• General Description

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

• Features

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

■Low Gate Charge for fast switching

■Low Thermal resistance

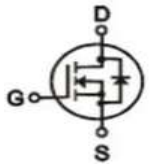
•Application

■BLDC Motor driver

■DC-DC

■Battery protection

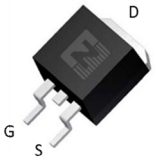
• Product Summary



V_{DS}= 120V

$R_{DS(ON)}$ = 6.5mΩ

I_D= 105A



TO-263

RoHS

REACH COMPLIANT

HF

•Ordering Information:

Part NO.	ZMS065N12B
Marking	ZMS065N12
Packing Information	REEL TAPE
Basic ordering unit (pcs)	800

•Absolute Maximum Ratings (T_C=25℃)

Parameter	Symbol	Conditions	Min.	Max.	Unit
Drain-Source Voltage	V_{DS}		120		V
Gate-Source Voltage ①	V_{GS}		-20	20	V
Continuous Drain Current	I_D	T_C=25℃		105	A
	I_D	T_C=75℃		105	A
	I_D	T_C=100℃		93	A
Pulsed Drain Current ①	I_{DM}	Pulsed; t_p ≤ 10 μs; T_{mb} = 25 °C;		420	A
Total Power Dissipation	P_D	T_C=25℃		156	W
Total Power Dissipation	P_D	T_A=25℃		3.1	W
Operating Junction Temperature	T_J		-55	150	℃
Storage Temperature	T_{STG}		-55	150	℃
Single Pulse Avalanche Energy	E_{AS}	L=0.1mH, VGS=10V, Rg=25Ω,		180	mJ
ESD Level (HBM)		CLASS 2			

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	RthJC		-	0.8	°C/W
Thermal resistance, junction-ambient	RthJA②		-	40	°C/W
Soldering temperature	Tsold		-	260	°C

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	120			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_{GS}=0V, V_{DS}= 120V			1	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= 25A		6.5	8.5	mΩ
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D= 20A		8.2	12	mΩ
Forward Transconductance	g_{FS}	V_{GS} =5V, I_{SD} = 10A		50		s
Diode Forward Voltage	V_{FSD}	V_{GS} =0V, I_{SD} = 25A			1.3	V

•Dynamic characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input capacitance	Ciss	f = 1MHz, V_{DS}=25V	-	3750	-	pF
Output capacitance	Coss		-	1830	-	
Reverse transfer capacitance	Crss		-	190	-	
Gate Risistance	Rg	f = 1MHz	-	1.6		Ω
Total gate charge	Qg	V_{DD} = 15V, I_D = 25A, V_{GS} = 10V	-	57	-	nC
Gate - Source charge	Qgs		-	8.8	-	
Gate - Drain charge	Qgd		-	10.7	-	
Turn-ON Delay time	$t_{D(on)}$	V_{GS}=10V,V_{DS}=15V, R_G =3.3Ω, I_D =20A	-	15	-	ns
Turn-ON Rise time	t_r		-	10	-	ns
Turn-Off Delay time	$t_{D(off)}$		-	43	-	ns
Turn-Off Fall time	t_f		-	12	-	ns
Reverse Recovery Time	t_{RR}	V_{DD}=20V, dI_S/dt = 100A/s, I_S=50A	-	80	-	ns
Reverse Recovery Charge	Q_{RR}		-	185	-	nC

Fig.1 Gate-Charge Characteristics

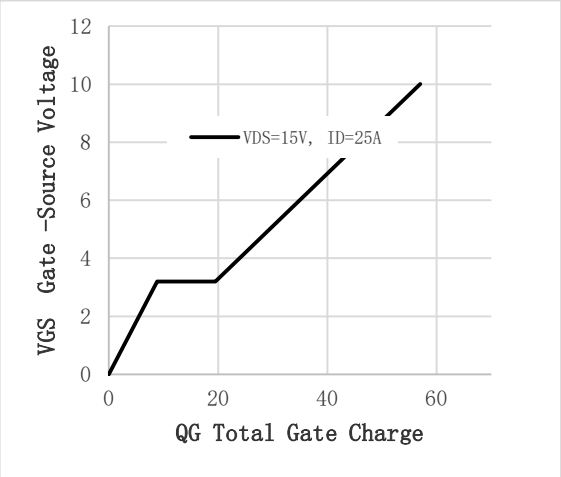


Fig.2 Capacitance Characteristics

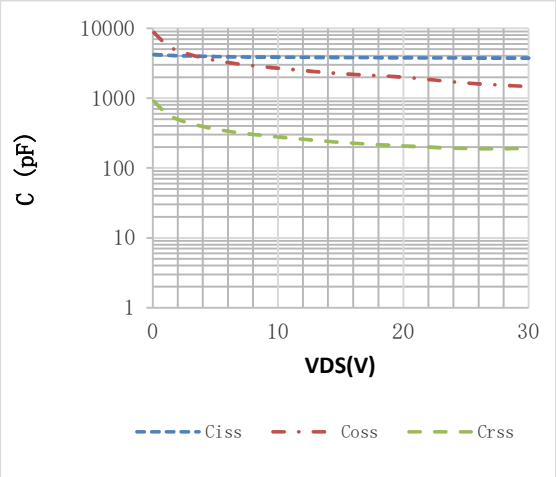


Fig.3 Power Dissipation

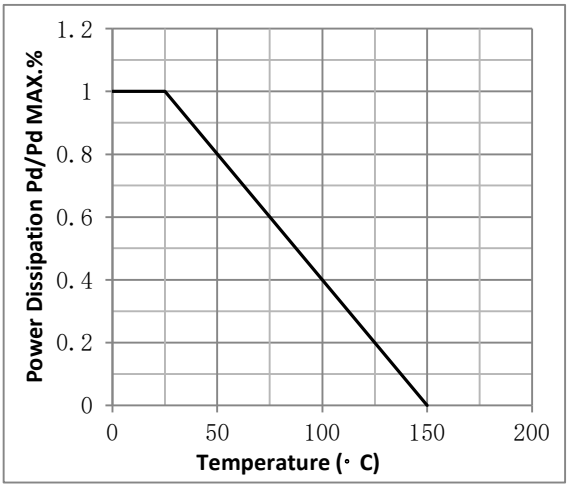


Fig.4 Typical output Characteristics

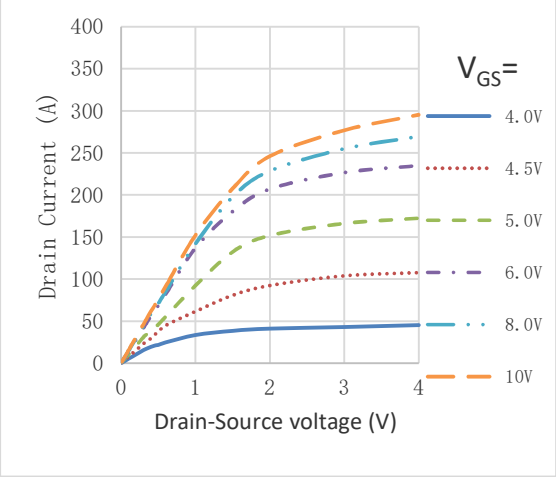


Fig.5 Threshold Voltage V.S Junction Temperature

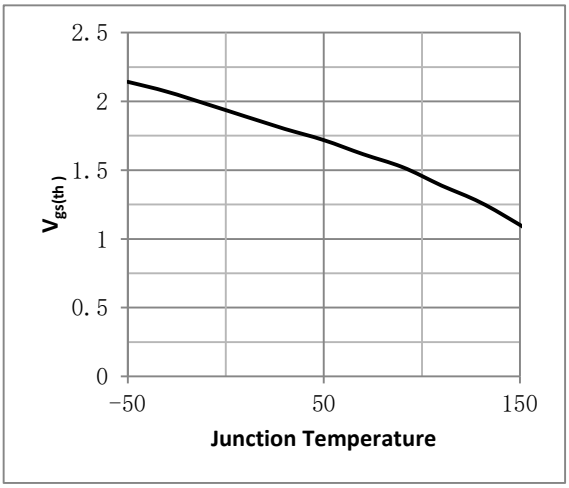


Fig.6 Resistance V.S Drain Current

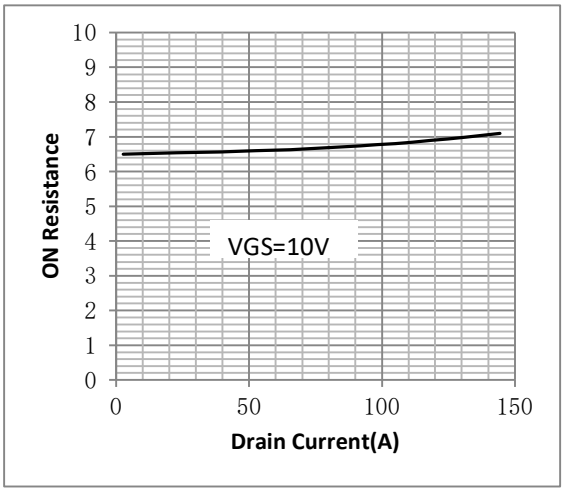


Fig.7 On-Resistance VS Gate Source Voltage

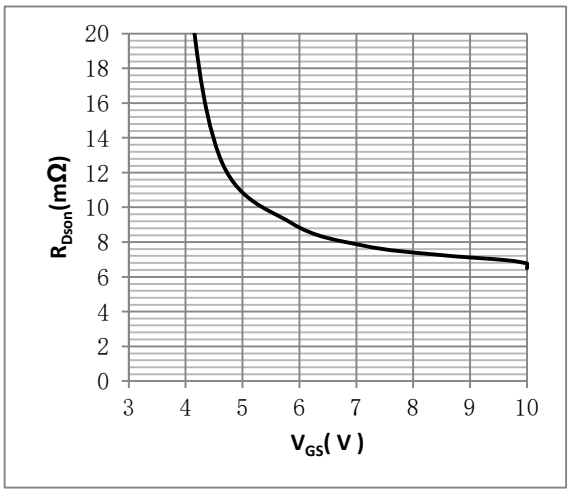


Fig.8 On-Resistance V.S Junction Temperature

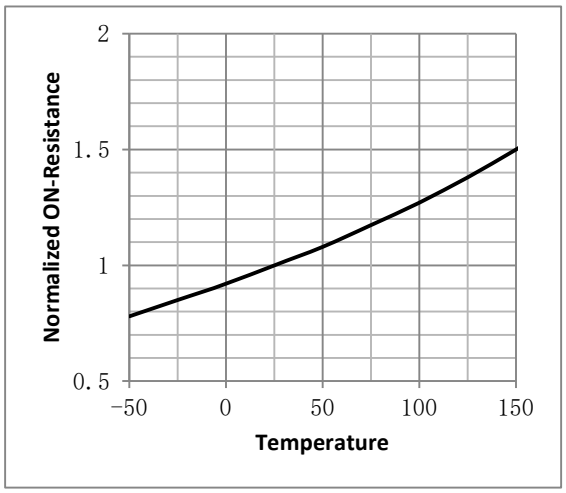


Figure 9. Diode Forward Voltage vs. Current

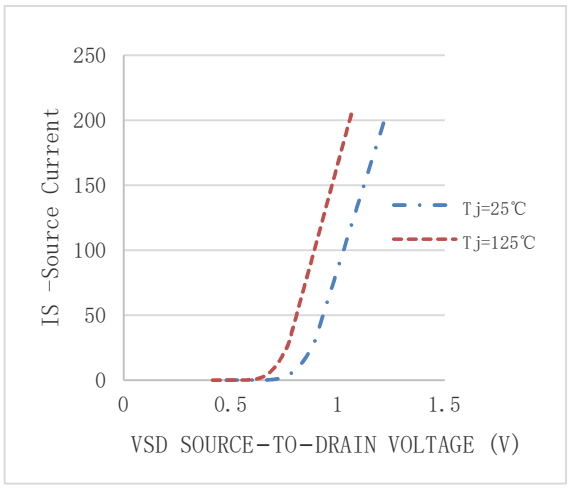


Figure 10. Transfer Characteristics

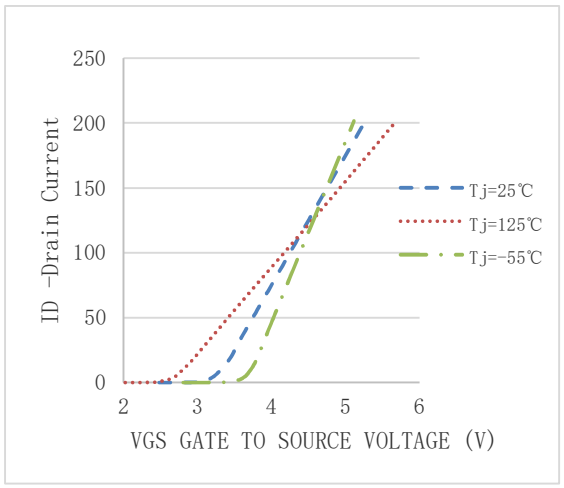


Fig.11 SOA Maximum Safe Operating Area

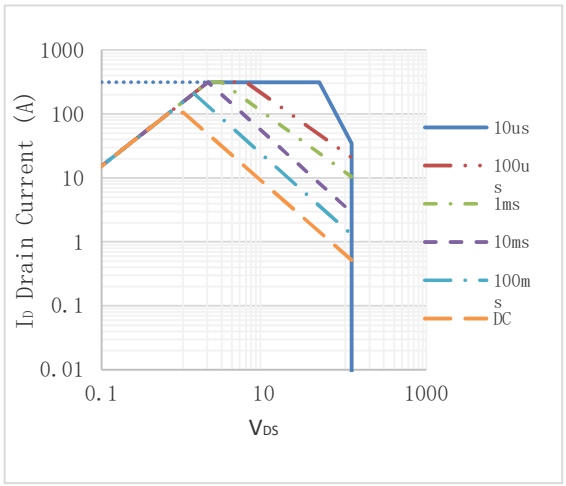
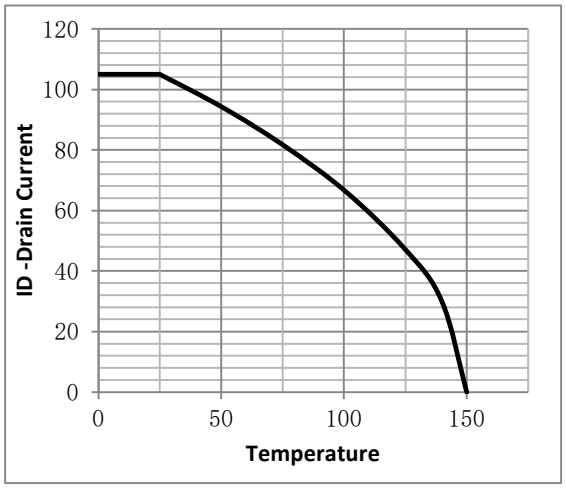


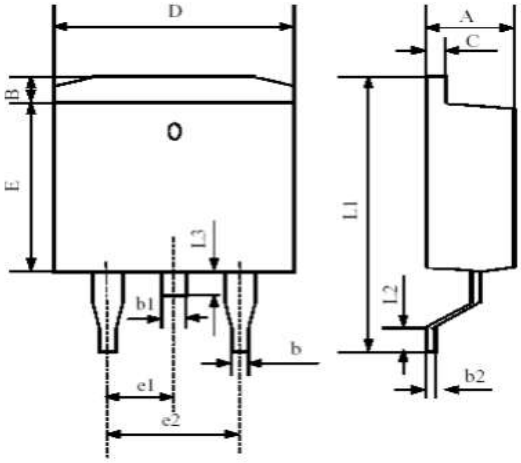
Fig.12 ID vs. Junction Temperature



●TO-263 Package Outline

Unit: mm

SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.3		1.75
D	9.95		10.25				



Note:

① Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%, Accumulation time ≤50 hours; For DC， the following test conditions can be passed: VGS=+20V/-10V, Tj=150℃, t=1000 hours；

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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