

• 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

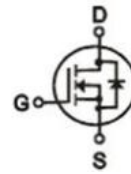
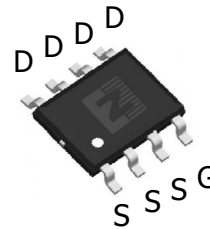
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

• Ordering Information:

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

• Absolute Maximum Ratings (T_C =25°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°C)	$P_{D@TC=25^{\circ}C}$	70	W
Total Power Dissipation(TA=25°C)	$P_{D@TA=25^{\circ}C}$	2.5	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	47	mJ

• Product Summary

 $V_{DS}=60V$
 $R_{DS(ON)} = 8m\Omega$
 $I_D = 12A$


SOP-8

•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

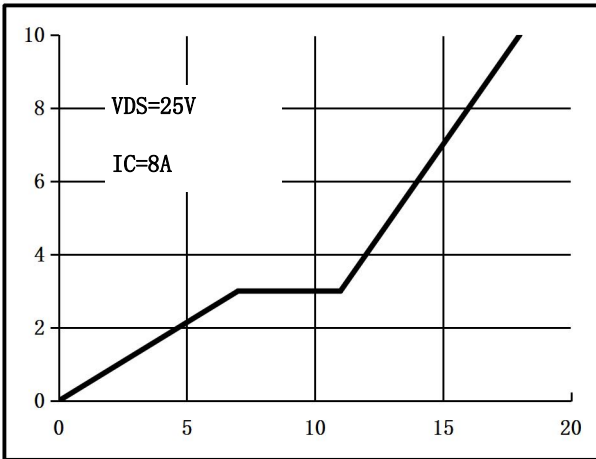


Fig.2 Capacitance Characteristics

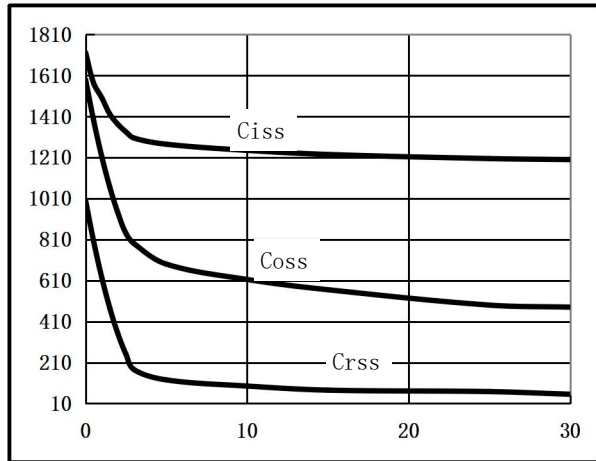


Fig.3 Power Dissipation

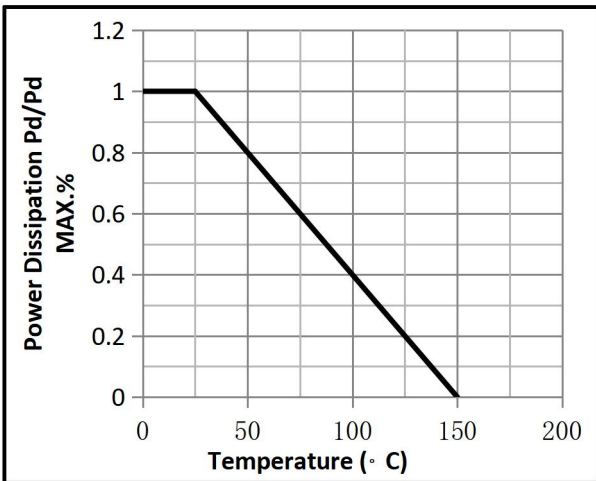


Fig.4 Typical output Characteristics

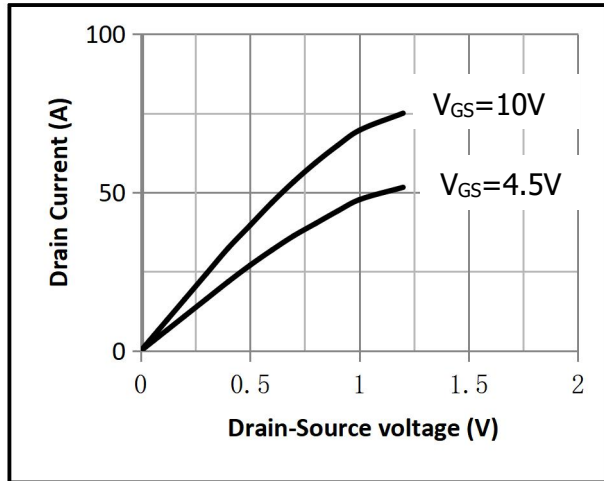


Fig.5 Threshold Voltage V.S Junction Temperature

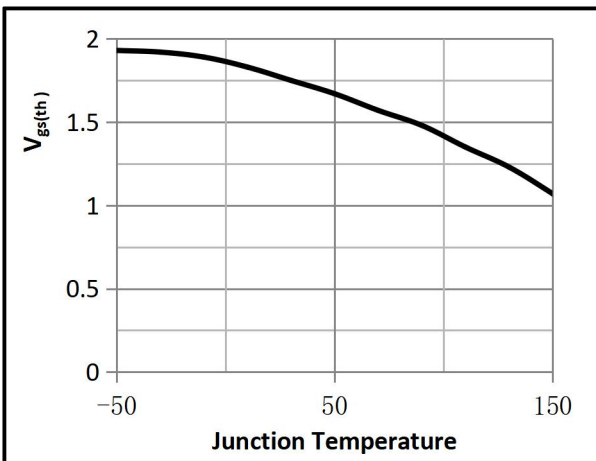


Fig.6 Resistance V.S Drain Current

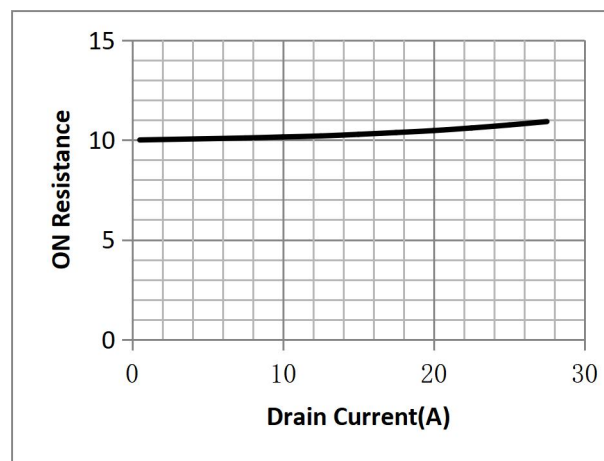


Fig.7 On-Resistance VS Gate Source Voltage

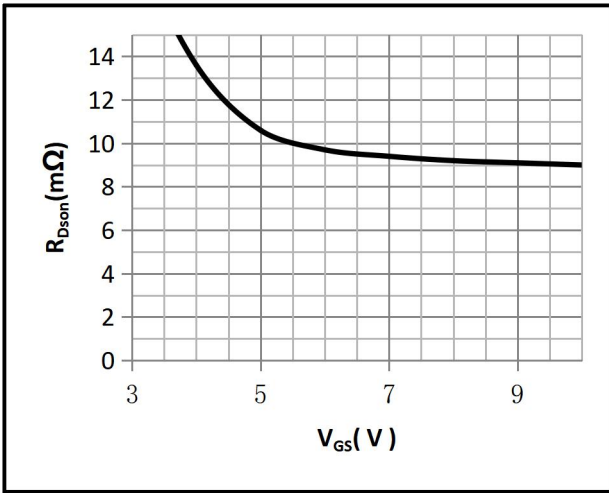


Fig.8 On-Resistance V.S Junction Temperature

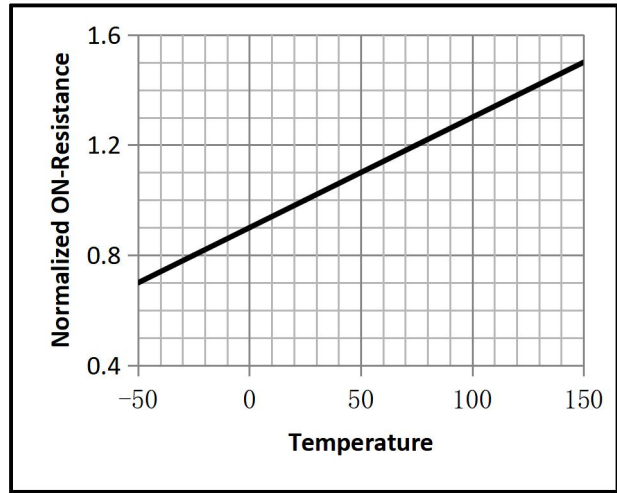


Fig.9 Switching Time Measurement Circuit

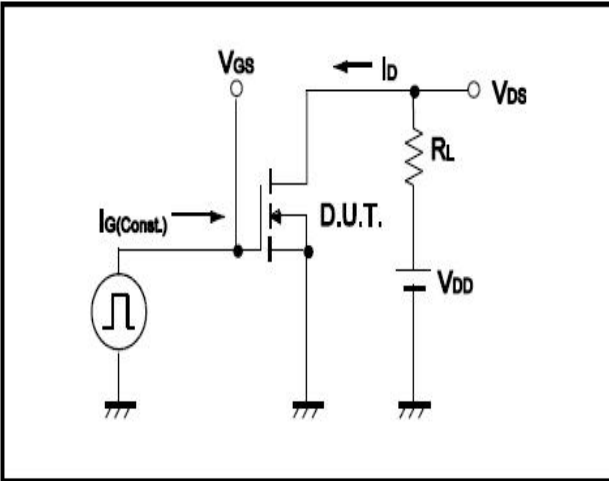


Fig.10 Gate Charge Waveform

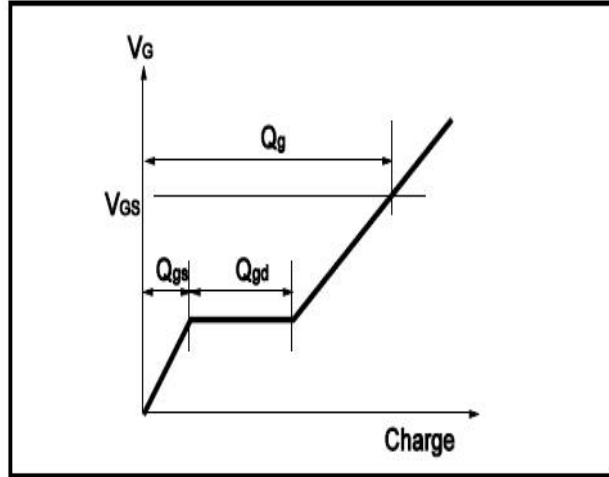


Fig.11 Switching Time Measurement Circuit

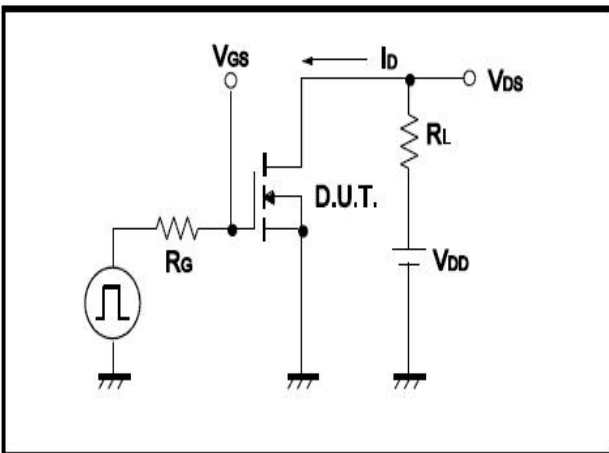
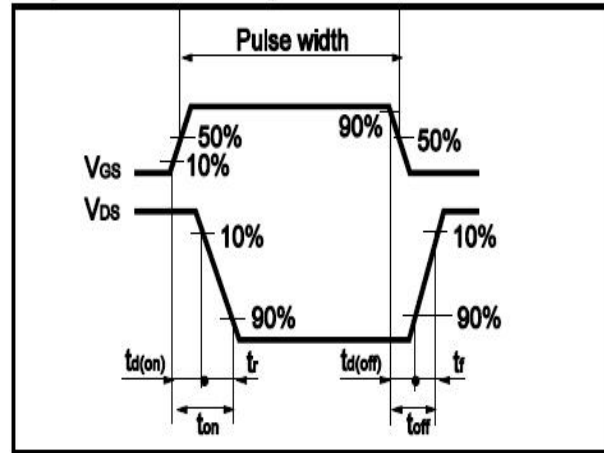


Fig.12 Gate Charge Waveform



•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

