



General Description

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

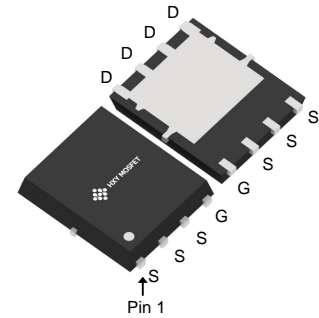
General Features

$V_{DS} = 100V$ $I_D = 75A$

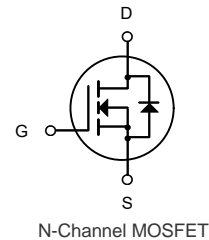
$R_{DS(ON)} < 7.5m\Omega @ V_{GS}=10V$

Applications

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



DFN5X6-8L
(TDSO8-8-EP(5x6))



Ordering Information

Product ID	Pack	Brand	Qty(PCS)
BSC098N10NS5	DFN5X6-8L (TDSO8-8-EP(5x6))	HXY MOSFET	5000

Absolute Maximum Ratings at $T_j=25^\circ C$ 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, pulse}	300	A
Power dissipation ³⁾	P _D	97	W
Single pulsed avalanche energy ⁵⁾	E _{AS}	90	mJ
Operation and storage temperature	T _{stg} , T _j	-55 to 150	°C
Thermal resistance, junction-case	R _{θJC}	1.3	°C/W



Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	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	$V_{DS}=0V, V_{GS}= \pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=20A$	-	6.4	7.5	m Ω
		$V_{GS}=4.5V, I_D=8A$	-	9.2	11.4	m Ω
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	$V_{DD}=50V, I_D=25A,$ $R_G=6\Omega, V_{GS}=10V$	-	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	$T_J=25^\circ\text{C},$ $I_F=12A, di/dt=100A/\mu s$	-	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: $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, R_G=25\Omega, L=0.5mH, I_{AS}=19A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Typical Performance Characteristics

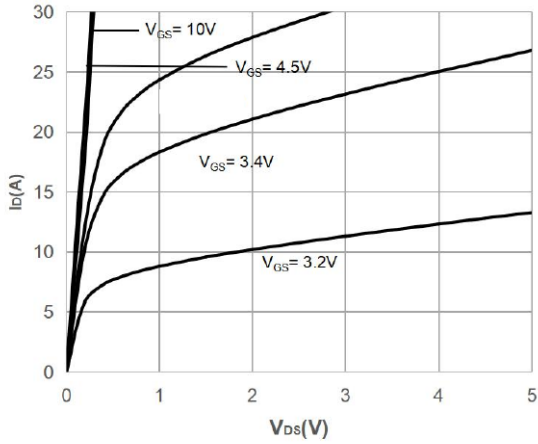


Figure 1: Output Characteristics

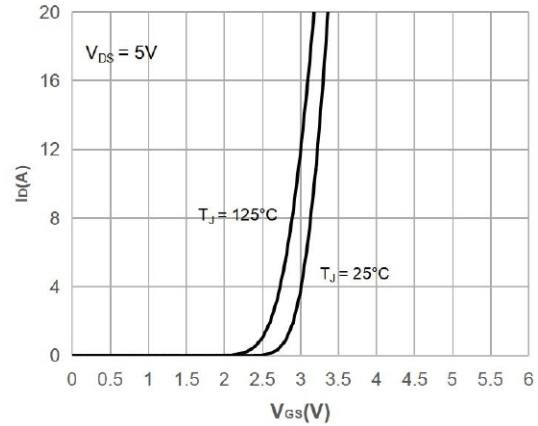


Figure 2: Typical Transfer Characteristics

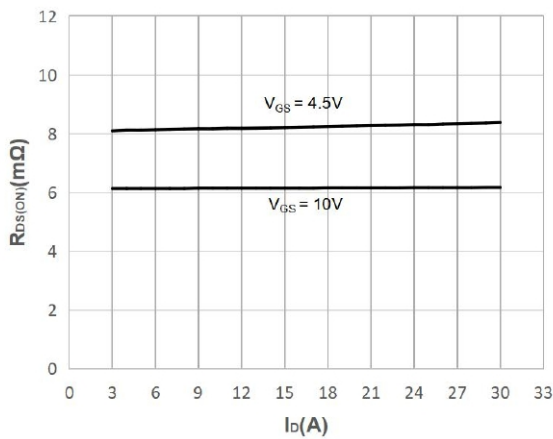


Figure 3: On-resistance vs. Drain Current

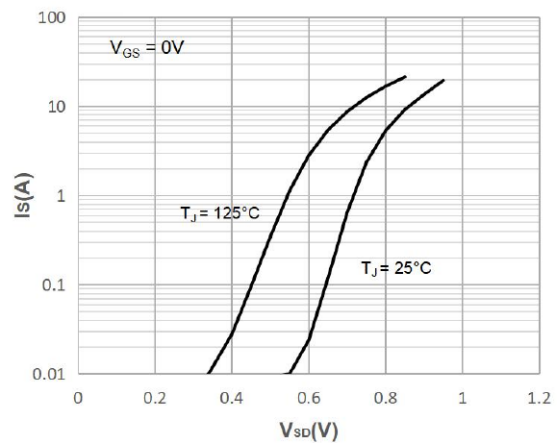


Figure 4: Body Diode Characteristics

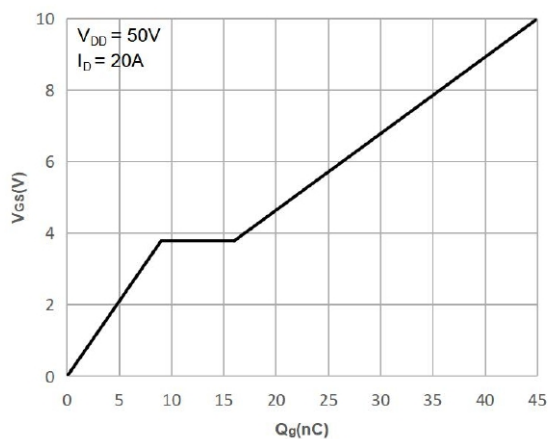


Figure 5: Gate Charge Characteristics

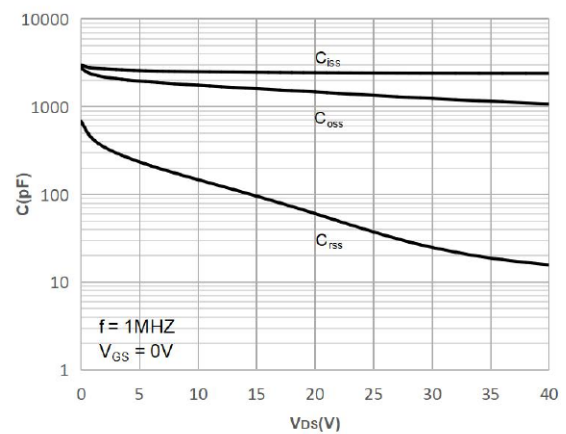


Figure 6: Capacitance Characteristics

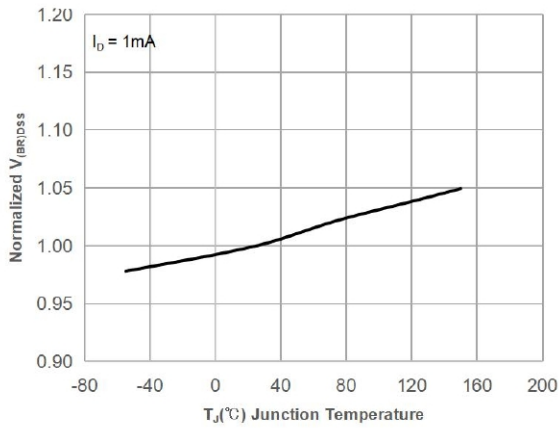


Figure 7: Normalized Breakdown voltage vs. vs. Junction Temperature

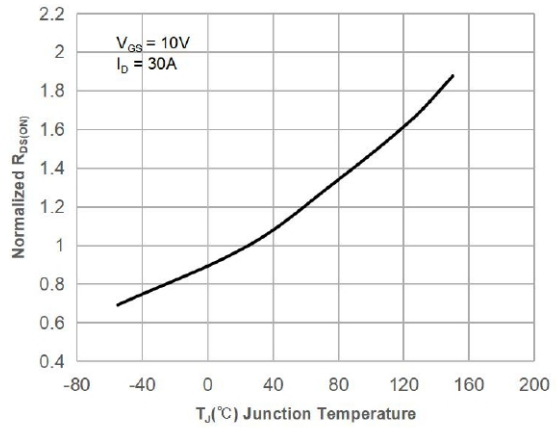


Figure 8: Normalized on Resistance vs. Junction Temperature

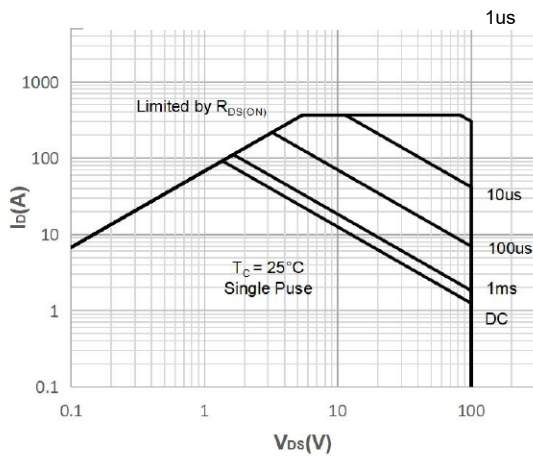


Figure 9: Maximum Safe Operating Area

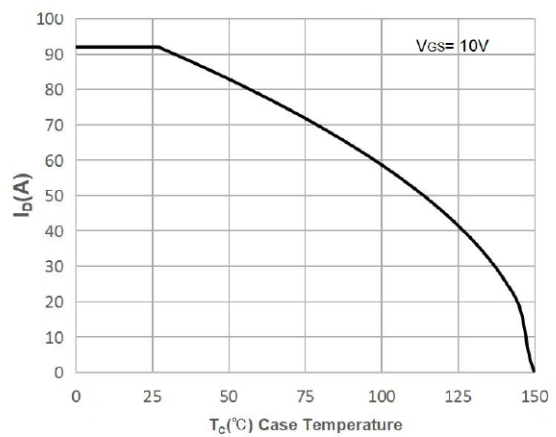


Figure 10: Maximum Continuous Driant Current vs. Case Temperature

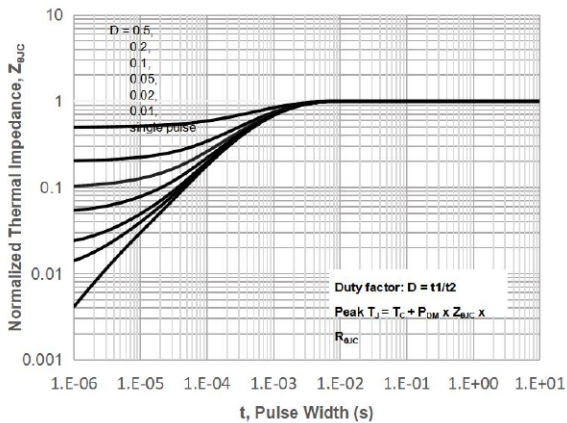


Figure 11: Normalized Maximum Transient Thermal Impedance

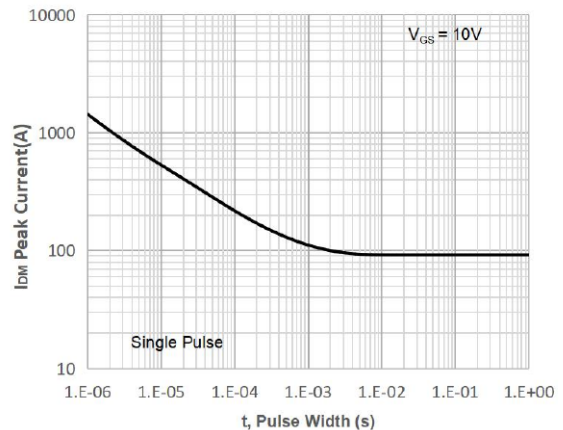
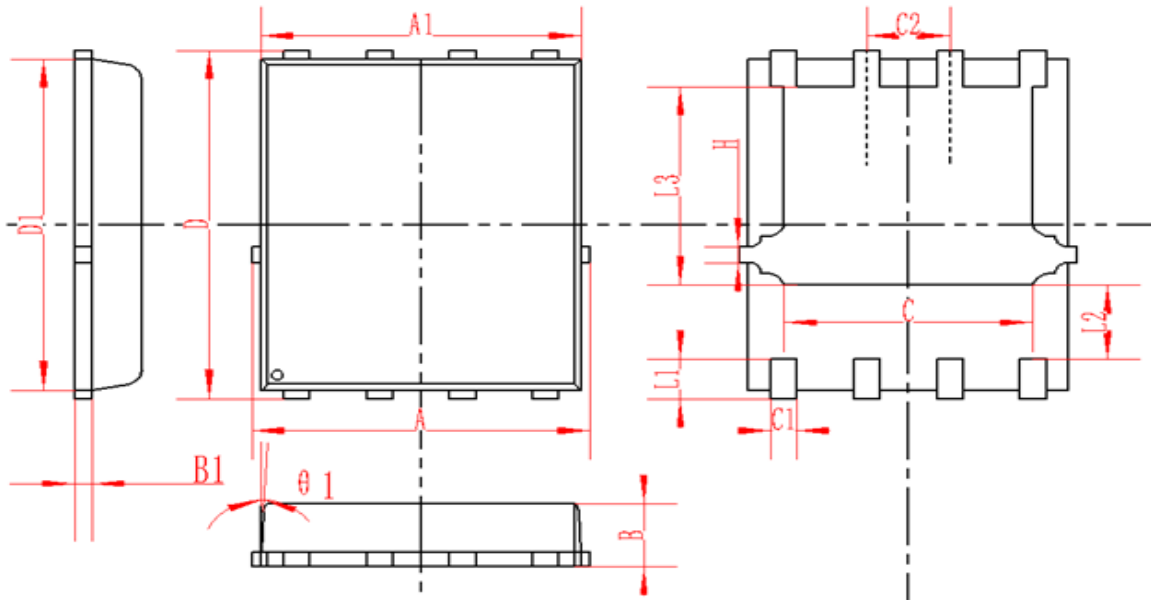


Figure 12: Peak Current Capacity



DFN5X6-8L(TDSON-8-EP(5x6)) Package Information



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		
$\theta 1$	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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