

BRCS120N06SRA

Rev.A Apr.-2023

/ Descriptions

N TO-220

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

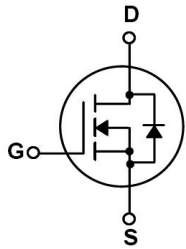
/ Features

Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast switching, HF Product.

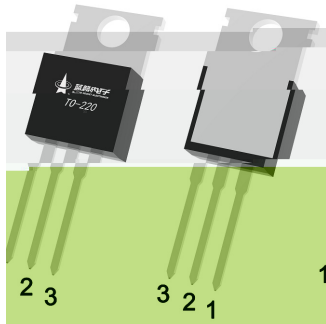
/ Applications

Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 D

PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Drain Current		$I_D(T_c=25)$	60	A
Drain Current - Pulsed		I_{DM}	225	A
Gate-Source Voltage		V_{GS}	± 20	V
Avalanche Current		I_{AS}	20	A
Single Pulsed Avalanche Energy		E_{AS}	170	mJ
Power Dissipation		$P_D(T_c=25)$	96	W
Storage Temperature Range		T_{stg}	-55 150	
Thermal Resistance-Junction to Ambient	$t \leq 10s$	$R_{\theta JA}$	15	/W
	Steady-State		62	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	1.3	

/ Electrical Characteristics(Ta=25)

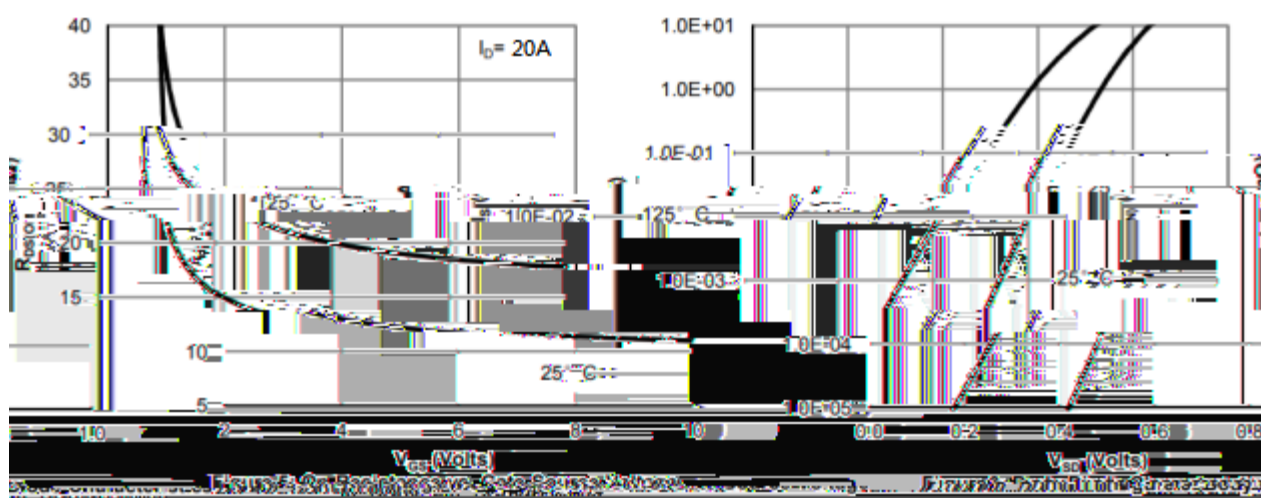
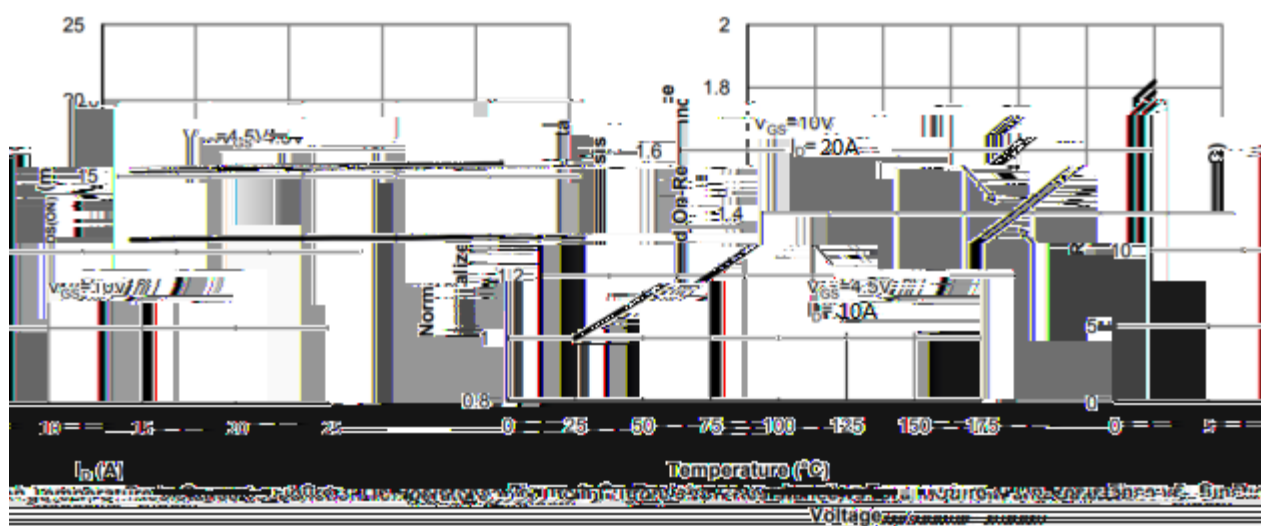
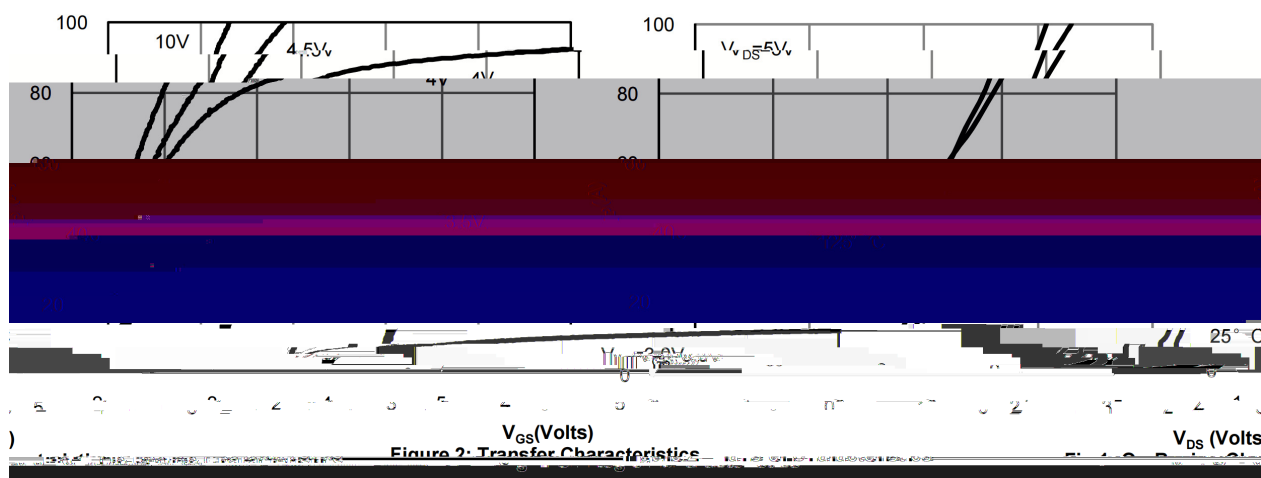
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	60	63		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=48V$ $T_C=150$			10	
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	μA
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	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=25A$		10.5	15	m Ω
		$V_{GS}=4.5V$ $I_D=18A$		13.5	20	
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=25A$			1.25	V
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$, $f=1MHz$		1.49		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		1010		pF
Output Capacitance	C_{oss}			250		
Reverse Transfer Capacitance	C_{rss}			280		
Total Gate Charge	$Q_g(10V)$	$V_{GS}=10V$ $V_{DS}=30V$ $I_D=20A$		22		nC
Total Gate Charge	$Q_g(4.5V)$			8.7		
Gate Source Charge	Q_{gs}			5.5		
Gate Drain Charge	Q_{gd}			2.6		

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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=30V$ $R_L=1.5\Omega$ $R_{GEN}=3\Omega$		8.9		ns
Turn-On Rise Time	t_r			3.7		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	t_f					

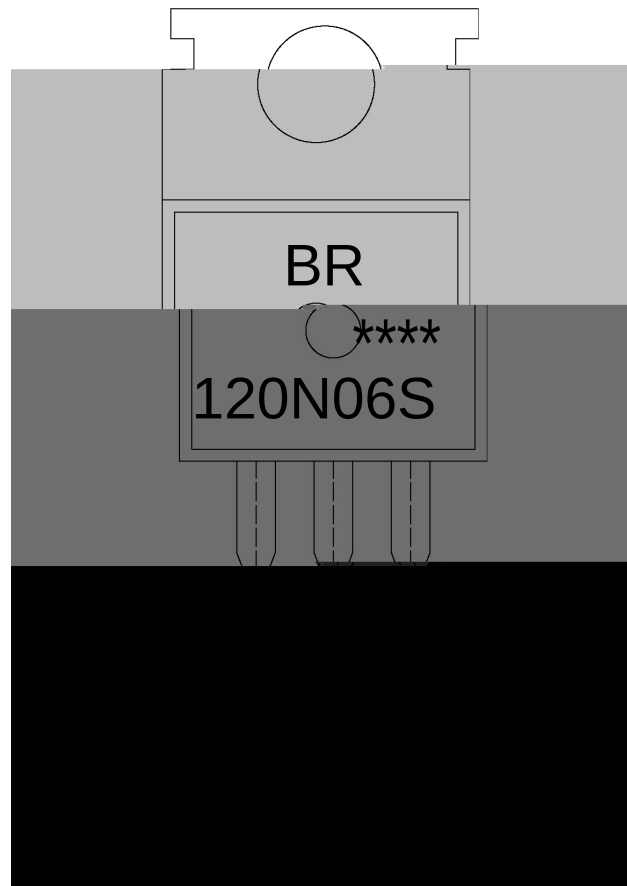
/ Electrical Characteristic Curve



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Technical drawing of a mechanical assembly, likely a pump or motor component, showing dimensions A, B, C, and ØR. The drawing includes a cross-sectional view of the assembly, showing internal components like a rotor and stator. Dimension A is the total length, B is the length of the main body, C is the length of the mounting flange, and ØR is the outer diameter of the mounting flange. The drawing is a black and white line drawing with hatching for cross-sections.

/ Marking Instructions



Note:

BR: Company Code

120N06S: 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 , Time:60~90sec. |
| 2 | 255 ± 5 | 5 ± 0.5sec; | 2.Peak Temp.:255 ± 5 , 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
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/ Packaging SPEC.

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