

BRCS120N15SHXC

Rev.B Aug.-2025

/ Descriptions

SGIQ8Ö90F0ls M Q ƒ ǒ Z 1
N-Channel MOSFET in a PDFN5 6–Clip Plastic Package.

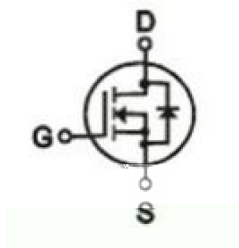
/ Features

$V_{DS}(V)=150V$ $I_D=54A$
 $R_{DS(ON)}@10V<12.5m\Omega$ (TYP. 10.5m Ω)
 $R_{DS(ON)}@6V<18.5m\Omega$ (TYP. 16.5m Ω)
 f_{β} HF Product.

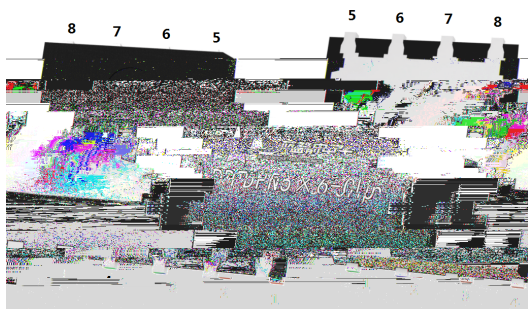
/ Applications

ǝ 0 ʱ ǀ GF 0 GF ʹΩ ʱ
Motor drivers, DC - DC Converter.

/ Equivalent Circuit



/ Pinning



PIN1 2 3 S PIN4 G PIN5 6 7 8 D

/ Marking

M ʹ ʹ
See Marking Instructions.

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	150	V
Drain Current*	$I_D(T_C=25^\circ\text{C})$	54	A
	$I_D(T_C=100^\circ\text{C})$	38	A
Drain Current – Pulsed**	I_{DM}	216	A
Gate-Source Voltage	V_{GS}	20	V
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	93	W
Diode Forward Current	$I_S(T_C=25^\circ\text{C})$	54	A
Single Pulse Avalanche Energy($L=1.0\text{mH}$)	E_{AS}	450	mJ
Junction and Storage Temperature Range	T_j, T_{stg}	-55 to 175	$^\circ\text{C}$
Thermal resistance, junction – ambient*	R_{JA}	59	$^\circ\text{C/W}$
Thermal resistance, junction – case*	R_{JC}	1.6	$^\circ\text{C/W}$

Note:

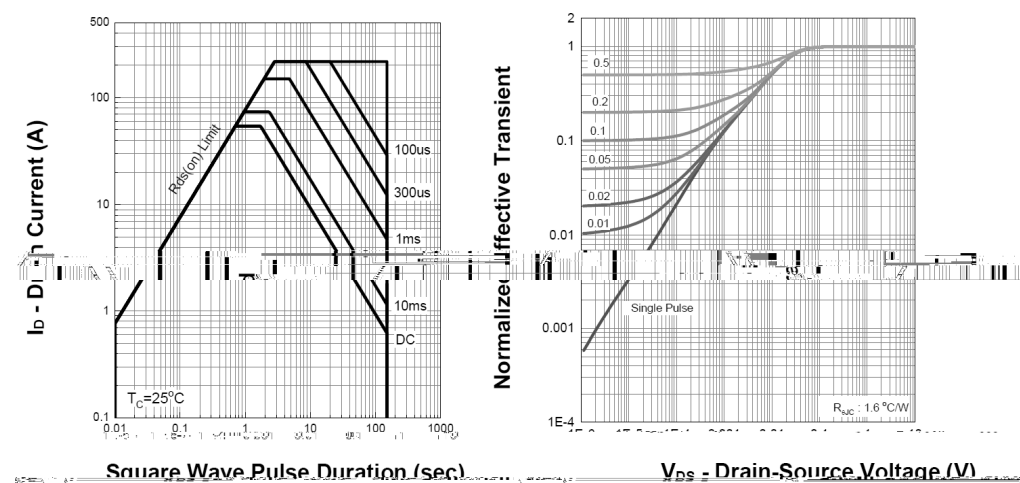
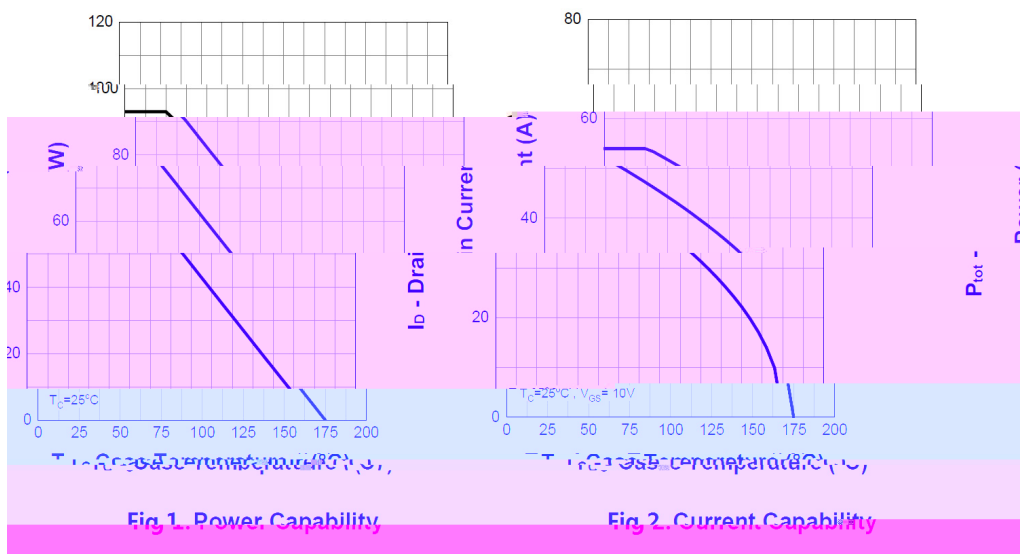
*: Surface Mounted on 1 in2 pad area, $t \leq 10$ sec**: Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$ / Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	150			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=120\text{V}, V_{GS}=0\text{V}$			1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=30\text{A}$		10.5	12.5	m Ω
		$V_{GS}=6\text{V}, I_D=20\text{A}$		16.5	18.5	
Diode Forward Voltage	V_{SD}	$I_{SD} = 30 \text{ A}, V_{GS} = 0 \text{ V}$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS} = 30 \text{ A}, V_{GS} = 0 \text{ V}$ $dI_{SD}/dt = 100 \text{ A}/\mu\text{s}$		77		nS
Reverse Recovery Charge	Q_{rr}			237		nC
Input Capacitance	C_{iss}	$V_{DS}=75\text{V}, V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		1548		pF
Output Capacitance	C_{oss}			227		
Reverse Transfer Capacitance	C_{rss}			14		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =75V, I _D =30A		23		nC
Gate Source Charge	Q _{gs}			10		
Gate Drain Charge	Q _{gd}			4		
Turn-On Delay Time	t _{d(on)}	V _{GEN} =10V, V _{DS} =75V, R _L =2.5 , R _G =3.9 I _{DS} =30A		13		ns
Turn-On Rise Time	t _r			21		
Turn-Off Delay Time	t _{d(off)}			27		
Turn-Off Fall Time	t _f			15		

/ Electrical Characteristic Curve



Area Fig 4. Transient Thermal Impedance Fig 3. Safe Operating Area

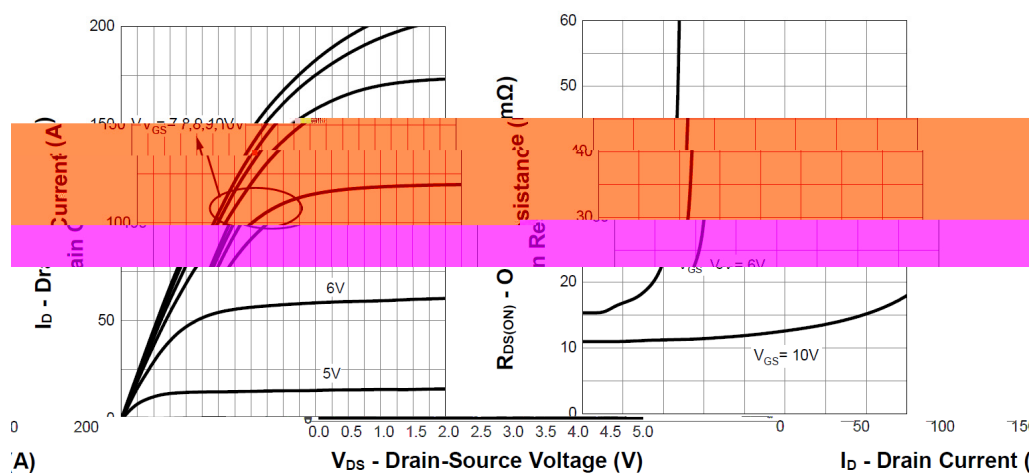
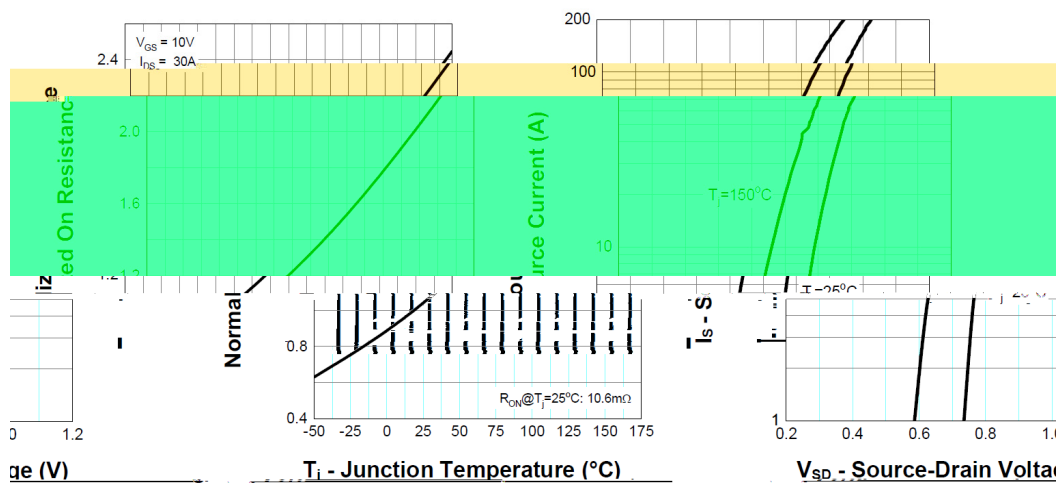
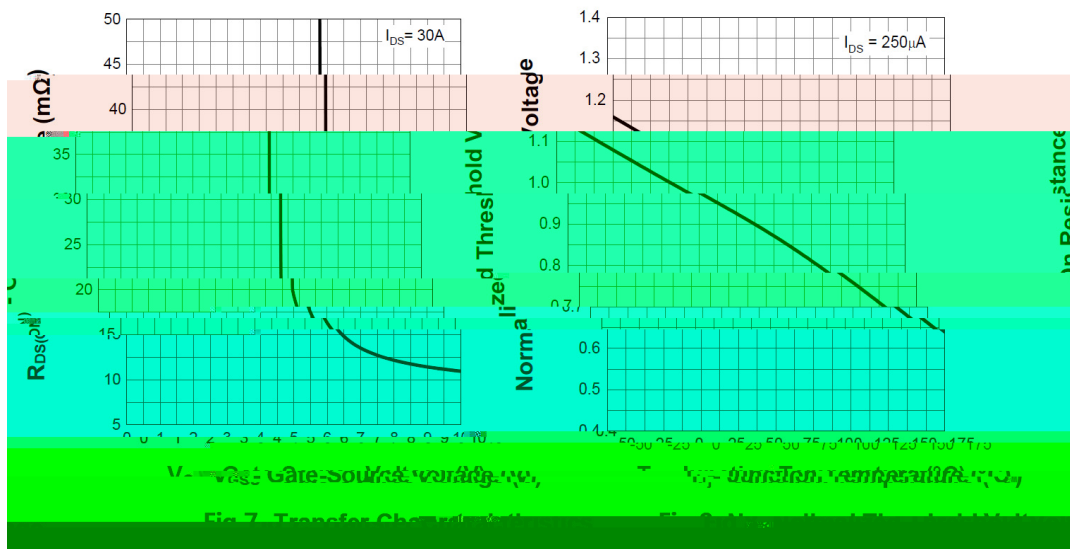


Fig 5. Output Characteristics Fig 6. On Resistance

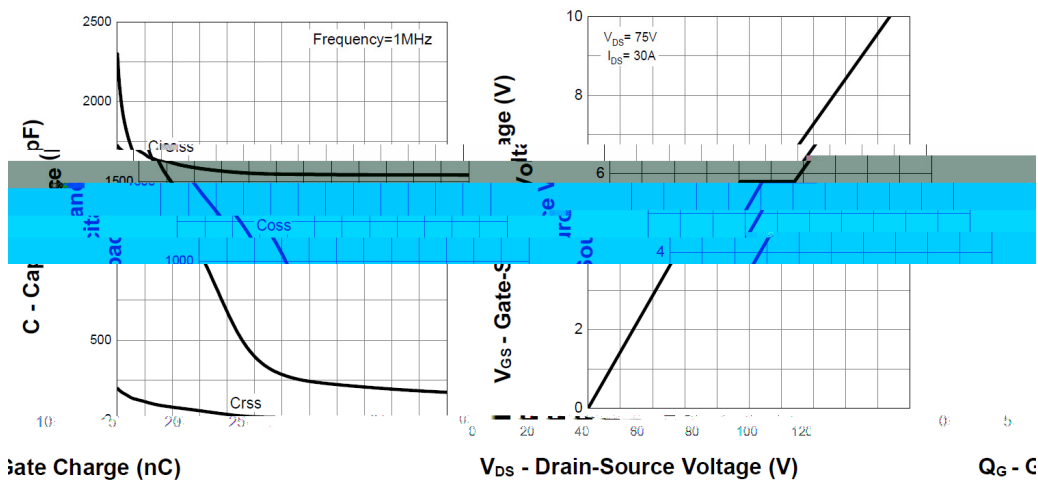
/ Electrical Characteristic Curve



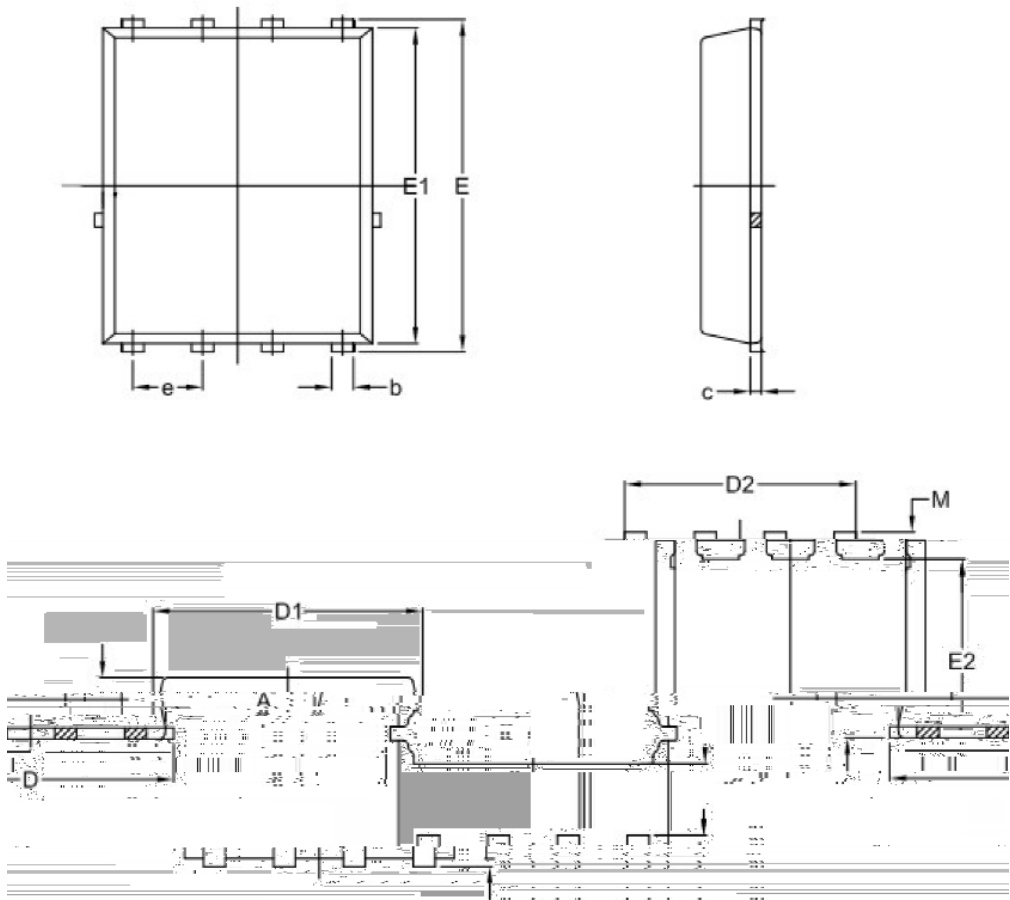
Diode Forward Current

Fig 9. Normalized On Resistance

Fig 10.



/ Package Dimensions



SYMBOL	Dimension in mm	
	MIN.	MAX.
A	0.9	1.2
b	0.3	0.51
c	0.11	0.35
D	4.7	5.35
D1	4.7	5.35
D2	3.7	4.4
6.25		E 5.75
6		E1 5.6
3.9		E2 3.18
0.71		L 0.35
0.71	0.71	M 0.35

/ Marking Instructions



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120N15SH X 3 N 7

$$----\chi \quad \mathbb{H} \cdot f \check{\eta}^N \Gamma_D \quad | \quad | \cdot f \check{\eta}^N \Psi \rho$$

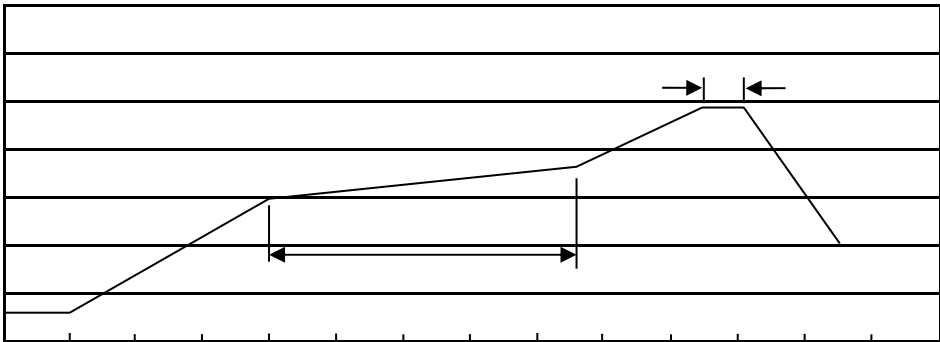
Note χ

BR χ Company Code

120N15SH χ Product Type Code

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

() / Temperature Profile for IR Reflow Soldering(Pb-Free)



- ” X
- 1 150~180 ℃ 60~90sec;
 - 2 245±5 ℃ 5~0.5sec;
 - 3 2~10 ℃/sec.

- Note:
- 1.Preheating:150~180 ℃ , Time:60~90sec.
 - 2.Peak Temp.:245±5 ℃ , Duration:5~0.5sec.
 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 M 6 A	Units					Dimension (unit mm ³)		
	5000	2	10000	6	60000	13"×12	360×360×50	380×335×366

/ Notices

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