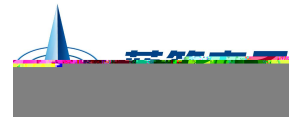


BRF65R650C

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		

/ 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%

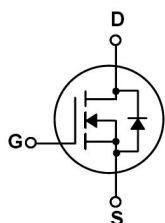
ROHS

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($T_a=25^\circ\text{C}$)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V_{DS}	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}	± 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	$R_{\theta JC}$	4.6	$^\circ\text{C/W}$
Junction-to-Ambient	$R_{\theta JA}$	65	$^\circ\text{C/W}$

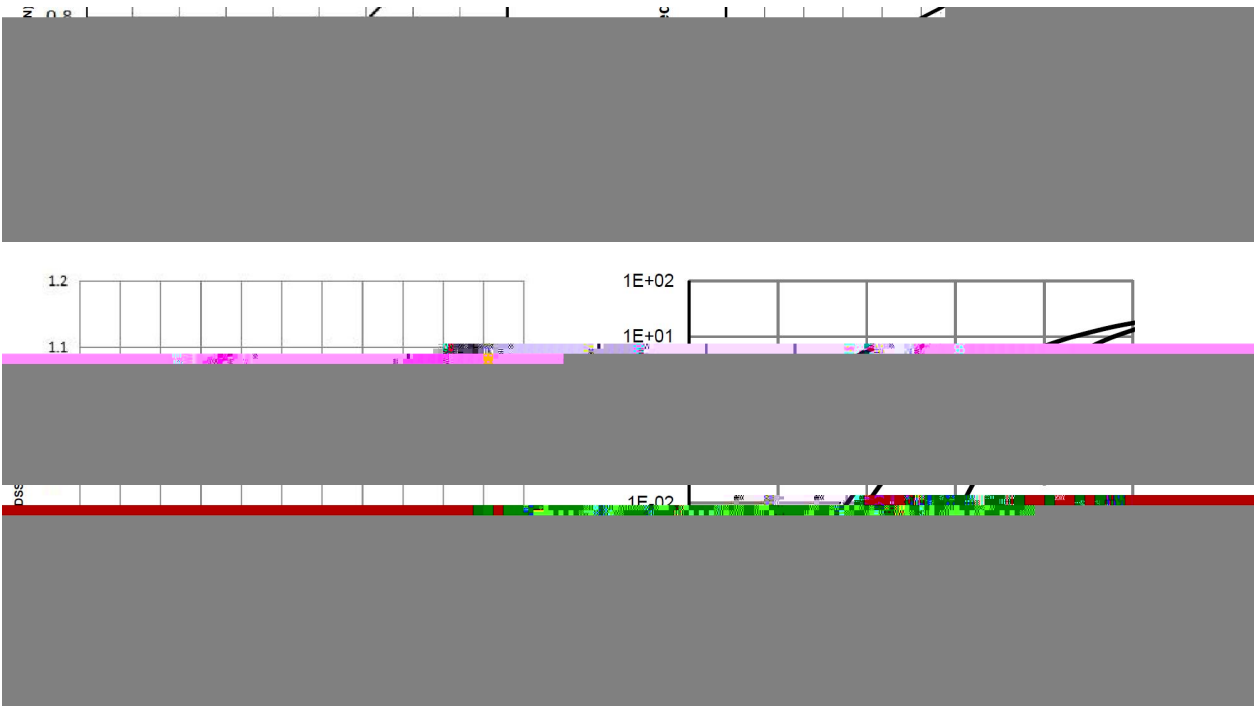
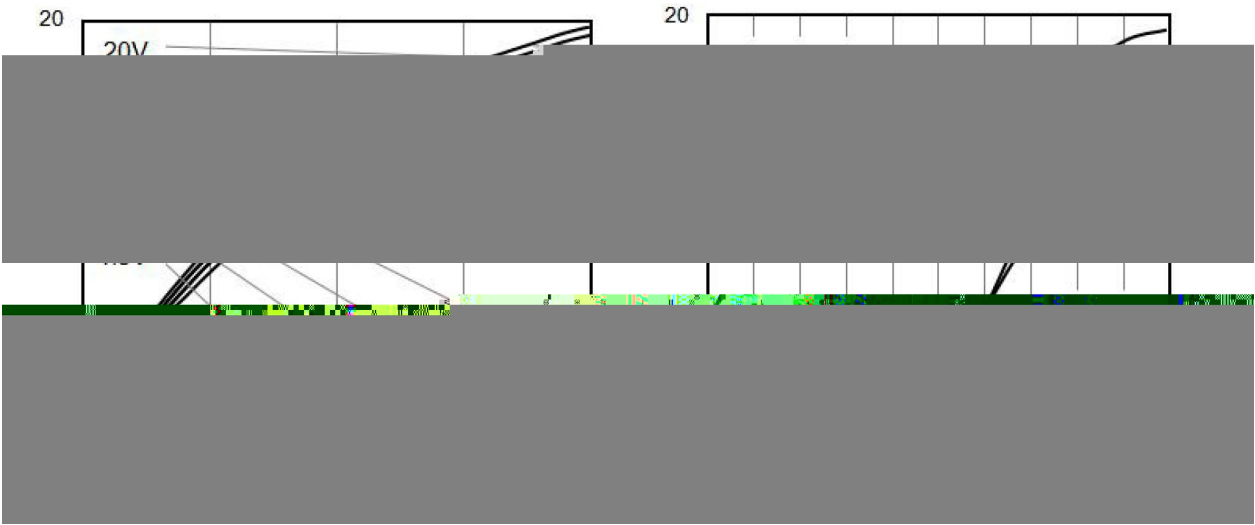
/ Electrical Characteristics($T_a=25^\circ\text{C}$)

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_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	650	700		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V$ $V_{GS}=0V$ $T_J=25^\circ\text{C}$			1.0	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	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 Ω
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		Ω
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_{rss}			0.5		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=400V$ $I_D=3.5A$ $V_{GS}=10V$ $R_G=25\Omega$		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

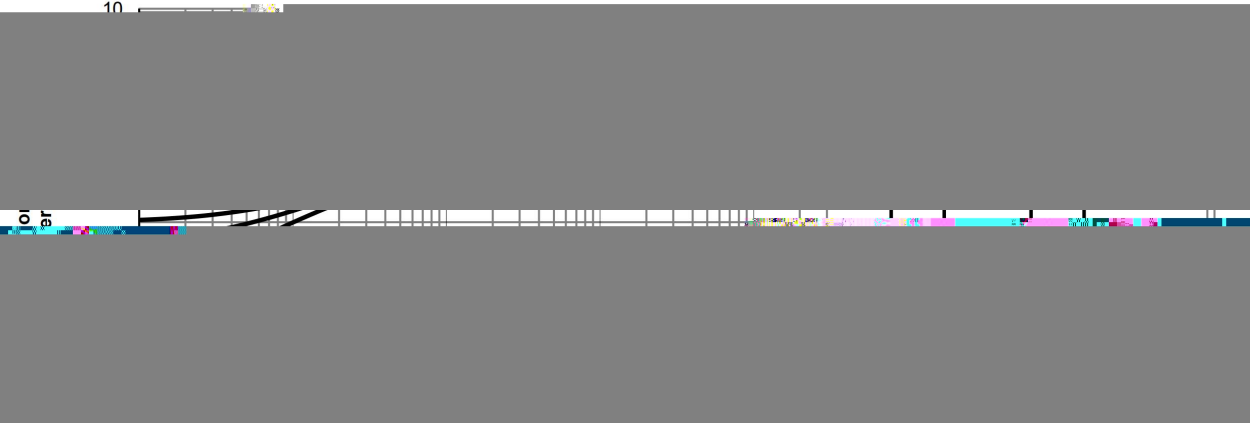
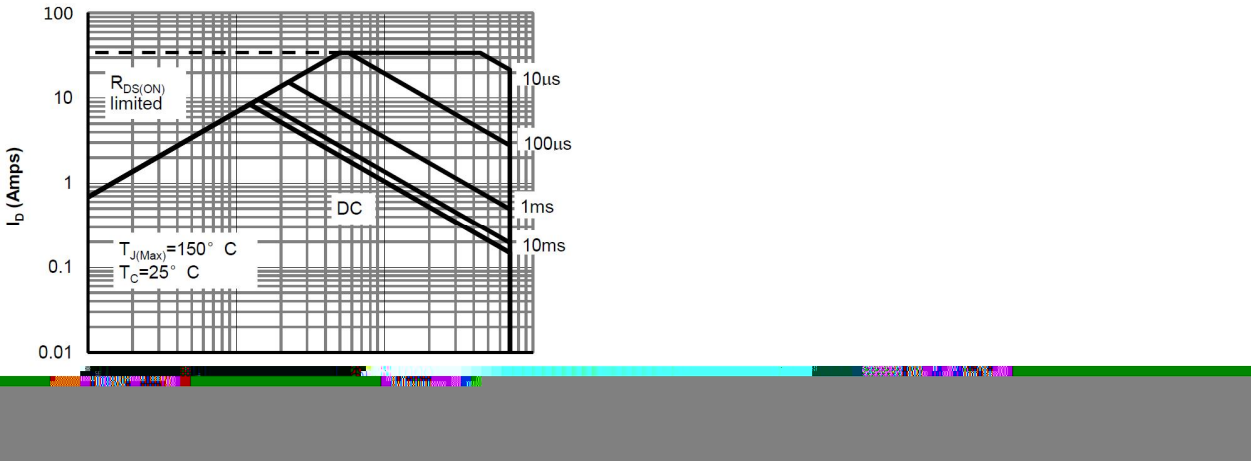
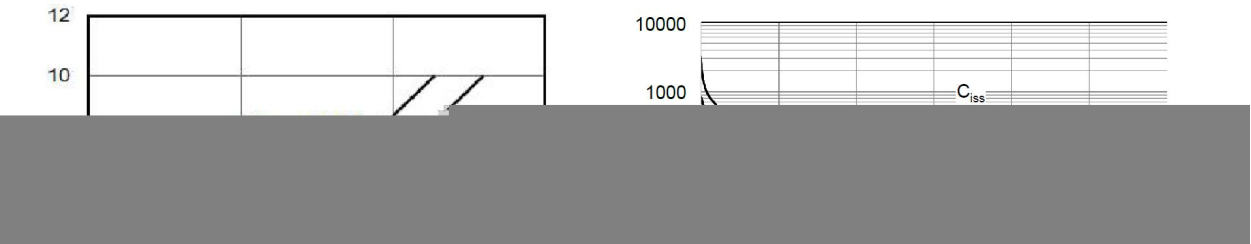
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Continuous Diode Forward Current	I_S					

D a rw

/ Electrical Characteristic Curve

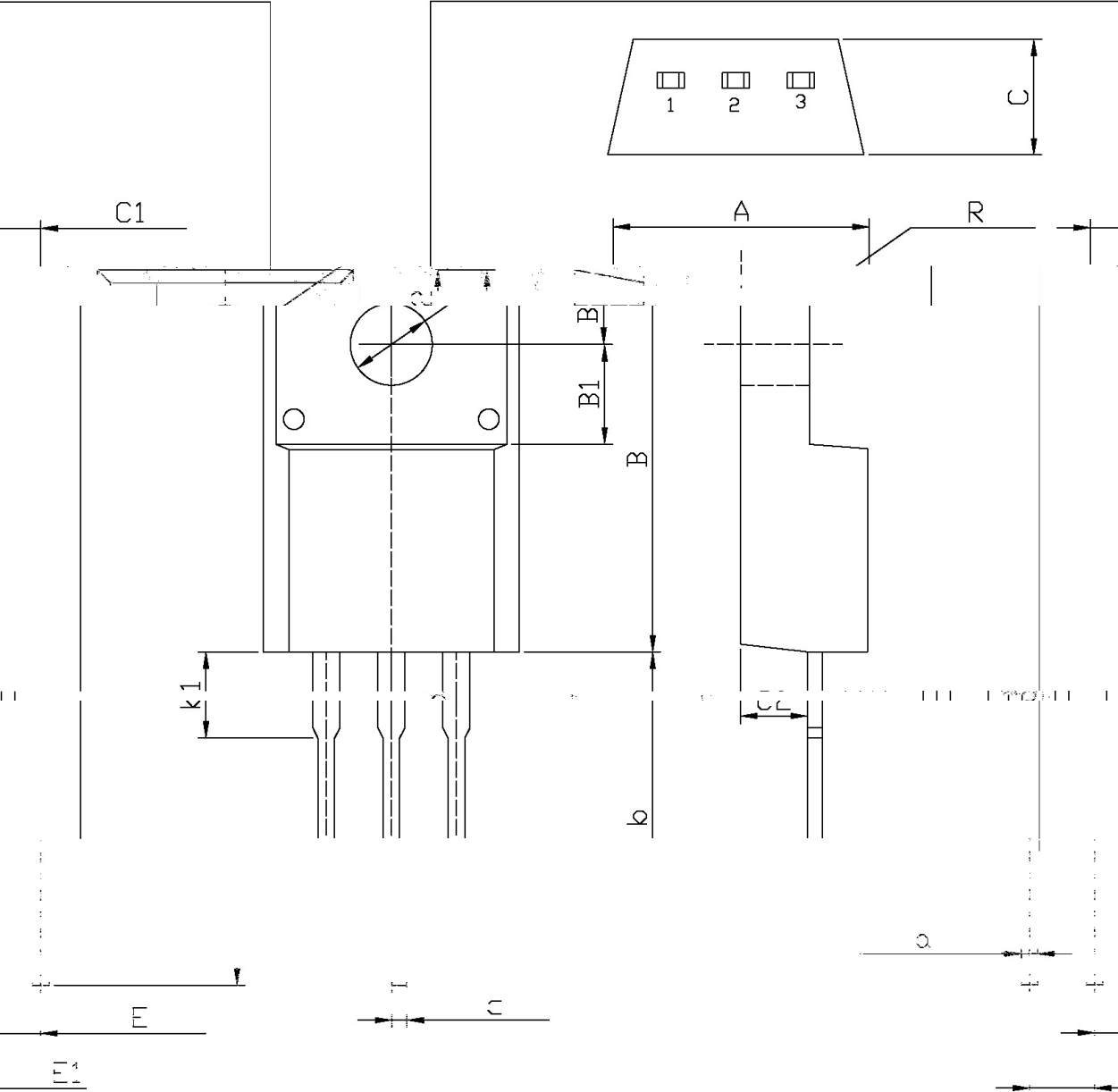


/ Electrical Characteristic Curve

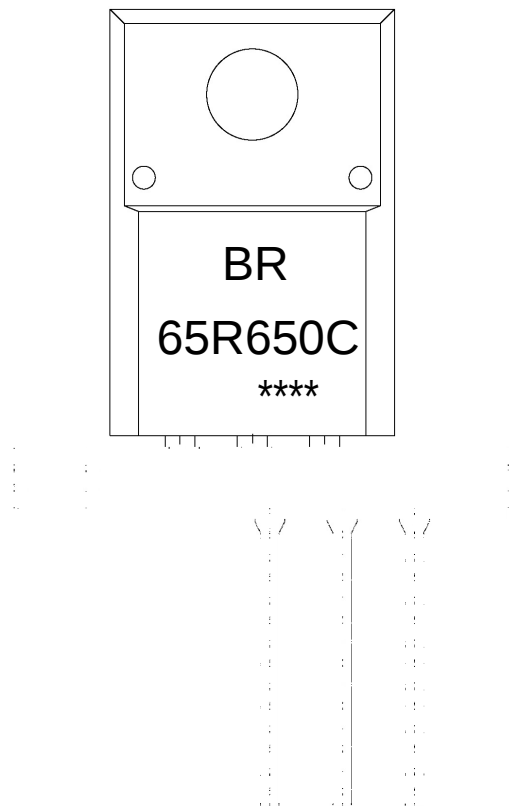


/ Package Dimensions

Unit: mm



Dimensions In Millimeters				Dimensions In Millimeters			
Min		Max		Min		Max	
A		19.7		19.7		20.3	
B1		3.8		2.89		2.79	
B2		2.9		2.5		2.9	
R		3.0		2.5		2.7	
b		2.5		0.5		0.7	

/ Marking Instructions

BR

65R650C

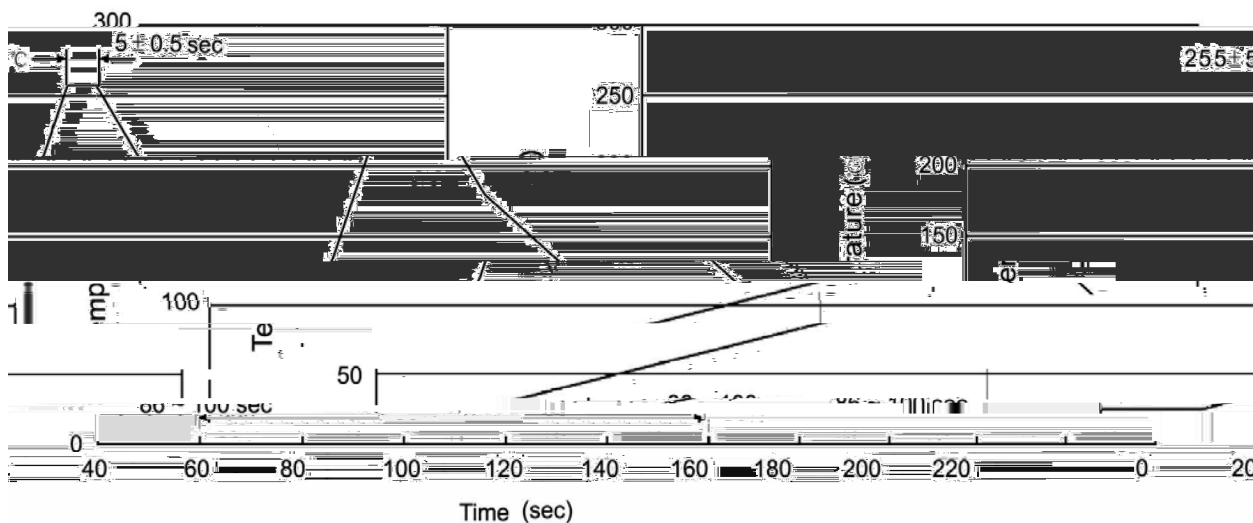
Note:

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 ³)		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	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 ³)		
	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-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices