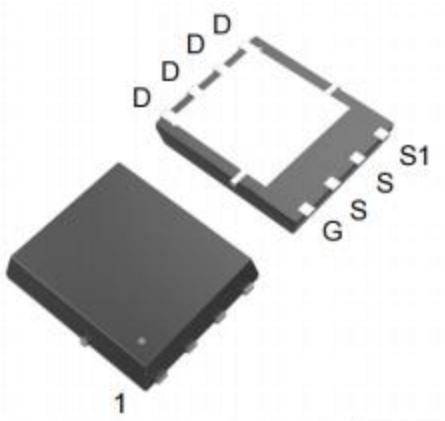
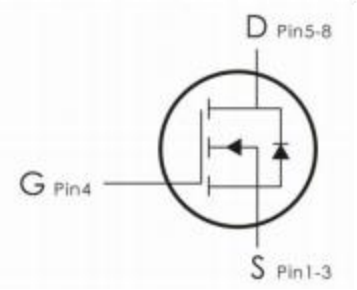
Description：

This N-Channel MOSFET uses advanced SGT technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.





Features：

1) V_{DS}=40V,I_D=60A, $R_{DS(ON)}$<5mΩ @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
BSC059N04LS6	059N04L	DFN5*6-8	5000 pcs/Reel

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	60	A
	Continuous Drain Current-T_C=100℃	39	
I_{DM}	Pulsed Drain Current[1]	260	
P_D	Power Dissipation	44	W
E_{AS}	Single pulse avalanche energy [2]	52	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2.8	℃/W

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250 μA	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=40V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250 μA	1	1.7	2.2	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=10V,I_D=20A	---	4.3	5	mΩ
		V_{GS}=4.5V,I_D=15A	---	6.2	7.5	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1MHz	---	997.5	---	pF
C_{oss}	Output Capacitance		---	626.8	--	
C_{rss}	Reverse Transfer Capacitance		---	29.4	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=20V, I_D=20A, R_{ENG}=3Ω,V_{GS}=10V	---	6.82	---	ns
t_r	Rise Time		---	2.83	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	27.3	---	ns
t_f	Fall Time		---	3.78	---	ns
Q_g	Total Gate Charge	V_{GS}=0 to 10V, V_{DS}=20V, I_D=20A	---	17	---	nc
Q_{gs}	Gate-Source Charge		---	4.5	---	nc
Q_{gd}	Gate-Drain “Miller” Charge		---	2	---	nc
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage[1]	V_{GS}=0V, I_S=20A	---	---	1.2	V
I_S	Continuous Drain Curren[3]	V_D=V_G=0V	---	---	60	A
I_{SM}	Pulsed Drain Current		---	---	260	A
Trr	Reverse Recovery Time	I_F=20A,T_J=25℃ dI/dt=100A/us	---	40	---	ns
Qrr	Reverse Recovery Charge		---	22	---	nc

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=14.5A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

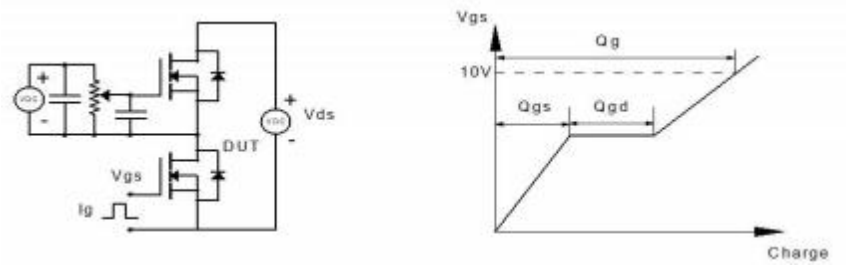


Figure 1: Gate Charge Test Circuit & Waveform

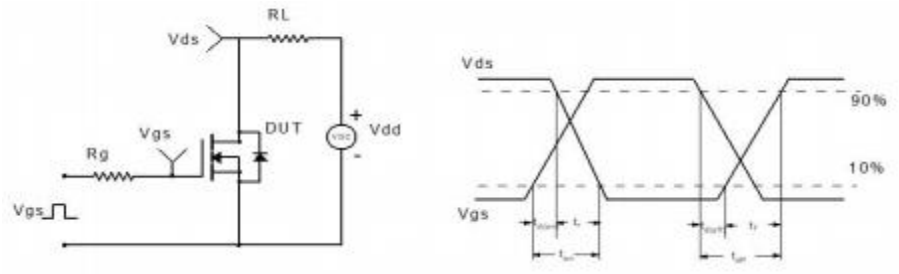


Figure 2: Resistive Switching Test Circuit & Waveform

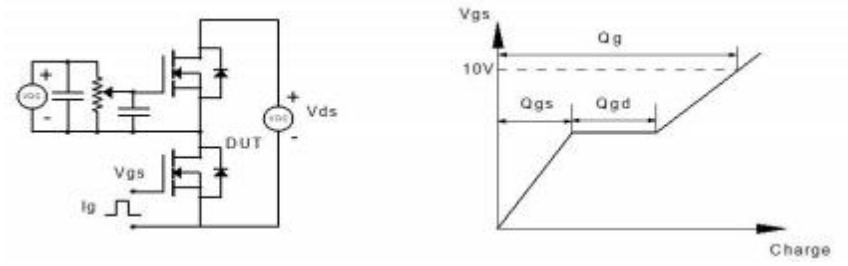


Figure 1: Gate Charge Test Circuit & Waveform

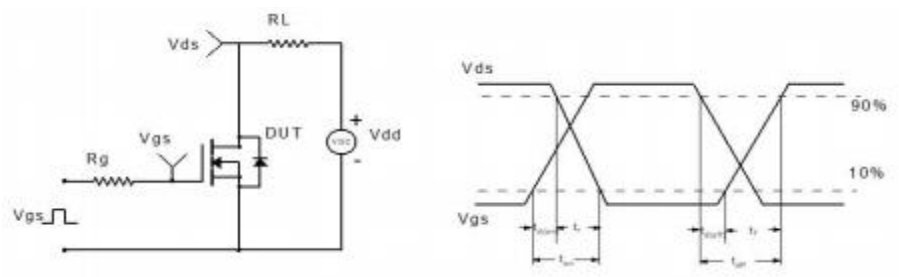


Figure 2: Resistive Switching Test Circuit & Waveform

DFN5x6-8 Package Information：