

### • General Description

The ZMS030N06I combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

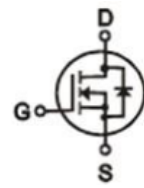
### • Features

- 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

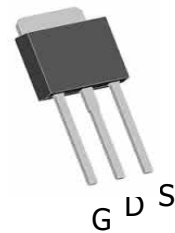
### • Product Summary



$$V_{DS} = 60V$$

$$R_{DS(ON)} = 3.3m\Omega$$

$$I_D = 95A$$



TO-251

### • Ordering Information:

Part NO.	ZMS030N06I
Marking	ZMS030N06
Packing Information	Bulk Tube
Basic ordering unit (pcs)	900

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	95	A
	$I_{D@TC=75^\circ C}$	72.2	A
	$I_{D@TC=100^\circ C}$	59.9	A
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	260	A
Total Power Dissipation	$P_D@TC=25^\circ C$	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	$E_{AS}$	125	mJ
Avalanche Current@L=0.1mH	$I_{AS}$	50	A

**•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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.7	2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$		3.3	4	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$		5	6	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=20A$		18		s
Source-drain voltage	$V_{SD}$	$I_S=30A$			1.28	V

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	$C_{iss}$	$f = 1MHz$	-	2900	-	pF
Output capacitance	$C_{oss}$		-	880	-	
Reverse transfer capacitance	$C_{rss}$		-	105	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD}=30V$	-	35	-	nC
Gate - Source charge	$Q_{gs}$	$I_D=20A$	-	10	-	
Gate - Drain charge	$Q_{gd}$	$V_{GS}=10V$	-	11	-	

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

Fig.1 Gate-Charge Characteristics

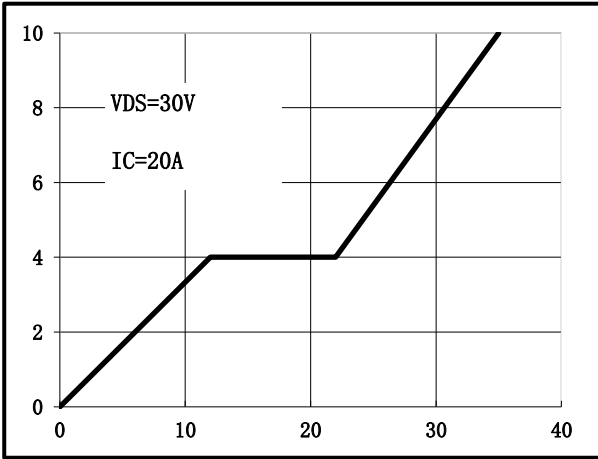


Fig.2 Capacitance Characteristics

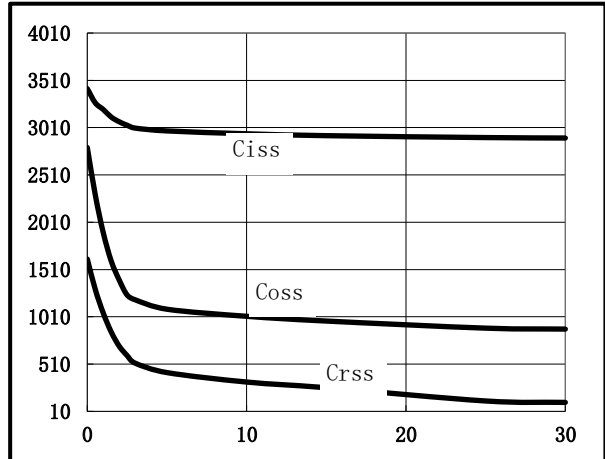


Fig.3 Power Dissipation

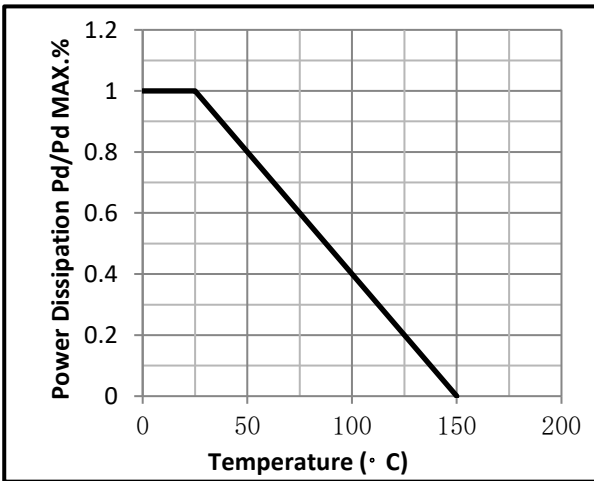


Fig.4 Typical output Characteristics

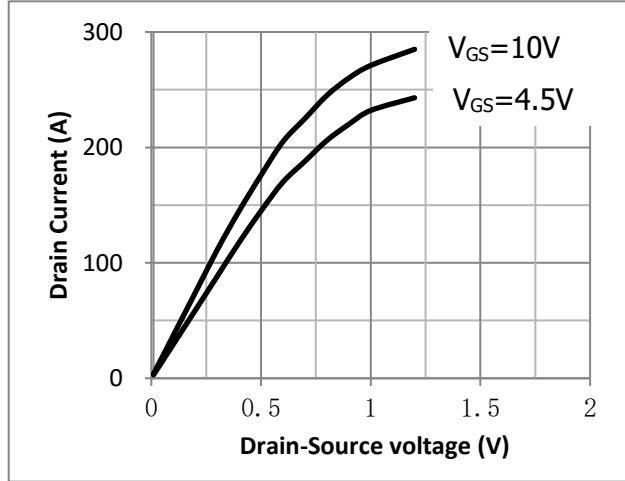


Fig.5 Threshold Voltage V.S Junction Temperature

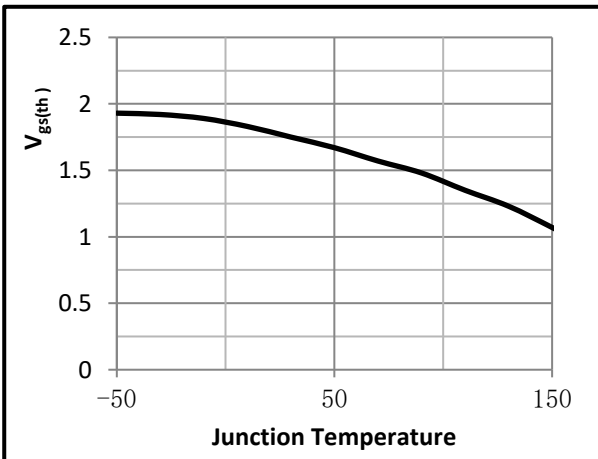


Fig.6 Resistance V.S Drain Current

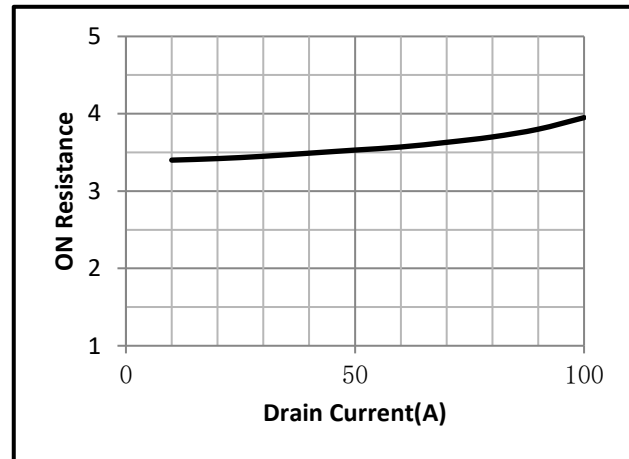


Fig.7 On-Resistance VS Gate Source Voltage

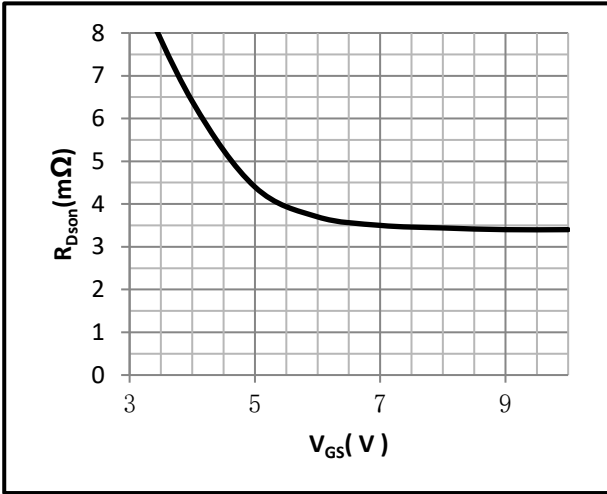


Fig.8 On-Resistance V.S Junction Temperature

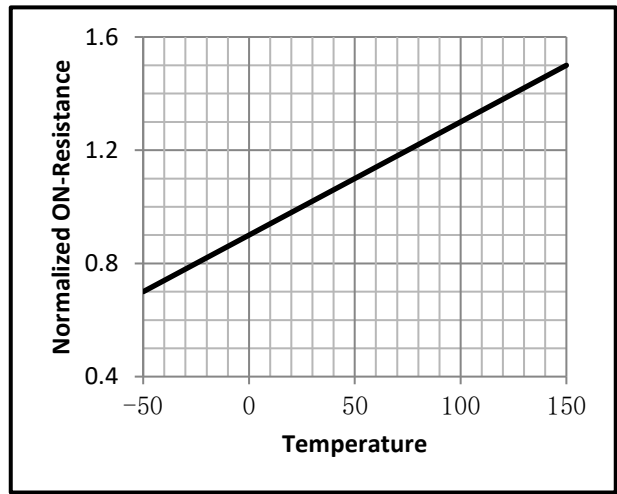


Fig.9 Switching Time Measurement Circuit

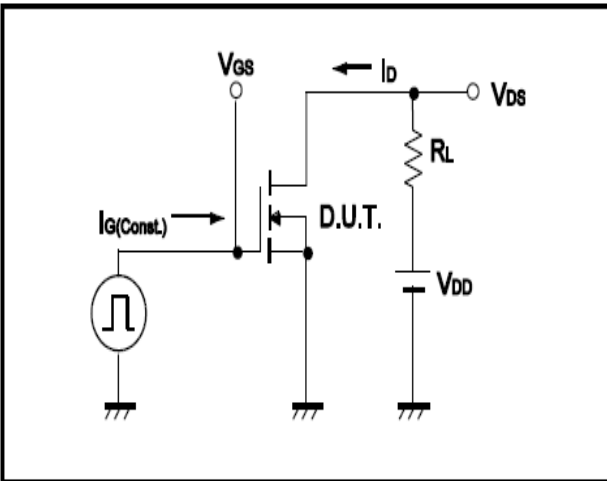


Fig.10 Gate Charge Waveform

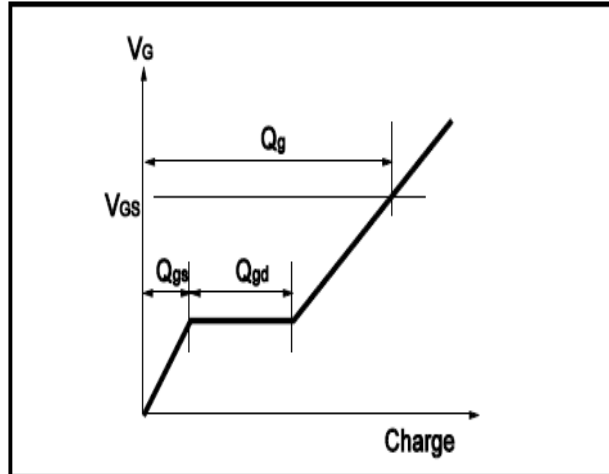


Fig.11 Switching Time Measurement Circuit

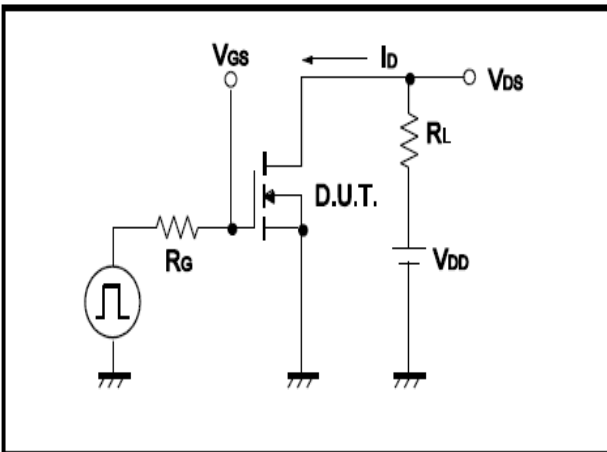
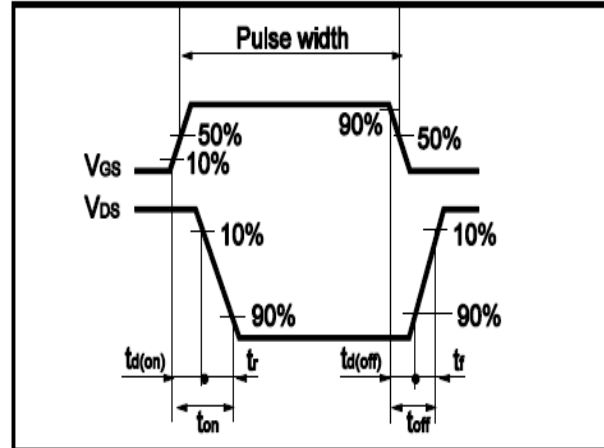


Fig.12 Gate Charge Waveform



•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	2.24	2.35
b1	0.70	0.90	E1	4.43	4.73
c	0.45	0.60	L	7.00	9.40
c1	0.45	0.60			

