

• General Description

The ZMS030N06F 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

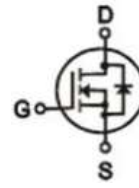
• Ordering Information:

Part NO.	ZMS030N06F
Marking	ZMS030N06
Packing Information	Bulk Tube
Basic ordering unit (pcs)	1000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ\text{C}}$	85	A
	$I_{D@TC=75^\circ\text{C}}$	65	A
	$I_{D@TC=100^\circ\text{C}}$	54	A
Pulsed Drain Current ^①	I_{DM}	200	A
Total Power Dissipation($TC=25^\circ\text{C}$)	$P_{D@TC=25^\circ\text{C}}$	85	W
Total Power Dissipation($TA=25^\circ\text{C}$)	$P_{D@TA=25^\circ\text{C}}$	3	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Single Pulse Avalanche Energy@ $L=0.1\text{mH}$	E_{AS}	245	mJ
Avalanche Current@ $L=0.1\text{mH}$	I_{AS}	70	A

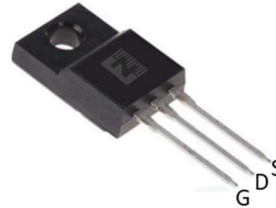
• Product Summary



$V_{DS} = 60V$

$R_{DS(ON)} = 3\text{m}\Omega$

$I_D = 85A$



TO-220F

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	1.47	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	42	° 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 =250uA	60			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1.0	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 =30A		3	3.9	mΩ
		V _{GS} =4.5V, I _D =20A		4.5	5.8	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =40A		28		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	-	3500	-	pF
Output capacitance	C _{oss}	V _{DS} =25V	-	880	-	
Reverse transfer capacitance	C _{rss}		-	110	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} =25V	-	46	-	nC
Gate - Source charge	Q _{gs}	I _D = 15A	-	15	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	7	-	

Note: ① Pulse Test : Pulse width ≤ 10μs, Duty cycle ≤ 1% ;

Fig.1 Gate-Charge Characteristics

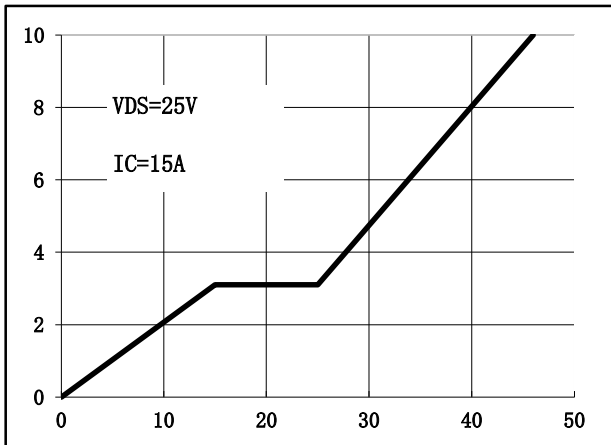


Fig.2 Capacitance Characteristics

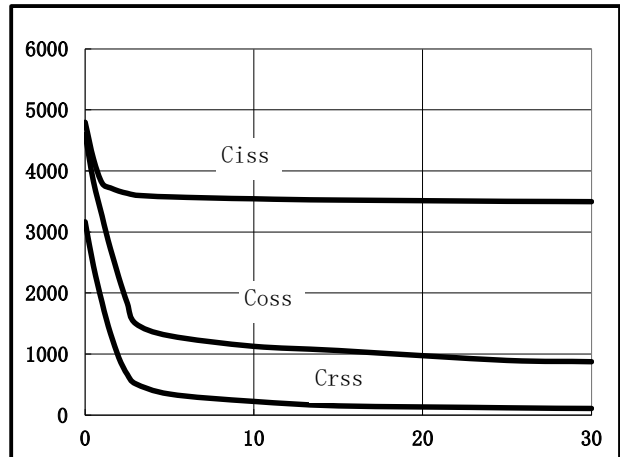


Fig.3 Power Dissipation

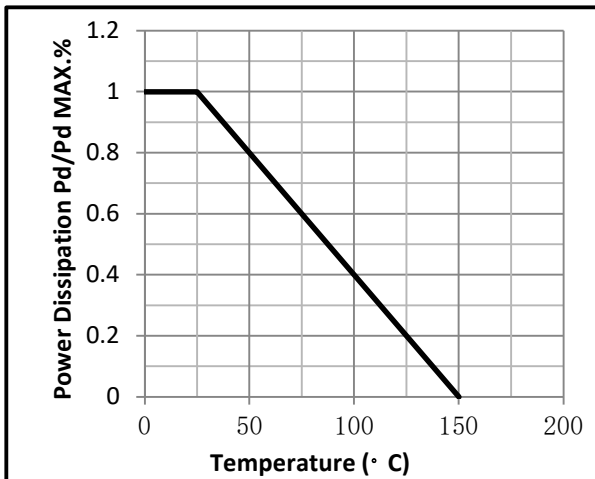


Fig.4 Typical output Characteristics

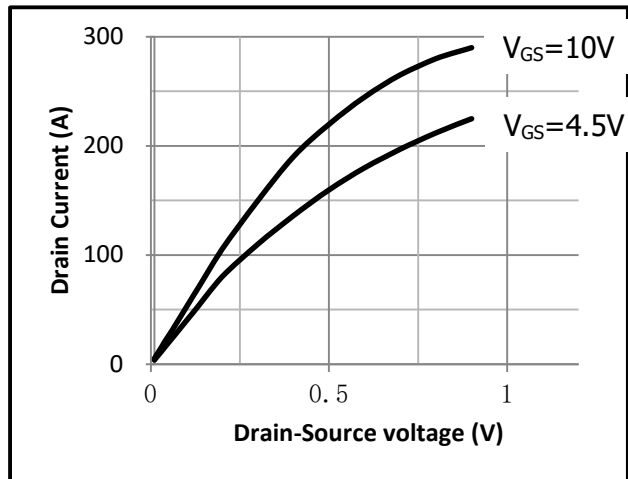


Fig.5 Threshold Voltage V.S Junction Temperature

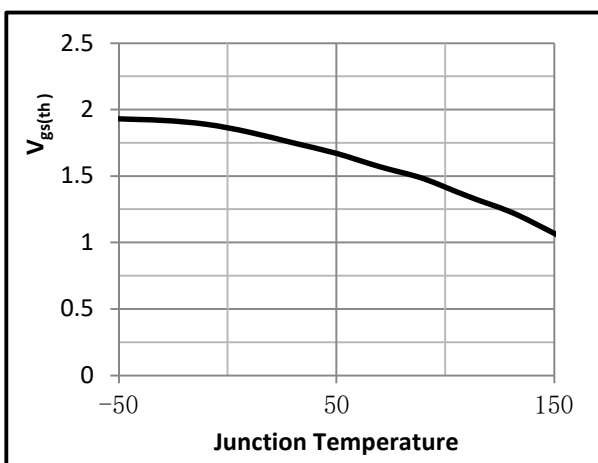


Fig.6 Resistance V.S Drain Current

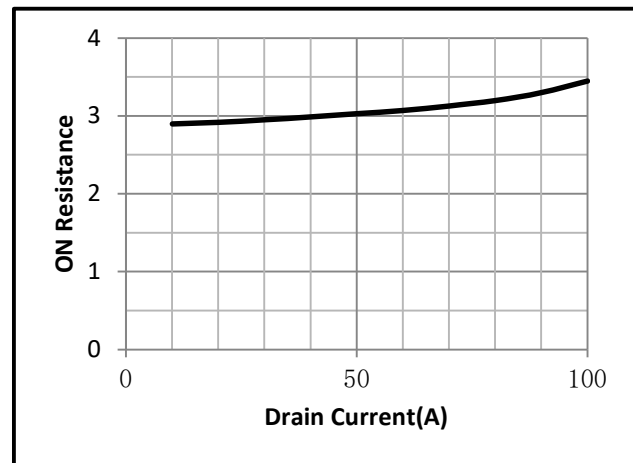


Fig.7 On-Resistance VS Gate Source Voltage

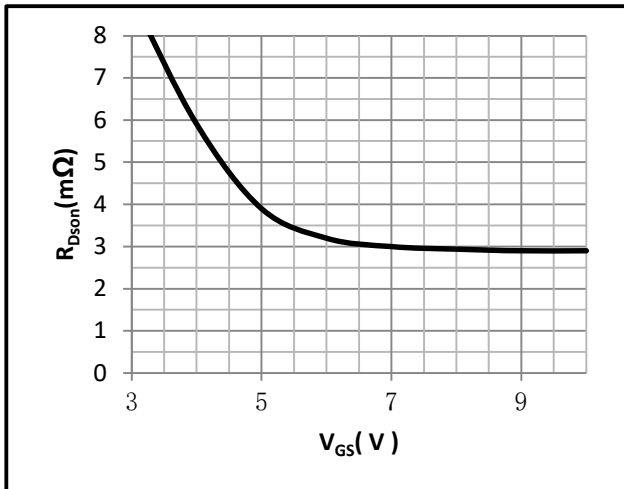


Fig.8 On-Resistance V.S Junction Temperature

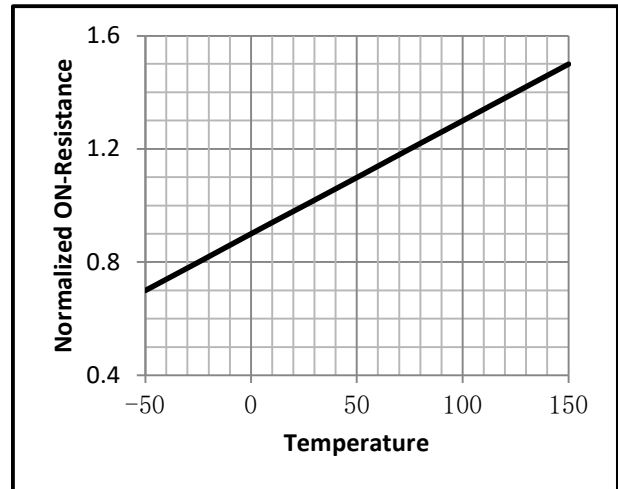


Fig.9 Switching Time Measurement Circuit

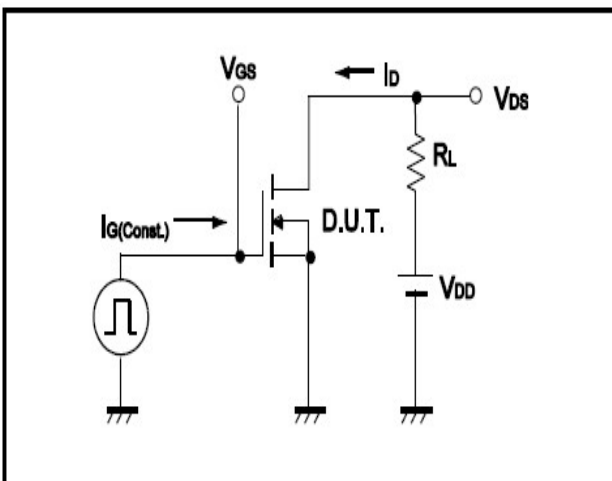


Fig.10 Gate Charge Waveform

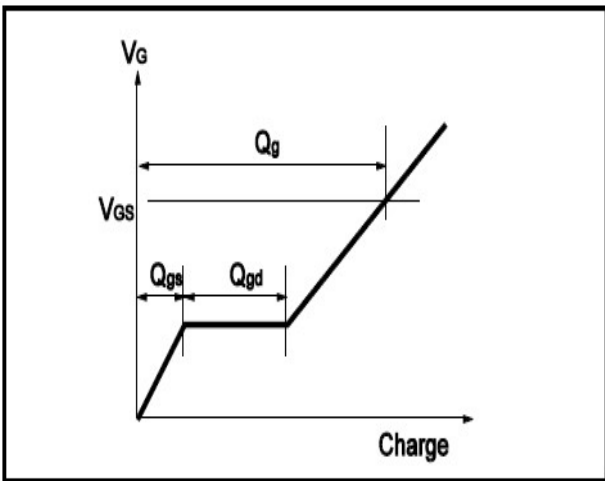


Fig.11 Switching Time Measurement Circuit

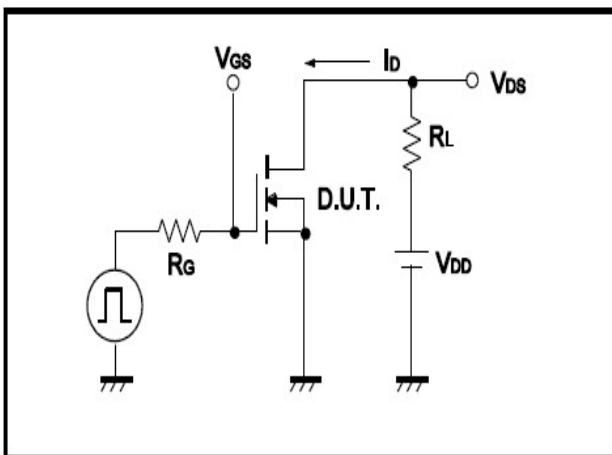
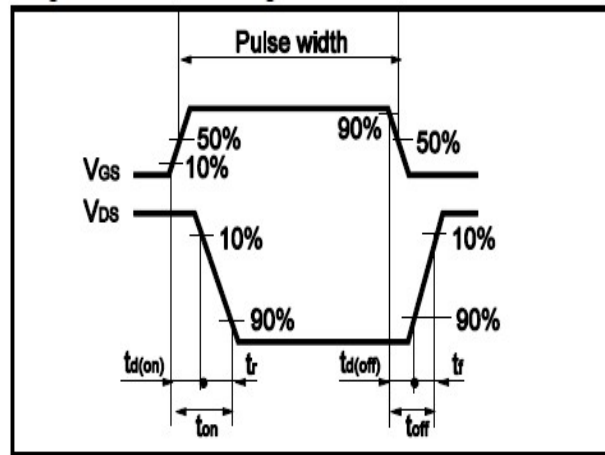


Fig.12 Gate Charge Waveform





• Dimensions (TO-220F)

Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
C	4.5	4.9	b1	2.90	3.90
c	0.4	0.6	a	1.08	1.48
A	9.96	10.36	a1	0.70	0.90
B	15.67	16.07	E	2.34	2.74
B1	3.30	3.50	E1	2.34	2.74
R	3.08	3.28	C1	2.34	2.74
b	12.48	13.48	C2	2.56	2.96

