

# BRCS020N04RA

Rev.C Mar.-2023

## / Descriptions

TO-220 N  
N-CHANNEL MOSFET in a TO-220 Plastic Package.

## / Features

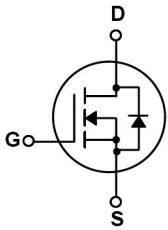
Ultra Low On-Resistance, fast switching, HF Product.

## / Applications

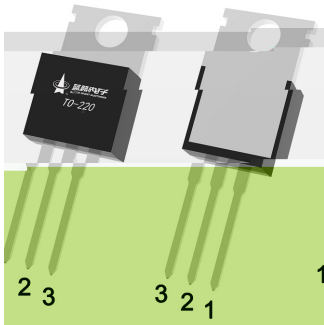
PFC

These devices are well suited for high efficient switched mode power supplies Active power factor correction, electronic lamp ballast based on half bridge topology.

## / Equivalent Circuit



## / Pinning



PIN1 G      PIN 2 4 D      PIN 3 S

## / Marking

See Marking Instructions.

## / Absolute Maximum Ratings(Ta=25 )

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DSS}$	40	V	
Drain Current	$I_D(T_C=25)$	220	A	
Pulsed Drain Current	$I_{DM}$	800	A	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Single Pulsed Avalanche Energy L=0.5mH	$E_{AS}$	482	mJ	
Avalanche Current	$I_{AS}$	35	A	
Total Power Dissipation	$P_D(T_C=25)$	187	W	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150		
Thermal Resistance-Junction to Ambient	t 10s	$R_{JA}$	15	/W
	Steady-State		60	
Thermal Resistance-Junction to Case	Steady-State	$R_{JC}$	0.67	

## / Electrical Characteristics(Ta=25 )

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	40	44		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V$ $V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1	1.6	3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20A$		1.6	2	m
		$V_{GS}=4.5V$ $I_D=10A$		2.1	4	
Forward On Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=1A$			1.2	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		11000		pF
Output Capacitance	$C_{oss}$			840		
Reverse Transfer Capacitance	$C_{rss}$			650		

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**DATA SHEET**

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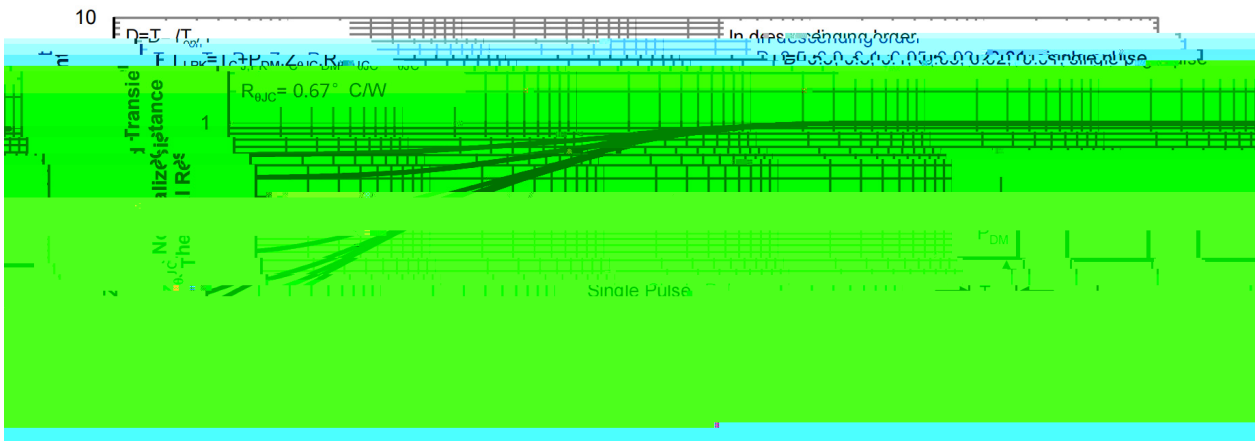
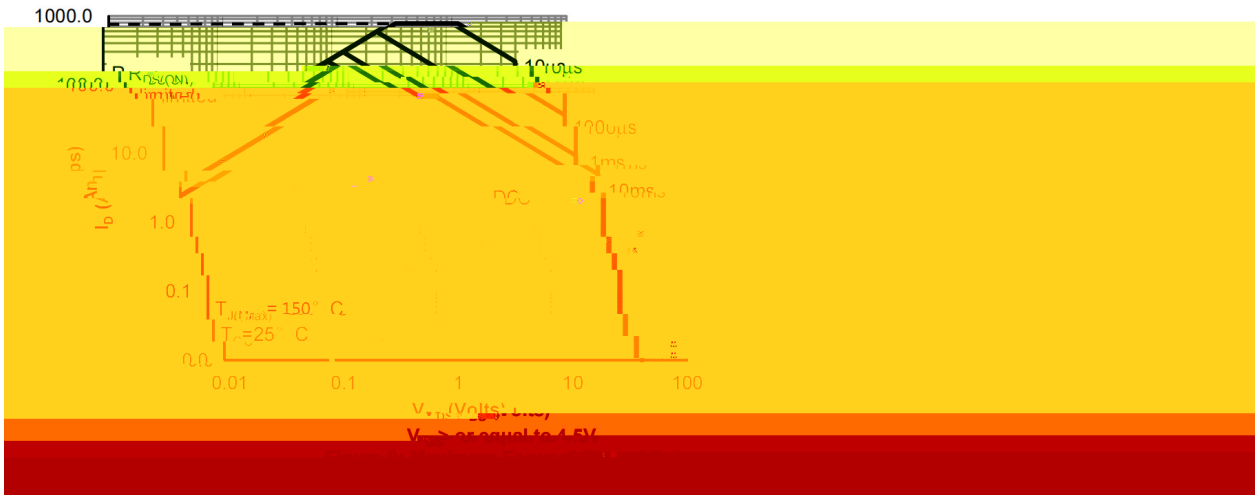
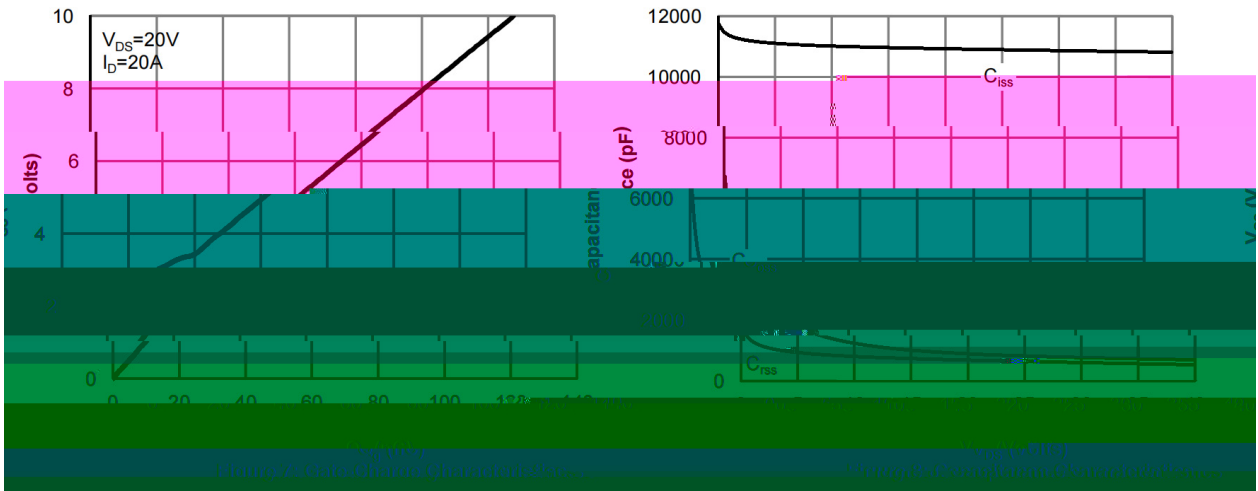
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T72e52.26 35492485.852-18.06 refoQ.777 .852 Q(T72e57.66 354924)74.66-18.06 refoBT/T84 1 Tf10.4958 0 0 10

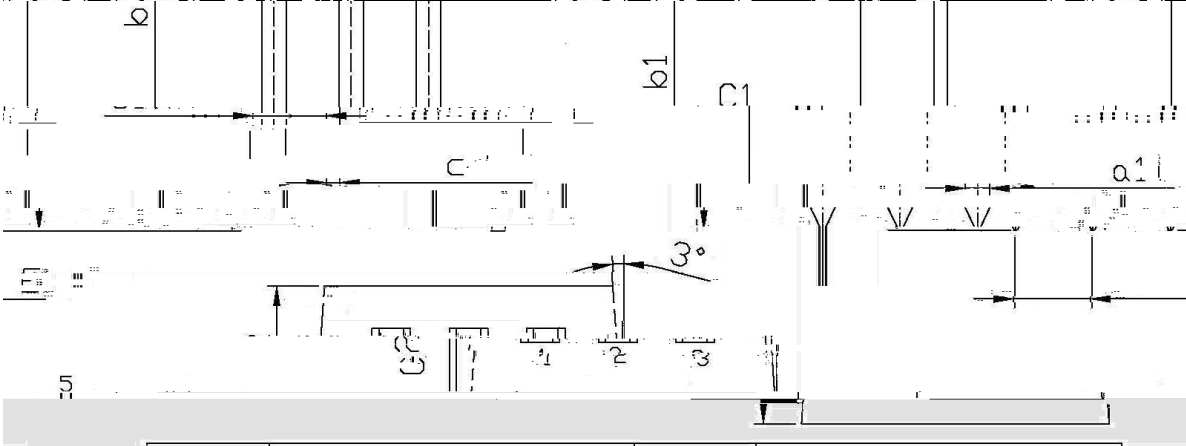
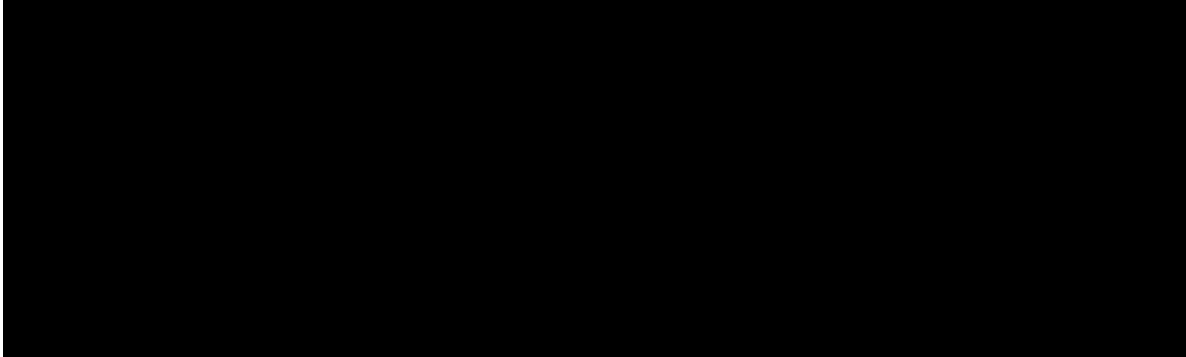


**DATA SHEET**

/ Electrical Characteristic Curve



/ Package Dimensions



Dimension	Min	Max	Symbol	Dimension	Min	Max	Symbol
Lead Width	1.2	1.4	$\Delta$	Lead Length	9.8	10.2	C
B	6.3	6.7		R	3.56	3.64	
b	9.0	9.4		Lead Spacing	15.7	16.1	J
C1	2.2	2.6		p	12.6	13.6	



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



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

/ Resistance to Soldering Heat Test Conditions

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

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm <sup>3</sup> )		
	Units/Bag	Bags/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135x190	237x172x102	560x245x195

/ TUBE

Units

Dimension