● General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● Features

■Low $R_{DS(ON)}$ to minimize conductive loss

■Low Gate Charge for fast switching

■Low Thermal resistance

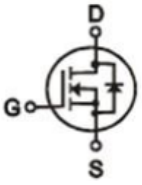
●Application

■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■BLDC Motor driver

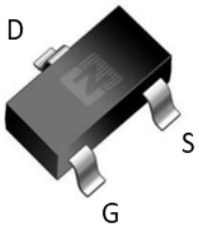
● Product Summary



V_{DS} =100V

$R_{DS(ON)}$ =90mΩ

I_D =3.5A



SOT23-3

●Ordering Information:

Part NO.	ZMS900N10T
Marking	900N10
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	+20/-10	V
Continuous Drain Current	$I_{D@}T_C$=25℃	3.5	A
	$I_{D@}T_C$=75℃	2.6	A
	$I_{D\ @}T_C$=100℃	2.2	A
Pulsed Drain Current ①	I_{DM}	10.5	A
Total Power Dissipation	$P_D@T_C$=25℃	1.5	W
Total Power Dissipation	$P_D@T_A$=25℃	0.5	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
ESD Level (HBM)		Class 1B	

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	80	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	250	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	100			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1.3	1.8	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.5A		90	130	mΩ
		V_{GS}=4.5V, I_D=2A		105	140	mΩ
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D=2A		2		s
Diode Forward Voltage	V_{FSD}	I_S=3.5A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	R_G	f = 1MHz		2.5		Ω
Input capacitance	Ciss	f = 1MHz VDS=25V	-	285	-	pF
Output capacitance	Coss		-	138	-	
Reverse transfer capacitance	Crss		-	25	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} =25V I_D = 2A V_{GS} = 10V	-	4.3	-	nC
	Qg (4.5V)			2.3		
Gate - Source charge	Qgs		-	1.1	-	
Gate - Drain charge	Qgd		-	0.95	-	

Fig.1 Power Dissipation Derating Curve

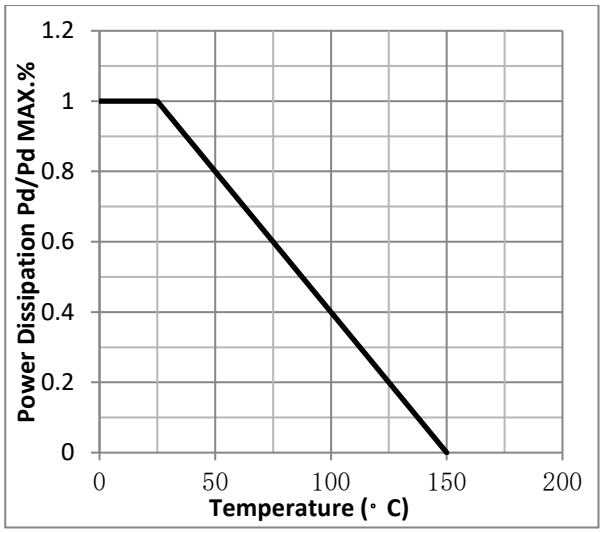


Fig.2 Typical output Characteristics

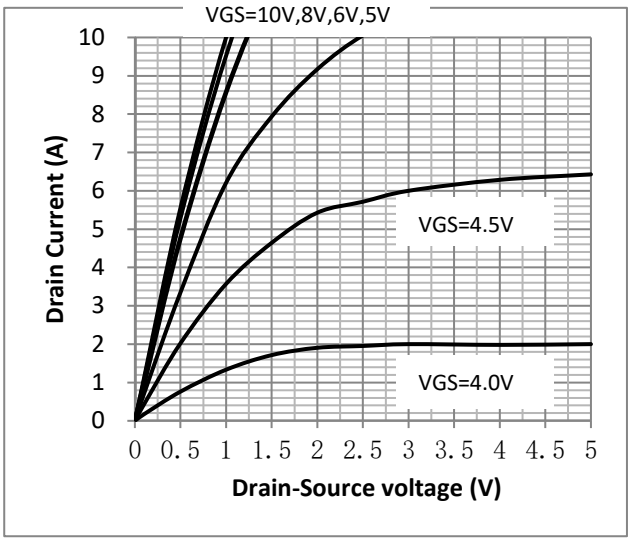


Fig.3 Gate-Charge Characteristics

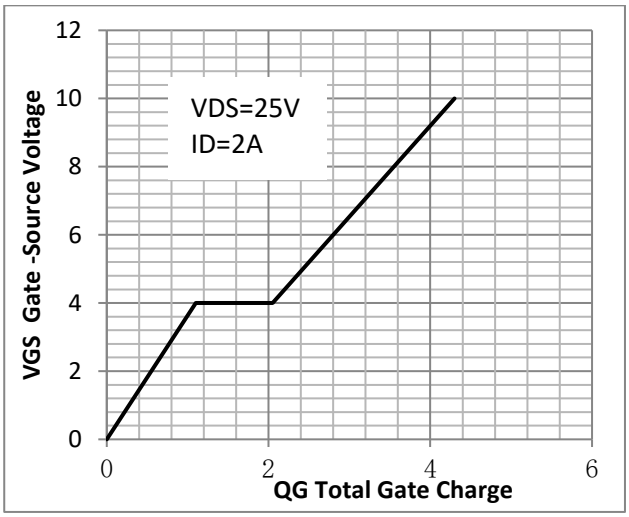


Fig.4 Capacitance Characteristics

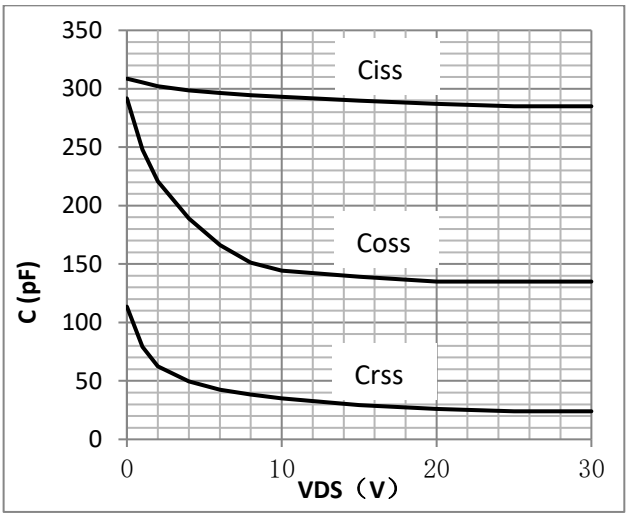


Fig.5 Threshold Voltage V.S Junction Temperature

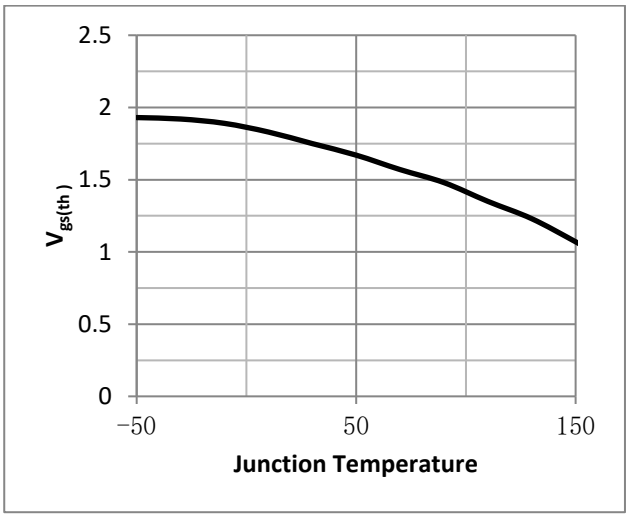


Fig.6 Resistance V.S Drain Current

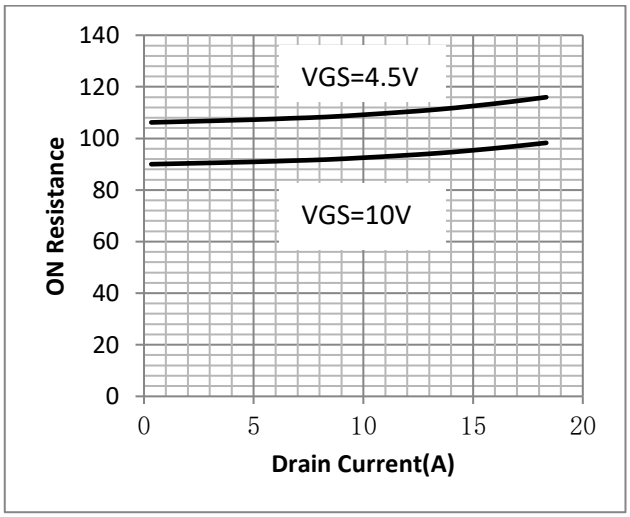


Fig.7 On-Resistance VS Gate Source Voltage

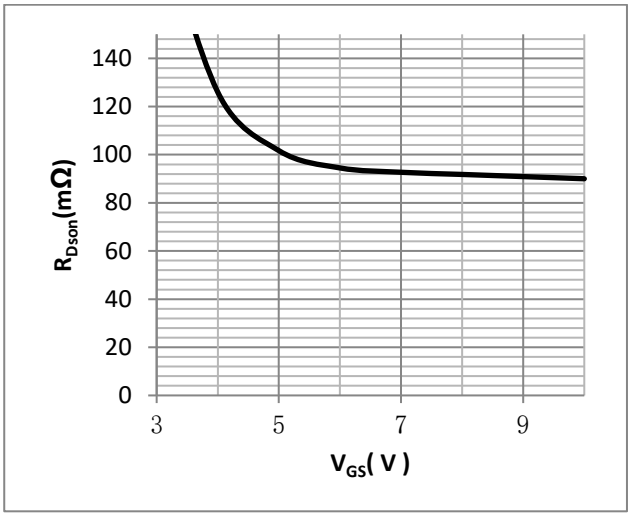


Fig.8 On-Resistance V.S Junction Temperature

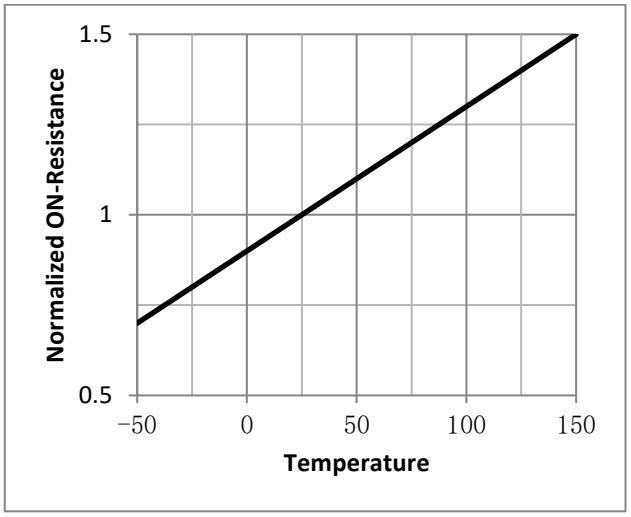


Fig.9 SOA Maximum Safe Operating Area

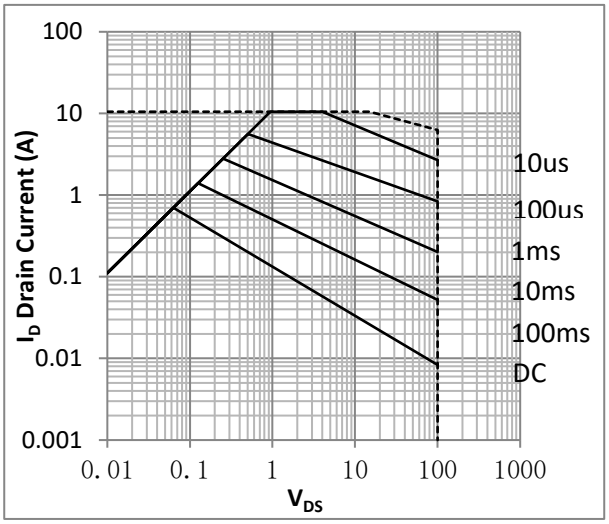


Fig.10 ID-Junction Temperature

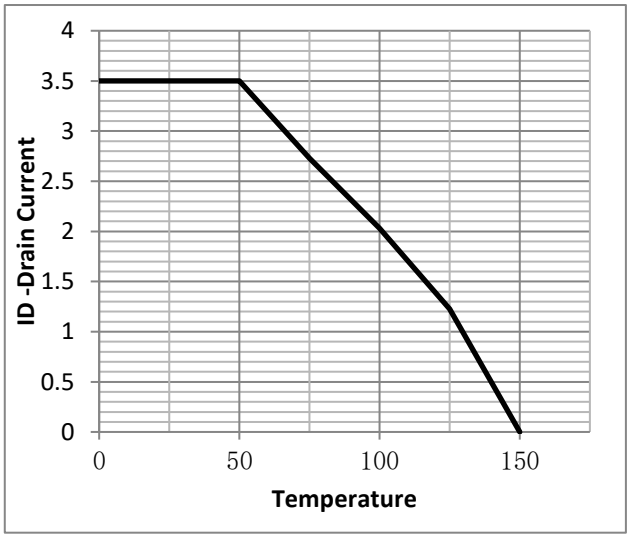


Figure.11 Diode Forward Voltage vs. Current

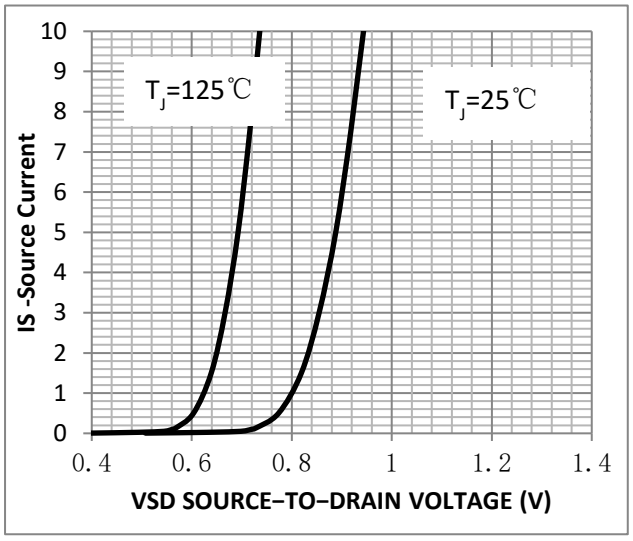


Figure.12 Transfer Characteristics

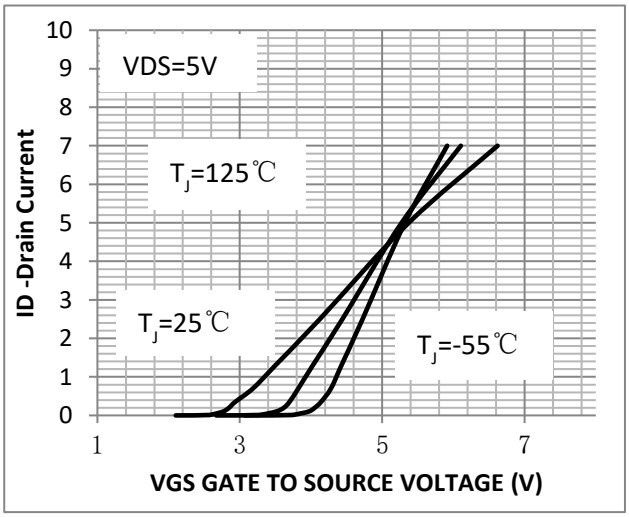


Fig.13 Gate Charge Measurement Circuit

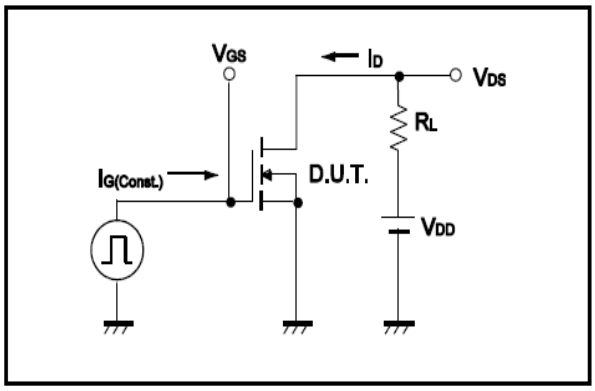


Fig.14 Gate Charge Waveform

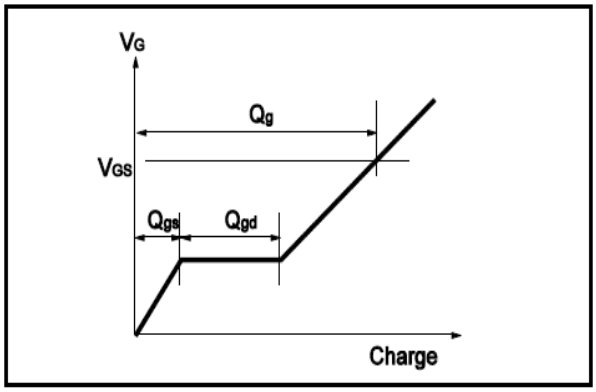


Fig.15 Switching Time Measurement Circuit

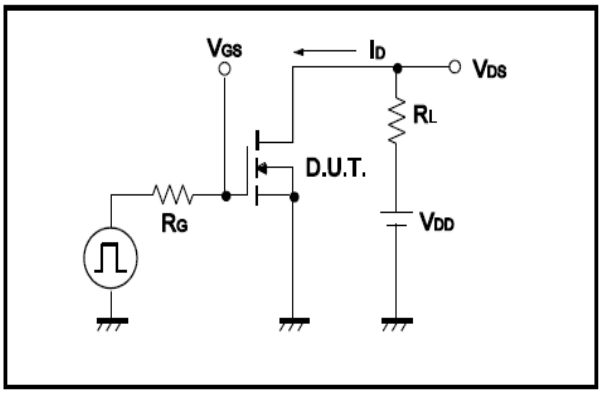


Fig.16 Switching Time Waveform

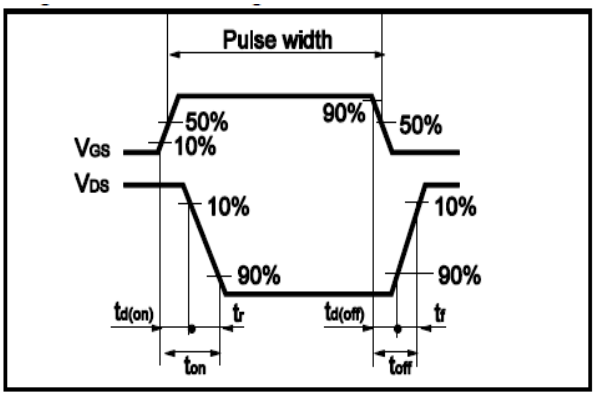


Fig.17 Avalanche Measurement Circuit

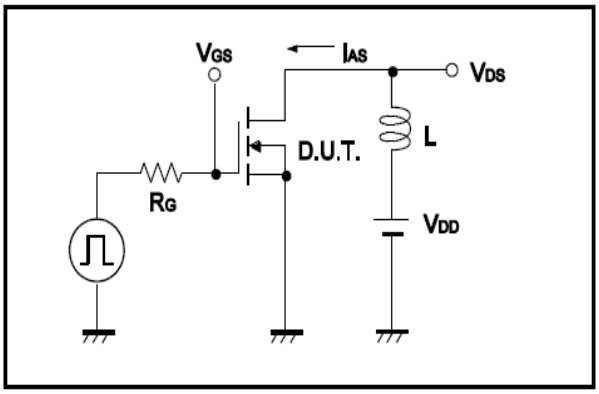
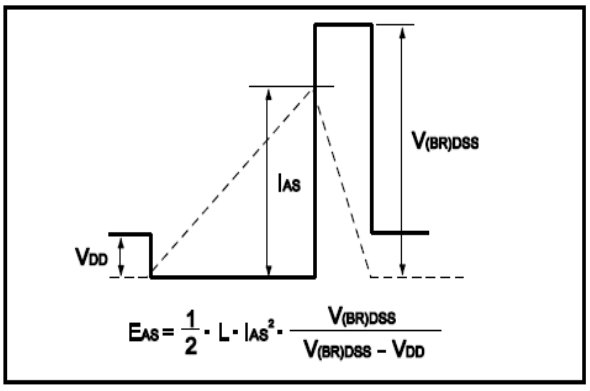
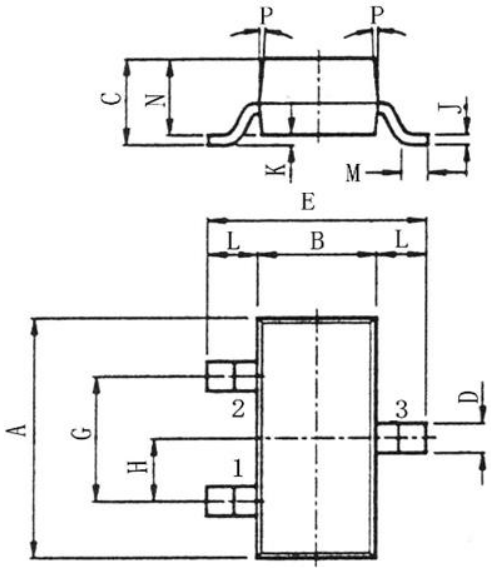


Fig.18 Avalanche Waveform



●Dimensions(SOT23-3)

Unit：mm



SYMBOL	min	nom	max
A	2.70	2.9	3.10
B	1.15	1.3	1.50
C			1.30
D	0.35	0.4	0.55
E	2.20	2.4	2.70
G	1.70	1.9	2.10
H	0.85	0.95	1.05
J	0.05	0.10	0.20
K	0.00		0.10
L	0.45	0.55	0.65
M	0.20		
N	0.90	1.00	1.20
P		7°	

Note: ① Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate；

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