● General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

● Features

■ Advance high cell density Trench technology

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

■Low Gate Charge for fast switching

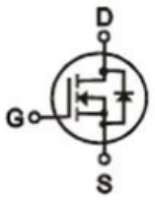
■Low Thermal resistance

●Application

■SMPS 2nd Synchronous Rectifier

■BLDC Motor driver

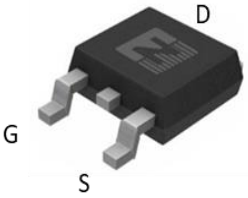
● Product Summary



V_{DS} =100V

$R_{DS(ON)}$ =10mΩ

I_D =46A



RoHS

TO-252

●Ordering Information:

Part NO.	ZMS100N10D
Marking	ZMS100N10
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current②	$I_{D@}$TC=25℃	46	A
	$I_{D@}$TC=75℃	35	A
	$I_{D@}$TC=100℃	29	A
Pulsed Drain Current ①	I_{DM}	138	A
Total Power Dissipation②	P_D@TC=25℃	60	W
Total Power Dissipation	P_D@TA=25℃	2.0	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	60	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case②	R_{thJC}	-	-	2.2	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	64	° C/W
Soldering temperature	T_{sold}	-	-	260	° 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		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=20A		10	12.8	mΩ
	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=16A		12.5	15	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=15A		15		s
Diode Forward Voltage	V_{FSD}	I_S=20A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=25V f = 1MHz	-	1400	-	pF
Output capacitance	Coss		-	630	-	
Reverse transfer capacitance	Crss		-	33	-	

Gate Charge characteristics(Ta= 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} =30V I_D = 8A V_{GS} = 10V	-	20	-	nC
Gate - Source charge	Qgs		-	3.6	-	
Gate - Drain charge	Qgd		-	2.8	-	

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;

Fig.1 Gate-Charge Characteristics

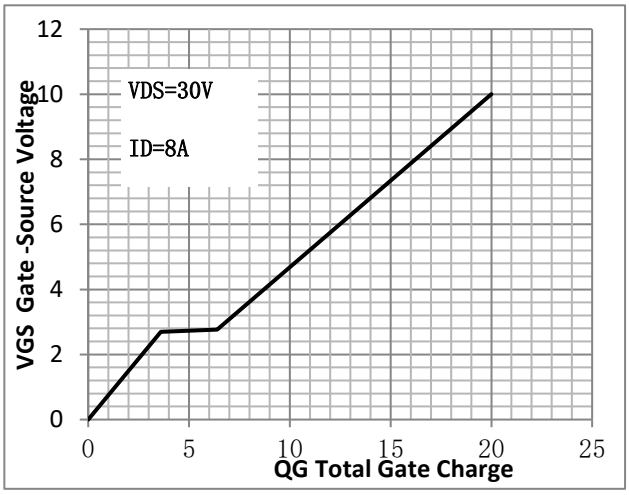


Fig.2 Capacitance Characteristics

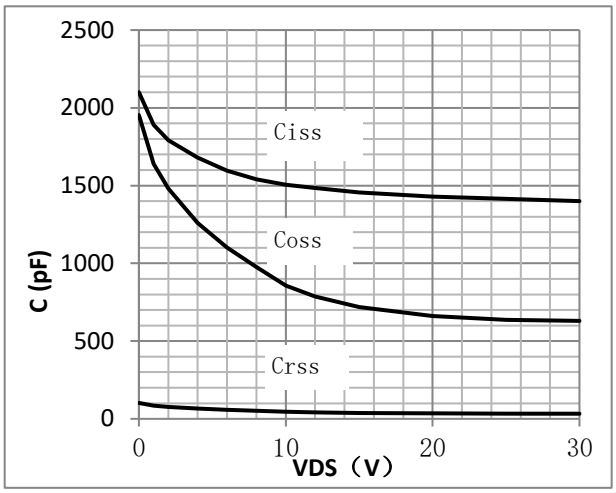


Fig.3 Power Dissipation

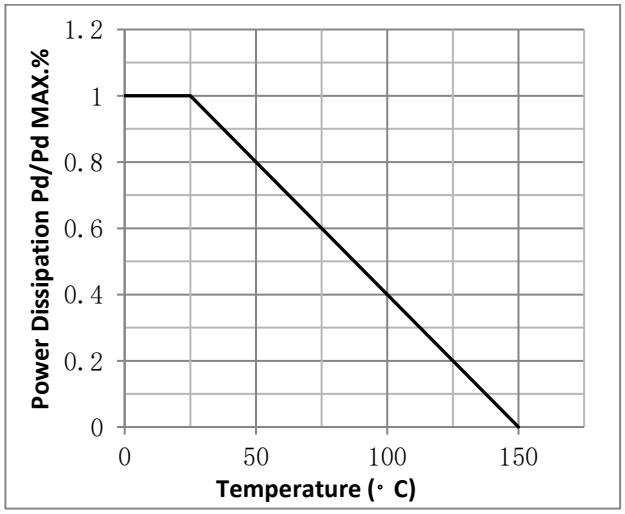


Fig.4 Typical output Characteristics

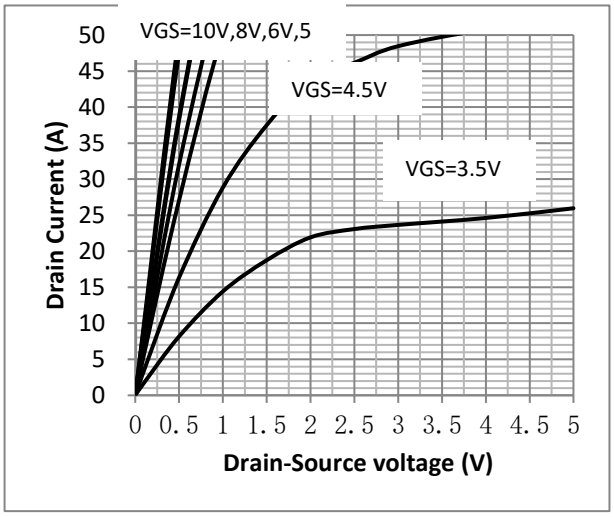


Fig.5 Threshold Voltage V.S Junction Temperature

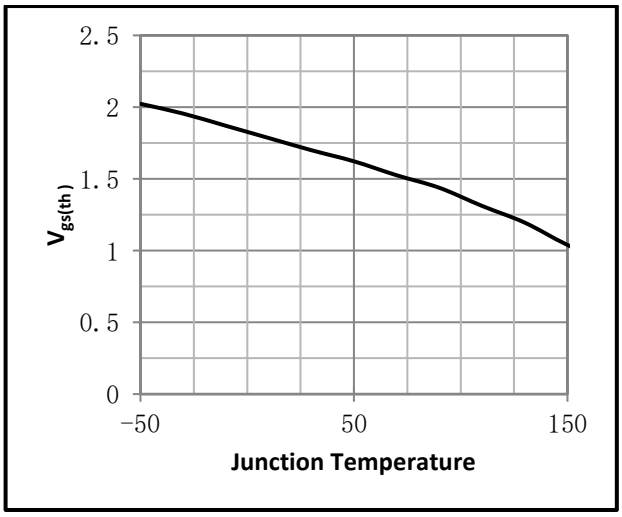


Fig.6 Resistance V.S Drain Current

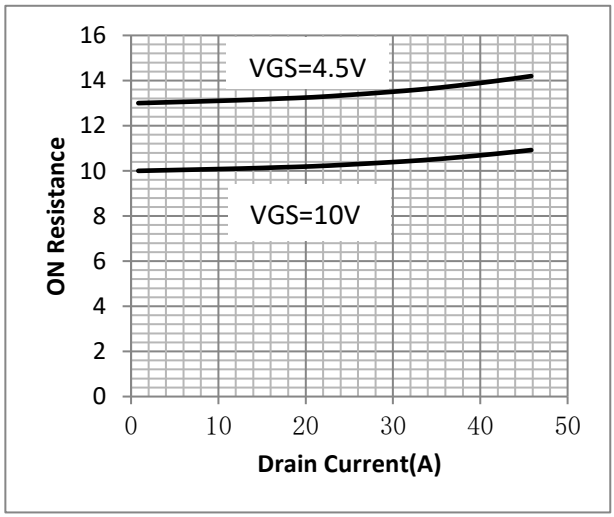


Fig.7 On-Resistance VS Gate Source Voltage

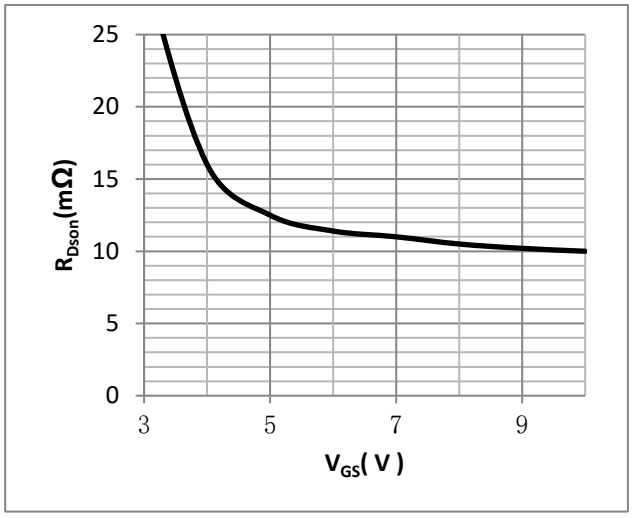


Fig.8 On-Resistance V.S Junction Temperature

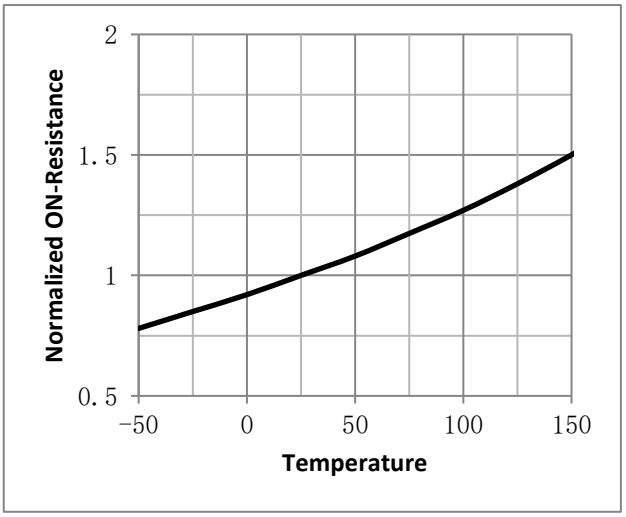


Fig.9 SOA Maximum Safe Operating Area

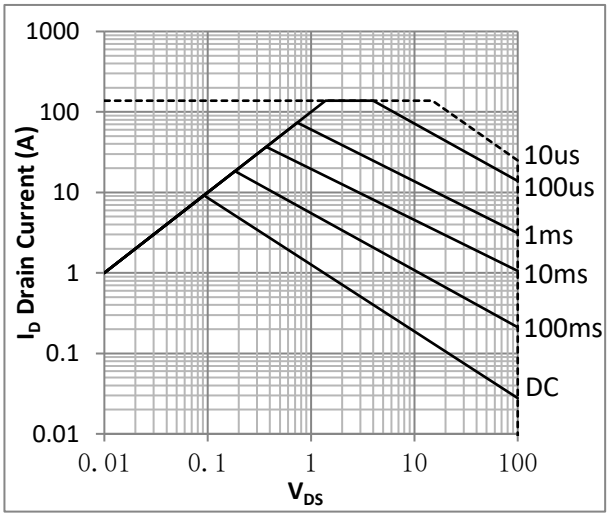
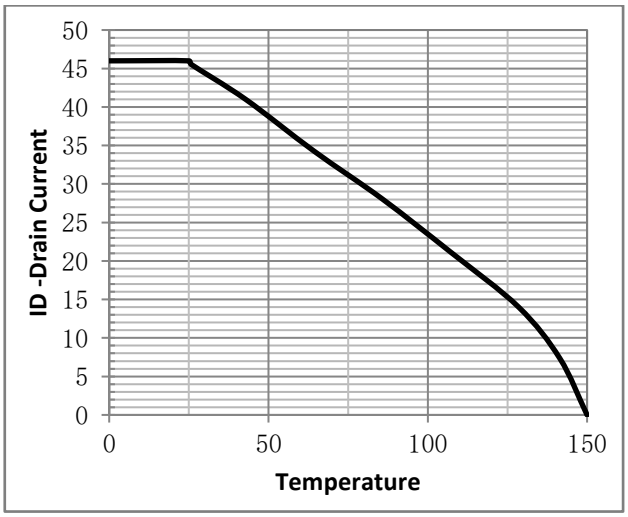


Fig.10 ID-Junction Temperature



igure 11. Diode Forward Voltage vs. Current

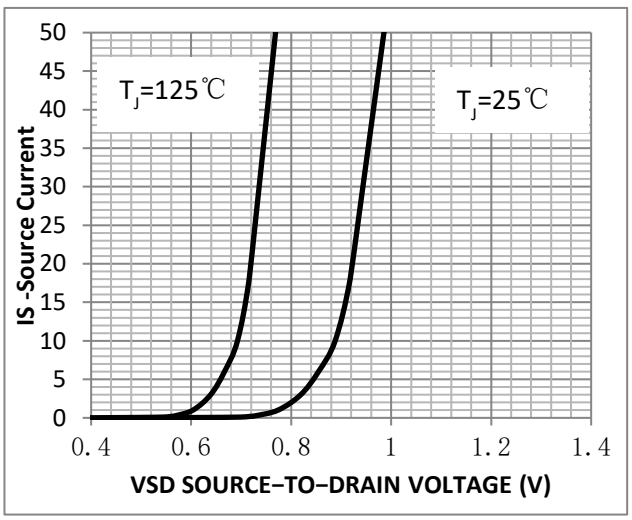


Figure 12. Transfer Characteristics

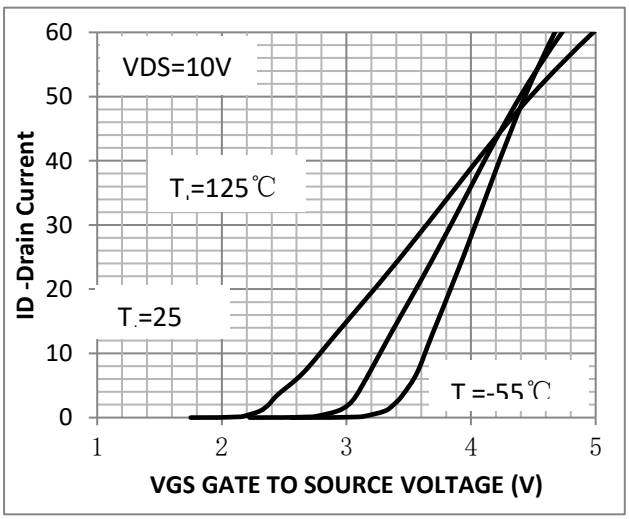


Fig.12 Gate Charge Measurement Circuit

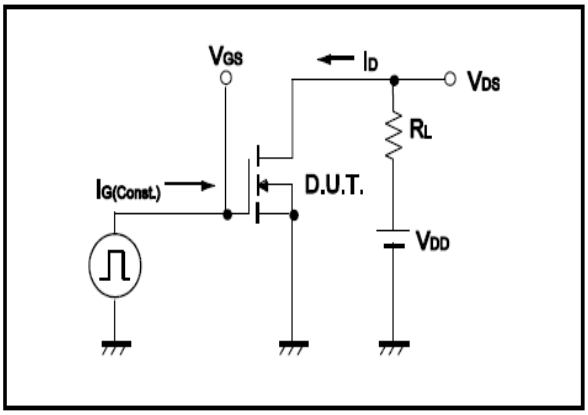


Fig.13 Gate Charge Waveform

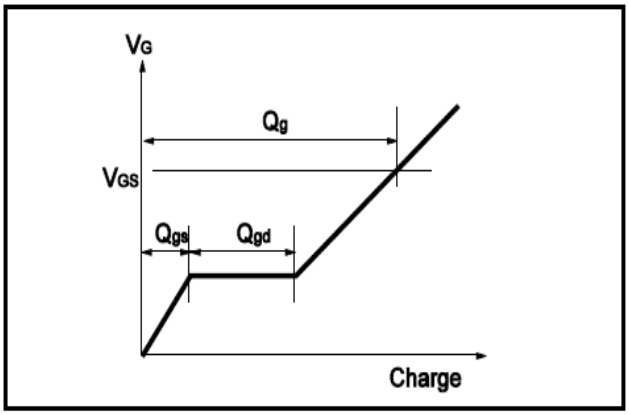


Fig.14 Switching Time Measurement Circuit

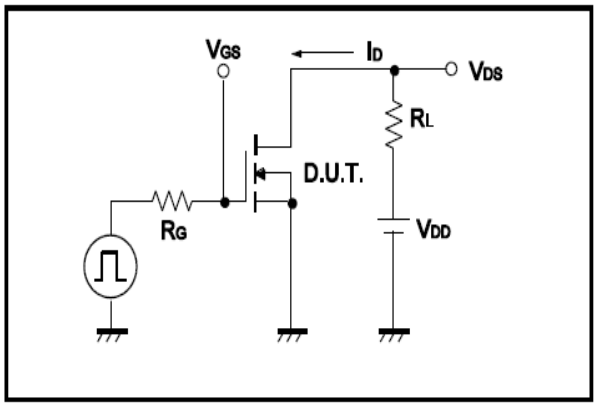


Fig.15 Switching Time Waveform

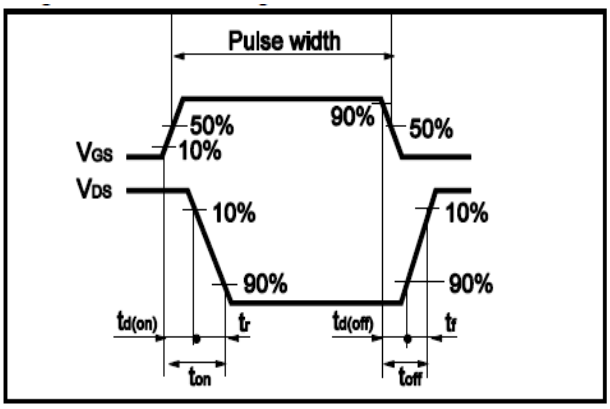


Fig.16 Avalanche Measurement Circuit

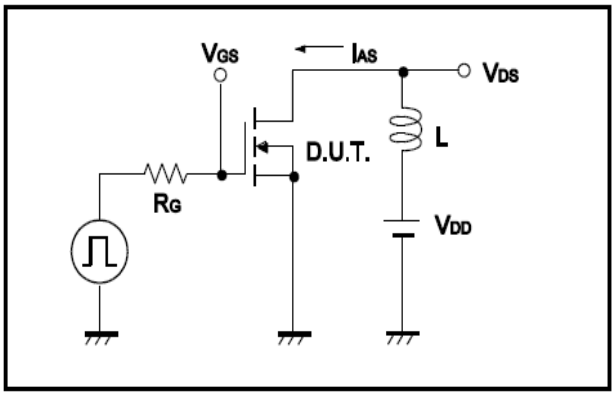
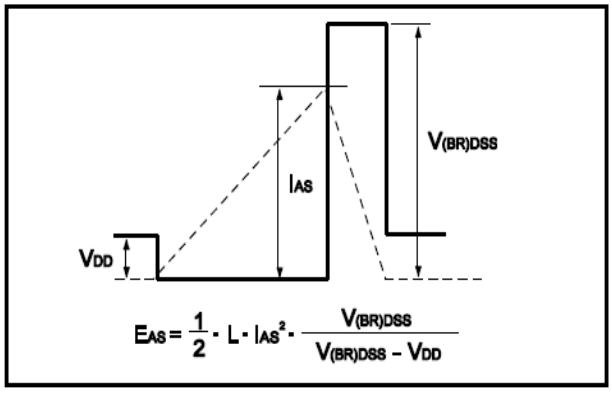


Fig.17 Avalanche Waveform



• Dimensions (TO-252)

Unit：mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.80	b1	0.50	0.90
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			

