

BRCS200N20SHRA

Rev.A Jul.-2025

/ Descriptions

TO-220 N

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

/ Features

$V_{DS} (V) = 200V$ $I_D = 67A (V_{GS} = 20V)$

$R_{DS(ON)} @ 10V \leq 20m\Omega$ (Typ. $17m\Omega$)

$R_{DS(ON)} @ 6V \leq 22m\Omega$ (Typ. $19m\Omega$)

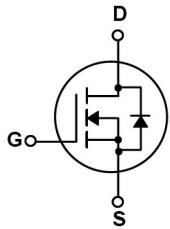
HF Product.

/ Applications

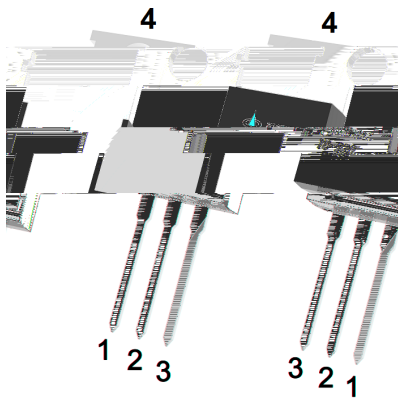
DC - DC

Motor drivers, DC - DC Converter.

/ 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}	200	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	67	A
	$I_D(T_C=100^\circ\text{C})$	42	A
Pulsed Drain Current*	I_{DM}	175	A
Gate-Source Voltage	V_{GS}	20	V
Single Pulsed Avalanche Energy ($V_{DD}=50\text{V}, L=1.0\text{mH}$)	E_{AS}	685	mJ
Continuous-Source Current	I_S	67	A
Total Power Dissipation	$P_D(T_C=25^\circ\text{C})$	227	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Thermal Resistance-Junction to Ambient**	R_{JA}	42	/W
Thermal Resistance-Junction to Case	R_{JC}	0.55	

Notes

* Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$ ** Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

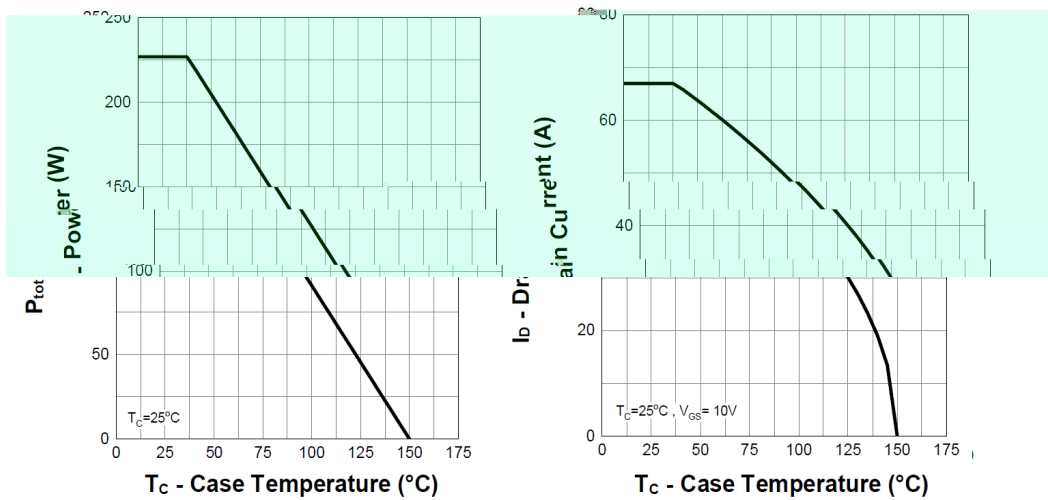
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$ $I_D=250\text{ }\mu\text{A}$	200			V
Drain Leakage Current	I_{DSS}	$V_{DS}=160\text{V}$ $V_{GS}=0\text{V}$			1	A
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{ }\mu\text{A}$	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=30\text{A}$		17	20	m
	$R_{DS(on)}$	$V_{GS}=6\text{V}$ $I_D=20\text{A}$		19	22	
Forward On Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=30\text{A}$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS} = 30\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$		118		nS
Reverse Recovery Charge	Q_{rr}			441		nC
Input Capacitance	C_{iss}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$		3517		pF
Output Capacitance	C_{oss}			200		
Reverse Transfer Capacitance	C_{rss}			30		
Total Gate Charge	Q_g	$V_{DS}=100\text{V}$ $V_{GS}=10\text{V}$ $I_D=30\text{A}$		59		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			14		

/ Electrical Characteristics(Ta=25)

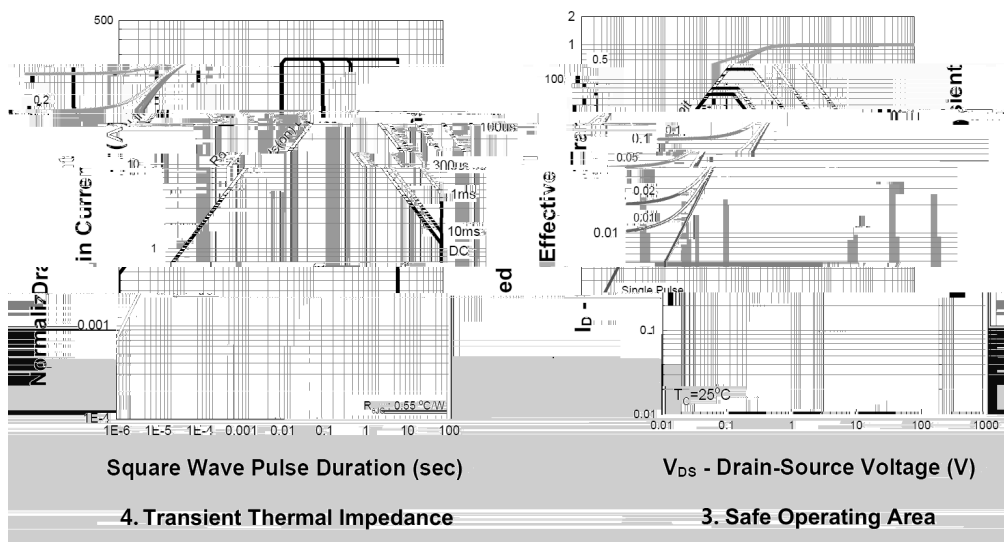
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GEN}=10V$ $V_{DS}=100V$ $R_L=3.3$ $R_G=3.9$ $I_{DS}=30A$		16		ns
Turn-On Rise Time	t_r			82		
Turn-Off Delay Time	$t_{d(off)}$			38		
Turn-Off Fall Time	t_f			86		

/ Electrical Characteristic Curve



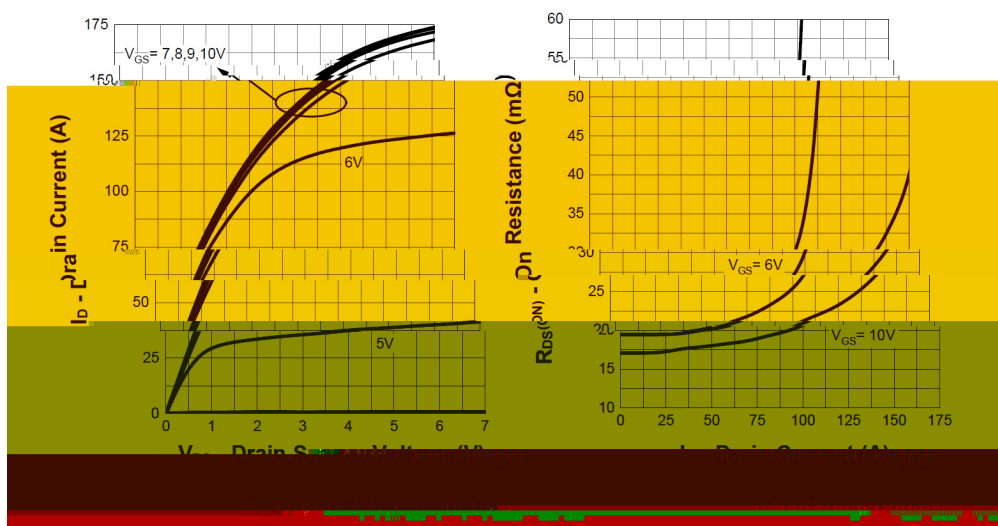
1. Power Capability

2. Current Capability

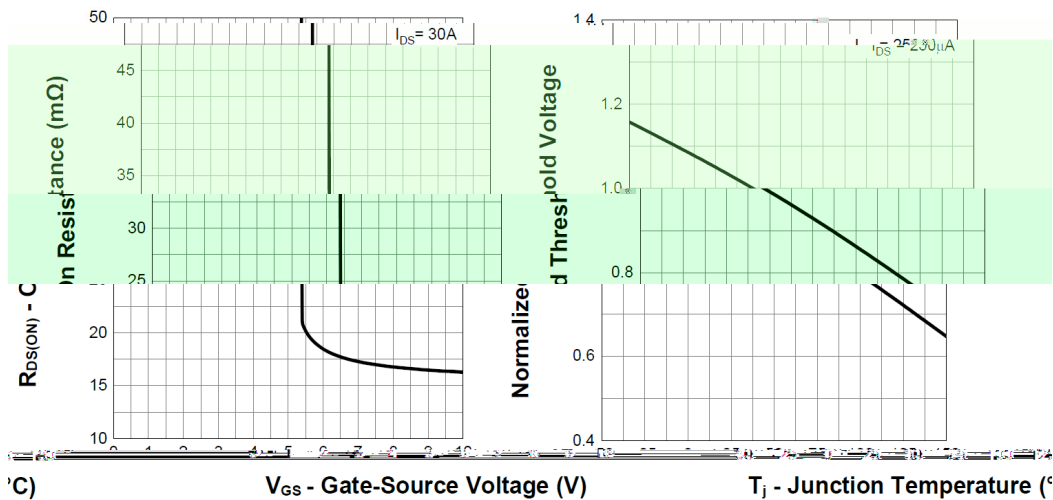


4. Transient Thermal Impedance

3. Safe Operating Area

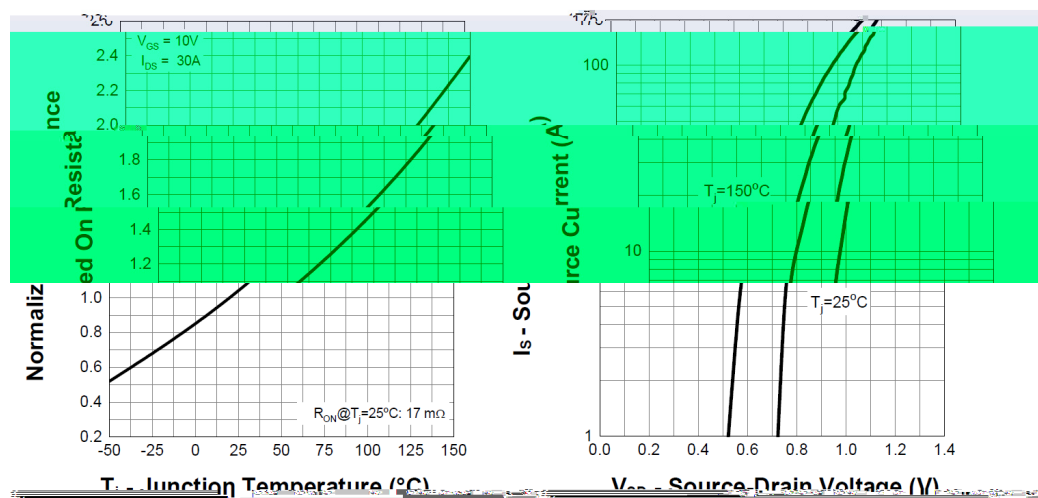


Electrical Characteristic Curve



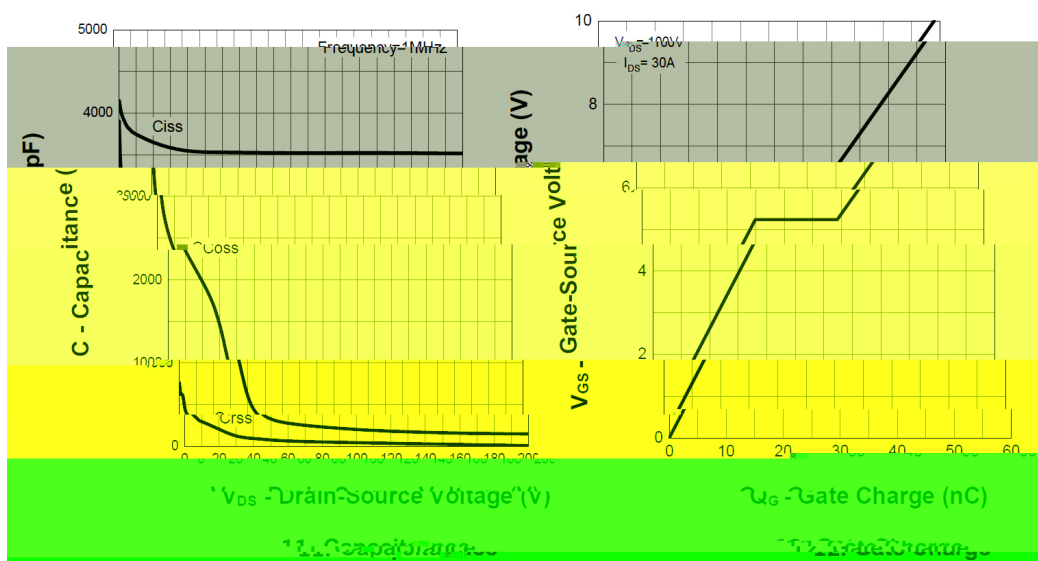
7. Transfer Characteristics

8. Normalized Threshold Voltage



9. Normalized On Resistance

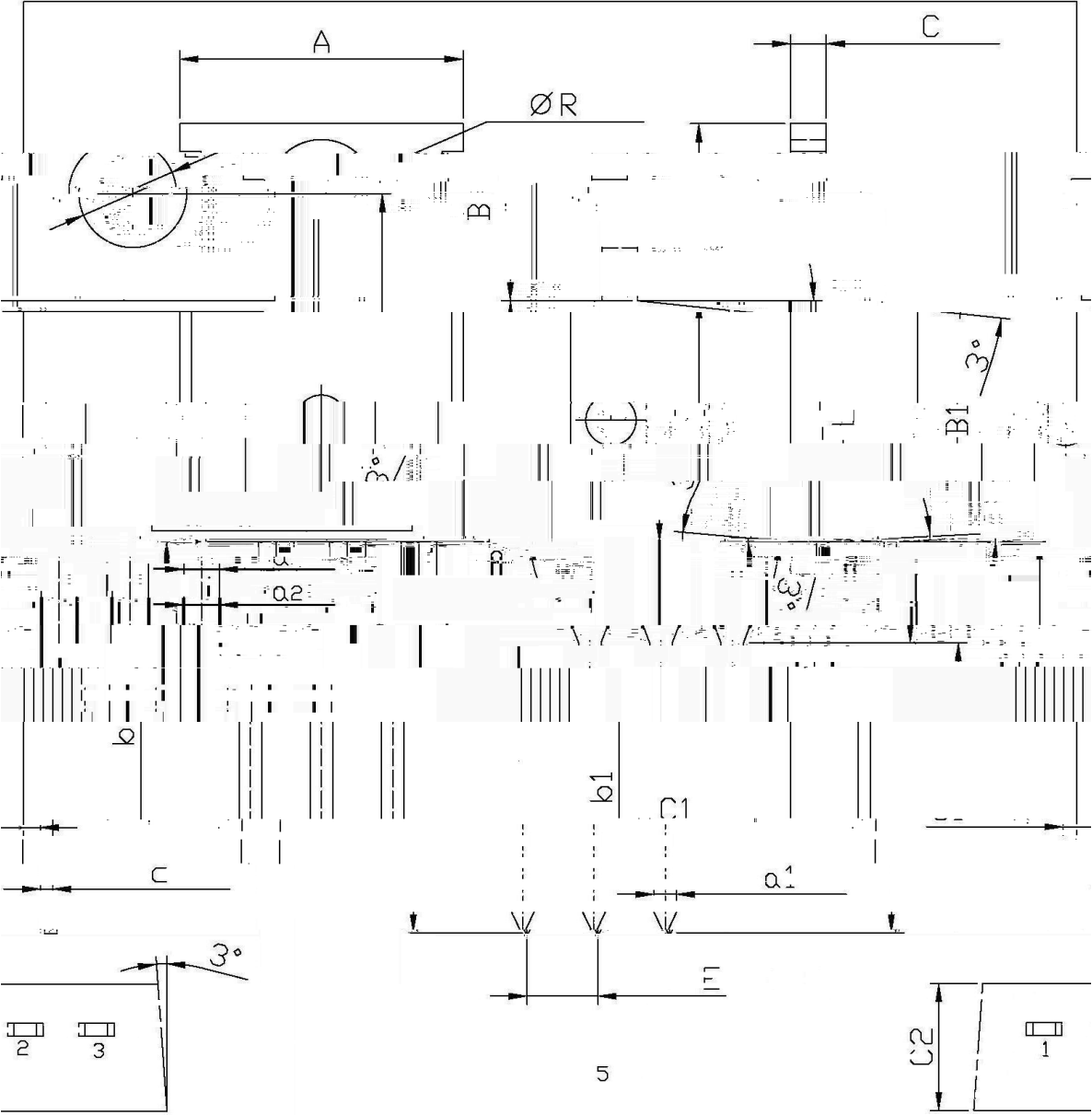
10. Diode Forward Current



/ Package Dimensions

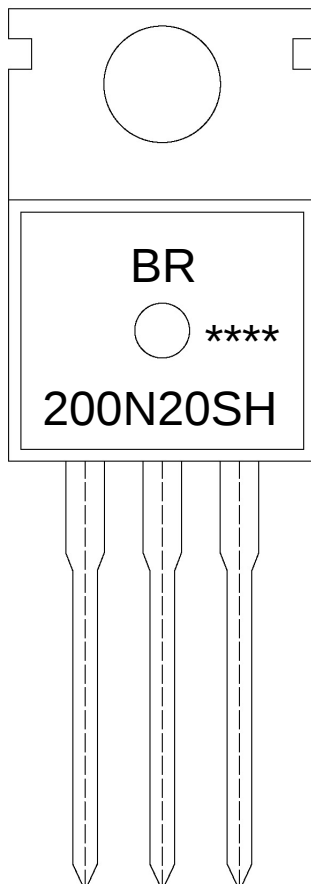
TO-220

单位: mm



Dimensions In Millimeters				Dimensions In Millimeters			
Symbol	Max	Min	Symbol	Max	Min	Symbol	Max
A	14.2	9.8	C	10.2	8.2	B	6.3
R	3.6	3.56	B1	16.1	9.0	C1	13.6
b	9.4	12.6					
P	6.6						

/ Marking Instructions



BR

200N20SH

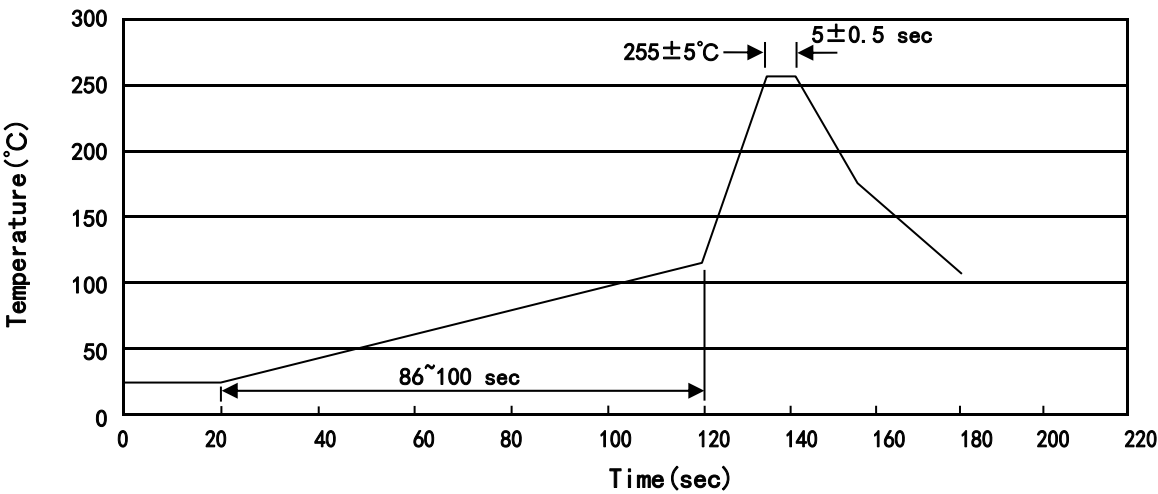
Note:

BR: Company Code

200N20SH: Product Type Code

****: 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

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
	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	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices