● General Description

The ZM016N04HN combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.
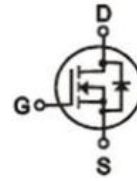
● Features

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

●Application

- Synchronous Rectification for AC-DC/DC-DC converter
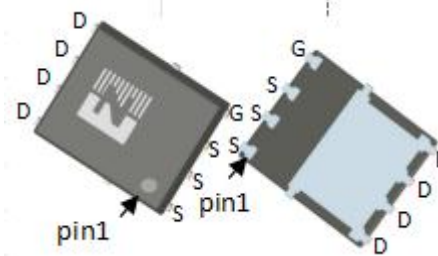- Oring switches
- BLDC Motor driver

● Product Summary

$$V_{DS} = 40V$$

$$R_{DS(ON)} = 1.9m\Omega$$

$$I_D = 130A$$

DFN5*6

●Ordering Information:

Part NO.	ZM016N04HN
Marking	ZM016N04H
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D@TC=25℃	130	A
	I_D@TC=75℃	98.8	A
	I_D@TC=100℃	81.9	A
Pulsed Drain Current [①]	I_{DM}	300	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	85	W
Total Power Dissipation(TA=25℃)	P_D@TA=25℃	3.4	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}	320	mJ
Avalanche Current@L=0.1mH	I_{AS}	80	A

●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}	$V_{GS} =0V, I_D =250uA$	40			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}	$V_{DS}=40V, V_{GS} =0V$			1.0	uA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm20V, V_{DS} =0V$			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=40A$		1.9	2.5	mΩ
		$V_{GS}=4.5V, I_D=20A$		2.6	3.5	mΩ
Forward Transconductance	g_{FS}	$V_{DS} =25V, I_D=10A$		25		s
Source-drain voltage	V_{SD}	Is=40A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=20V$ f = 1MHz	-	5200	-	pF
Output capacitance	C_{oss}		-	456	-	
Reverse transfer capacitance	C_{rss}		-	188	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	$V_{DD} = 20V$	-	95	-	nC
Gate - Source charge	Qgs	$I_D = 25A$	-	22	-	
Gate - Drain charge	Qgd	$V_{GS} = 10V$	-	11	-	

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

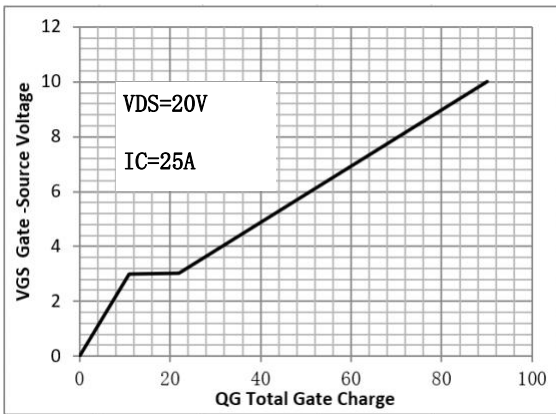Fig.1 Gate-Charge Characteristics

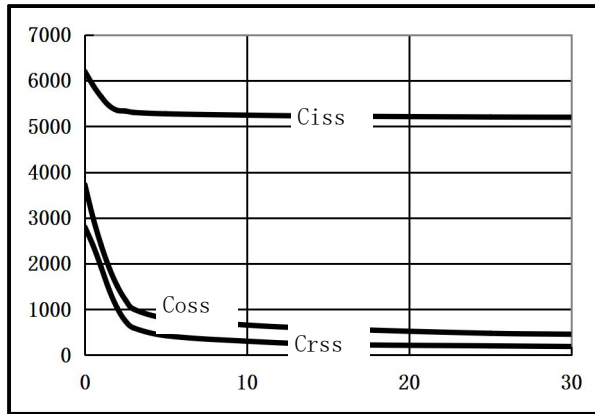Fig.2   Capacitance Characteristics
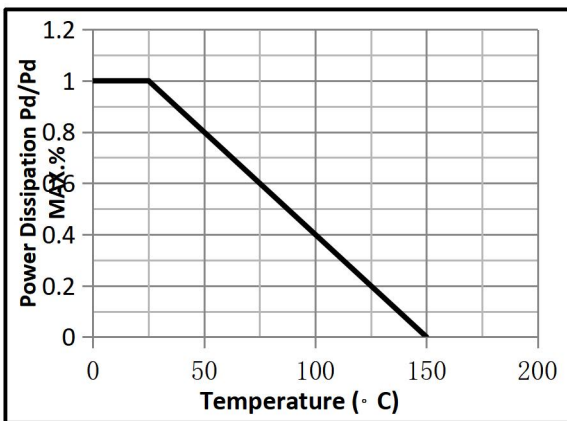
Fig.3 Power Dissipation
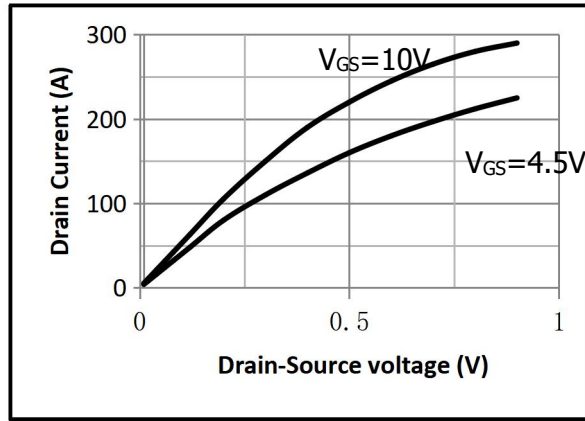
Fig.4 Typical output Characteristics

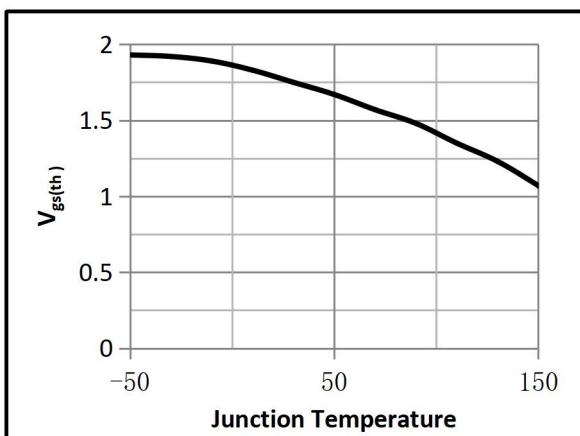Fig.5 Threshold Voltage V.S Junction Temperature

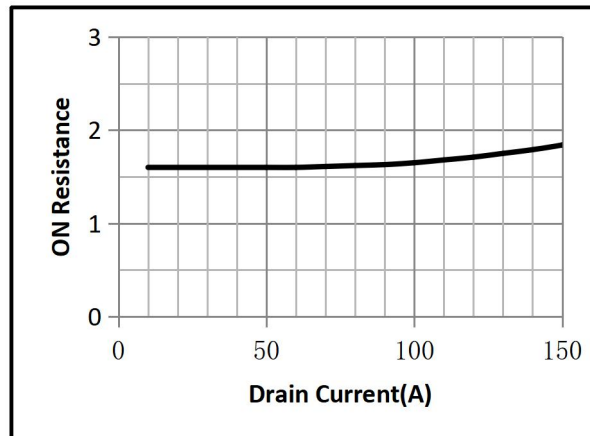Fig.6 Resistance V.S Drain Current
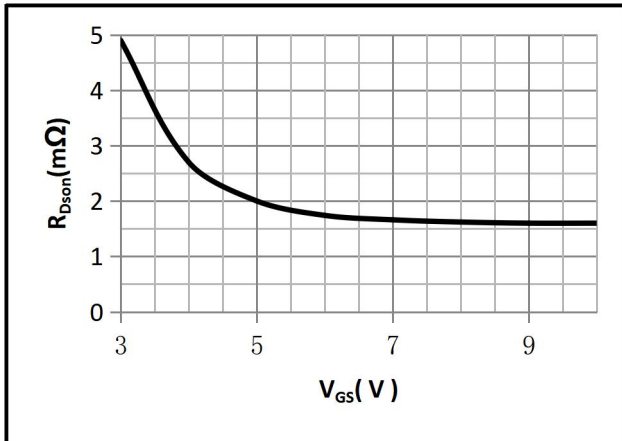
Fig.7 On-Resistance VS Gate Source Voltage
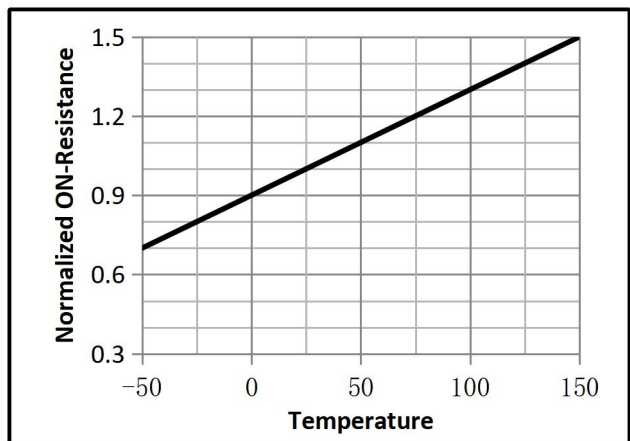

Fig.8 On-Resistance V.S Junction Temperature
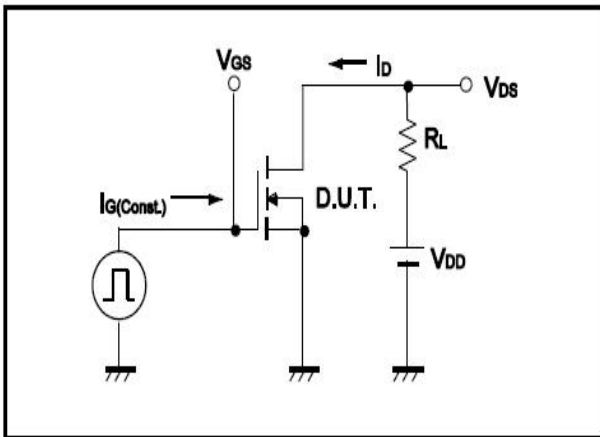

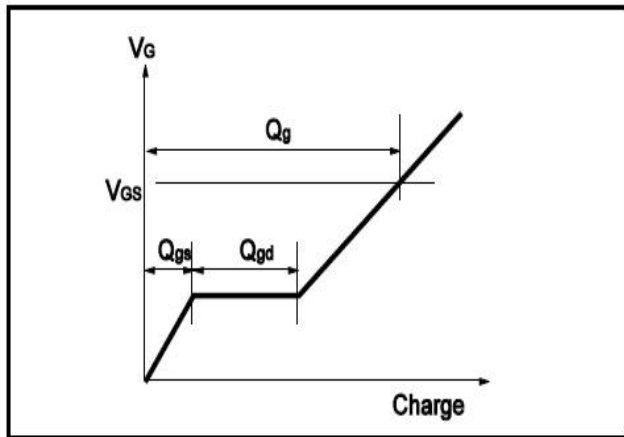Fig.9 Switching Time Measurement Circuit

Fig.10 Gate Charge Waveform

Fig.11Switching Time Measurement Circuit

Fig.12 Gate Charge Waveform
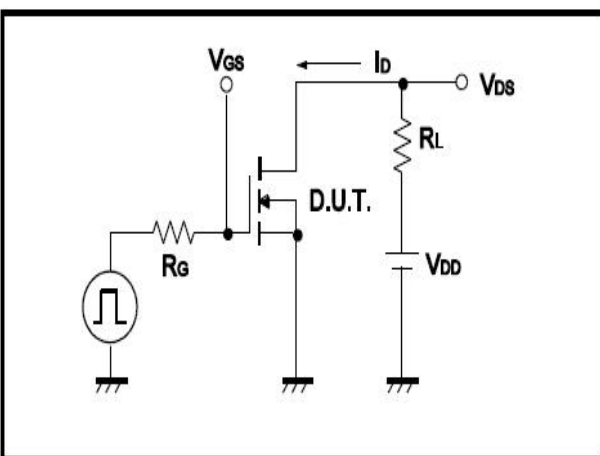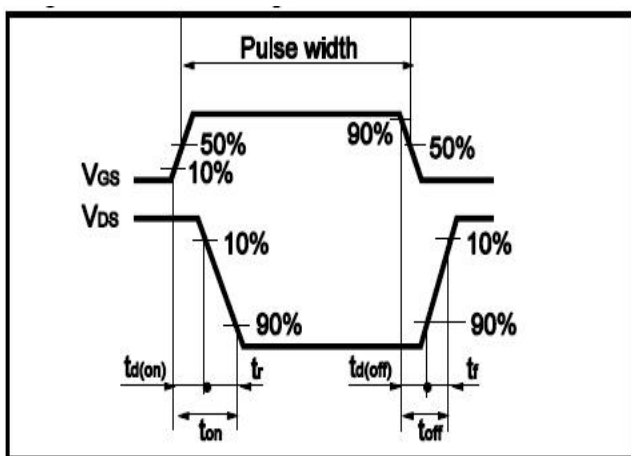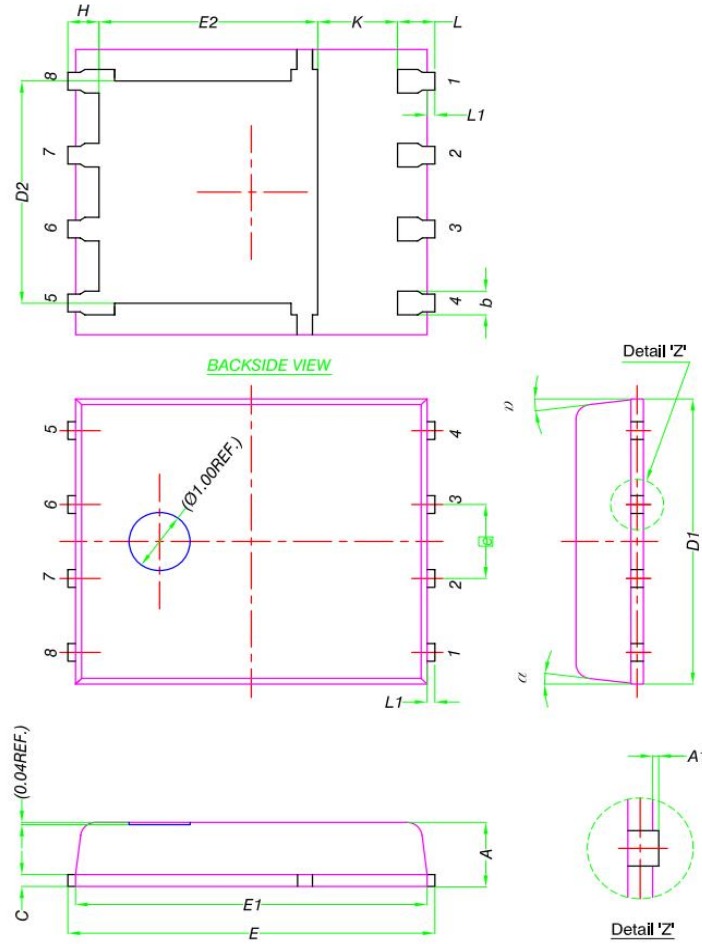
●**Dimensions（DFN5×6）**

Unit：mm

BACKSIDE VIEW

Detail 'Z'

Detail 'Z'

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
α	0°	-	12°