● General Description

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

● Features

■Low $R_{DS(ON)}$ to minimize conductive loss

■Low Gate Charge for fast switching

■Low Thermal resistance

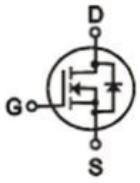
●Application

■ Synchronous Rectification for AC-DC/DC-DC converter

■ Load switch

■Power Tools

● Product Summary

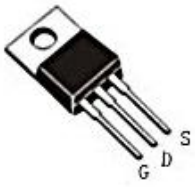


V_{DS} =100V

$R_{DS(ON)}$ =2.8mΩ

I_D =190A

RoHS



TO-220

●Ordering Information:

Part NO.	ZMS030N10HP
Marking	ZMS030N10H
Packing Information	Bulk Tube
Basic ordering unit (pcs)	1000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D@T_C=25℃	190①	A
	I_D@T_C=75℃	144	A
	I_D @T_C=100℃	119	A
Pulsed Drain Current②	I_{DM}	570	A
Total Power Dissipation	P_D@T_C=25℃	156	W
Total Power Dissipation	P_D@T_A=25℃	2.7	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	312	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	0.8	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	45	°C/W
Soldering temperature, wave soldering for 10s	T_{sold}	-	-	260	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	100			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	2.0		4.0	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, 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=40A		2.8	3.6	mΩ
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D=15A		30		s
Source-drain voltage	V_{SD}	Is=40A			1.28	V

●Dynamic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=25V f = 1MHz	-	5490	-	pF
Output capacitance	Coss		-	3060	-	
Reverse transfer capacitance	Crss		-	309	-	
Total gate charge	Qg	V_{DD} = 25V I_D = 8A V_{GS} = 10V	-	97	-	nC
Gate - Source charge	Qgs		-	30	-	
Gate - Drain charge	Qgd		-	19	-	
Body Diode Reverse Recovery Time	trr	I_F=20A, di/dt=100A/μs		58		nS
Body Diode Reverse Recovery Charge	Qrr	I_F=20A, di/dt=100A/μs		96		nC

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Fig.1 Gate-Charge Characteristics

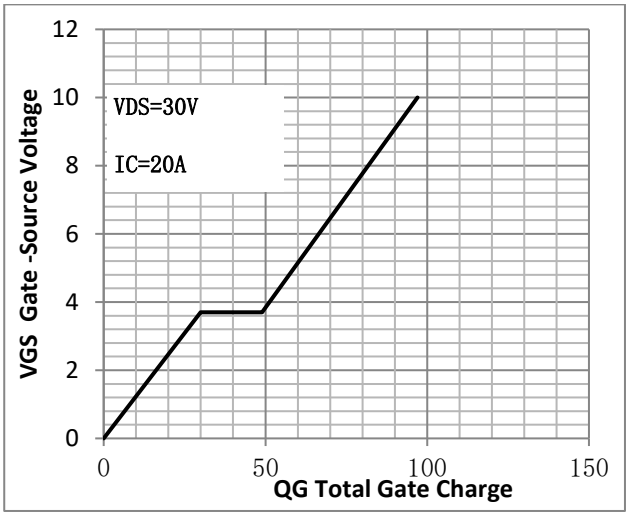


Fig.2 Capacitance Characteristics

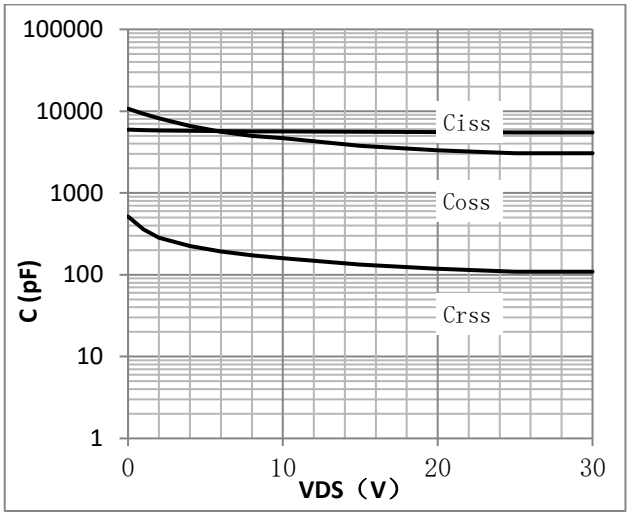


Fig.3 Power Dissipation

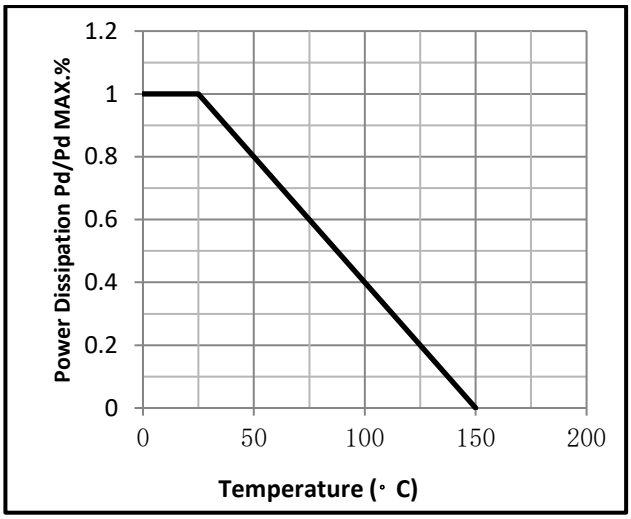


Fig.4 Typical output Characteristics

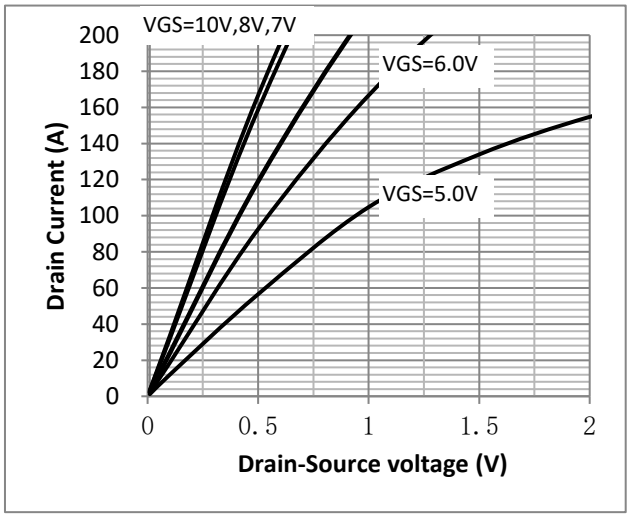


Fig.5 Threshold Voltage V.S Junction Temperature

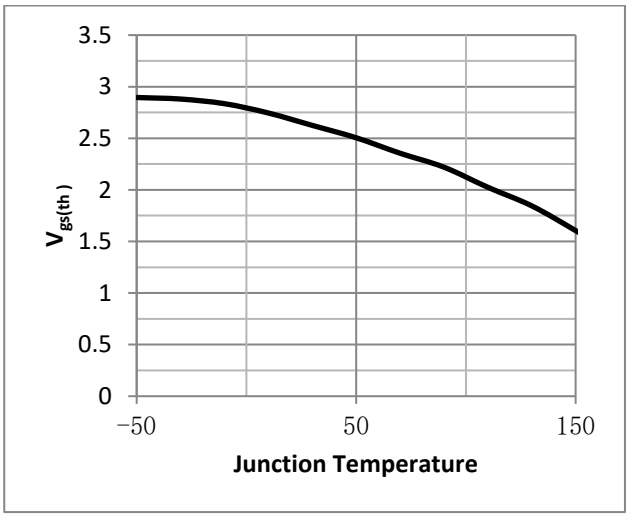


Fig.6 Resistance V.S Drain Current

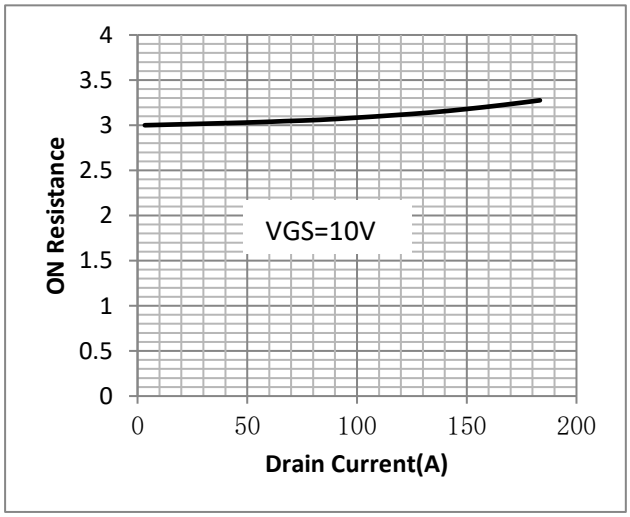


Fig.7 On-Resistance VS Gate Source Voltage

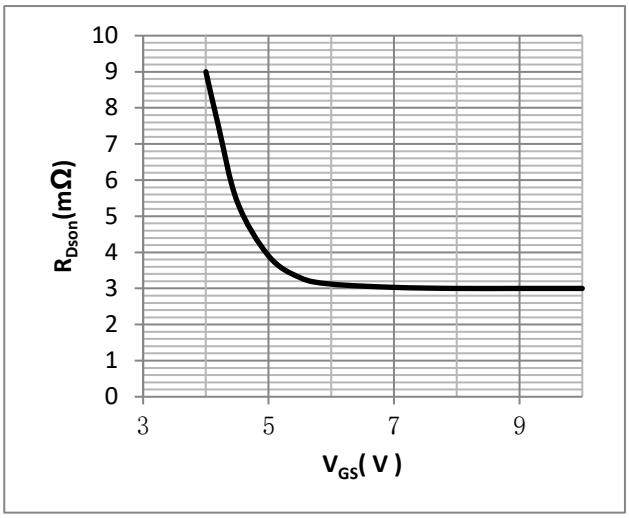


Fig.8 On-Resistance V.S Junction Temperature

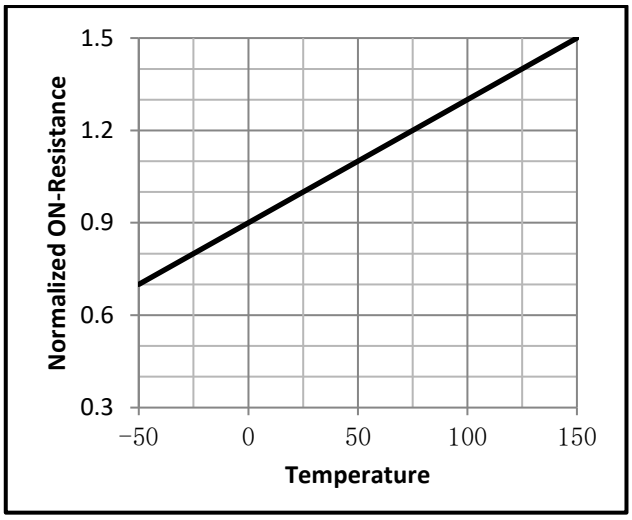


Fig.9 SOA Maximum Safe Operating Area

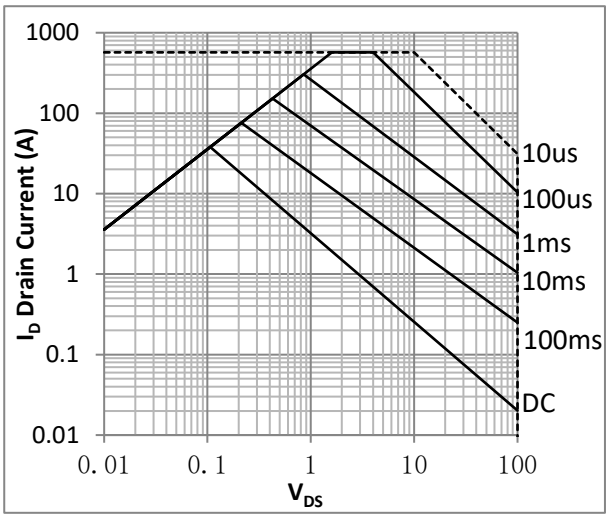


Fig.10 ID-Junction Temperature

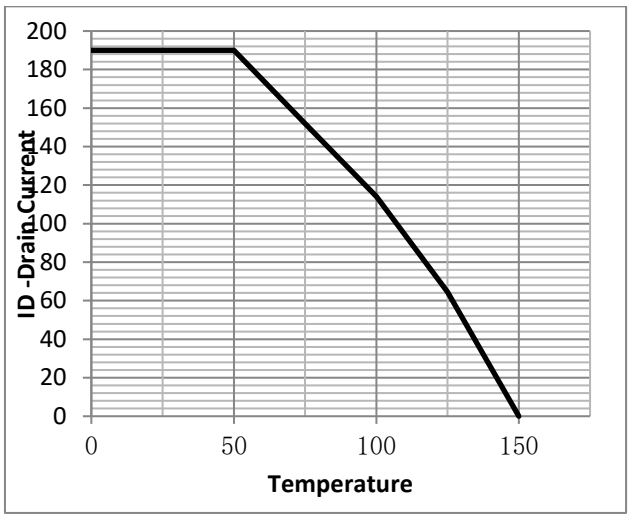


Figure.11 Diode Forward Voltage vs. Current

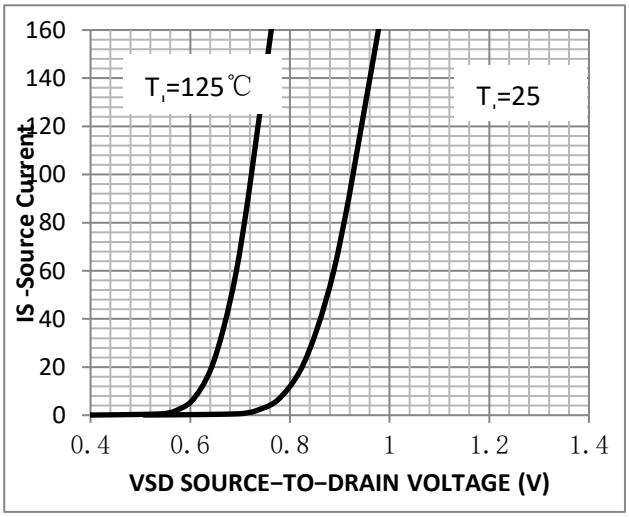


Figure.12 Transfer Characteristics

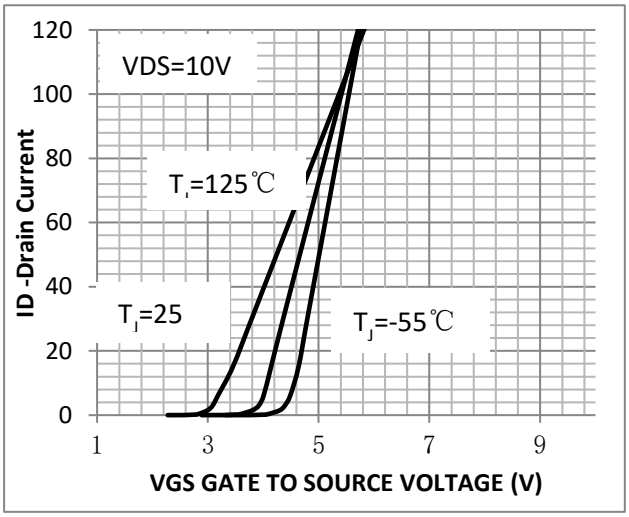


Fig.12 Switching Time Measurement Circuit

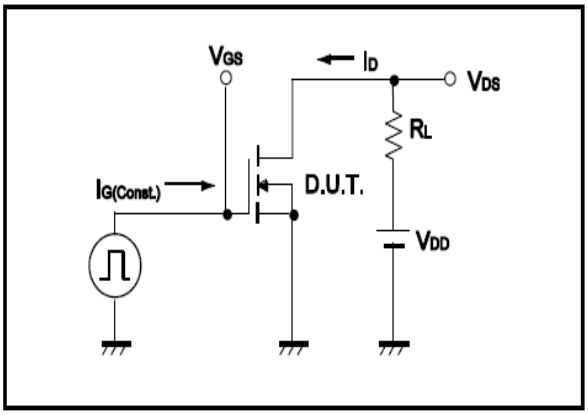


Fig.13 Gate Charge Waveform

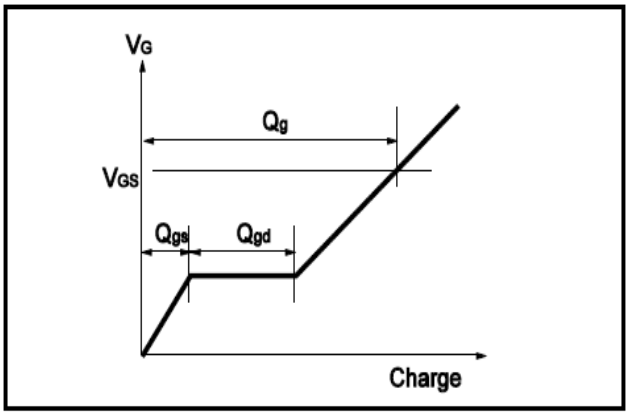


Fig.14 Switching Time Measurement Circuit

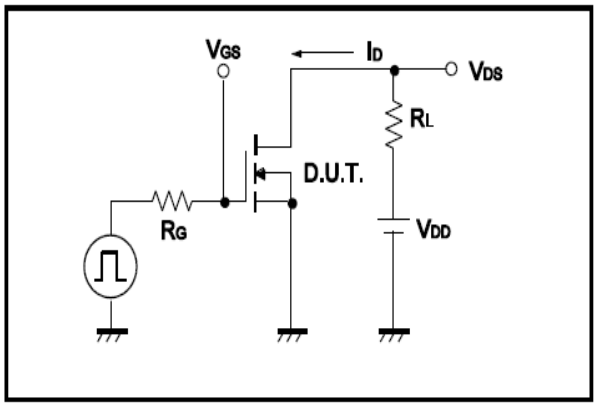


Fig.15 Gate Charge Waveform

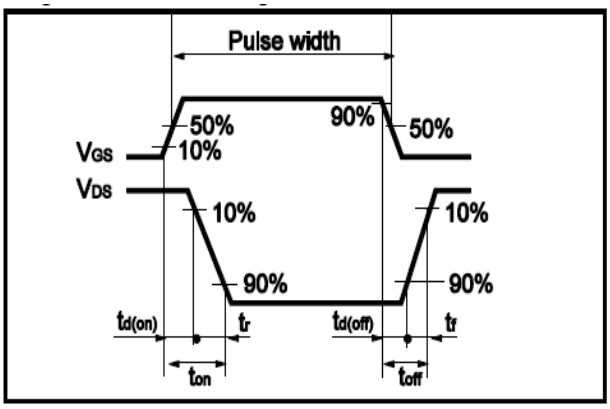


Fig.16 Avalanche Measurement Circuit

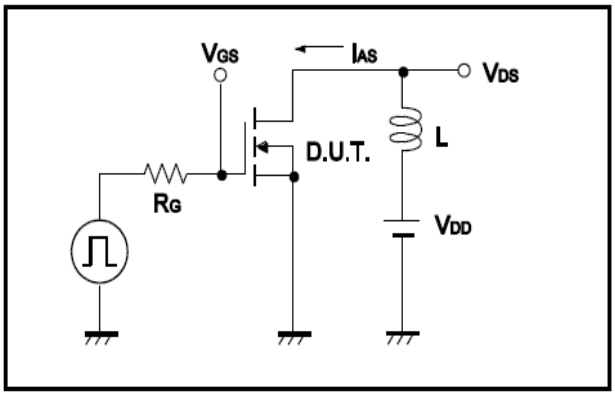
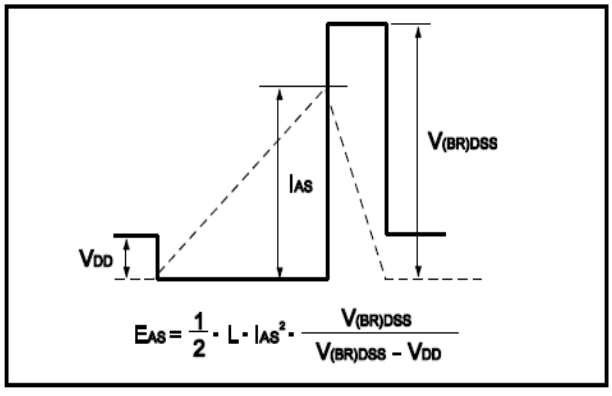


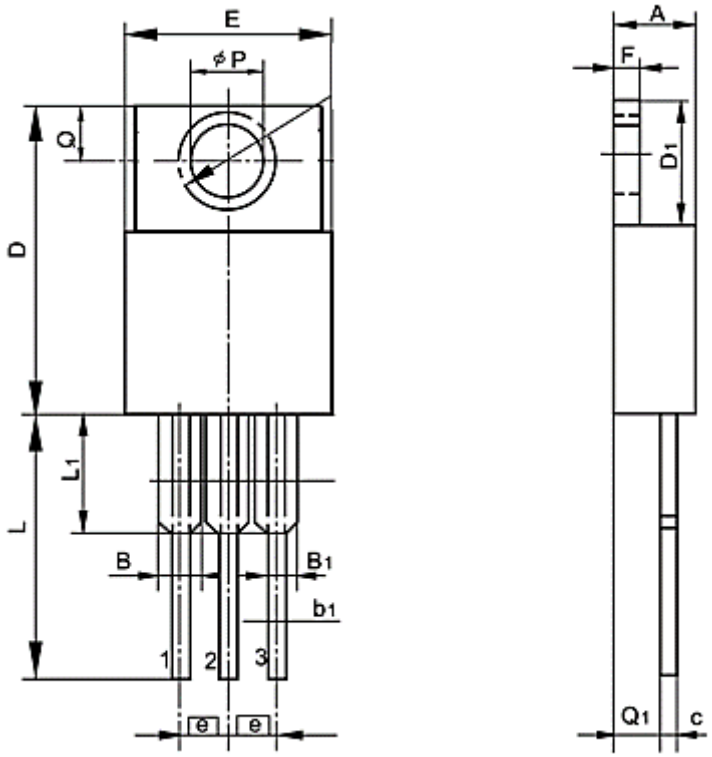
Fig.17 Avalanche Waveform



●Dimensions (TO-220)

Unit：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.00		4.80	E	9.90		10.70
B	1.20		1.50	e		2.54	
B1	1.00		1.40	F	1.10		1.45
b1	0.65		1.00	L	12.50		14.50
c	0.35		0.75	L1	3.00	3.50	4.00
D	15.00		16.50	Q	2.50		3.00
D1	5.90		6.90	Q1	2.00		3.00
				ΦP	3.60		3.90



Note: ① silicon limited

② Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

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