

# FBR59-DS Relay (1 POLE )

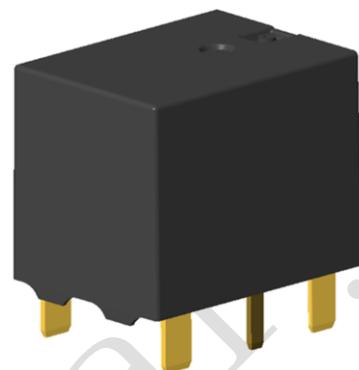
**These specifications are subject to change without notice.**

**[FEATURES]**

- Smallest High-power relay for On-board Charger
- High temperature grade (-40°C to +105°C)
- N.O. 50A continuous power supply at 105°C ※1
- Operable at up to 105°C ambient temperature
- 4.0kV impulse withstand voltage (between contacts and coil)
- Safety standard UL (Plan)

※1 Not compliant with safety standard UL,  
Up to 32A when compliant with safety standard UL.

RoHS compliant



**1. ORDERING INFORMATION**

[Example] FBR59    A    N    012    Y    -    DS  
                   (a)    (b)    (c)    (d)    (e)    (f)

(a)	Series Name	FBR59-DS Series
(b)	Arrangement	A : 1 form A C : 1 form C
(c)	Structure	N : Plastic sealed type
(d)	Nominal Coil Voltage	012 : 12VDC
(e)	Contact Material	Y : Silver- tin oxide
(f)	Features	DS : for On-board Charger

**2. COIL DATA CHART**

Coil Number	Nominal Voltage [VDC]	Coil Resistance [ohms] (tolerance of 10%)	Operate Voltage [VDC]	Holding Voltage [VDC]	Release Voltage [VDC]	Nominal Power [W]
012	12	206	8.4	8.4	1.0	Approx. 0.7

All values in the table are measured at 20 °C.

※These specifications are subject to change without notice.

**3. SPECIFICATIONS ※2**

Item		FBR59AN012Y-DS	FBR59CN012Y-DS	
Contact	Arrangement	1 form A	1 form C	
	Material	Silver Tin Oxide		
	Rating	32A 250VAC		
	Max. Carrying Current	N.O. side	60A(@20°C) / 52A (@85°C) / 50A (@105°C) Rating coil voltage	
		N.C. side	-	Same as N.O. side
	Max. Switching Current	32A 250VAC (10 times)		
	Max. Inrush Current	60A 250VAC		
	Min. Switching Load	1A 6VDC(Reference)		
Contact Voltage Drop	Max. 100 mV (at 1A 12VDC)			
Coil	Operating Temperature	-40 to +105 °C (no frost)		
Time Value	Operate	Max. 20ms (at nominal voltage, without bounce)		
	Release	Max. 10ms (without bounce, without diode)		
Insulation	Resistance (at 500VDC)	Min. 1000MΩ		
	Dielectric Strength	B/T contacts	1000VAC (50/60Hz), 1 minute	
		B/T coil and contacts	2000VAC (50/60Hz), 1 minute	
Impulse withstand voltage	B/T coil and contacts	4000V/1.2 x 50μs standard wave		
Life	Mechanical	1 x 10 <sup>6</sup> ope. min.		
	Electrical	Resistive	60A Inrush 10mA Switching 250VAC : 1 x 10 <sup>5</sup> ope. min.	
Vibration Resistance	Misoperation	10 to 55 Hz at double amplitude of 1.5mm		
	Endurance	10 to 55 Hz at double amplitude of 1.5mm		
Shock Resistance	Misoperation	Min. 100m/s <sup>2</sup> (11±1ms)		
	Endurance	Min. 1,000m/s <sup>2</sup> (6±1ms)		
Weight		Approx. 11 g		

※2 Normal temp.&humidity

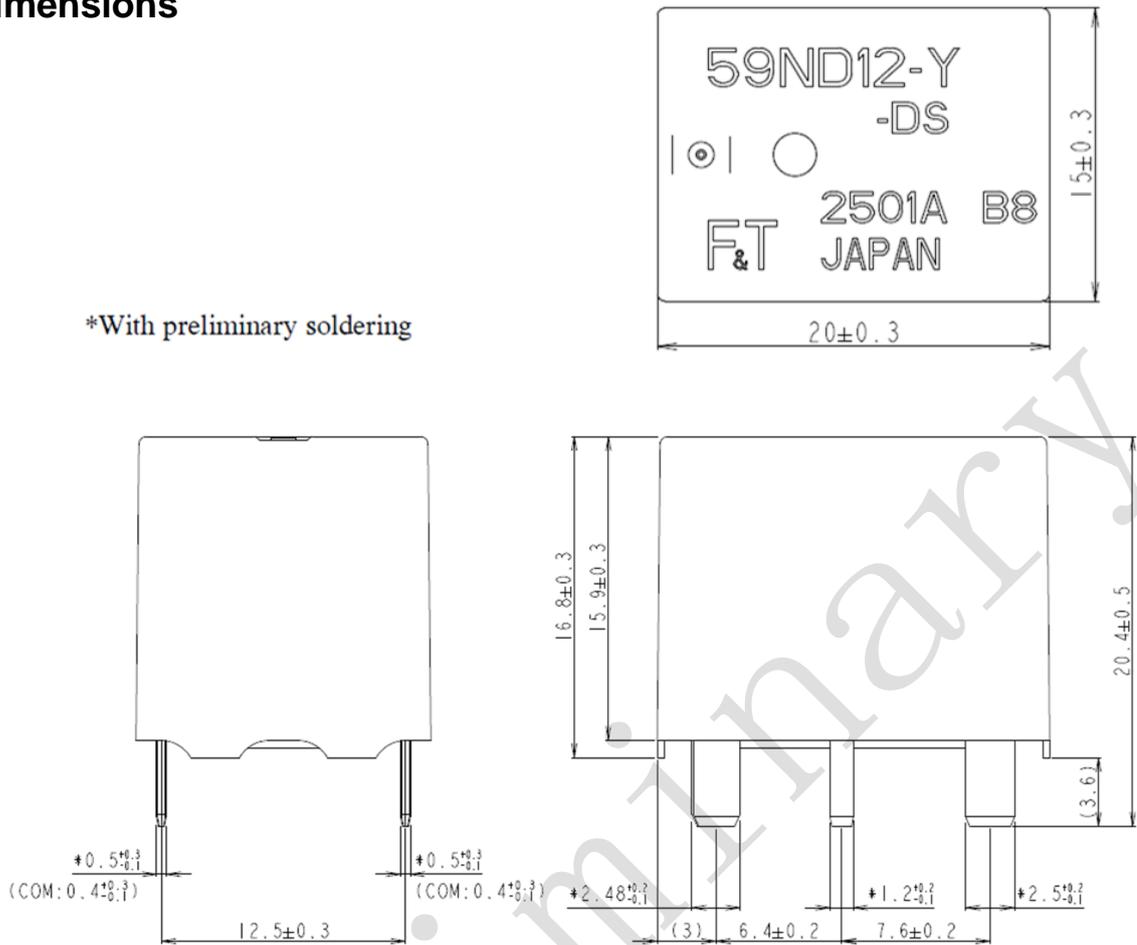
**Insulation Characteristics (IEC61810-1) ※3**

Item	Characteristics
Clearance/Creepage distance (Between coil and contacts)	Min. 3.0/3.0 mm
Category of protection (IEC61810-1)	RT III
Insulation material group	IIIa
Over voltage category	II
Rated voltage	AC250V
Pollution degree	2
Type of insulation (Between contact and coil)	Basic insulation
Type of insulation (Between open contacts)	Micro disconnection

※3 Stated in terms of actual performance

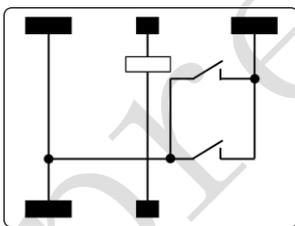
※These specifications are subject to change without notice.

**4. Dimensions**

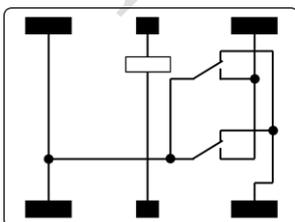


**5. Schematics (Bottom View)**

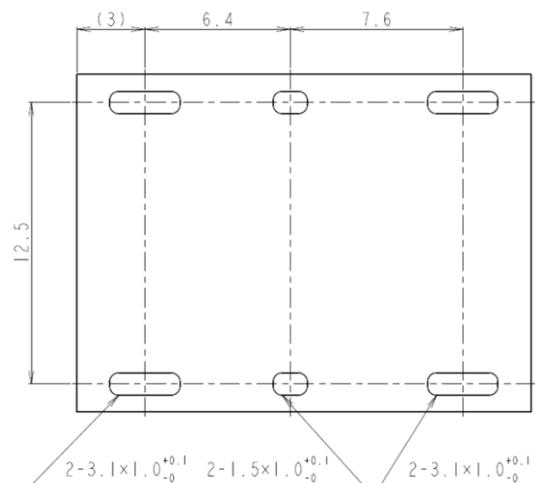
• 1 form A



• 1 form C



**6. PC board mounting hole layout (Bottom View)**



※These specifications are subject to change without notice.

## **7. Recommended solder condition**

### (1) Flow solder condition

Pre-heating:	maximum 120°C within 9 sec.
Soldering	dip within 5 sec. at 255°C±5°C solder bath.
Relay must be cooled by air immediately after soldering	

preliminary