

• General Description

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

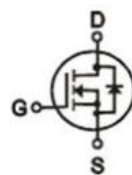
• Features

- Advance device constructure
- Low $R_{DS(ON)}$ to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

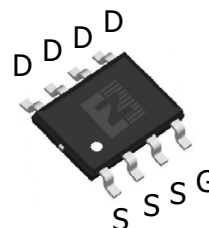
• Product Summary



$$V_{DS}=60V$$

$$R_{DS(ON)}=8m\Omega$$

$$I_D=12A$$



SOP-8

• Ordering Information:

Part NO.	ZMS090N06SA
Marking	ZMS090N06
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^{\circ}C}$	12	A
	$I_{D@TC=75^{\circ}C}$	9.1	A
	$I_{D@TC=100^{\circ}C}$	7.5	A
Pulsed Drain Current ^①	I_{DM}	36	A
Total Power Dissipation($TC=25^{\circ}C$)	$P_{D@TC=25^{\circ}C}$	70	W
Total Power Dissipation($TA=25^{\circ}C$)	$P_{D@TA=25^{\circ}C}$	2.5	W
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}C$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}C$
Single Pulse Avalanche Energy@ $L=0.1mH$	E_{AS}	47	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	34	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	180	°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}	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2		2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$		8	10	m Ω
		$V_{GS}=4.5V, I_D=5A$		11	13	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=10A$		14		S
Source-drain voltage	V_{SD}	$I_S=10A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz V _{DS} =25V	-	960	-	pF
Output capacitance	C_{oss}		-	460	-	
Reverse transfer capacitance	C_{rss}		-	9	-	

•Gate Charge characteristics($T_a = 25^\circ C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD}=25V$	-	11	-	nC
Gate - Source charge	Q_{gs}	$I_D=8A$	-	2.2	-	
Gate - Drain charge	Q_{gd}	$V_{GS}=10V$	-	1.4	-	

Note: ① Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

Fig.1 Gate-Charge Characteristics

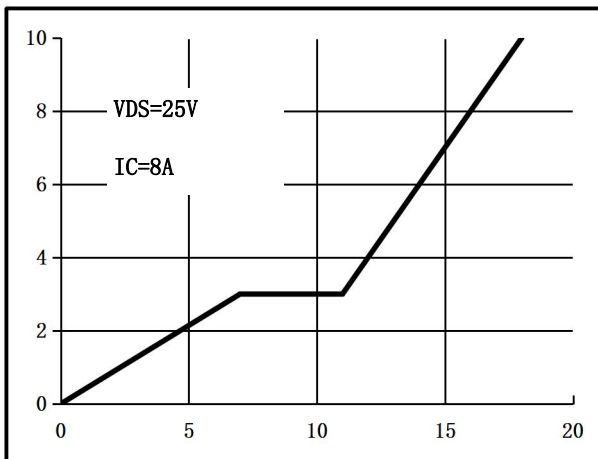


Fig.2 Capacitance Characteristics

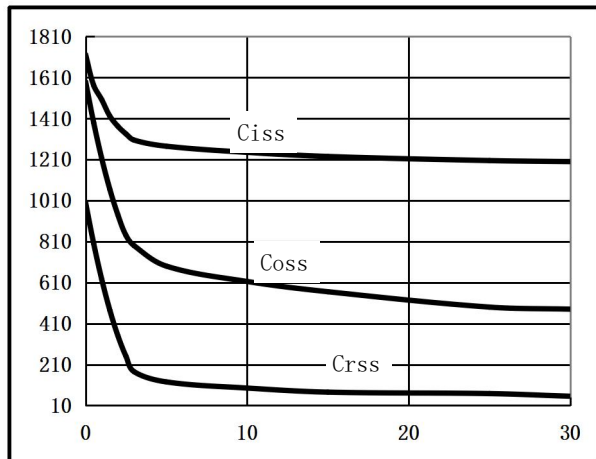


Fig.3 Power Dissipation

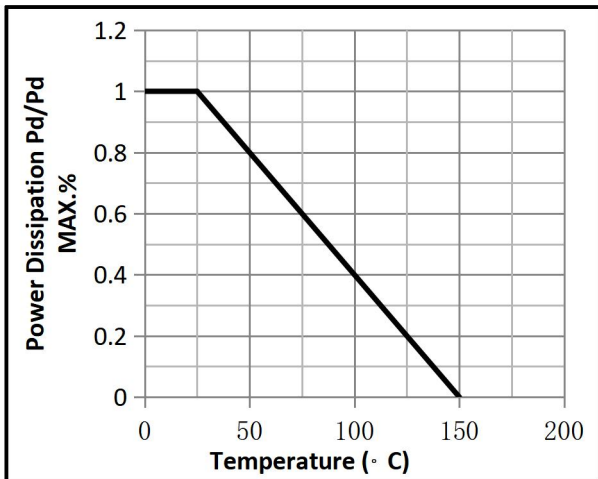


Fig.4 Typical output Characteristics

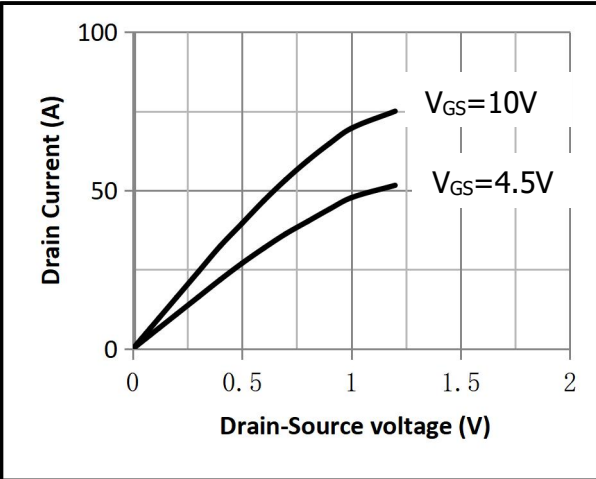


Fig.5 Threshold Voltage V.S Junction Temperature

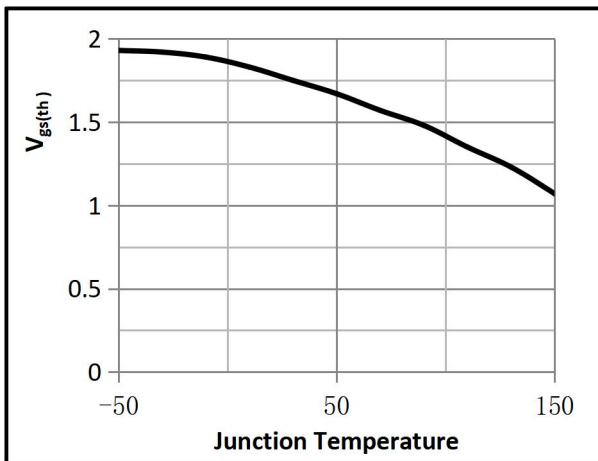


Fig.6 Resistance V.S Drain Current

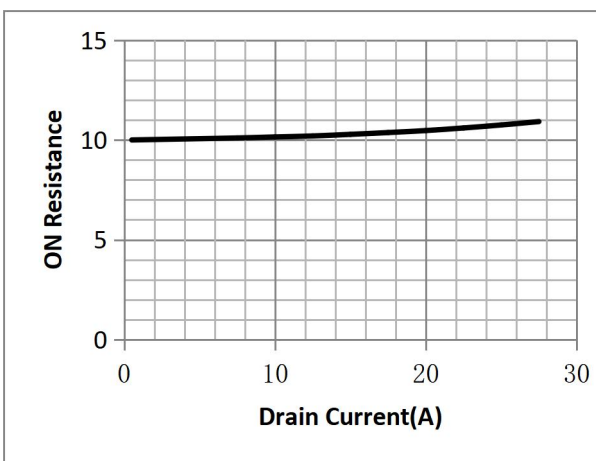


Fig.7 On-Resistance VS Gate Source Voltage

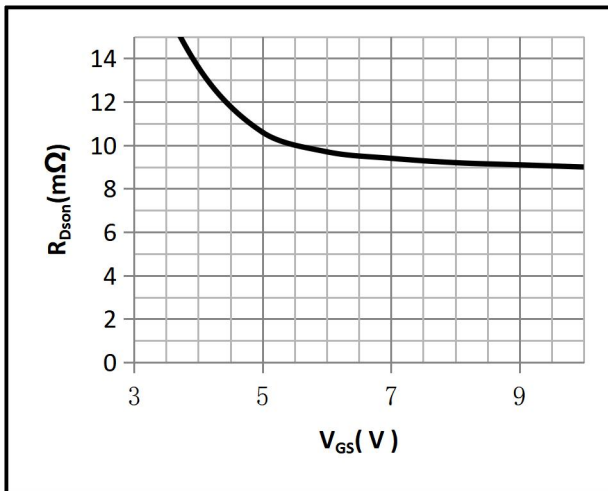


Fig.8 On-Resistance V.S Junction Temperature

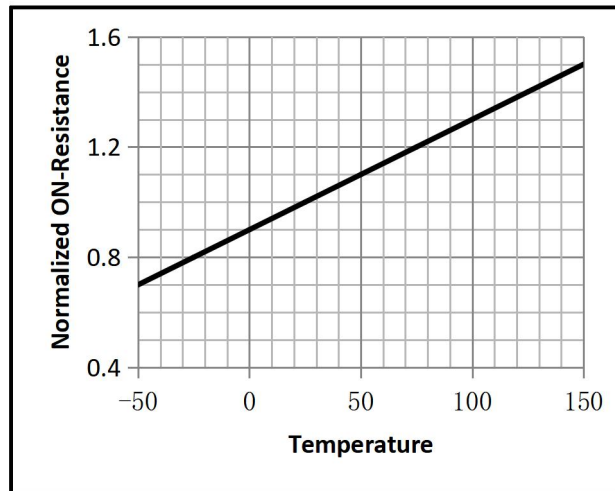


Fig.9 Switching Time Measurement Circuit

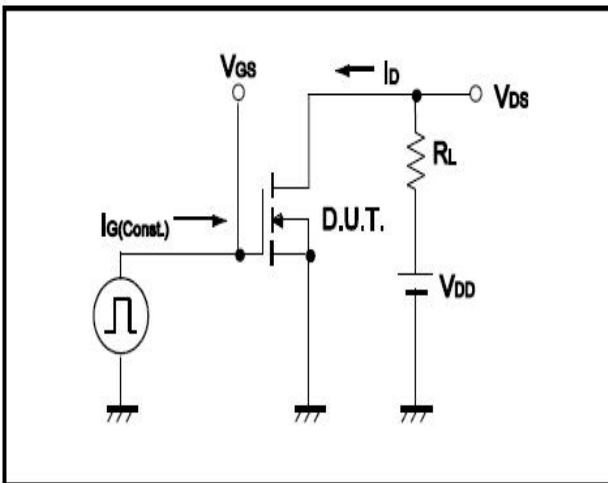


Fig.10 Gate Charge Waveform

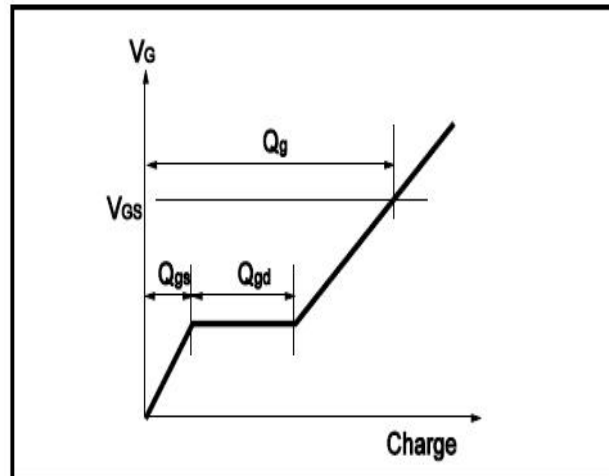


Fig.11 Switching Time Measurement Circuit

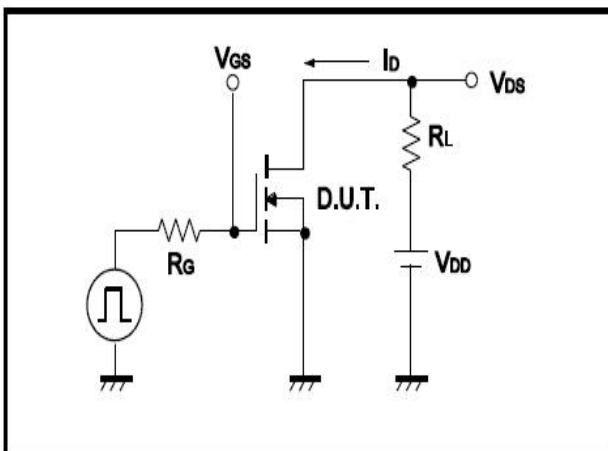
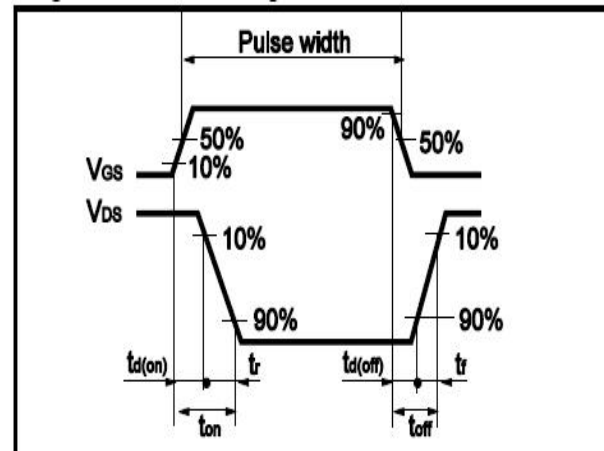


Fig.12 Gate Charge Waveform



•Dimensions(SOP8)

Unit: mm

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62

