

• General Description

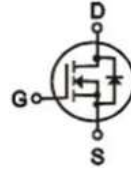
The ZM060N06HP combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• 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

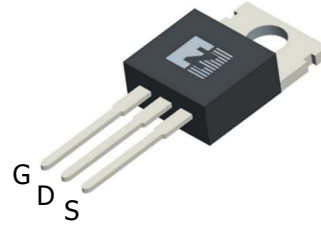
- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

• Product Summary


$V_{DS} = 60V$

$R_{DS(ON)} = 6m\Omega$

$I_D = 80A$



TO-220

• Ordering Information:

Part NO.	ZM060N06HP
Marking	ZM060N06H
Packing Information	Bulk Tube
Basic ordering unit (pcs)	1000

• Absolute Maximum Ratings (T_C = 25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@TC=25^{\circ}C}$	80	A
	$I_{D@TC=75^{\circ}C}$	60.8	A
	$I_{D@TC=100^{\circ}C}$	50.4	A
Pulsed Drain Current ^①	I_{DM}	190	A
Total Power Dissipation(TC=25°C)	$P_{D@TC=25^{\circ}C}$	120	W
Total Power Dissipation(TA=25°C)	$P_{D@TA=25^{\circ}C}$	5	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	1	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	25	° 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	2		4	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 =16A		6	8	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =8A		28		s
Source-drain voltage	V _{SD}	I _S =16A			1.28	V

•Dynamic characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz V _{DS} =25V	-	4200	-	pF
Output capacitance	C _{oss}		-	290	-	
Reverse transfer capacitance	C _{rss}		-	130	-	
Total gate charge	Q _g	V _{DD} = 25V	-	56	-	nC
Gate - Source charge	Q _{gs}	I _D = 15A	-	16	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	26	-	
Turn-ON Delay time	t _{D(on)}	V _{GS} =10V, V _{DS} =15V, R _G =3.3Ω, I _D =20A	-	11	-	ns
Turn-ON Rise time	t _r		-	66	-	ns
Turn-Off Delay time	t _{D(off)}		-	41	-	ns
Turn-Off Delay time	t _f		-	44	-	ns
Reverse Recovery Time	T _{rr}	V _{DD} =20V, dI _S /dt = 100A/us, I _S =50A	-	37	-	ns
Reverse Recovery Charge	Q _{rr}		-	43	-	nC

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

Fig.1 Gate-Charge Characteristics

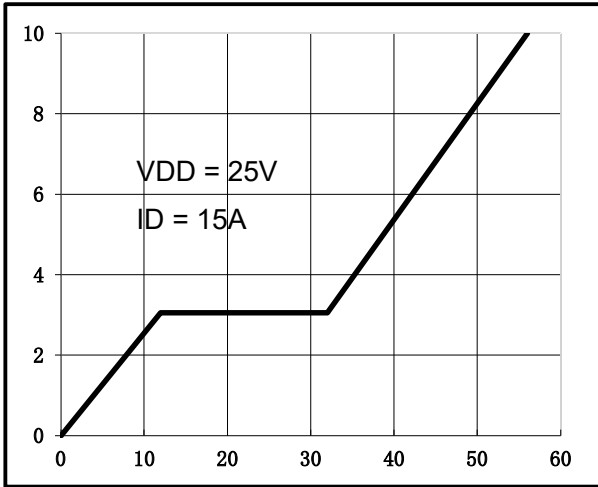


Fig.2 Capacitance Characteristics

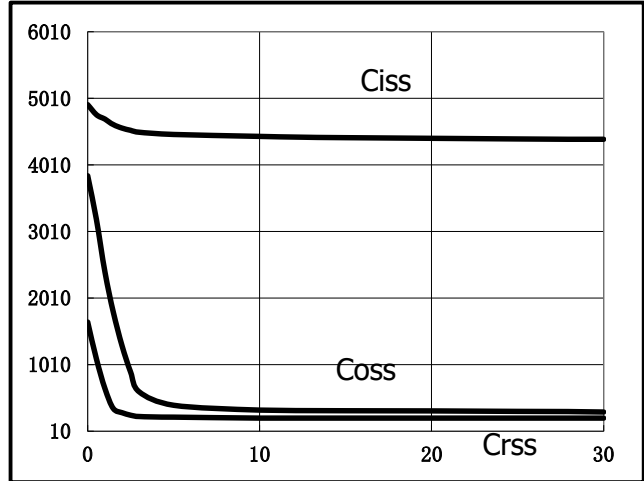


Fig.3 Power Dissipation

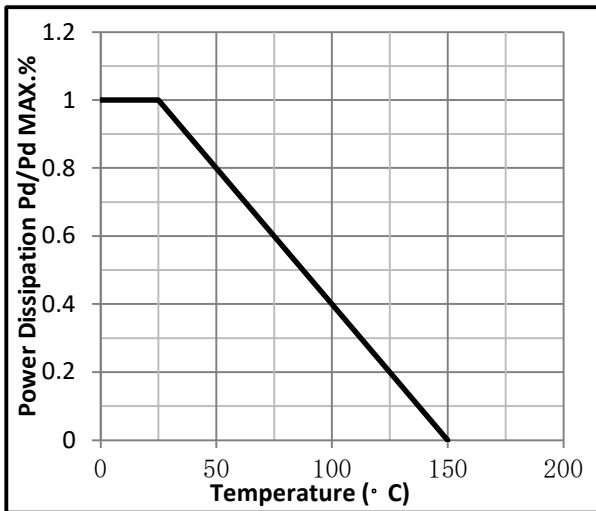


Fig.4 Typical output Characteristics

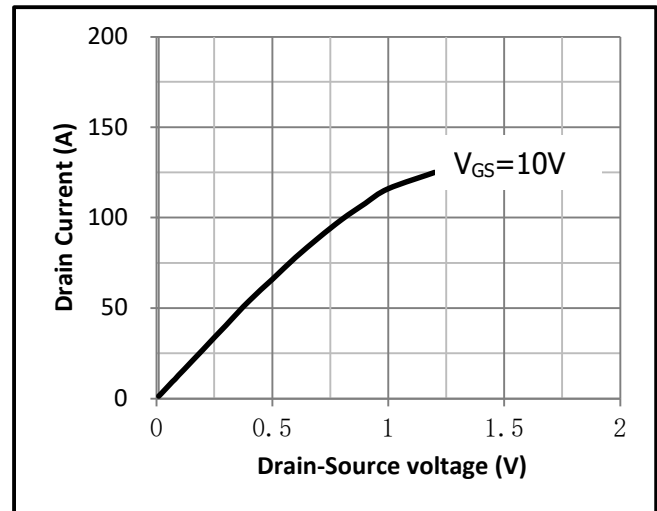


Fig.5 Threshold Voltage V.S Junction Temperature

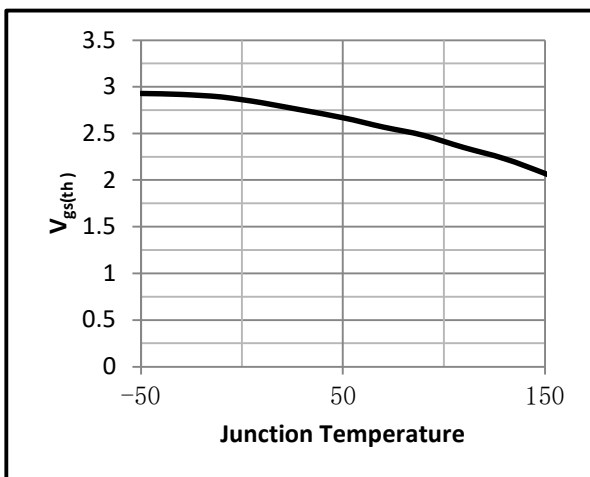


Fig.6 Resistance V.S Drain Current

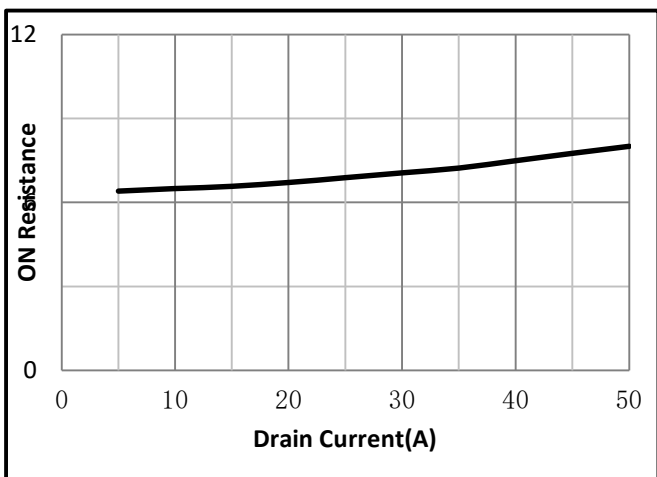


Fig.7 On-Resistance VS Gate Source Voltage

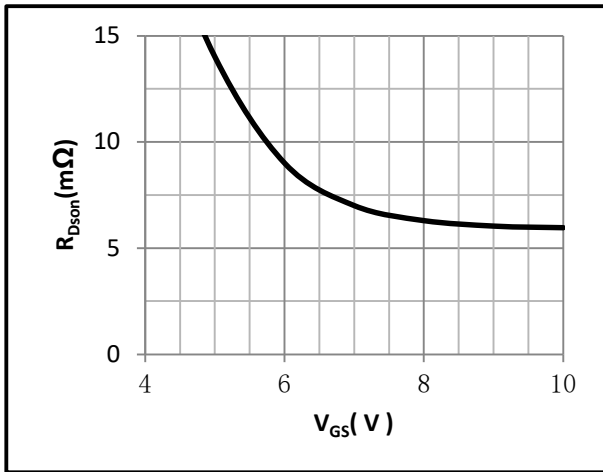


Fig.8 On-Resistance V.S Junction Temperature

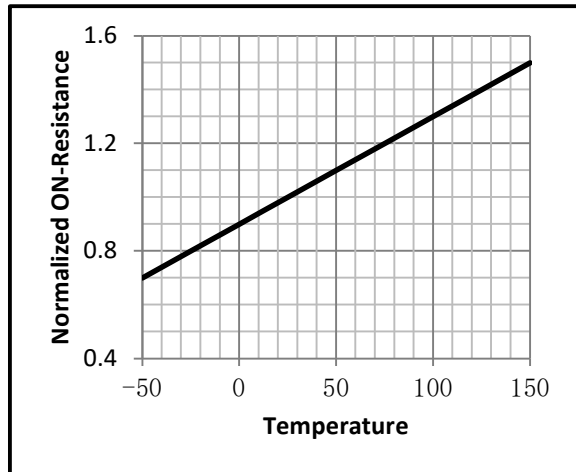


Fig.9 Switching Time Measurement Circuit

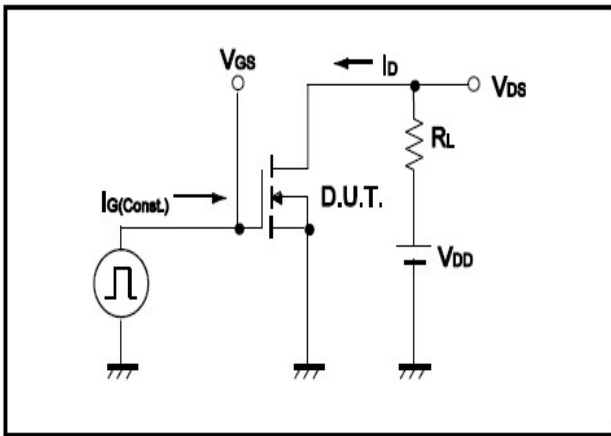


Fig.10 Gate Charge Waveform

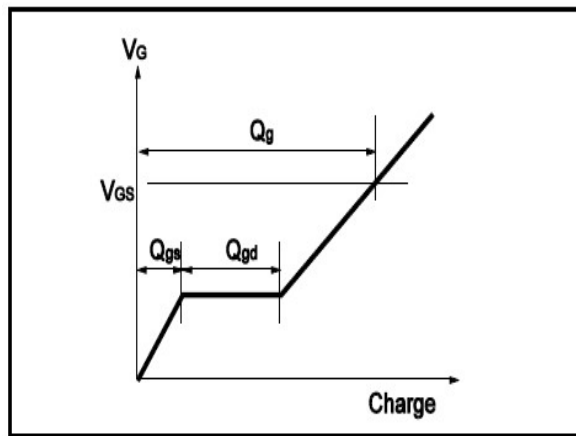


Fig.11 Switching Time Measurement Circuit

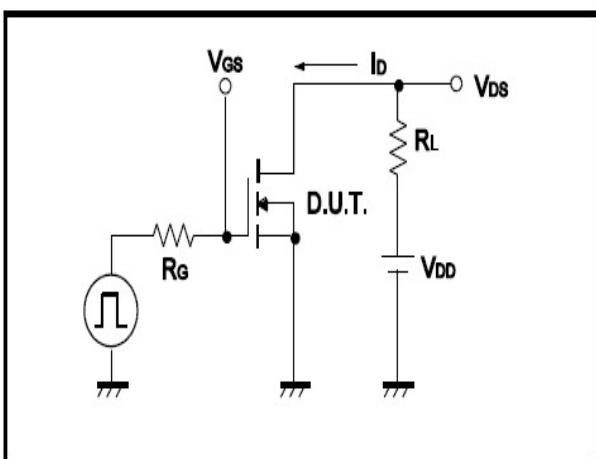
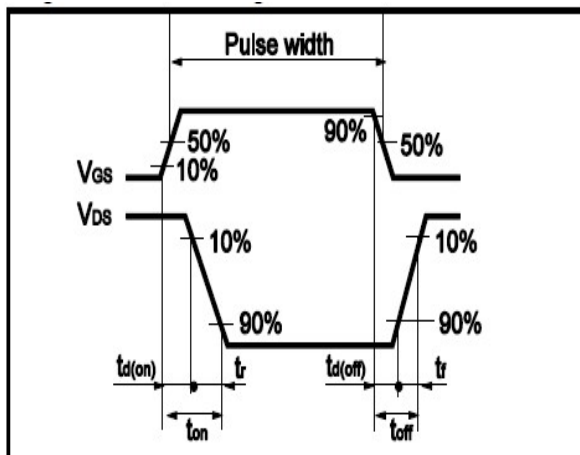


Fig.12 Gate Charge Waveform





•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

