EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

Domestic Part Number	BSC057N08N
Overseas Part Number	BSC057N08N
Equivalent Part Number	BSC057N08N

80V N-Channel Enhancement Mode MOSFET

General Description

BSC057N08N use advanced MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics.

This device is specially designed to get better ruggedness and suitable to use in

Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications

General Features

V_{DS} = 80V I_D =92 A

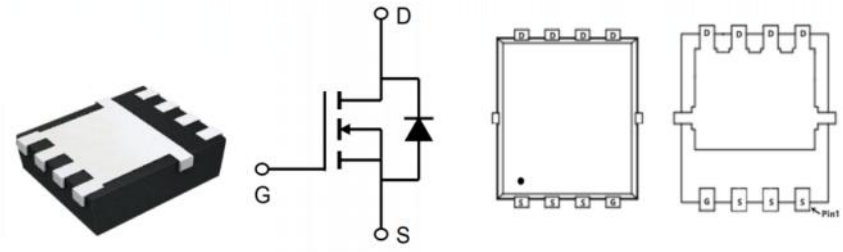
$R_{DS(ON)}$ < 7.5 mΩ @ V_{GS}=10V

Low RDS(on) & FOM

Extremely low switching loss

Excellent stability and uniformity or Invertors

PDFN5*6-8L Pin Configuration



Package Marking and Ordering Information

Product ID	Package	Marking	QTY(PCS)	Packing methed
BSC057N08N	PDFN5*6-8L	T65HND	5000	Reel

Absolute Maximum Ratings at T_j=25℃ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	80	V
Gate source voltage	VGS	±20	V
Continuous drain current[1]	I_D	92	A
Pulsed drain current[2]	ID, pulse	400	A
Power dissipation[3]	P_D	148	W
Single pulsed avalanche energy[5]	EAS	205	mJ
Operation and storage temperature	Tstg, Tj	-55 to 150	℃
Thermal resistance, junction-case	RθJC	0.84	℃/W
Thermal resistance, junction-ambient[4]	RθJA	75	℃/W

80V N-Channel Enhancement Mode MOSFET

Electrical Characteristics at T_j=25 ℃ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	80	90		V	V_{GS}=0 V, I_D=250 μA
Gate threshold voltage	$V_{GS(th)}$	2		4	V	V_{DS}=V_{GS}, I_D=250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		6.5	7.5	mΩ	V_{GS}=10 V, I_D=12 A
Gate-source leakage current	I_{GSS}			100	nA	V_{GS}=20 V
				-100		V_{GS}=-20 V
Drain-source leakage current	I_{DSS}			1	μA	V_{DS}=80 V, V_{GS}=0 V
Input capacitance	C_{iss}		3600		pF	V_{GS}=0 V, V_{DS}=40 V, f=100 kHz
Output capacitance	C_{oss}		402		pF	
Reverse transfer capacitance	C_{rss}		366		pF	
Turn-on delay time	$t_{d(on)}$		22.0		ns	V_{GS}=10 V, V_{DS}=50 V, R_G=2 Ω, I_D=25 A
Rise time	t_r		21.5		ns	
Turn-off delay time	$t_{d(off)}$		62.7		ns	
Fall time	t_f		61.4		ns	
Total gate charge	Q_g		52.6		nC	I_D=25 A, V_{DS}=50 V, V_{GS}=10 V
Gate-source charge	Q_{gs}		14.7		nC	
Gate-drain charge	Q_{gd}		7.5		nC	
Gate plateau voltage	$V_{plateau}$		3.8		V	
Diode forward current	I_S			100	A	V_{GS}<V_{th}
Pulsed source current	I_{SP}			300		
Diode forward voltage	V_{SD}			1.3	V	I_S=12 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		75.0		ns	I_S=25 A, di/dt=100 A/μs
Reverse recovery charge	Q_{rr}		159.8		nC	
Peak reverse recovery current	I_{rrm}		3.4		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 ℃.
5) V_{DD}=50 V, R_G=25 Ω, L=0.3 mH, starting T_j=25 ℃.

Electrical Characteristics Diagrams

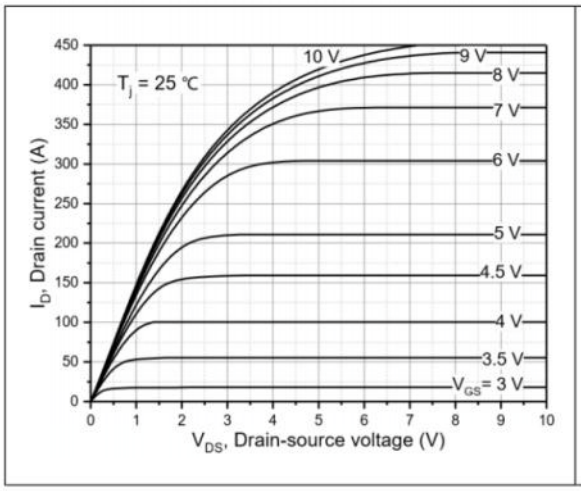


Figure 1, Typ. output characteristics

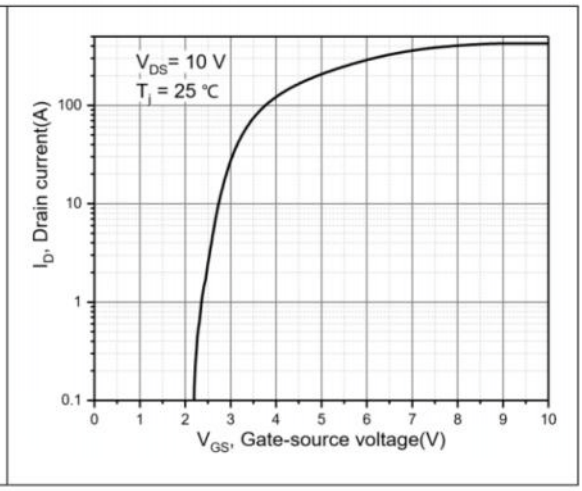


Figure 2, Typ. transfer characteristics

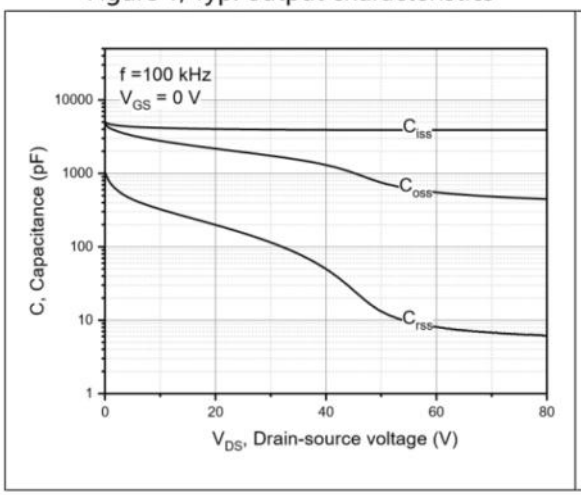


Figure 3, Typ. capacitances

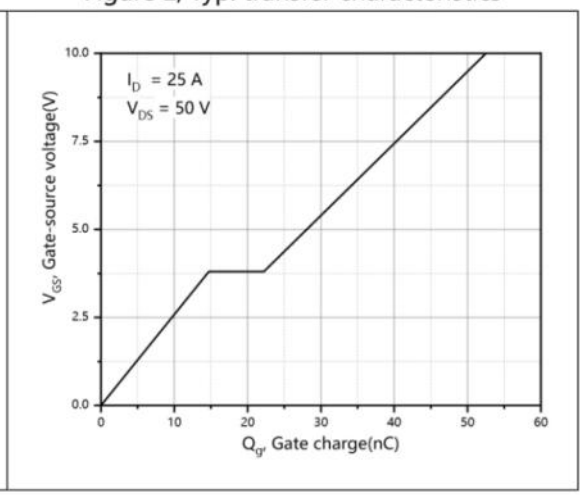


Figure 4, Typ. gate charge

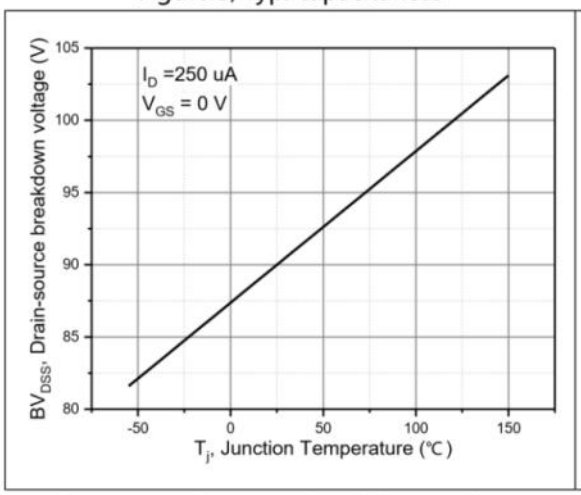


Figure 5, Drain-source breakdown voltage

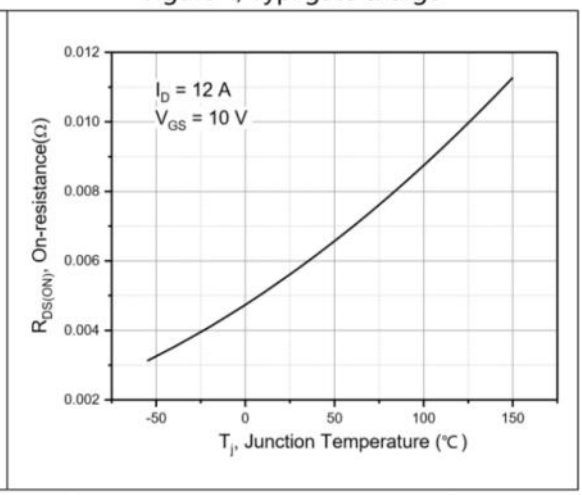


Figure 6, Drain-source on-state resistance

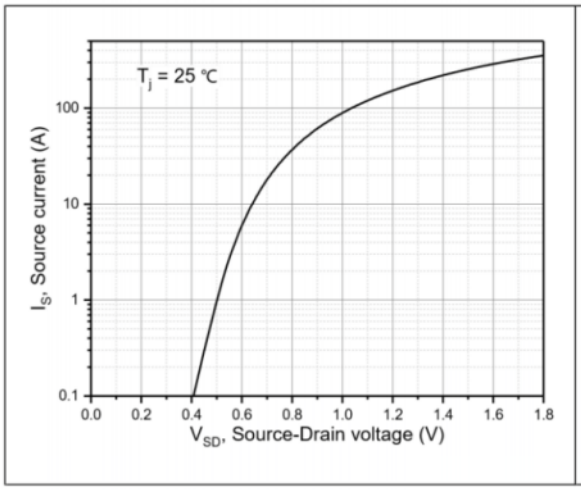


Figure 7, Forward characteristic of body diode

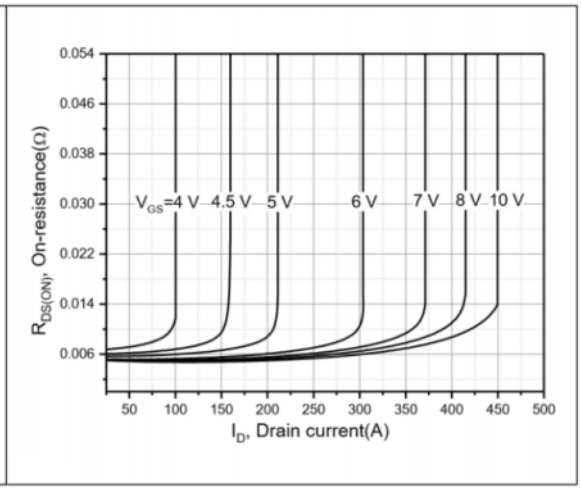


Figure 8, Drain-source on-state resistance

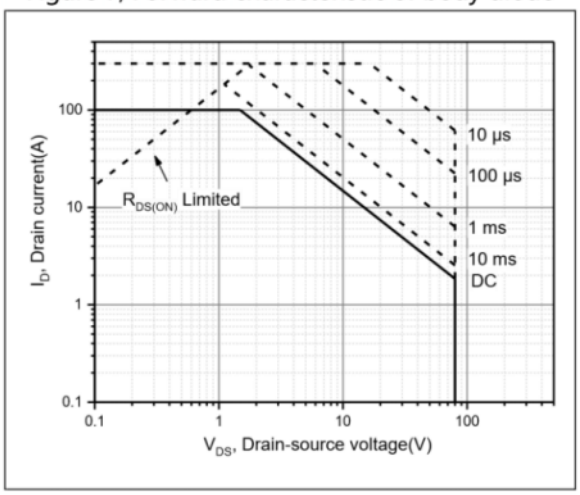


Figure 9, Safe operation area T_C=25 ℃

Test circuits and waveforms

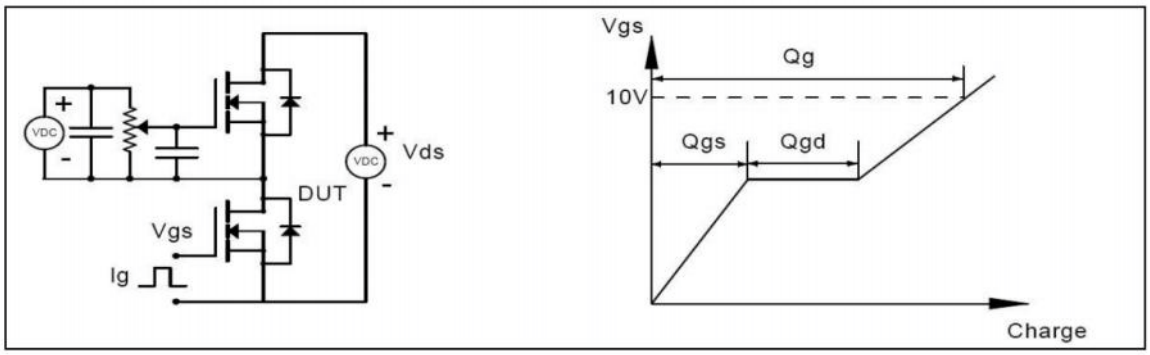


Figure 1, Gate charge test circuit & waveform

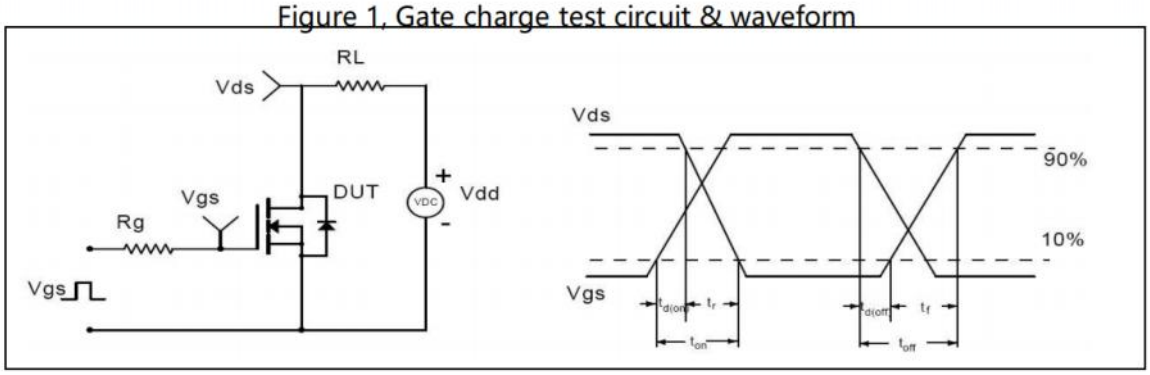


Figure 2, Switching time test circuit & waveforms

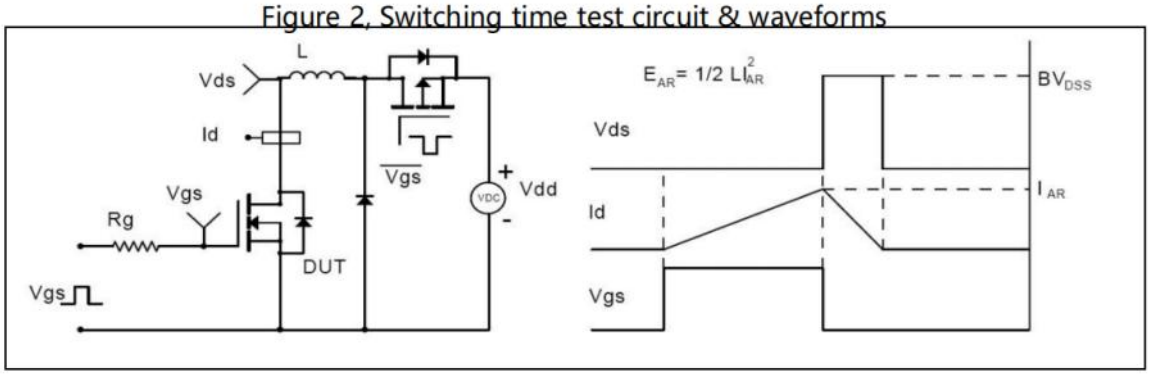


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

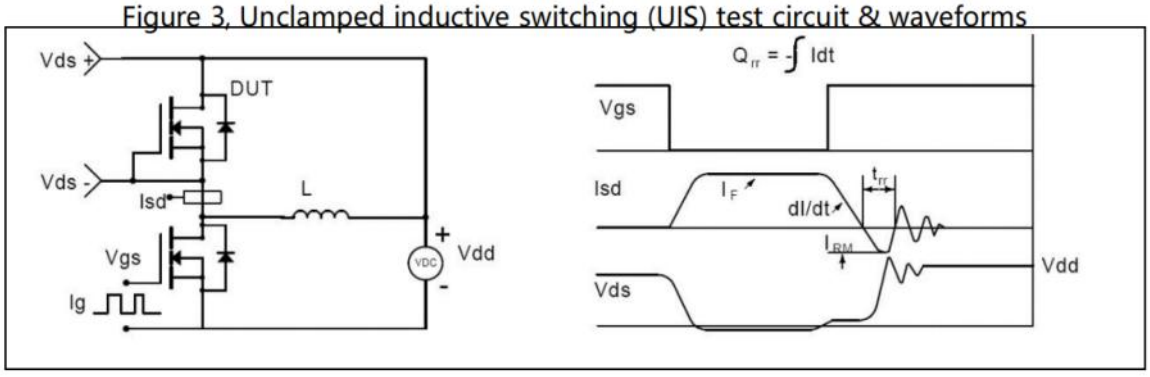
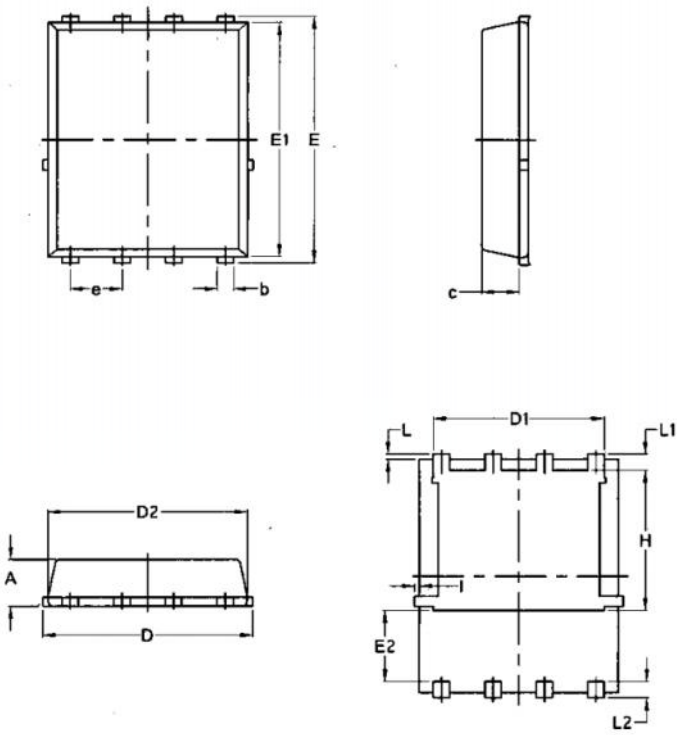


Figure 4, Diode reverse recovery test circuit & waveforms

Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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