

• General Description

The ZMS070N10I combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

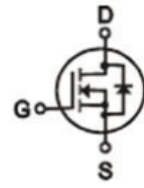
• Features

- 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



$$V_{DS} = 100V$$

$$R_{DS(ON)} = 7m\Omega$$

$$I_D = 70A$$



TO-251

• Ordering Information:

Part NO.	ZMS070N10I
Marking	ZMS070N10
Packing Information	Bulk Tube
Basic ordering unit (pcs)	3600

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	70	A
	$I_{D@TC=75^\circ C}$	57	A
	$I_{D@TC=100^\circ C}$	47	A
Pulsed Drain Current ^①	I_{DM}	280	A
Total Power Dissipation($TC=25^\circ C$)	$P_{D@TC=25^\circ C}$	100	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}	50	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	1.25	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	120	° 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}	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.6		2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$		7	9	m Ω
		$V_{GS}=4.5V, I_D=20A$		9	11	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=40A$		18		s
Diode Forward Voltage	V_{FSD}	$I_S=30A$			1.2	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $f = 1MHz$	-	2000	-	pF
Output capacitance	C_{oss}		-	780	-	
Reverse transfer capacitance	C_{rss}		-	80	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD}=25V$ $I_D=8A$ $V_{GS}=10V$	-	36	-	nC
Gate - Source charge	Q_{gs}		-	4.8	-	
Gate - Drain charge	Q_{gd}		-	8.9	-	

Note: ① Pulse Test : Pulse width $\leq 10\mu s$, Duty cycle $\leq 1\%$;

Fig.1 Gate-Charge Characteristics

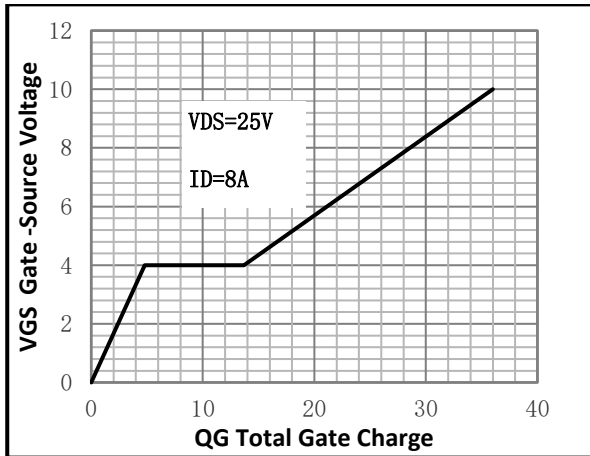


Fig.2 Capacitance Characteristics

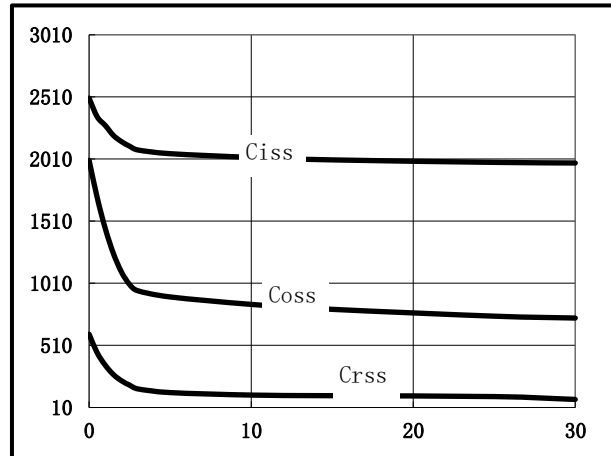


Fig.3 Power Dissipation

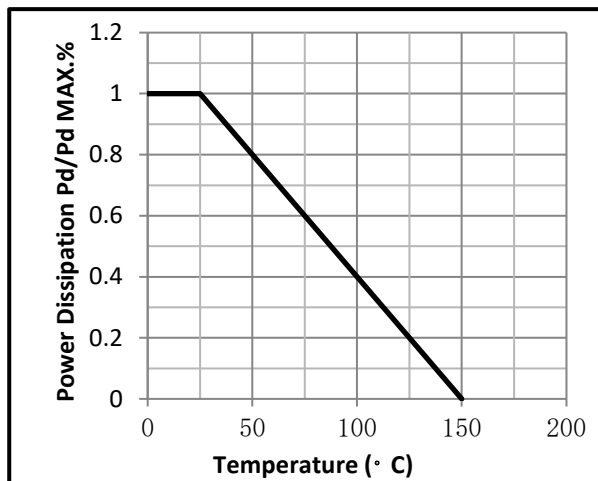


Fig.4 Typical output Characteristics

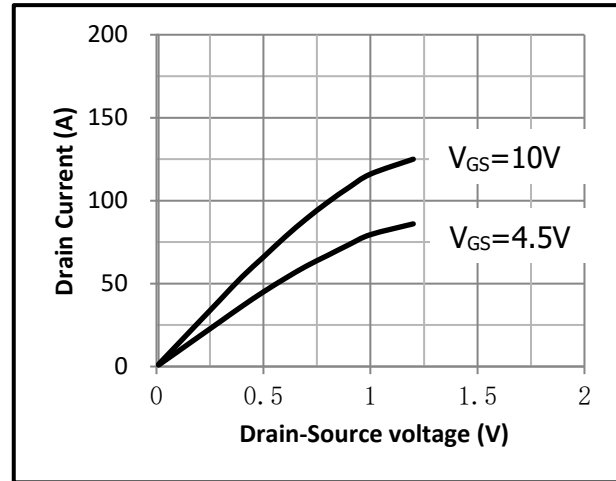


Fig.5 Threshold Voltage V.S Junction Temperature

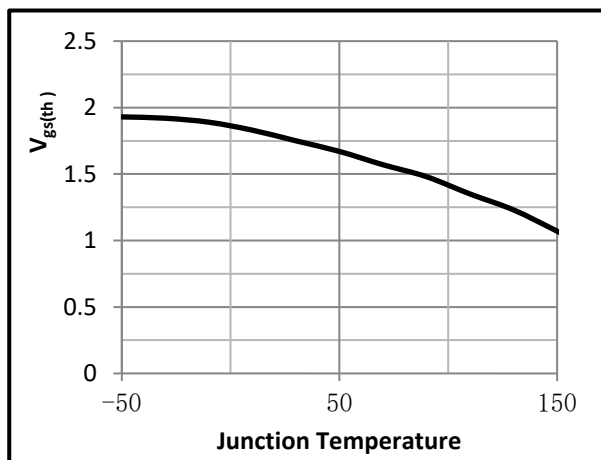


Fig.6 Resistance V.S Drain Current

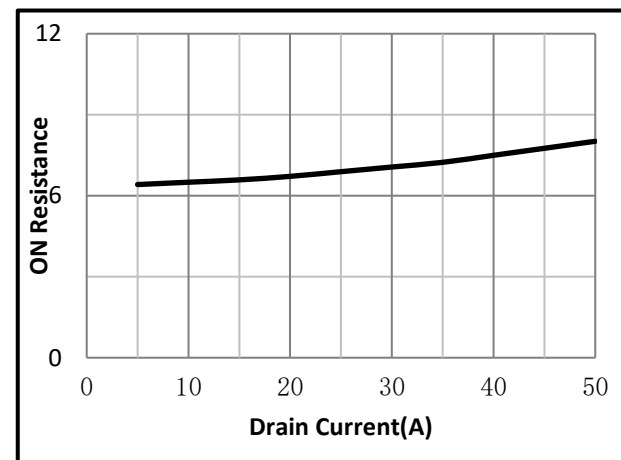


Fig.7 On-Resistance VS Gate Source Voltage

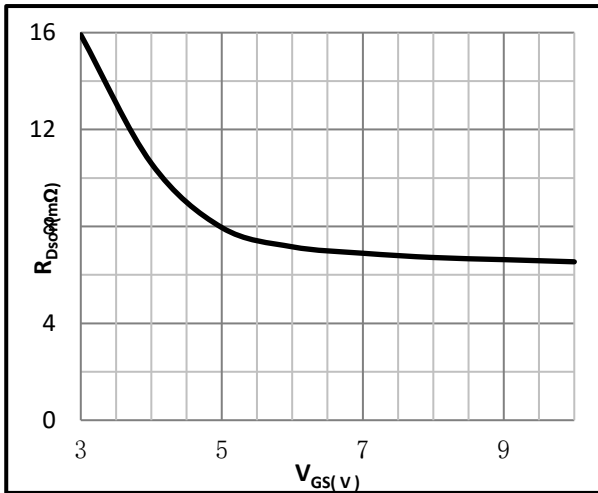


Fig.8 On-Resistance V.S Junction Temperature

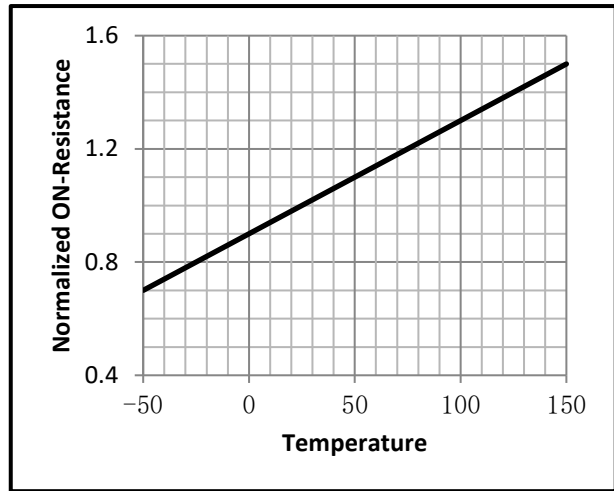


Fig.9 Gate Charge Measurement Circuit

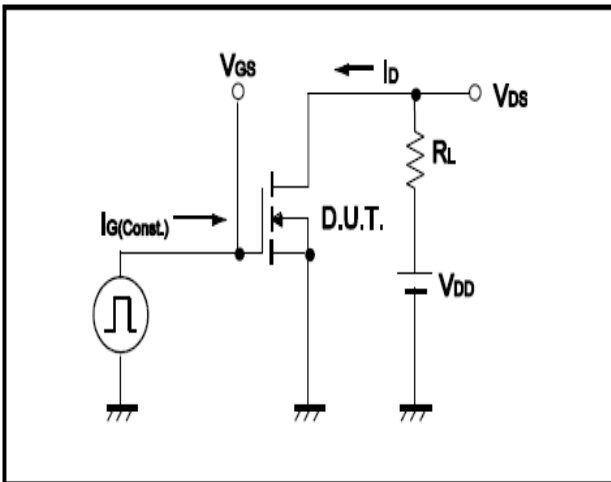


Fig.10 Gate Charge Waveform

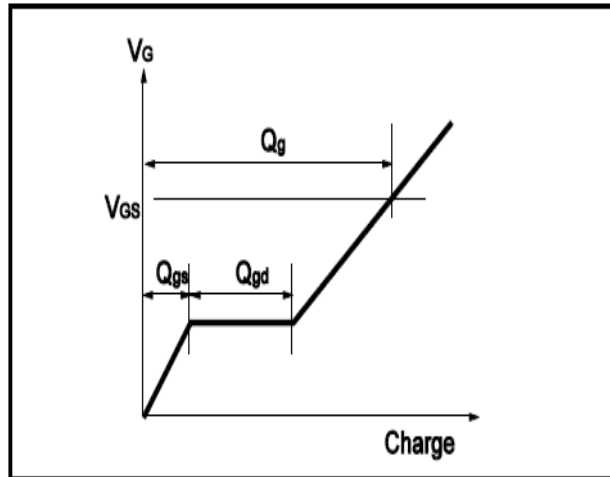


Fig.11 Switching Time Measurement Circuit

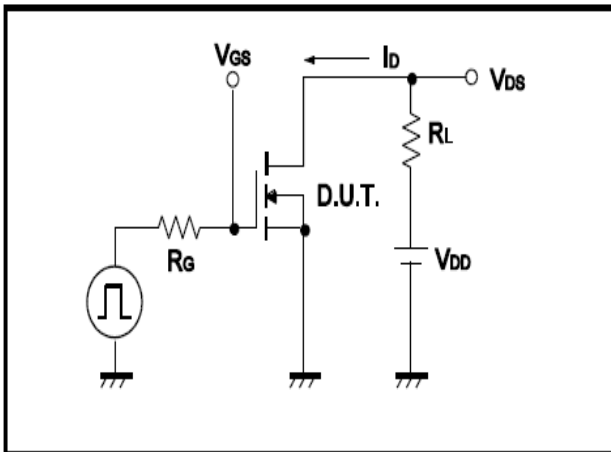
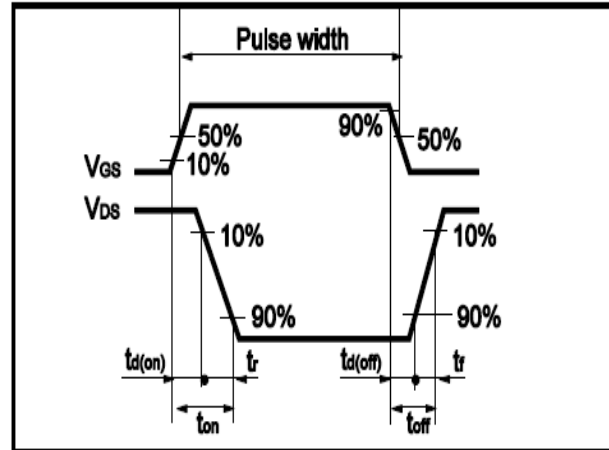


Fig.12 Switching Time Waveform



• **Dimensions (TO-251)**

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	D	6.35	6.80
A1	0.95	1.30	D1	5.10	5.50
B	0.80	1.25	E	5.30	6.30
b	0.50	0.80	e	2.30	2.35
b1	0.70	0.90	L	7.00	9.20
c	0.45	0.70			
c1	0.45	0.70			

