

Product Specification

BSC098N10NS5

N-SGT Enhancement Mode MOSFET

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Descriptions

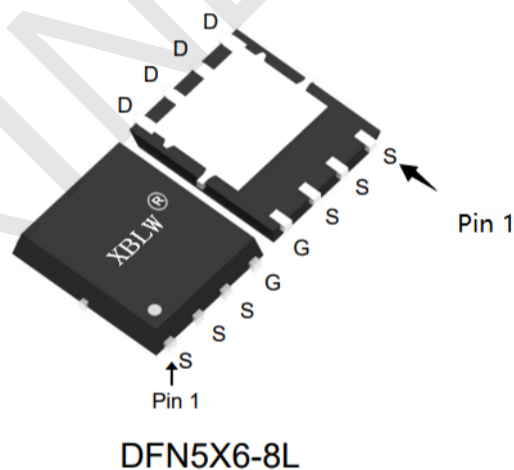
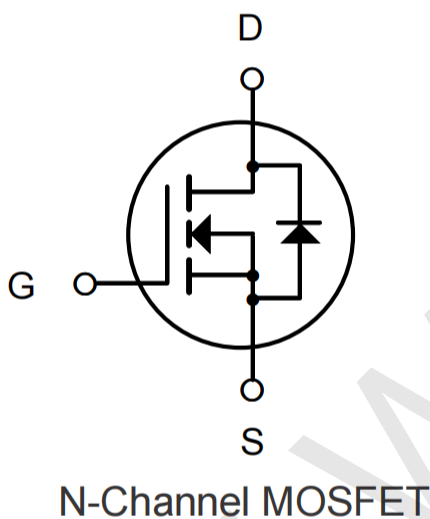
The BSC098N10NS5 use advanced SGT MOSFET technology to provide low $R_{DS(ON)}$, low gate charge, and excellent fast switching avalanche characteristics. This device is specially designed to get better ruggedness and suitable.

Features

- $V_{DS} = 100V, I_D = 75A$
- $R_{DS(ON)} < 7.5m\Omega @ V_{GS} = 10V$

Applications

- Consumer electronic power supply Motor control
- Synchronous-rectification Isolated DC
- Synchronous-rectification applications



Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
BSC098N10NS5	DFN5X6-8L	C098N10NS	Tape	5000Pcs/Reel

Absolute Maximum Ratings at $T_j = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	100	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current ¹⁾	I_D	75	A
Pulsed drain current ²⁾	$I_{D, \text{ pulse}}$	300	A
Power dissipation ³⁾	P_D	97	W
Single pulsed avalanche energy ⁵⁾	EAS	90	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^\circ\text{C}$
Thermal resistance, junction-case	$R_{\theta JC}$	1.3	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =20A	-	6.4	7.5	mΩ
		V _{GS} =4.5V, I _D =8A	-	9.2	11.4	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1.0MHz	-	2944	-	pF
C _{oss}	Output Capacitance		-	736	-	pF
C _{rss}	Reverse Transfer Capacitance		-	2.04	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =30A, V _{GS} =10V	-	39.4	-	nc
Q _{gs}	Gate-Source Charge		-	5.6	-	nc
Q _{gd}	Gate-Drain(“Miller”) Charge		-	7.6	-	nc
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =25A, R _G =6Ω, V _{GS} =10V	-	13	-	nc
t _r	Turn-on Rise Time		-	27.5	-	nc
t _{d(off)}	Turn-off Delay Time		-	45.5	-	nc
t _f	Turn-off Fall Time		-	41.5	-	nc
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25℃ , I _F =12A,dI/dt=100A/μs	-	177	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	1291	-	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=19A.
3. Pulse Test: Pulse Width≤300μs, Duty Cycle ≤0.5%.

Typical Characteristics

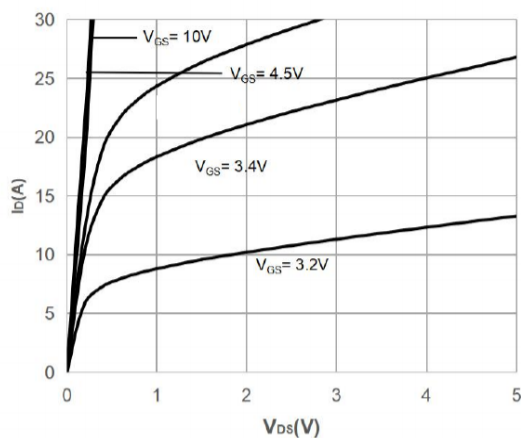


Fig 1. Output Characteristics

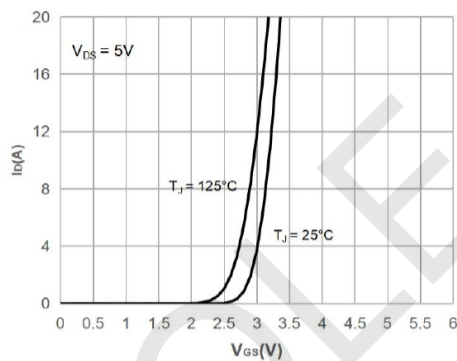


Fig 2. Typical Transfer Characteristics

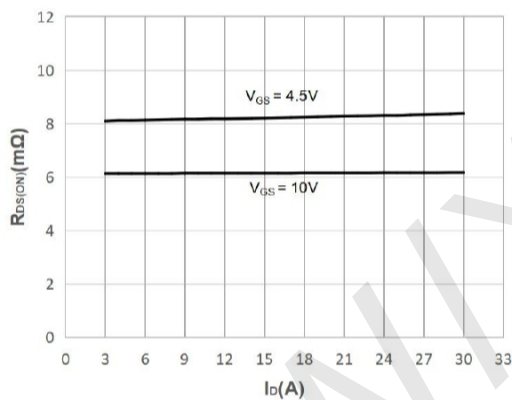


Fig 3. On-resistance vs. Drain Current

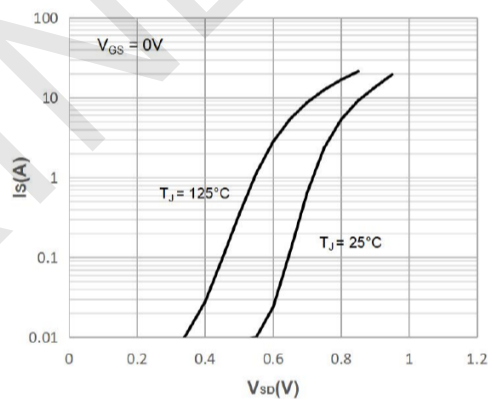


Fig 4. Body Diode Characteristics

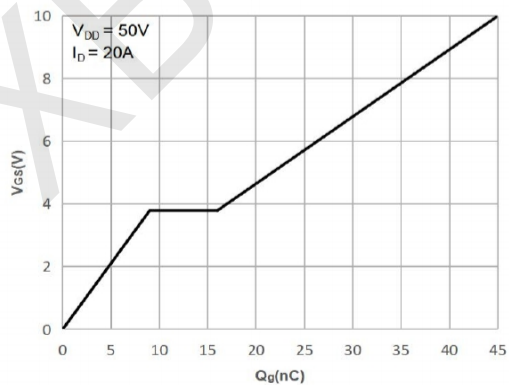


Fig 5. Gate Charge Characteristics

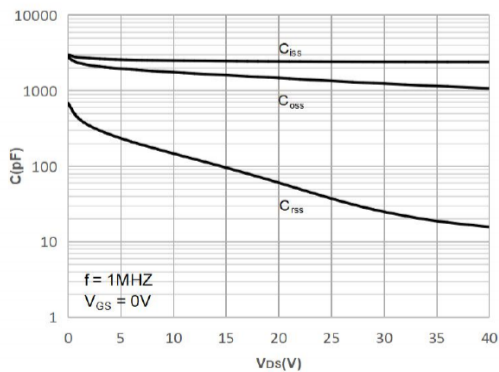


Fig 6. Capacitance Characteristics

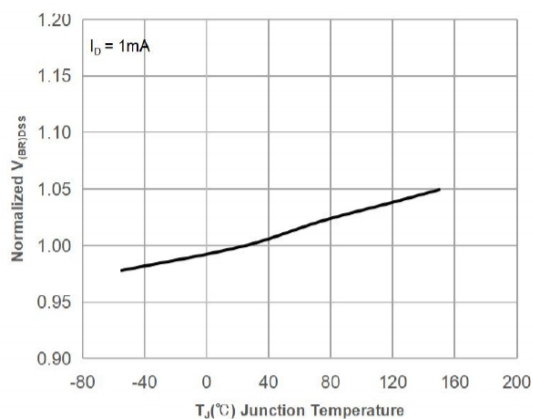


Fig 7. Normalized Breakdown voltage vs. Junction Temperature

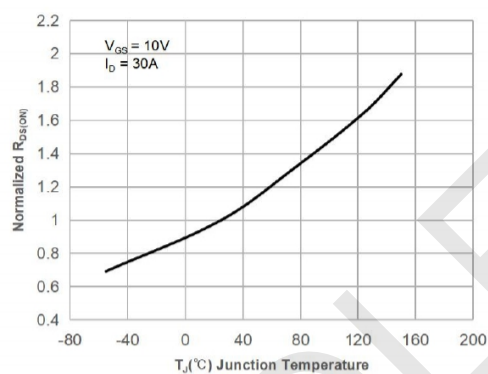


Fig 8. Normalized on Resistance vs. Junction Temperature

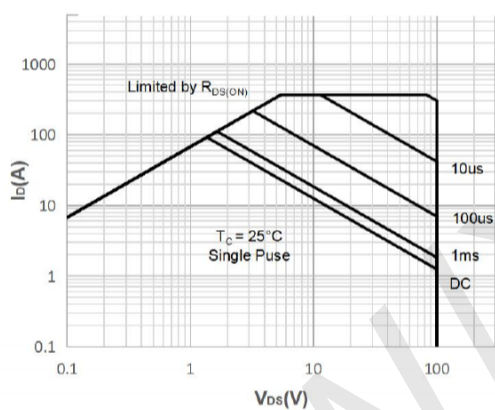


Fig 9. Maximum Safe Operating Area

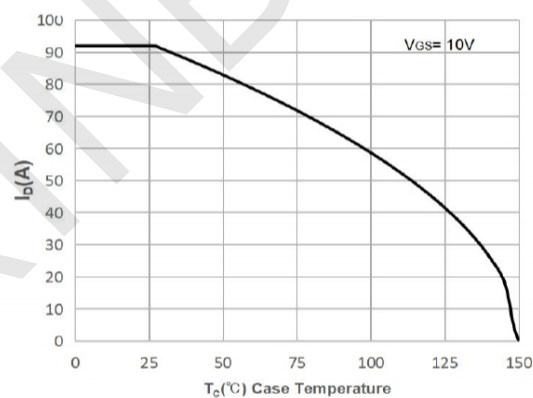


Figure 10: Maximum Continuous Driant Current vs. Case Temperature

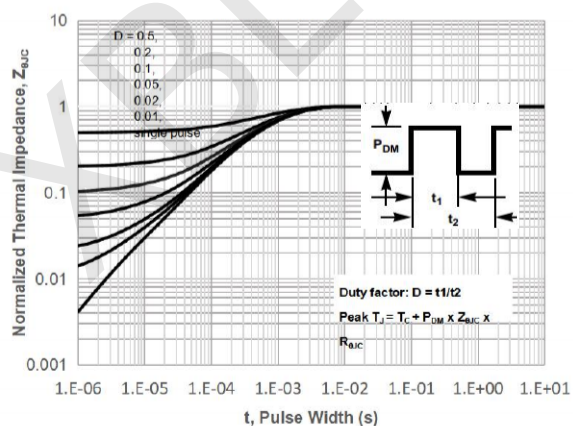


Fig 11. Normalized Maximum Transient Thermal Impedance

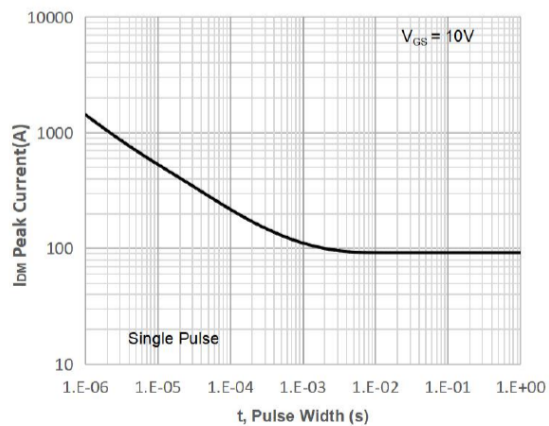
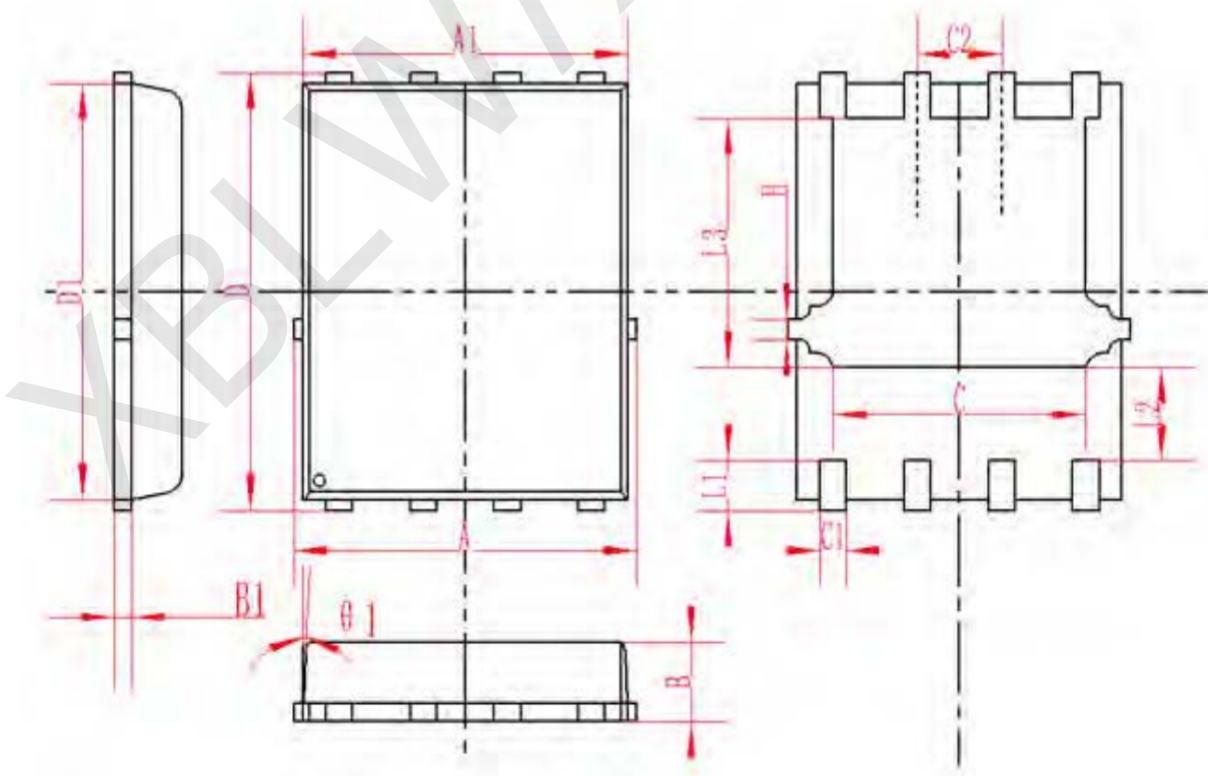


Fig 12. Peak Current Capacity

Package Information

DFN5X6-8L

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
B1	0.254REF			0.010REF		
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2	1.27TYP			0.5TYP		
θ1	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010



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