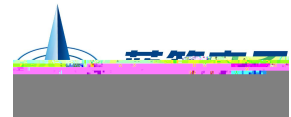


# BRF65R650C

Rev.B May.-2022



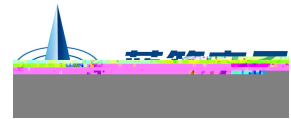
DATA SHEET

/ Revised record

A	2022.4.21	ALL	AOS-AOTF600A70L		
B	2022.5.26	2,3,4,5	YC-RMX65R380SN_ReV1.0		

# BRF65R650C

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DATA SHEET

## / Descriptions

TO-220F          N          650V                                  N-CHANNEL 650V Super-Junction Power MOSFET in a TO-220F Plastic Package.

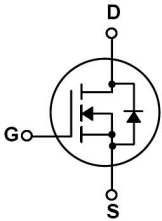
## / Features

$R_{DS(on)} \times Q_g$  100%                                  ROHS  
Very low  $R_{DS(on)} \times Q_g$ , 100% avalanche tested, RoHS compliant.

## / Applications

For switch mode power supply, uninterruptible power supply, power factor correction.

## / Equivalent Circuit



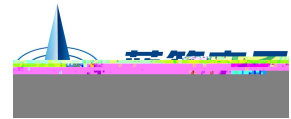
## / Pinning



PIN1 G                  PIN 2 D                  PIN 3 S

## / Marking

See Marking Instructions.



## / Absolute Maximum Ratings(Ta=25 )

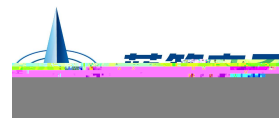
参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	650	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	8.5	A
Drain Current - Pulsed	$I_{DM}$	34	A
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Single Pulsed Avalanche Energy	$E_{AS}$	108	mJ
Avalanche Current	$I_{AS}$	5	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	27	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$
Junction-to-Case	$R_{JC}$	4.6	$^\circ\text{C/W}$
Junction-to-Ambient	$R_{JA}$	65	$^\circ\text{C/W}$

## / Electrical Characteristics(Ta=25 )

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu\text{A}$	650	700		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=650V$ $V_{GS}=0V$ $T_J=25^\circ\text{C}$			1.0	$\mu\text{A}$
Gate-Body Leakage Current, Forward	$I_{GSS}$	$V_{GS}=\pm 30V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	2.5	3.2	4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=3.5A$		580	650	m
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_{SD}=1A$ $T_J=25^\circ\text{C}$			1.2	V
Gate Resistance	$R_g$	$V_{GS}=0V$ $f=1.0\text{MHz}$		13.5		
Input Capacitance	$C_{iss}$	$V_{DS}=100V$ $V_{GS}=0V$ $f=1.0\text{MHz}$		460		pF
Output Capacitance	$C_{oss}$			22		pF
Reverse Transfer Capacitance	$C_{riss}$			0.5		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=400V$ $I_D=3.5A$ $V_{GS}=10V$ $R_G=25$		11.6		ns
Turn-On Rise Time	$t_r$			23		ns
Turn-Off Delay Time	$t_{d(off)}$			53		ns
Turn-Off Fall Time	$t_f$			35.8		ns

# BRF65R650C

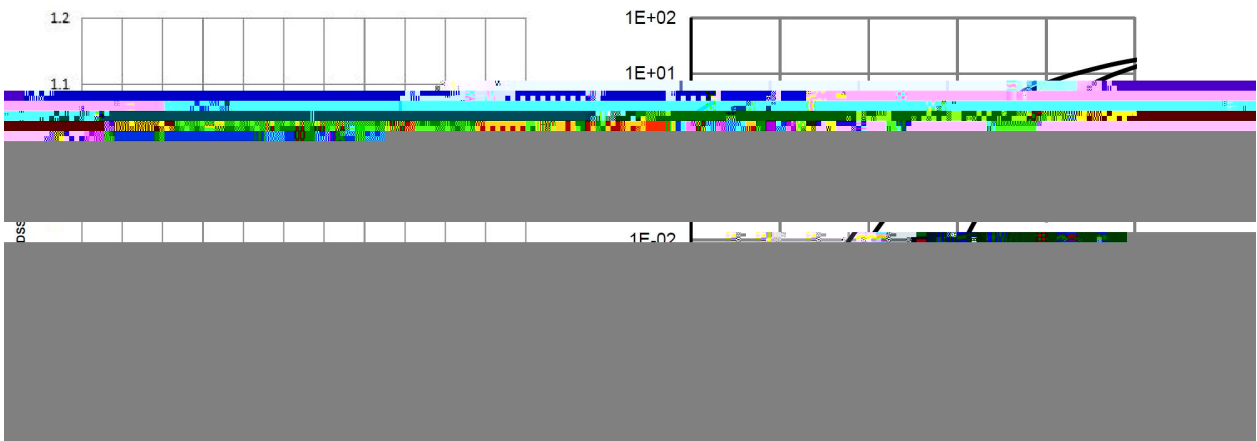
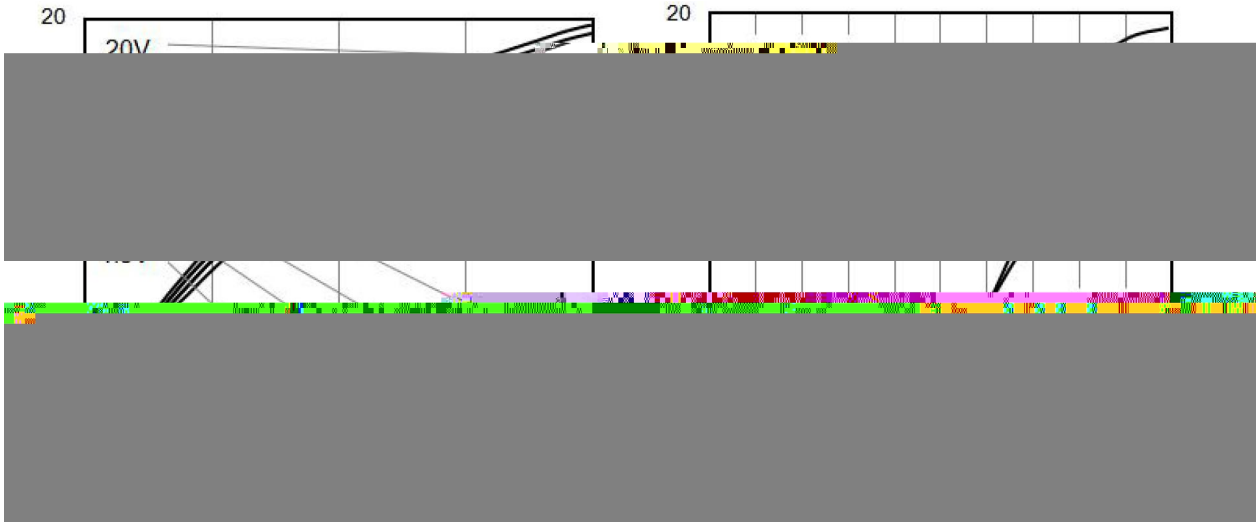
Rev.B May.-2022



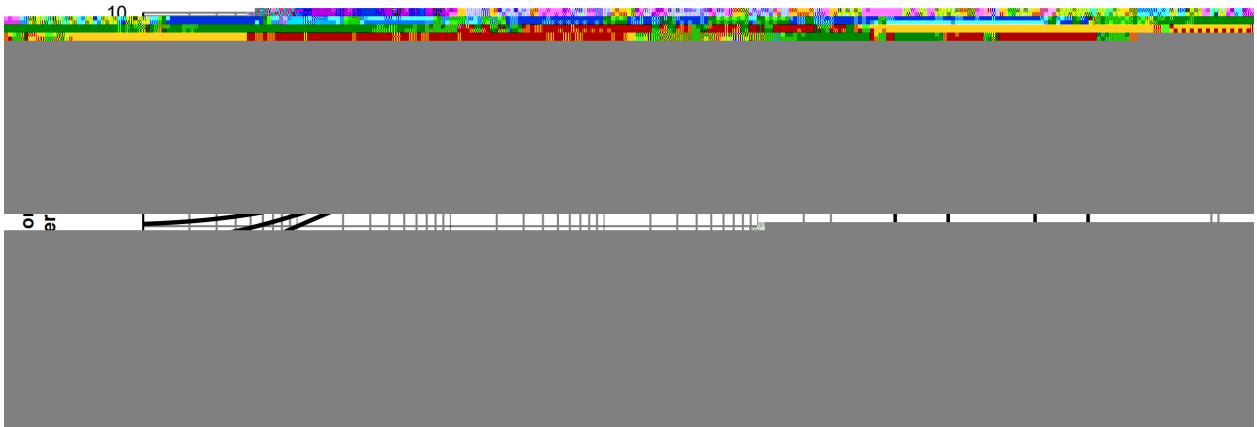
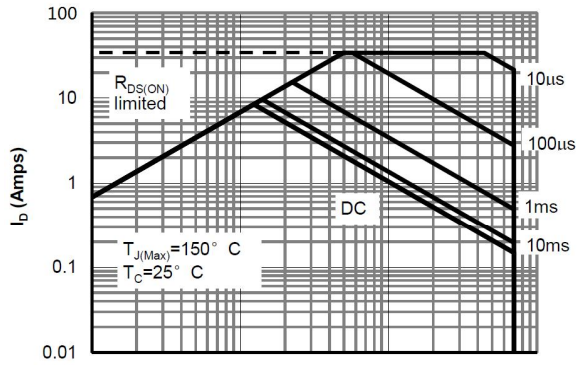
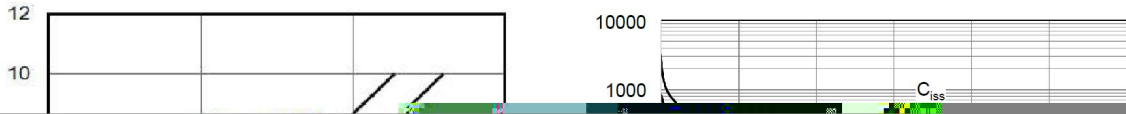
DATA SHEET

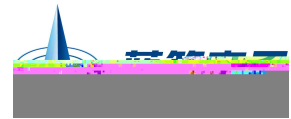
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Continuous Diode Forward Current	$I_s$					

**/ Electrical Characteristic Curve**

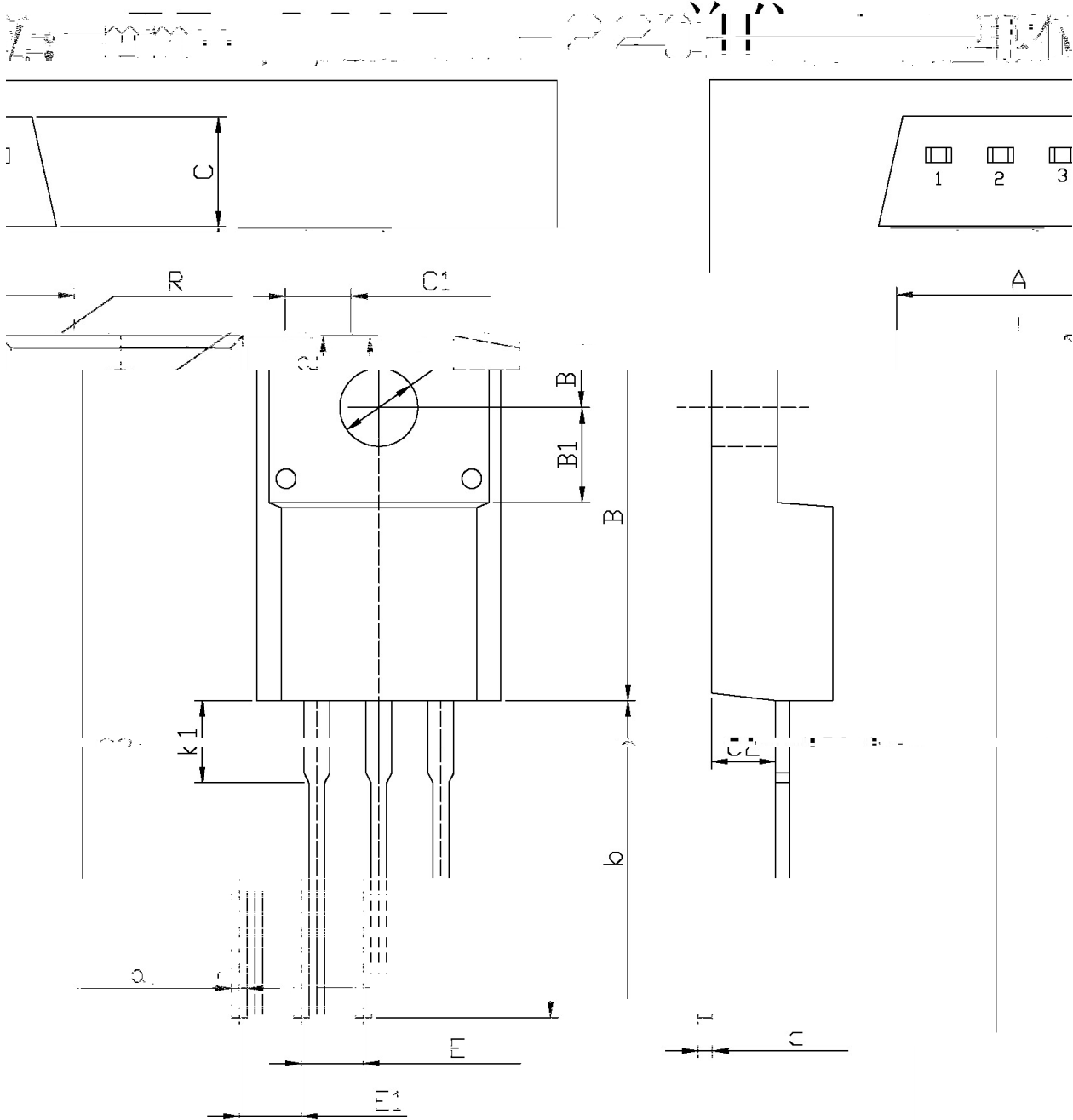


**/ Electrical Characteristic Curve**



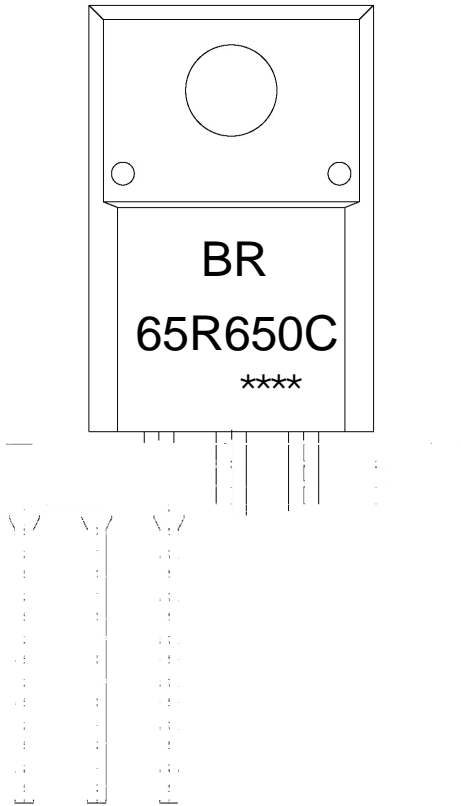


**/ Package Dimensions**



Dimensions In Millimeters				Dimensions In Millimeters			
Symbol	Min	Max	Symbol	Min	Max	Symbol	Max
0.55	0.75		A	2.7	10.0		
10.30	11.00	12.00	B1	0.8			
4.50	E1	2.29	2.79	B2	2.9		
3.10	C1	2.5	2.9	R	3.0		
2.50	C2	2.5	2.7				
2.50							

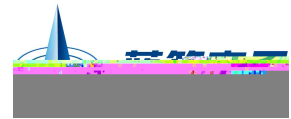
**/ Marking Instructions**



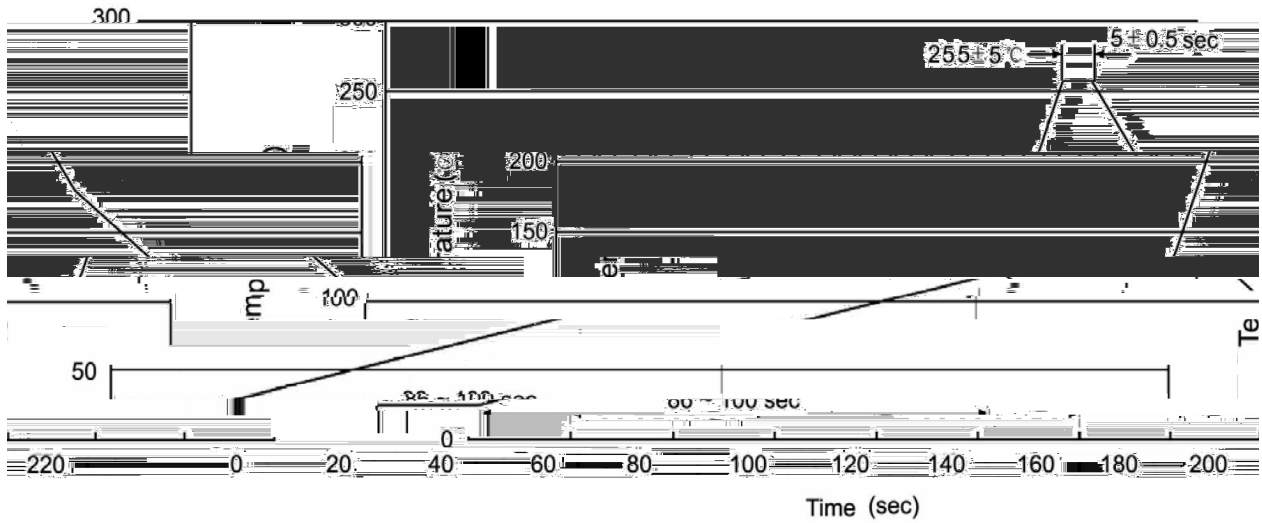
BR . . . . .  
65R650C . . . . .  
\*\*\*\* . . . . .

Note:

- BR: Company Code
- 65R650C: Product Type
- \*\*\*\*: Lot No. Code, code change with Lot No



( ) / **Temperature Profile for Dip Soldering(Pb-Free)**



**Note:**

- |   |       |     |           |        |                                          |
|---|-------|-----|-----------|--------|------------------------------------------|
| 1 | 25    | 150 | 60        | 90sec; | 1.Preheating:25~150°C, Time:60~90sec.    |
| 2 | 255±5 |     | 5±0.5sec; |        | 2.Peak Temp.:255±5°C, Duration:5±0.5sec. |
| 3 |       | 2   | 10°C/sec. |        | 3. Cooling Speed: 2~10°C/sec.            |

/ **Resistance to Soldering Heat Test Conditions**

270±5°C                      10±1 sec.                      Temp.:270±5°C                      Time:10±1 sec

/ **Packaging SPEC.**

/ **BULK**

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220F	200	10	2000	5	10000	135×190	237×172×102	560×245×195

/ **TUBE**

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ **Notices**