

# BRCS030N03DP

Rev.A Jul.-2023

ATA SHEET

## / Descriptions

N-Channel Enhancement Mode Field Effect Transistor in a TO-252 Plastic Package.

## / Features

$V_{DS} (V) = 30V$     $I_D = 135 A (V_{GS} = \pm 20V)$

$R_{DS(ON)} @ 10V$  3mR(Typ.2.3mR)

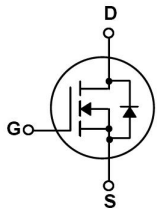
$R_{DS(ON)} @ 4.5V$  5mR(Typ.3.1mR)

HF Product.

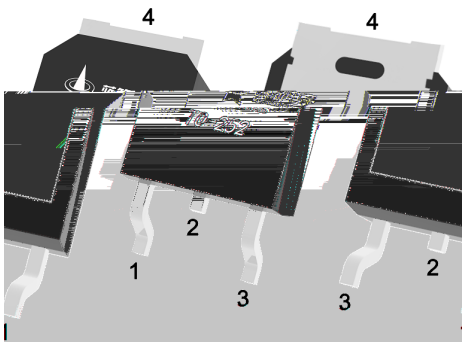
## / Applications

Load Switch Applications, Battery Power Management.

## / Equivalent Circuit



## / Pinning



PIN1 G      PIN 2 4 D      PIN 3 S

## / Marking

See Marking Instructions.

## / Absolute Maximum Ratings(Ta=25 )

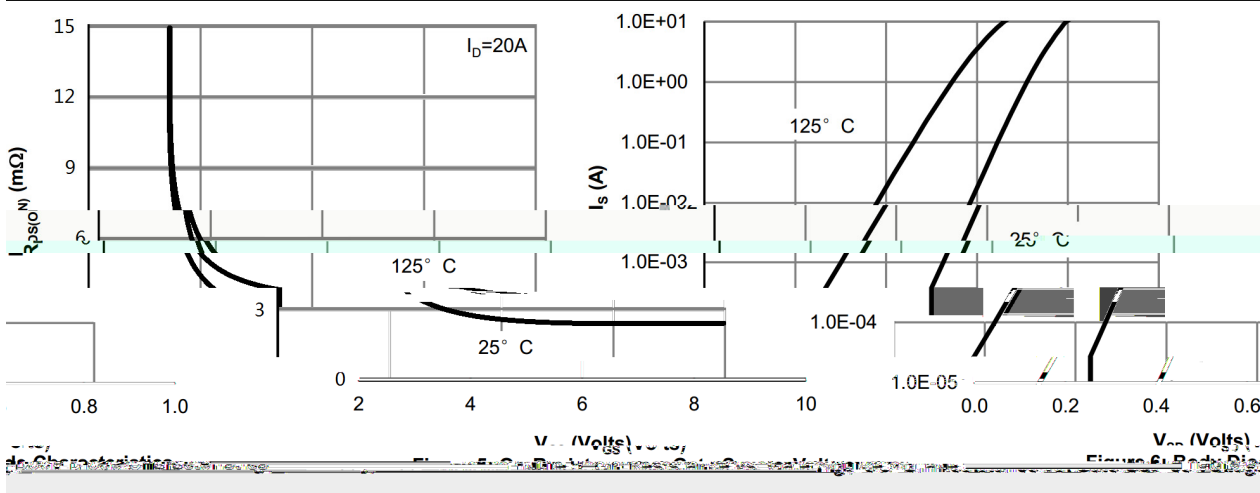
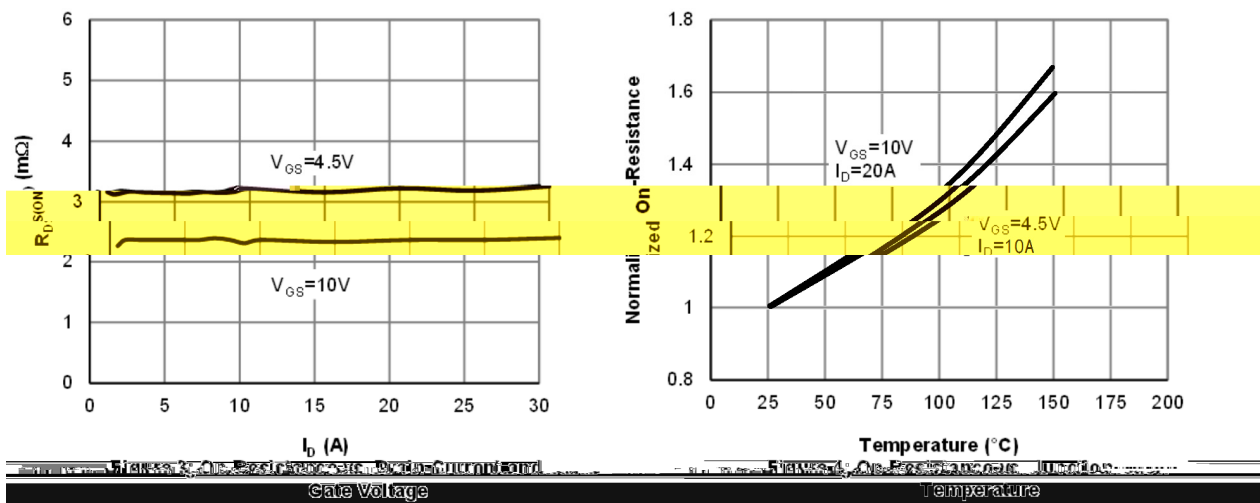
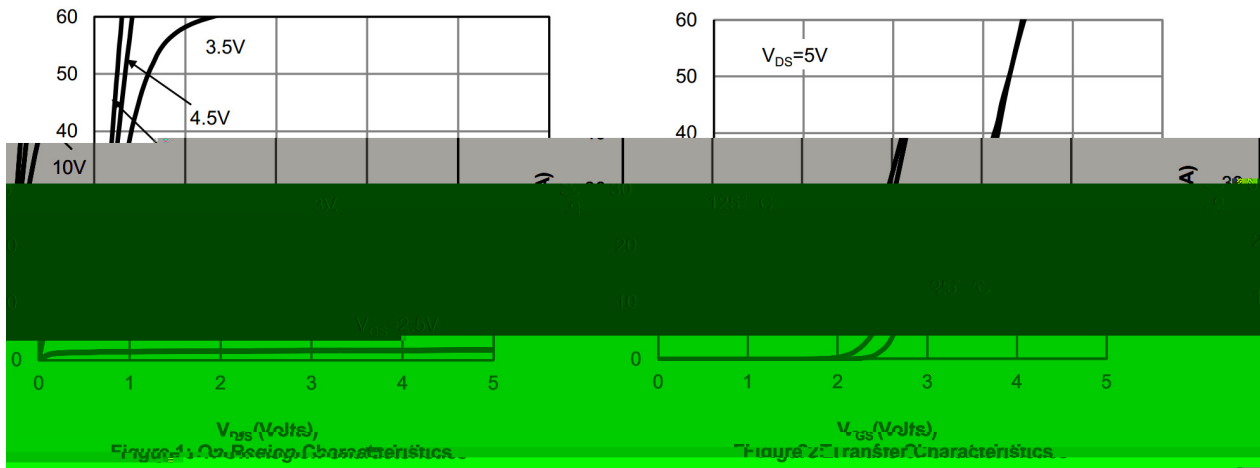
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		$V_{DSS}$	30	V
Drain Current		$I_D(T_c=25)$	135	A
Drain Current - Pulsed		$I_{DM}$	285	A
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Single Pulsed Avalanche Energy		$E_{AS}$	706	mJ
Avalanche Current		$I_{AS}$	42	A
Power Dissipation		$P_D(T_c=25)$	90	W
Operating and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^{\circ}C$
Junction-to-Ambient	$t \leq 10$	$R_{JA}$	20	/W
Junction-to-Ambient	Steady-State		50	
Junction-to-Case	Steady-State	$R_{JC}$	1.39	

## / Electrical Characteristics(Ta=25 )

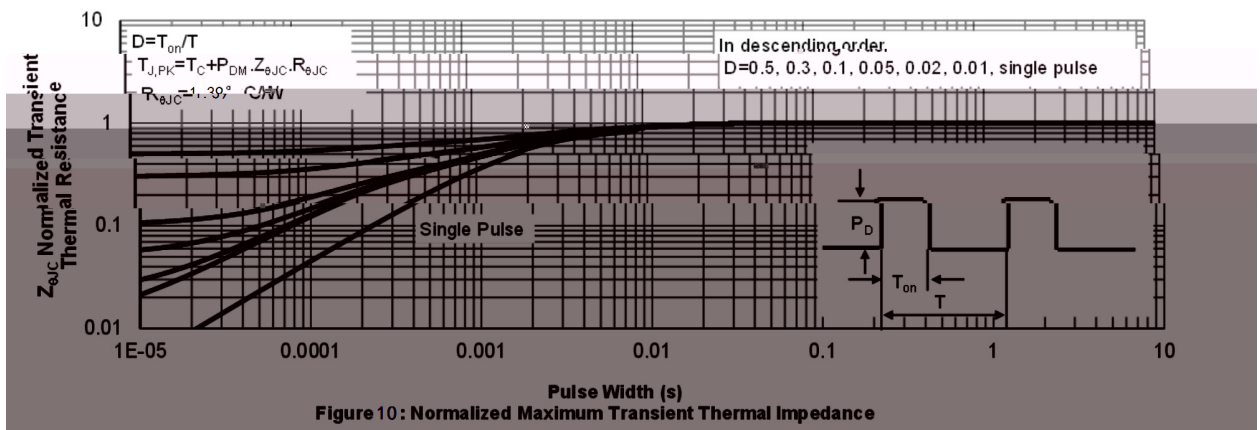
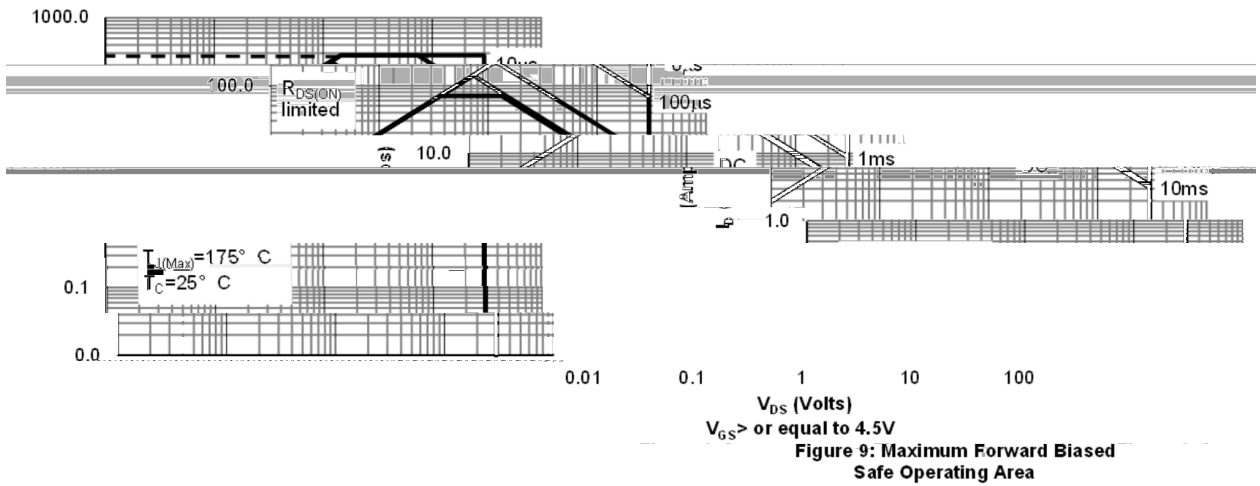
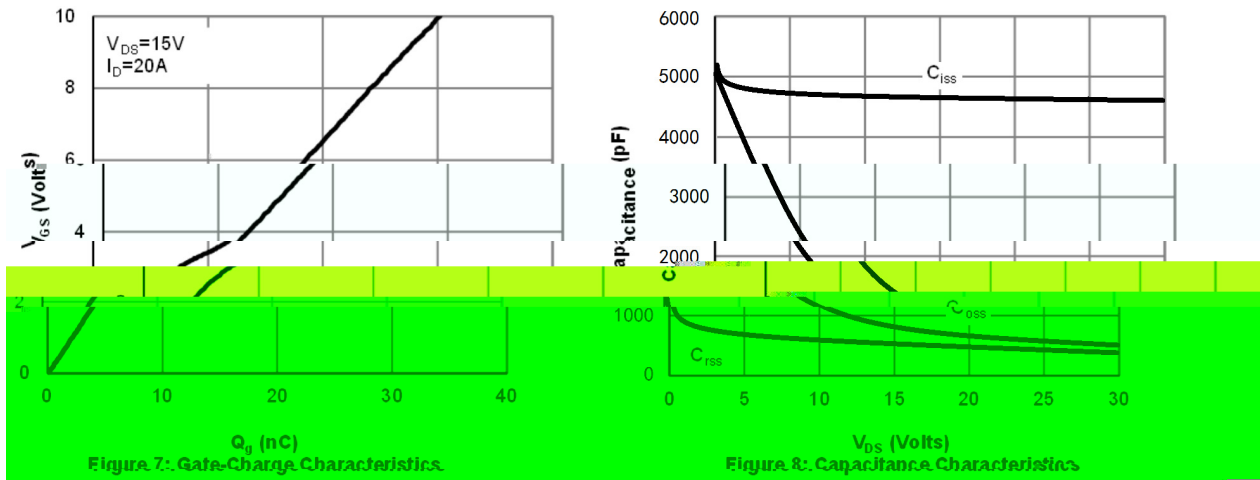
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	30	35		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V$ $V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 0.1$	$\mu A$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.0	1.6	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	$V_{GS}=10V$ $I_D=20A$		2.3	3	m
	$R_{DS(on)2}$	$V_{GS}=4.5V$ $I_D=10A$		3.1	5	m
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=1A$			1.2	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		4650		pF
Output Capacitance	$C_{oss}$			650		
Reverse Transfer Capacitance	$C_{rss}$			480		
Gate resistance	$R_g$	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		1.5		

**/ Electrical Characteristics(Ta=25 )**

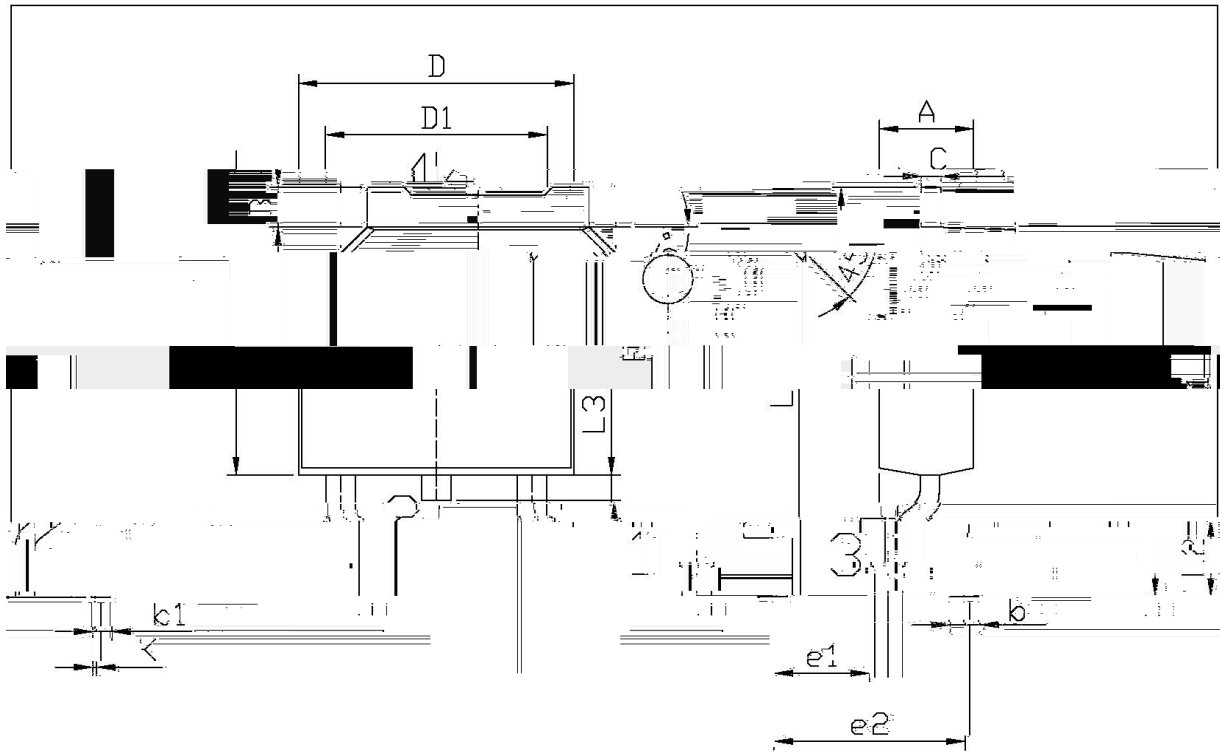
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=20A$		32		nC
Total Gate Charge	$Q_{g(4.5V)}$			15		
Gate Source Charge	$Q_{gs}$			5.2		
Gate Drain Charge	$Q_{gd}$			6.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=15V$ $R_L=0.75$ $R_{GEN}=3$		8.5		ns
Turn-On Rise Time	$t_r$			4.2		
Turn-Off Delay Time	$t_{d(off)}$			30		
Turn-Off Fall Time	$t_f$			5.7		

**/ Electrical Characteristic Curve**


**Electrical Characteristic Curve**



**/ Package Dimensions**

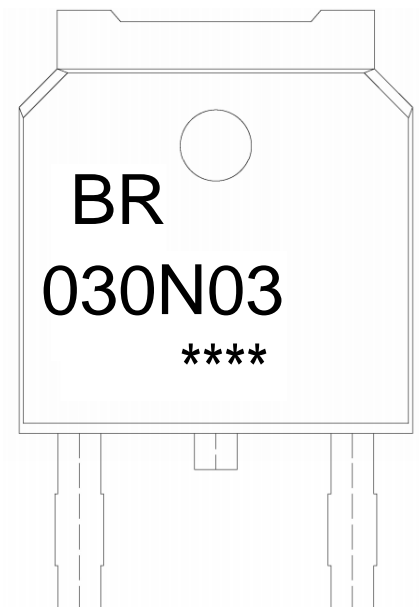


单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min.	Max.		Min.	Max.
E	5.95	6.25	A	2.20	2.40
e	2.24	2.34	B	0.95	1.25
L1	9.85	10.35	b1	0.45	0.55
f	0.45	0.55	I2	1.70	2.00
D	6.45	6.75	D	0.60	0.90
L3	5.00	5.50	L3	5.50	6.00

TO-252

**/ Marking Instructions**



BR

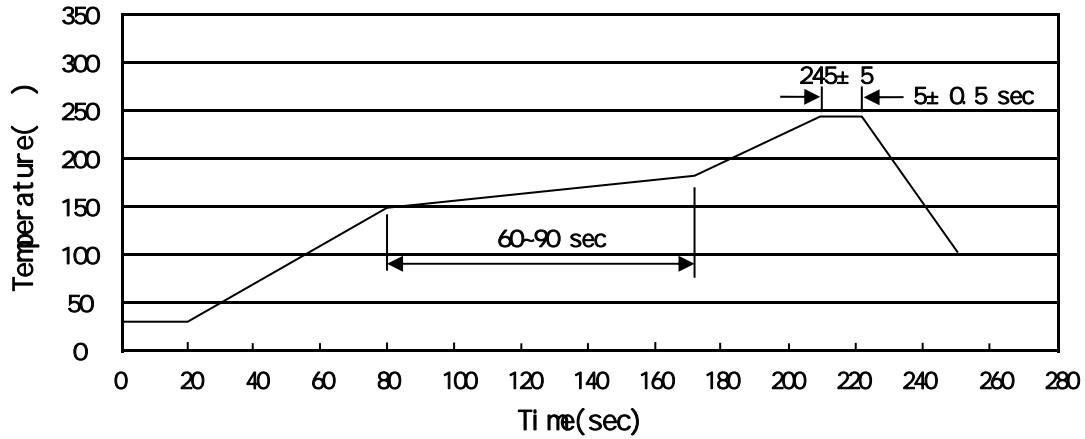
Note:

BR: Company Code

030N03: Product Type Code

\*\*\*\*: Lot No. Code, code change with Lot No

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Note:

- 1            150 180                    60 90sec;            1.Preheating:150~180 , Time:60~90sec.
- 2            245 5                            5 0.5sec;            2.Peak Temp.:245 5 , Duration:5 0.5sec.
- 3                                    2 10 /sec.            3. Cooling Speed: 2~10 /sec.

**/ Resistance to Soldering Heat Test Conditions**

260 5                            10 1 sec.                            Temp.:260±5℃                            Time:10±1 sec

**/ Packaging SPEC.**

/ REEL

Package Type	Units					Dimension (unit mm <sup>3</sup> )		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13 x16	360x360x50	380x335x366

/ TUBE

Package Type	Units					Dimension (unit mm <sup>3</sup> )		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526x20.5x5.25	555x164x50	575x290x180

**/ Notices**