

• General Description

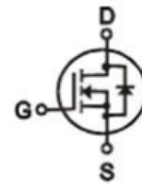
The ZMS070N10HP combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• Features

- Advance device constructure
- Low $R_{DS(ON)}$ to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

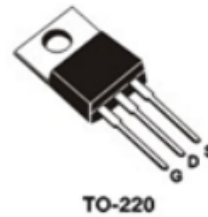
- Synchronous Rectification for AC-DC/DC-DC converter
- Power Tools

• Product Summary


$V_{DS} = 100V$

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

$I_D = 100A$


• Ordering Information:

Part NO.	ZMS070N10HP
Marking	ZMS070N10H
Packing Information	Bulk Tube
Basic ordering unit (pcs)	500

• 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	$I_D @ TC=25^\circ C$	100	A
	$I_D @ TC=75^\circ C$	76	A
	$I_D @ TC=100^\circ C$	63	A
Pulsed Drain Current ①	I_{DM}	300	A
Total Power Dissipation($TC=25^\circ C$)	$P_D @ TC=25^\circ C$	150	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
Avalanche Current@L=0.1mH	I_{AS}	35	A

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	0.75	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	50	° 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	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	2.0		4.0	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
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}	f = 1MHz	-	2120	-	pF
Output capacitance	C_{oss}		-	940	-	
Reverse transfer capacitance	C_{rss}		-	48	-	

•Switching Parameters ($T_a = 25^\circ C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = 30V$ $I_D = 10A$ $V_{GS} = 10V$	-	28	-	nC
Gate - Source charge	Q_{gs}		-	3.8	-	
Gate - Drain charge	Q_{gd}		-	5.9	-	
Turn-ON Delay time	$t_{D(on)}$	$V_{GS} = 10V,$ $V_{DS} = 50V, R$ $= 0.75\Omega, R = 6\Omega$		15		nS
Turn-ON Rise time	t_r			17		
Turn-Off Delay time	$t_{D(off)}$			96		
Turn-Off Fall time	t_f			76		

Body Diode Reverse Recovery Time	t_{rr}	IF=20A, dI/dt=100A/μs		47		nS
Body Diode Reverse Recovery Charge	Q_{rr}	IF=20A, dI/dt=100A/μs		38		nC

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

Fig.1 Gate-Charge Characteristics

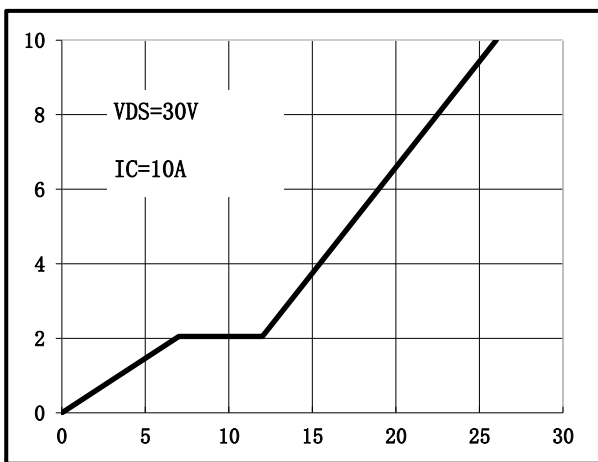


Fig.2 Capacitance Characteristics

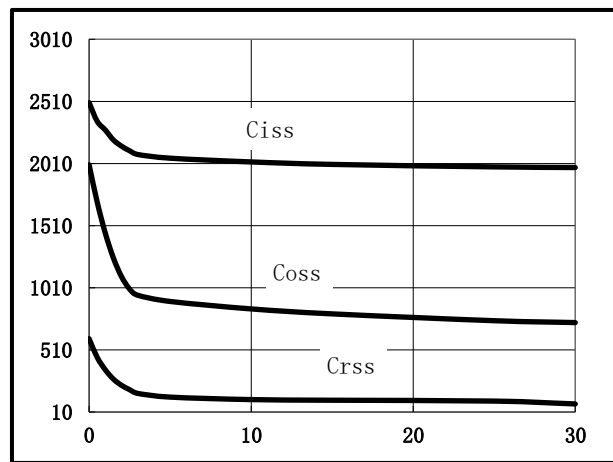


Fig.3 Power Dissipation

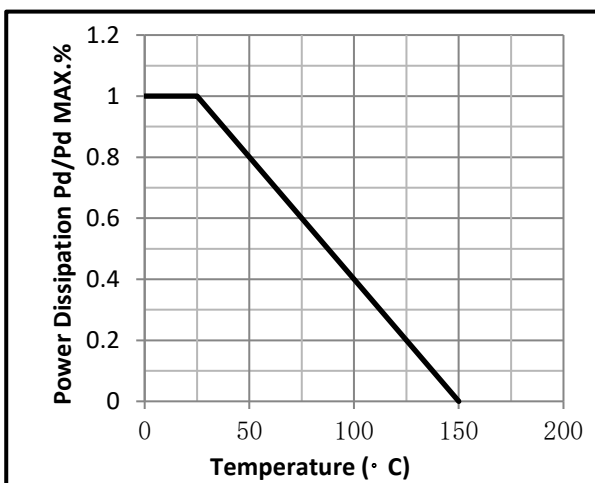


Fig.4 Typical output Characteristics

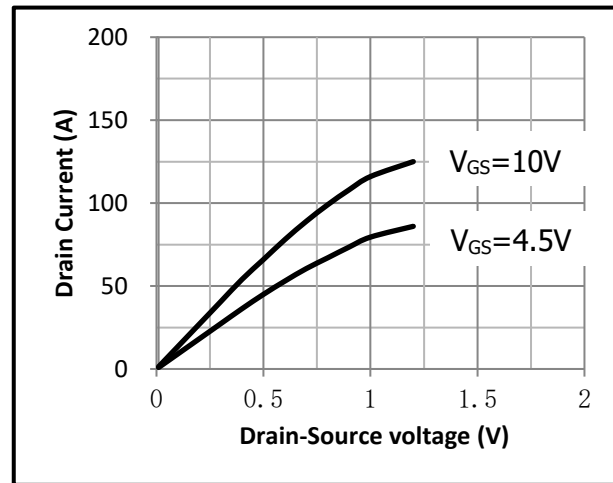


Fig.5 Threshold Voltage V.S Junction Temperature Fig.6 Resistance V.S Drain Current

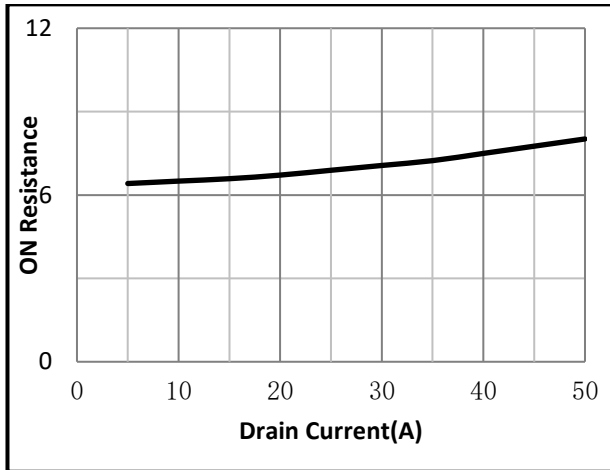
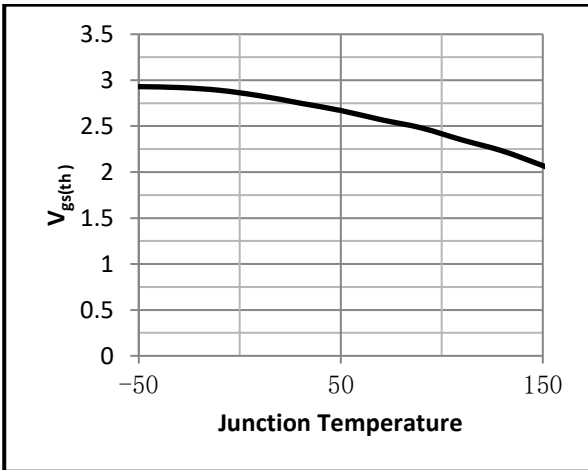


Fig.7 On-Resistance VS Gate Source Voltage

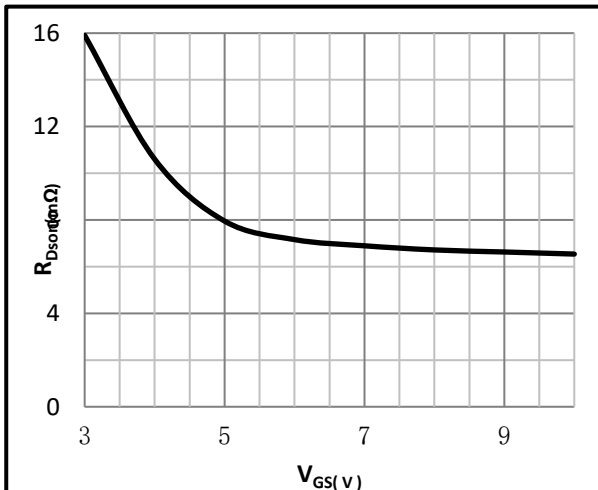


Fig.8 On-Resistance V.S Junction Temperature

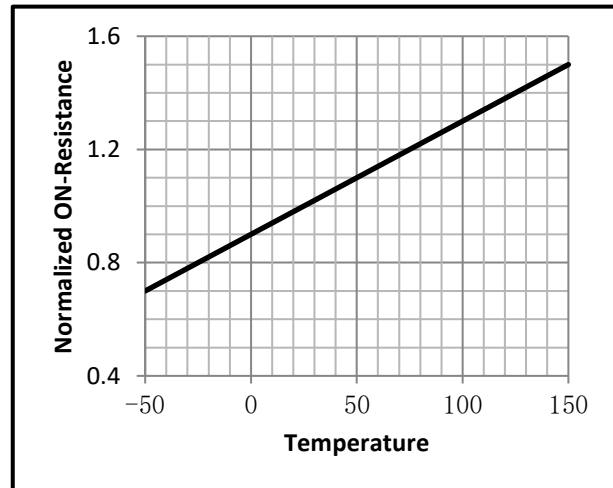


Fig.9 Switching Time Measurement Circuit

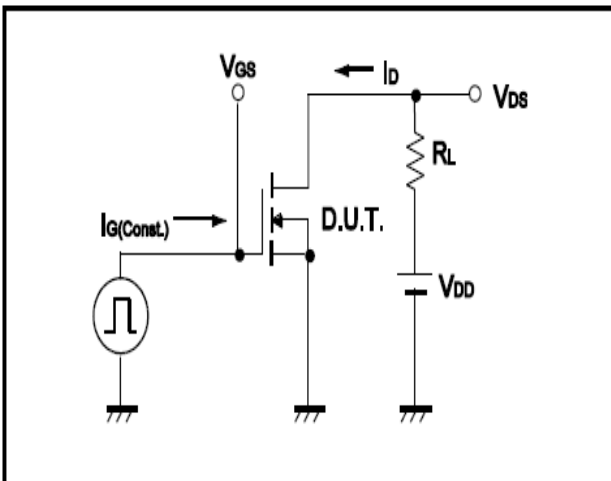


Fig.10 Gate Charge Waveform

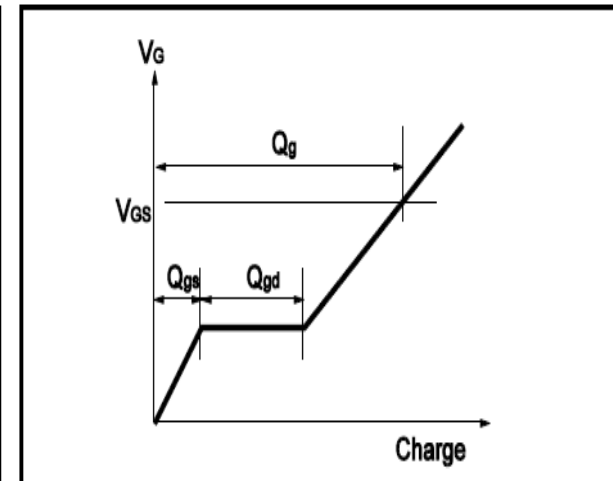


Fig.11 Switching Time Measurement Circuit

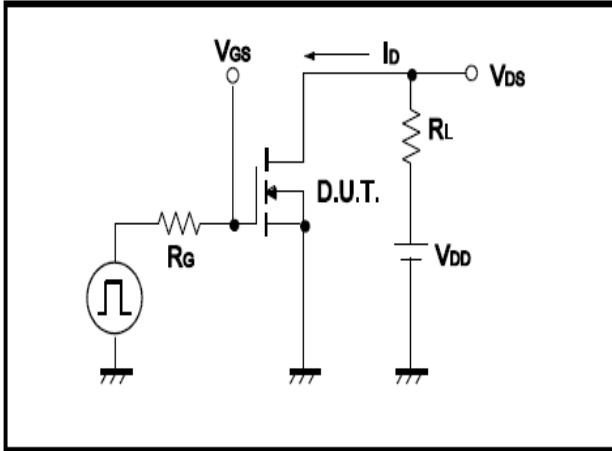
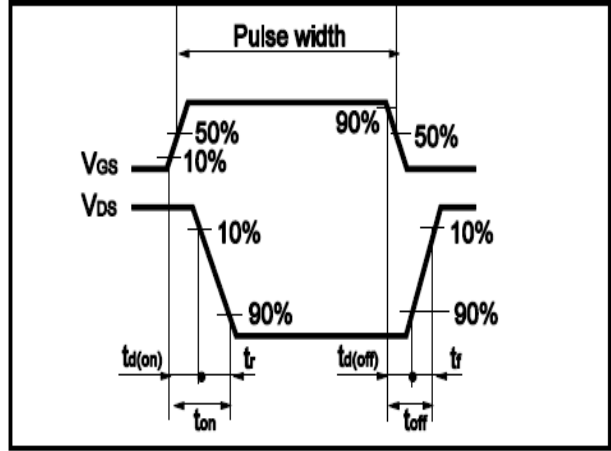


Fig.12 Gate Charge Waveform



• Dimensions (TO-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

