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BSC093N04LSG-MS

Product specification

Description

The BSC093N04LSG-MS uses advanced trench technology to provide excellent RDS(ON) , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Features

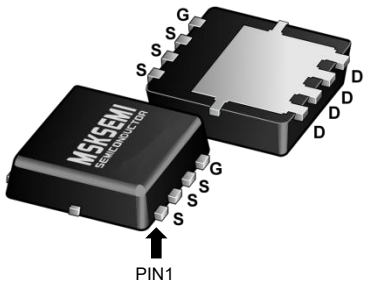
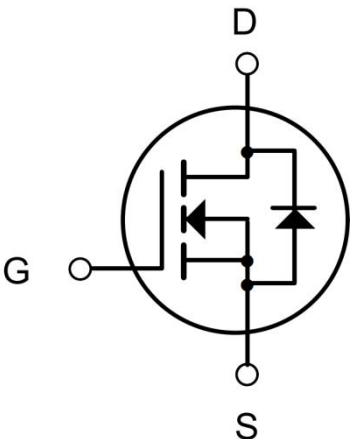

$V_{DS} = 40V$ $I_D = 50A$

$R_{DS(ON)} < 14m\Omega$ $V_{GS} = 10V$

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Reference News

PACKAGE OUTLINE	N-Channel MOSFET	Marking
 <p>DFN5X6-8L</p>		

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	40	V
V_{GS}	Gate- Source Voltage	± 20	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ¹	50	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ¹	38	A
I_{DM}	Pulsed Drain Current ²	160	A
EAS	Single Pulse Avalanche Energy ³	50	mJ
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Case ^(Note 2)	R _{θJC}	1.76	°C/W
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Electrical Characteristics (TA=25°C unless otherwise noted)

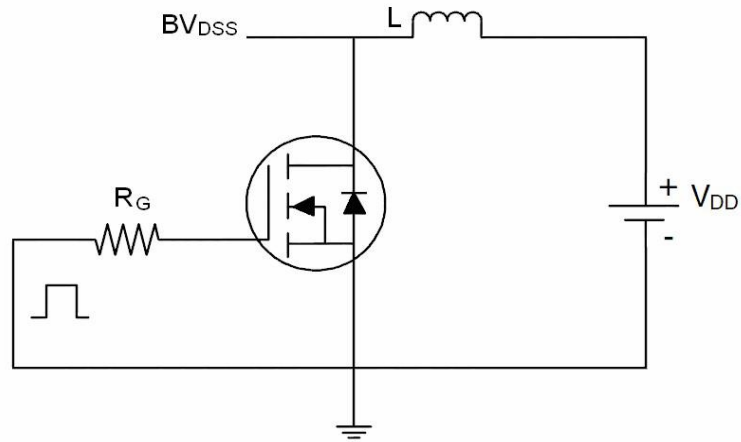
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} = 0V,	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	μA
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	V _{GS} =10V, I _D =30A	-	11	14	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A	30	-	-	S
Dynamic Characteristics ^(Note 4)						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	1540	-	pF
C _{oss}	Output Capacitance		-	171	-	pF
C _{rss}	Reverse Transfer Capacitance		-	115	-	pF
Switching Characteristics ^(Note 4)						
t _{d(on)}	Turn-on Delay Time	V _{DD} =20V, I _D =20A, R _L =1Ω	-	5	-	ns
t _r	Turn-on Rise Time		-	24	-	ns
t _{d(off)}	Turn-off Delay Time		-	38	-	ns
t _f	Turn-off Fall Time	V _{GS} =10V, R _{GEN} =3Ω	-	12	-	ns
Q _g	Total Gate Charge	V _{DS} =30V, I _D =30A, V _{GS} =10V	-	24	-	nC
Q _{gs}	Gate-Source Charge		-	5.9	-	nC
Q _{gd}	Gate-Drain Charge		-	3.6	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Drain Forward Current ^(Note 2)		-	-	48	A
V _{SD}	Drain Forward Current ^(Note 3)	V _{GS} =0V, I _S =30A	-	-	1.2	V
t _{rr}	Reverse Recovery Time	T _J =25°C, I _F =30A	-	9	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs ^(Note 3)	-	15	-	nC
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible(turn-on is dominated br LS+LD)				

Notes:

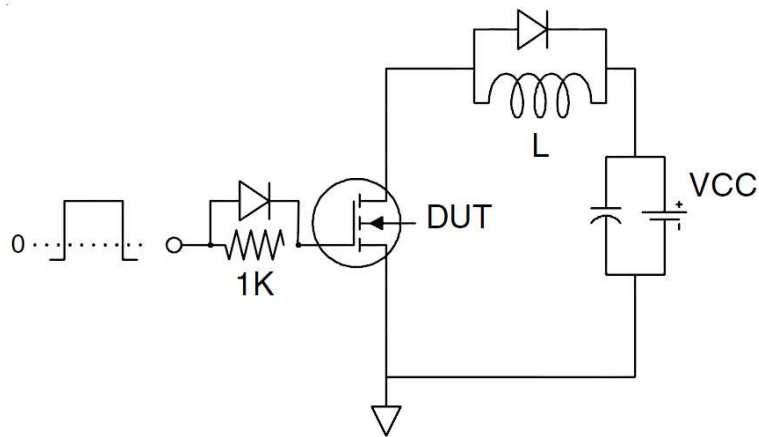
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t_s≤10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production
5. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25Ω

Test circuit

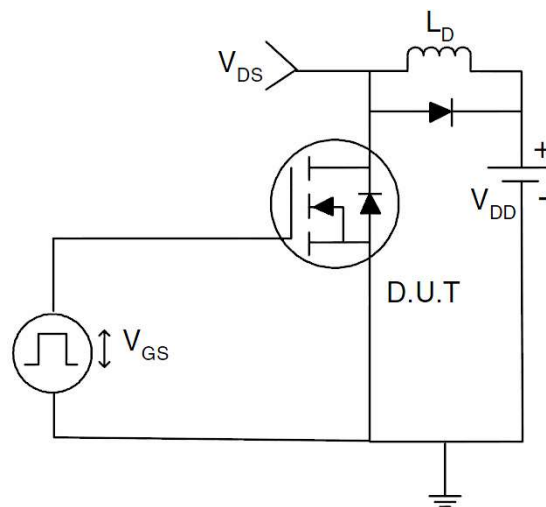
1) E_{AS} test Circuits



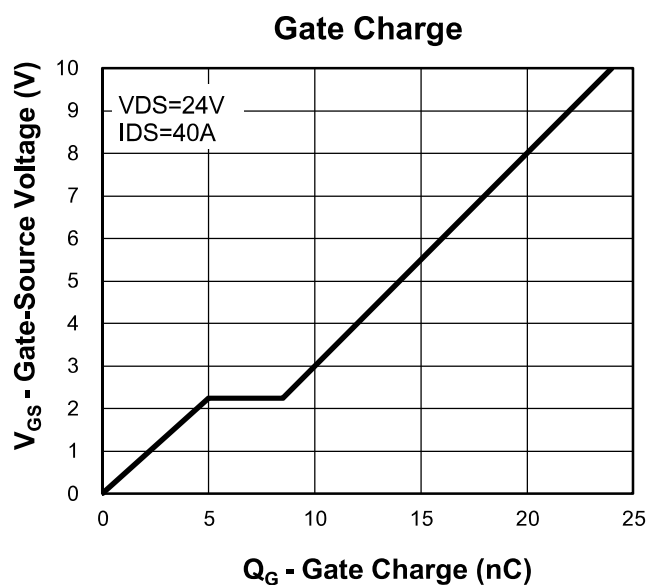
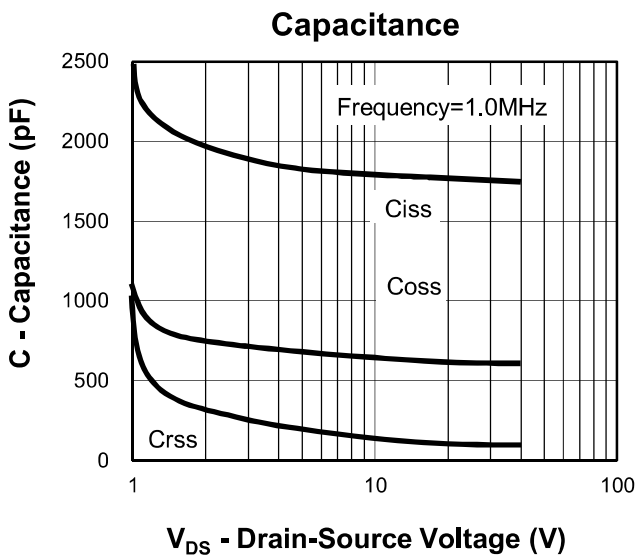
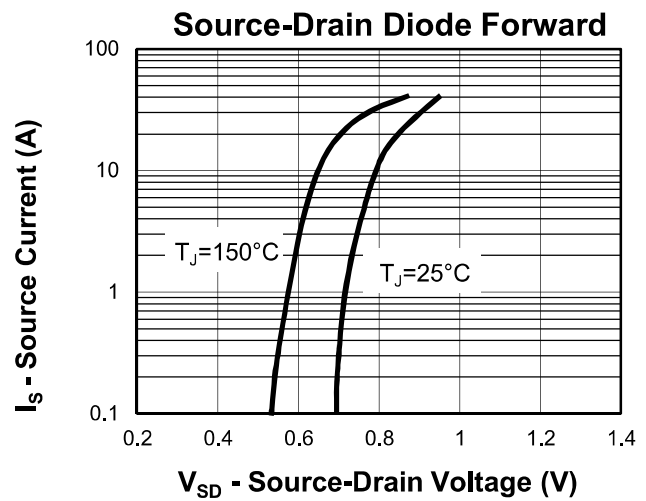
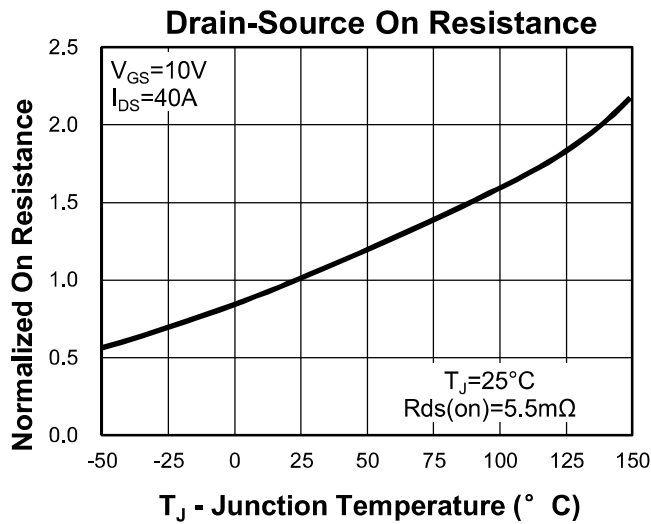
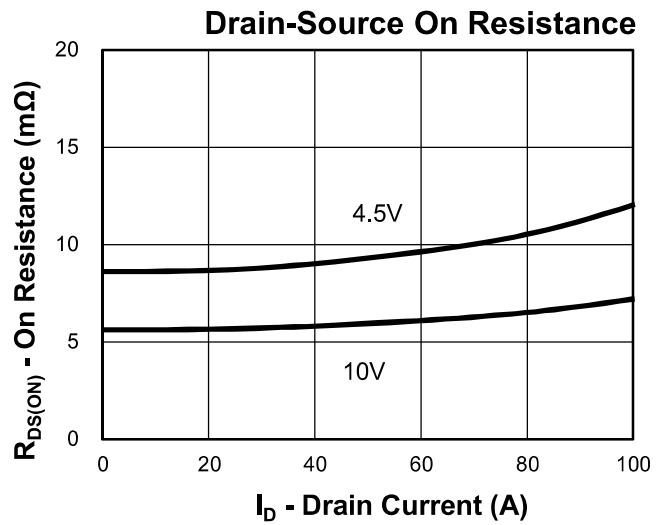
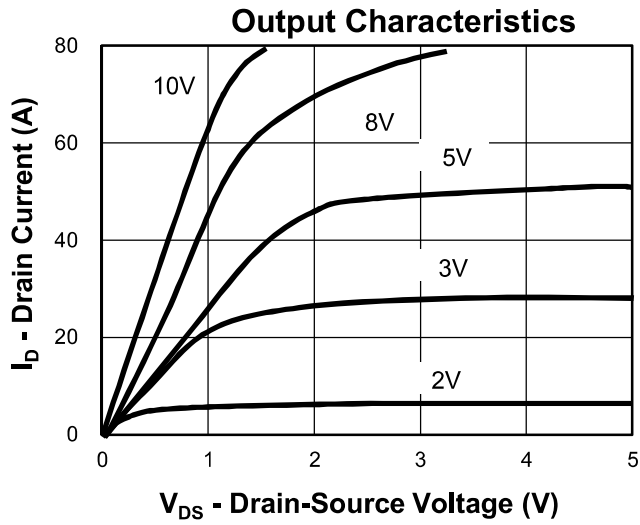
2) Gate charge test Circuit



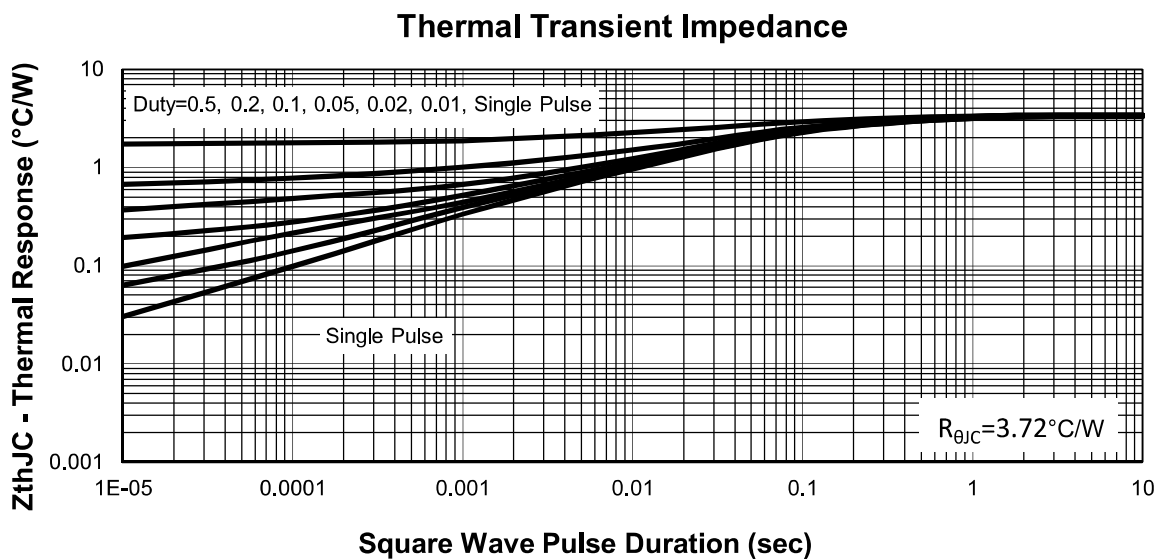
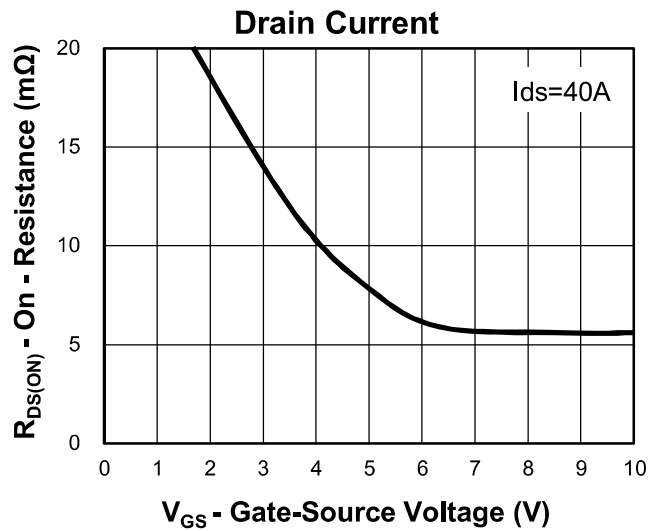
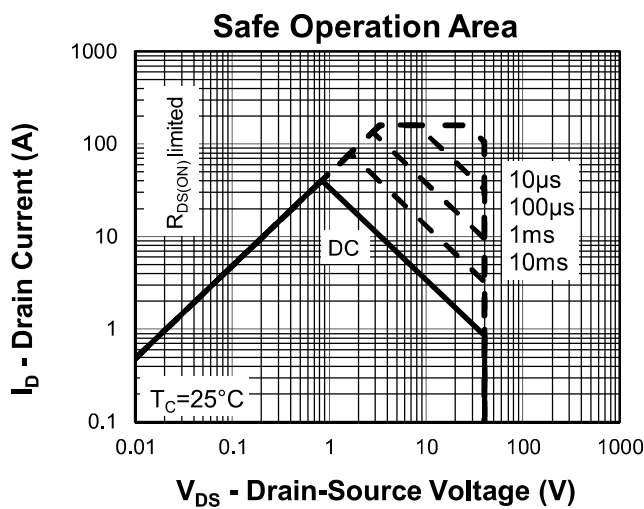
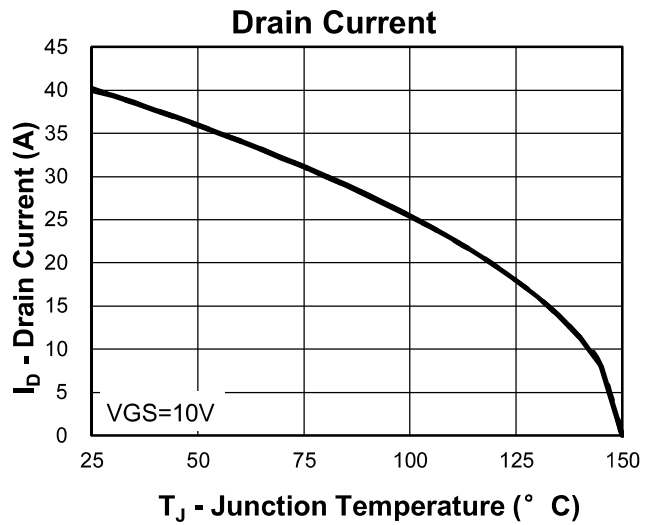
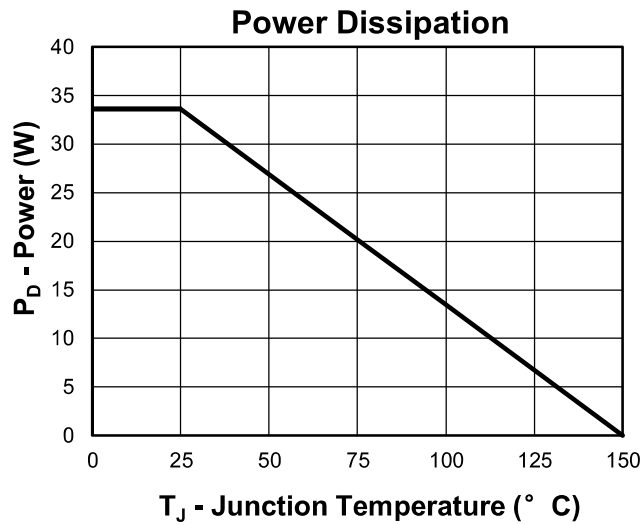
3) Switch Time Test Circuit



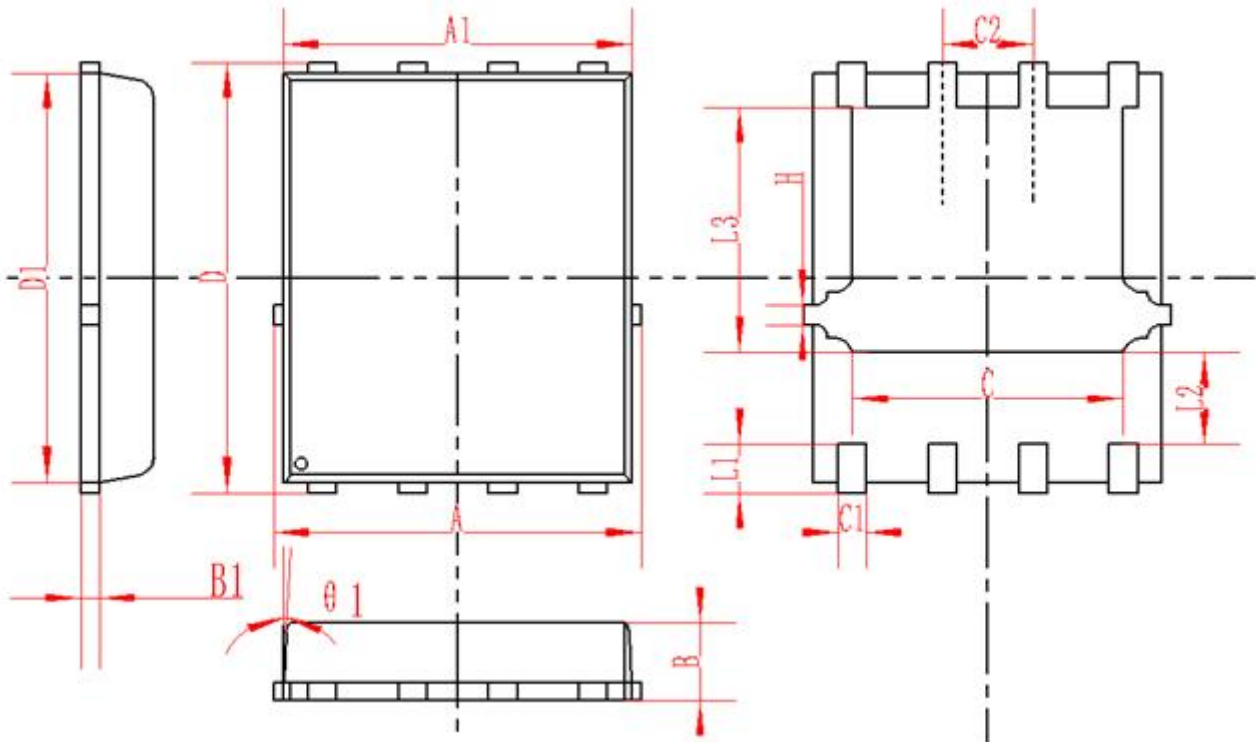
Typical Characteristics



Typical Characteristics



DFN5X6-8L 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		
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

REEL SPECIFICATION

P/N	PKG	QTY
BSC093N04LSG-MS	DFN5X6-8L	5000

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