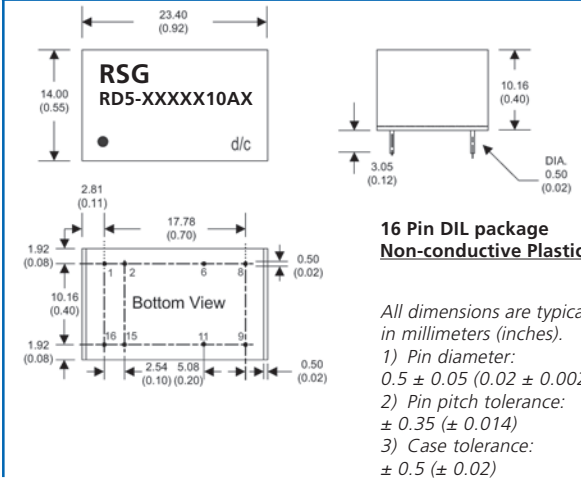
## MECHANICAL SPECIFICATIONS 8 Pin SIL



**8 Pin SIL package  
Non-conductive Plastic**

All dimensions are typical in millimeters (inches).  
 1) Pin diameter:  $0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 2) Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 3) Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

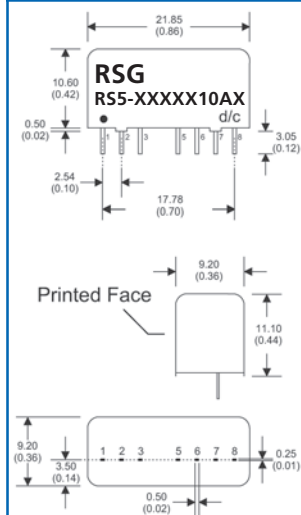
## MECHANICAL SPECIFICATIONS 16 Pin DIL



**16 Pin DIL package  
Non-conductive Plastic**

All dimensions are typical in millimeters (inches).  
 1) Pin diameter:  $0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 2) Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 3) Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

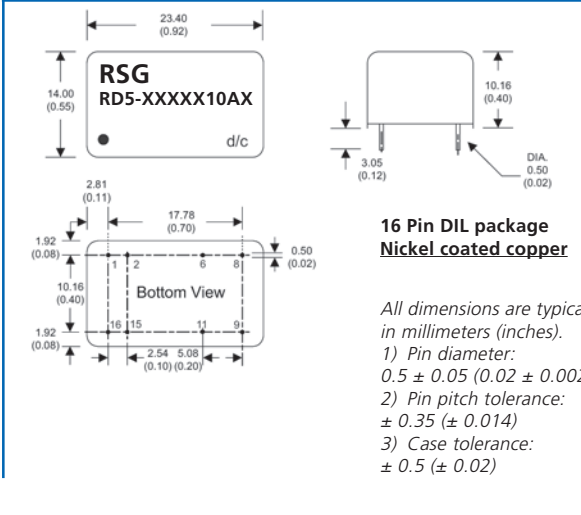
## MECHANICAL SPECIFICATIONS 8 Pin SIL



**8 Pin SIL package  
Nickel coated copper**

All dimensions are typical in millimeters (inches).  
 1) Pin diameter:  $0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 2) Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 3) Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

## MECHANICAL SPECIFICATIONS 16 Pin DIL



**16 Pin DIL package  
Nickel coated copper**

All dimensions are typical in millimeters (inches).  
 1) Pin diameter:  $0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 2) Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 3) Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

## PIN CONNECTIONS > RS5 Models, 8 Pin SIL

PIN#	SINGLE	DUAL	DUAL(T)	PIN#	SINGLE(C)	DUAL(C)	DUAL(CT)
1	-V Input	-V Input	-V Input	1	-V Input	-V Input	-V Input
2	+V Input	+V Input	+V Input	2	+V Input	+V Input	+V Input
3	N.P.	N.C.	N.C.	3	Remote On/Off	Remote On/Off	Remote On/Off
5	N.P.	N.C.	N.C.	5	N.C.	N.C.	N.C.
6	+V Output	+V Output	+V Output	6	+V Output	+V Output	+V Output
7	-V Output	-V Output	Common	7	-V Output	-V Output	Common
8	N.C.	Common	-V Output	8	N.C.	Common	-V Output

## > RD5 Models, 16 Pin DIL

PIN#	SINGLE	DUAL
1	-V Input	-V Input
2	-V Input	-V Input
6	N.C.	Common
8	N.C.	-V Output
9	+V Output	+V Output
11	-V Output	Common
15	+V Input	+V Input
16	+V Input	+V Input

The Pin connections for High Isolation Models are the same as for normal ones.  
 The Pin connections for Metal Case are the same as for Plastic package (standard).  
 Please add suffix „M“ for Metal case.  
 Please add suffix „C“ for Remote Control function ON/OFF.  
 Please add suffix „T“ for TRACO TMR series pin-compatible version.

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