

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

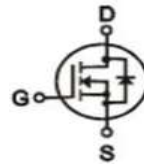
Ordering Information:

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

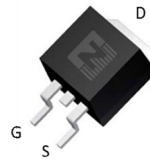
Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

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	$T_C=25^\circ\text{C}$		105	A
	I_D	$T_C=75^\circ\text{C}$		105	A
	I_D	$T_C=100^\circ\text{C}$		93	A
Pulsed Drain Current ^①	I_{DM}	Pulsed; $t_p \leq 10 \mu\text{s}$; $T_{mb} = 25^\circ\text{C}$;		420	A
Total Power Dissipation	P_D	$T_C=25^\circ\text{C}$		156	W
Total Power Dissipation	P_D	$T_A=25^\circ\text{C}$		3.1	W
Operating Junction Temperature	T_J		-55	150	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55	150	$^\circ\text{C}$
Single Pulse Avalanche Energy	E_{AS}	$L=0.1\text{mH}$, $V_{GS}=10\text{V}$, $R_g=25\Omega$,		180	mJ
ESD Level (HBM)		CLASS 2			

Product Summary



$V_{DS} = 120\text{V}$
 $R_{DS(ON)} = 6.5\text{m}\Omega$
 $I_D = 105\text{A}$



T0-263



•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	RthJC		-	0.8	°C/W
Thermal resistance, junction-ambient	RthJA ^②		-	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 Resistance	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

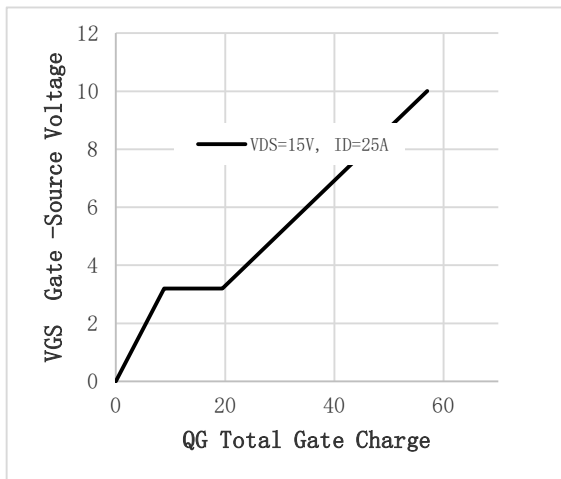


Fig.2 Capacitance Characteristics

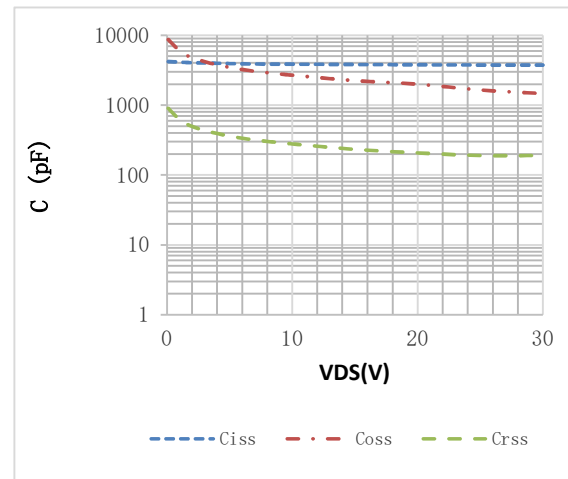


Fig.3 Power Dissipation

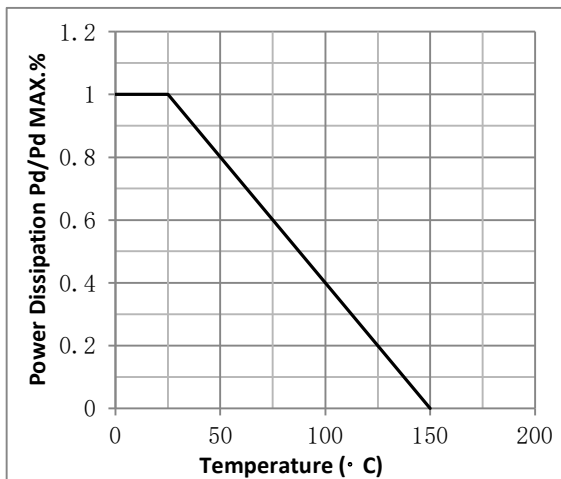


Fig.4 Typical output Characteristics

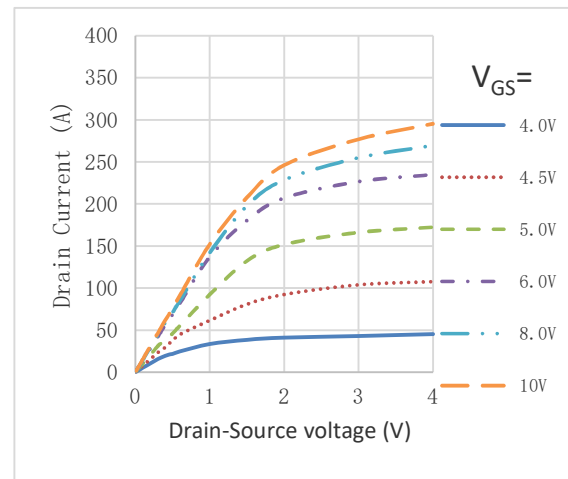


Fig.5 Threshold Voltage V.S Junction Temperature

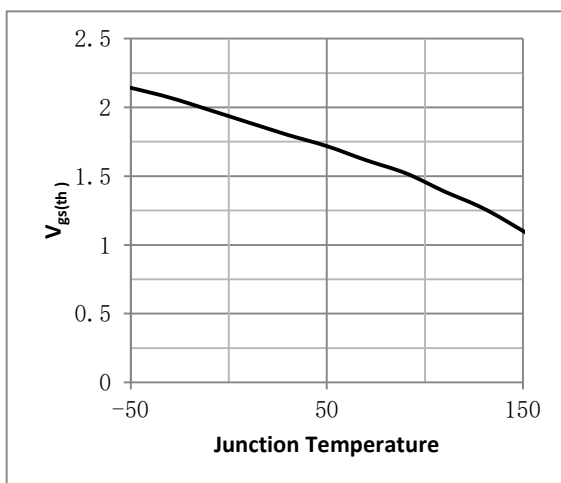


Fig.6 Resistance V.S Drain Current

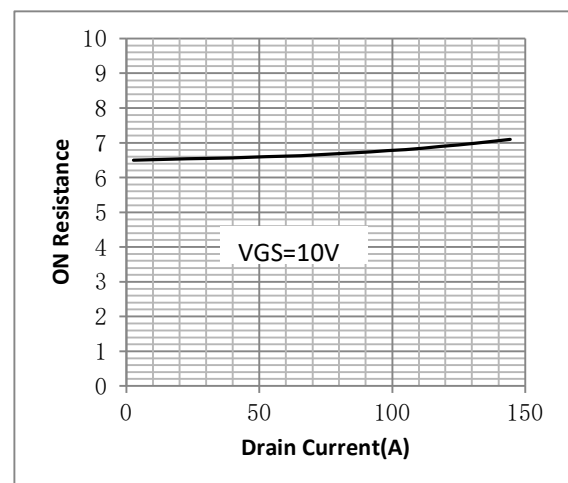


Fig.7 On-Resistance VS Gate Source Voltage

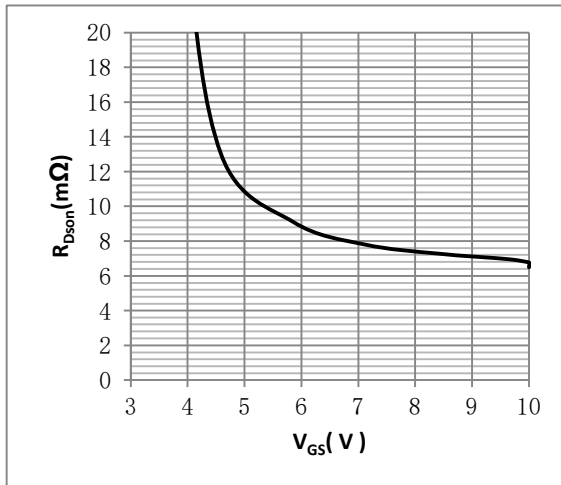


Fig.8 On-Resistance V.S Junction Temperature

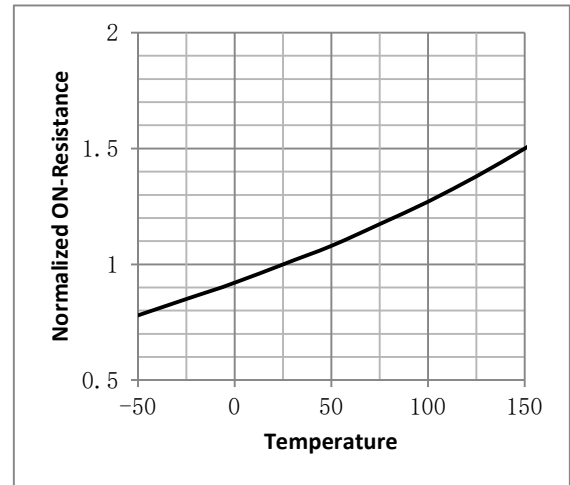


Figure 9. Diode Forward Voltage vs. Current

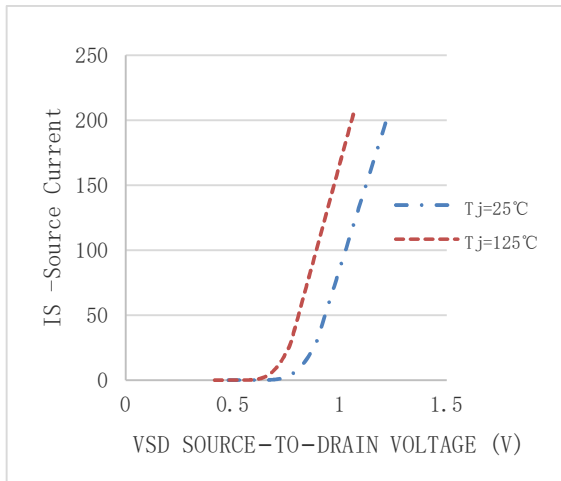


Figure 10. Transfer Characteristics

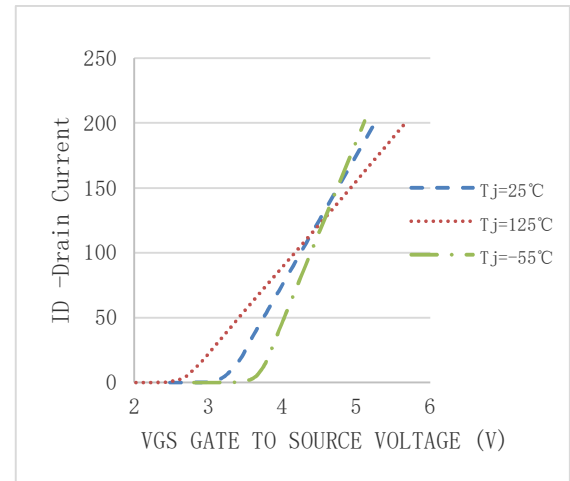


Fig.11 SOA Maximum Safe Operating Area

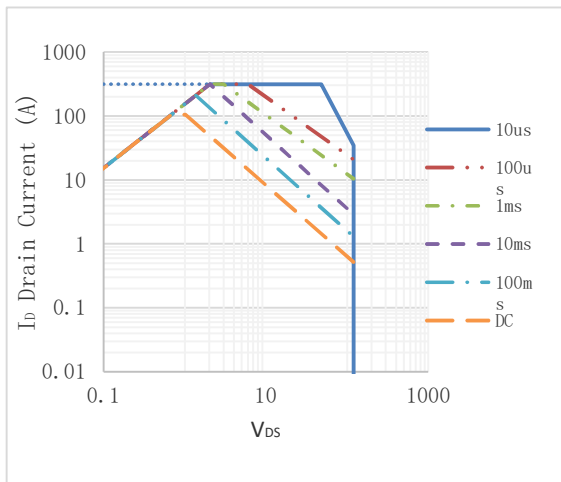
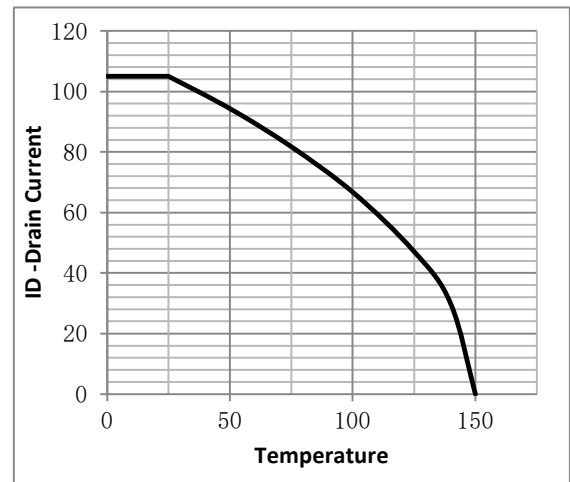


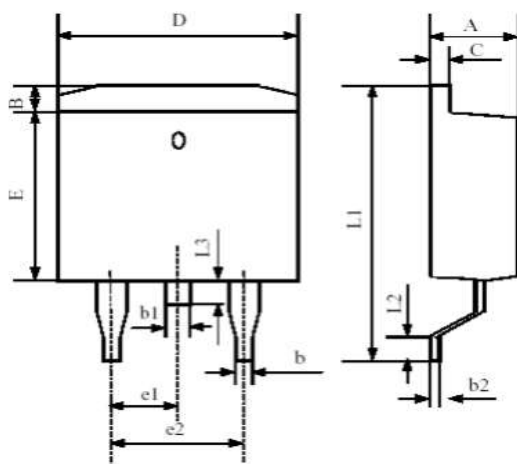
Fig.12 ID vs. Junction Temperature



•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 $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$, Accumulation time ≤ 50 hours; For DC , the following test conditions can be passed: $V_{GS}=+20V/-10V$, $T_j=150^{\circ}\text{C}$, $t=1000$ 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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