

• General Description

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

• Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

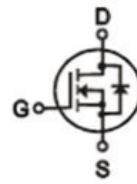
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

• Ordering Information:

Part NO.	ZMS030N06N
Marking	ZMS030N06
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

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

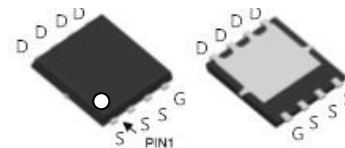
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_C=25^\circ\text{C}$)	$I_{D@TC=25^\circ\text{C}}$	120	A
	$I_{D@TC=75^\circ\text{C}}$	91	A
	$I_{D@TC=100^\circ\text{C}}$	75	A
Pulsed Drain Current ①	I_{DM}	300	A
Total Power Dissipation($T_C=25^\circ\text{C}$)	$P_D@TC=25^\circ\text{C}$	85	W
Total Power Dissipation($T_A=25^\circ\text{C}$)	$P_D@TA=25^\circ\text{C}$	3.4	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}	1200	mJ

• Product Summary


$V_{DS} = 60\text{V}$

$R_{DS(ON)} = 2.6\text{m}\Omega$

$I_D = 120\text{A}$



DFN5 x 6

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	1.5	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	37	° C/W
Soldering temperature, wave soldering 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	1.3		2.6	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		2.6	3.3	mΩ
		V _{GS} =4.5V, I _D =20A		3.4	4.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =10A		25		s
Source-drain voltage	V _{SD}	I _S =30A		0.8	1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =30V f = 1MHz	-	3500	-	pF
Output capacitance	C _{oss}		-	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 I _D = 20A V _{GS} = 10V	-	35	-	nC
Gate - Source charge	Q _{gs}		-	10	-	
Gate - Drain charge	Q _{gd}		-	11	-	
Total gate charge	Q _g	V _{DD} = 4.5V I _D = 20A V _{GS} = 10V	-	28	-	nC
Gate - Source charge	Q _{gs}		-	8	-	
Gate - Drain charge	Q _{gd}		-	8.8	-	
Turn-ON Delay time	t _{D(on)}	V _{GS} =10V,		8		ns

Turn-ON Rise time	t_r	$V_{DS}=15V$	7	ns
Turn-Off Delay time	$t_{D(off)}$	$R_G = 6\Omega, I_D = 15A$	39	ns
Turn-Off Fall time	t_f		8	ns
Reverse Recovery Time	t_{RR}	$dI_S/dt = 500$	22	ns
Reverse Recovery Charge	Q_{RR}	$A/s, I_S = 20 A$	80	nC

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

Fig.1 Gate-Charge Characteristics

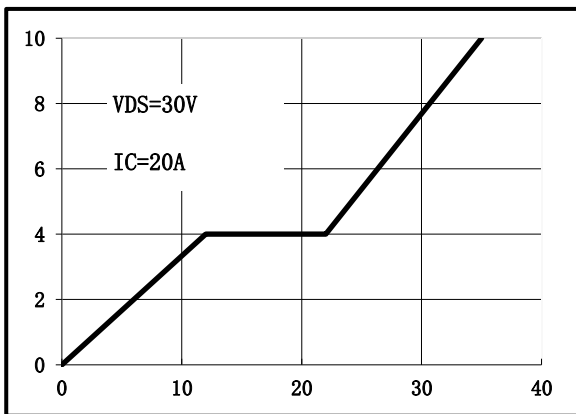


Fig.2 Capacitance Characteristics

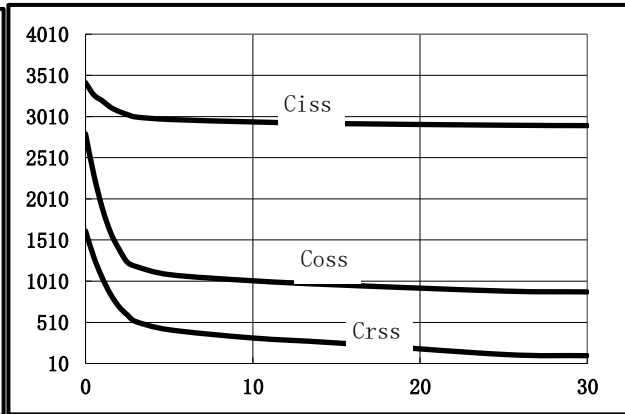


Fig.3 Power Dissipation

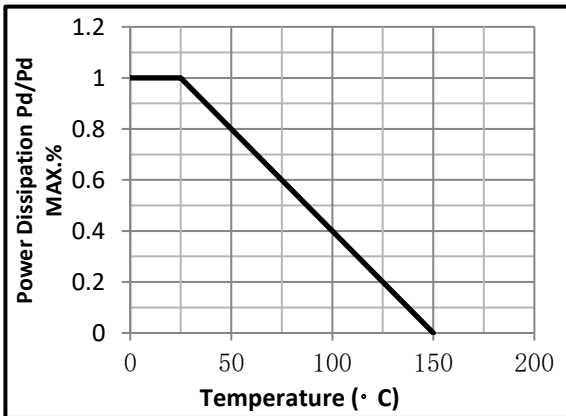


Fig.4 Typical output Characteristics

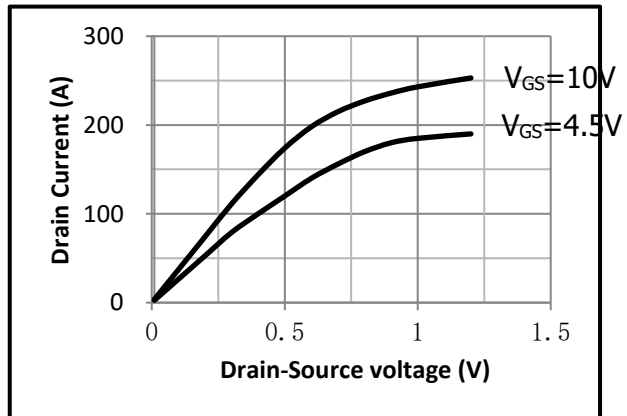


Fig.5 Threshold Voltage V.S Junction Temperature Fig.6 Resistance V.S Drain Current

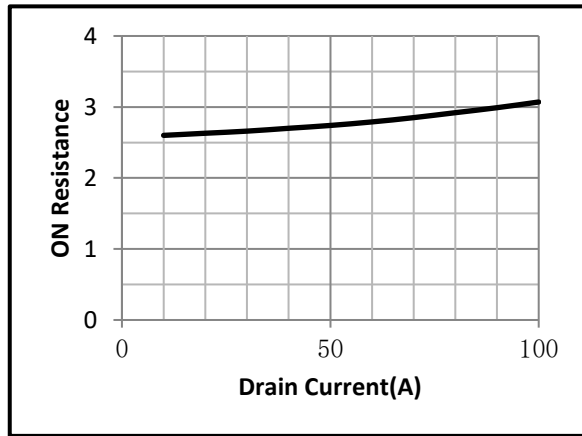
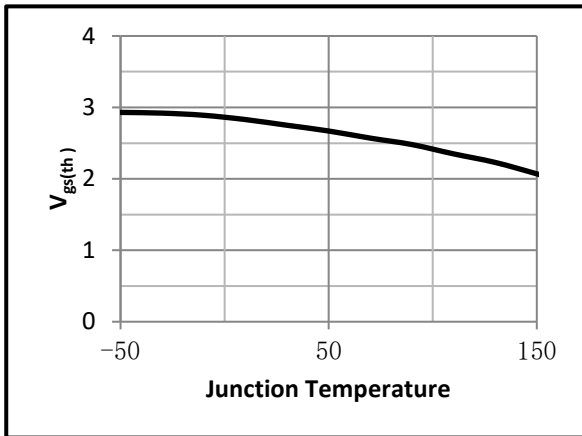


Fig.7 On-Resistance VS Gate Source Voltage

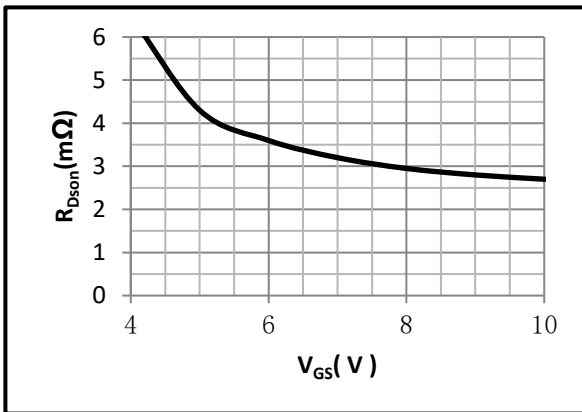


Fig.8 On-Resistance V.S Junction Temperature

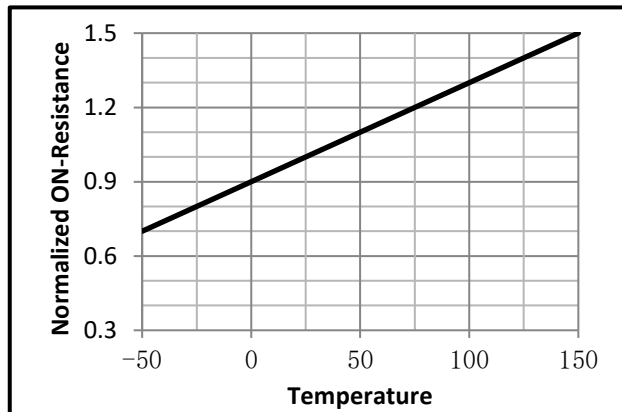


Fig.9 Switching Time Measurement Circuit

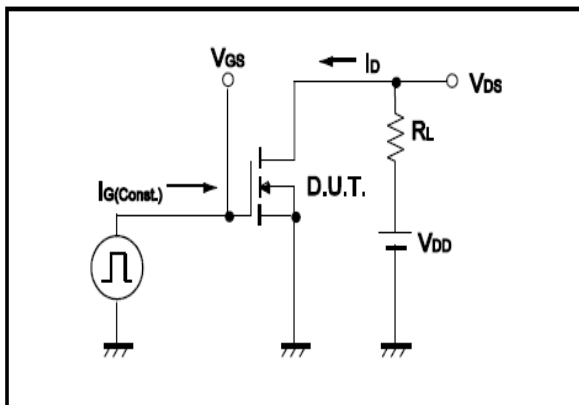


Fig.10 Gate Charge Waveform

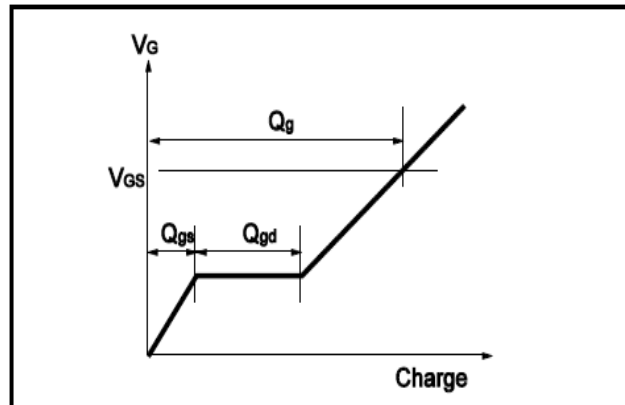


Fig.11 Switching Time Measurement Circuit

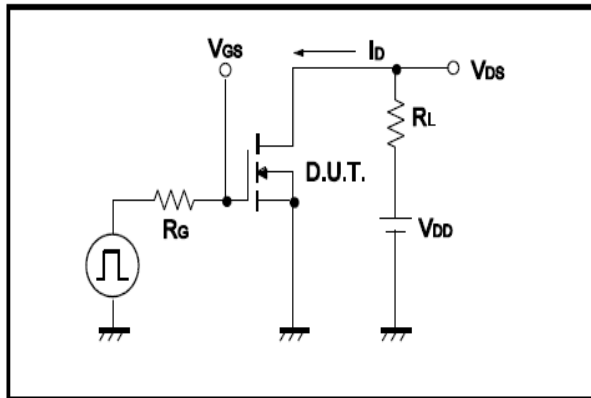


Fig.12 Gate Charge Waveform

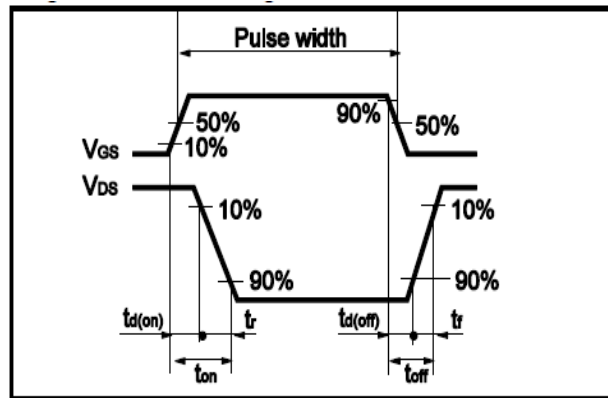


Fig.13 Avalanche Measurement Circuit

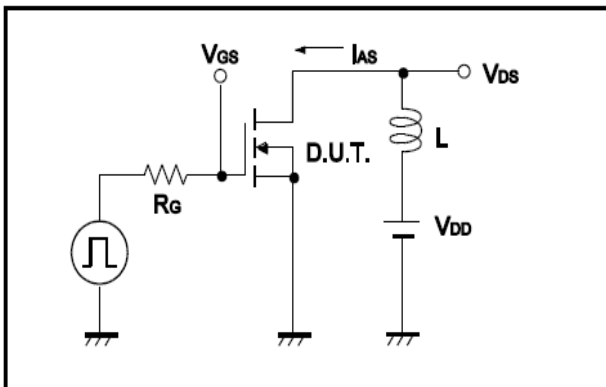
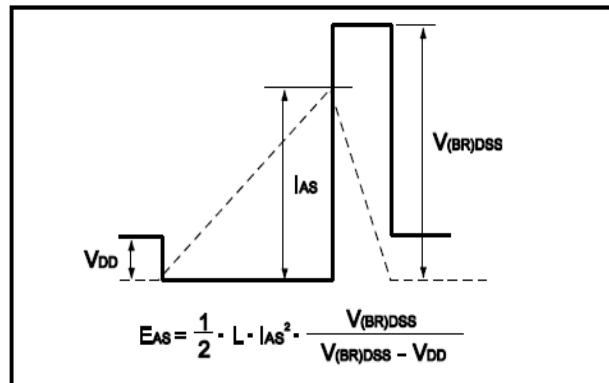


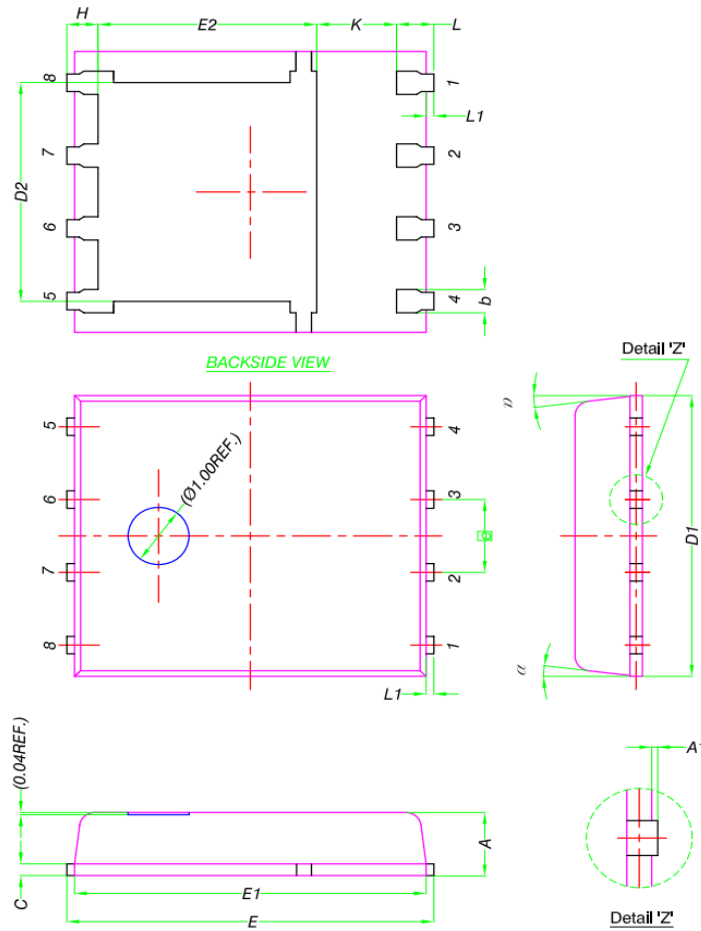
Fig.14 Avalanche Waveform





•Dimensions (DFN5x6)

Unit: mm



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
alpha	0°	-	12°