

• General Description

The ZM140N10HN 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

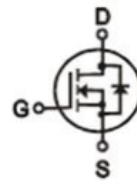
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- BLDC Motor driver

• Ordering Information:

Part NO.	ZM140N10HN
Marking	ZM140N10H
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

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

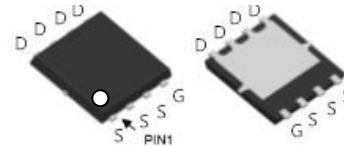
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_C=25^\circ\text{C}$)	$I_{D@TC=25^\circ\text{C}}$	40	A
	$I_{D@TC=75^\circ\text{C}}$	30	A
	$I_{D@TC=100^\circ\text{C}}$	25	A
Pulsed Drain Current ①	I_{DM}	105	A
Total Power Dissipation($T_C=25^\circ\text{C}$)	$P_D@TC=25^\circ\text{C}$	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}	80	mJ

• Product Summary


$V_{DS} = 100\text{V}$

$R_{DS(ON)} = 14\text{m}\Omega$

$I_D = 40\text{A}$


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	100			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} =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 =20A		14	17	mΩ
		V _{GS} =4.5V, I _D =12A		17	20	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =10A		20		s

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =30V f = 1MHz	-	4200	-	pF
Output capacitance	C _{oss}		-	184	-	
Reverse transfer capacitance	C _{rss}		-	150	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 30V	-	74	-	nC
Gate - Source charge	Q _{gs}	I _D = 20A	-	20	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	10	-	

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

Fig.1 Gate-Charge Characteristics

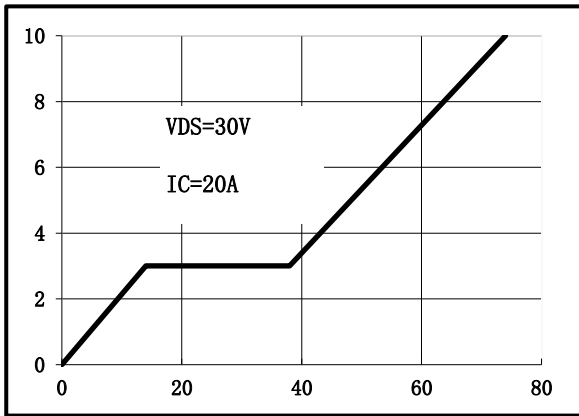


Fig.2 Capacitance Characteristics

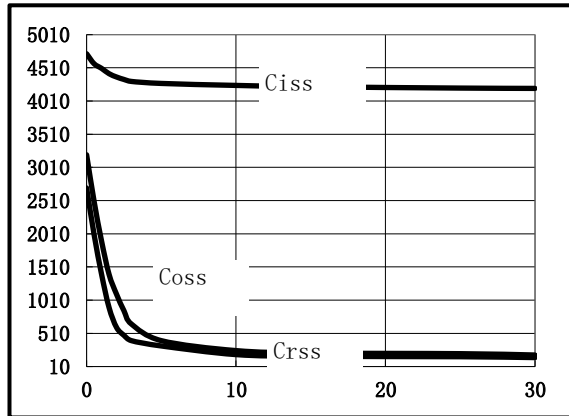


Fig.3 Power Dissipation

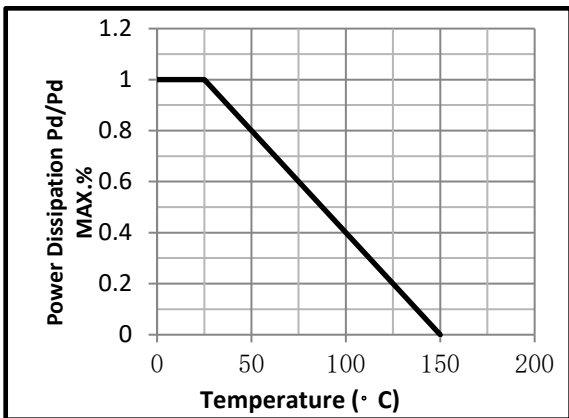


Fig.4 Typical output Characteristics

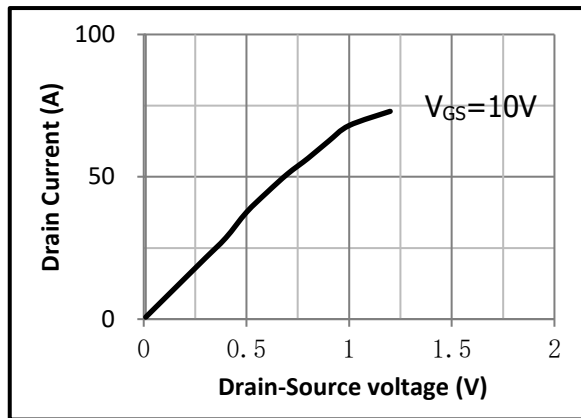


Fig.5 Threshold Voltage V.S Junction Temperature

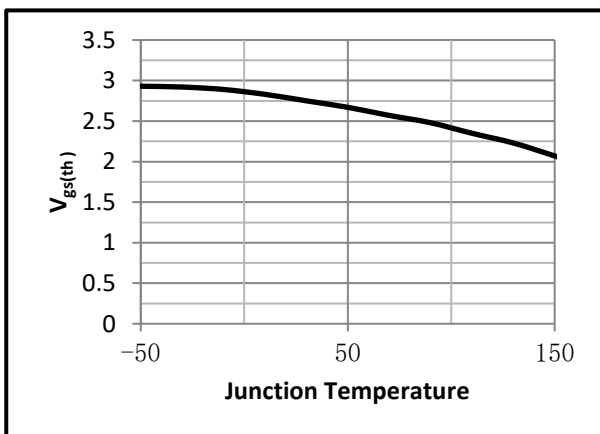


Fig.6 Resistance V.S Drain Current

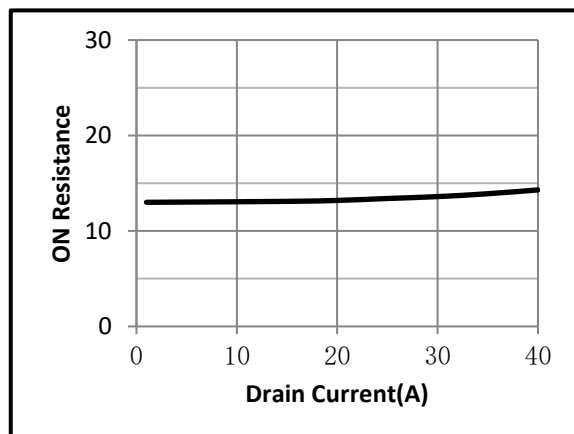


Fig.7 On-Resistance VS Gate Source Voltage

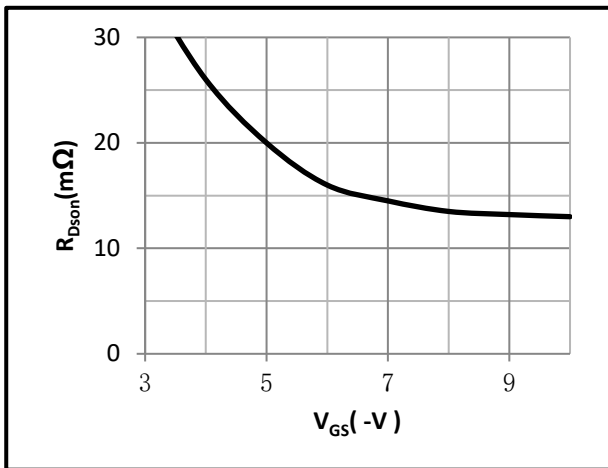


Fig.8 On-Resistance V.S Junction Temperature

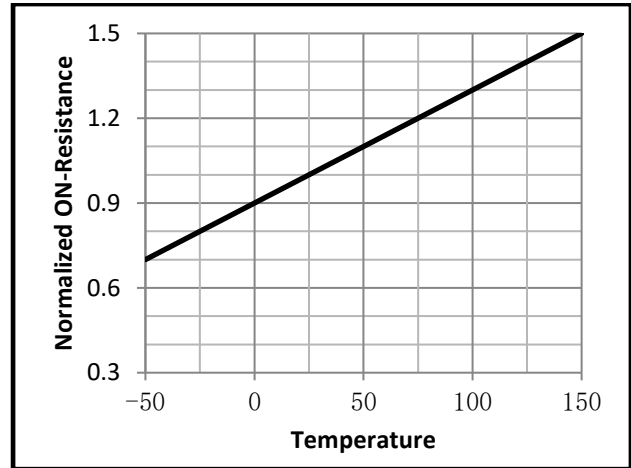


Fig.9 Switching Time Measurement Circuit

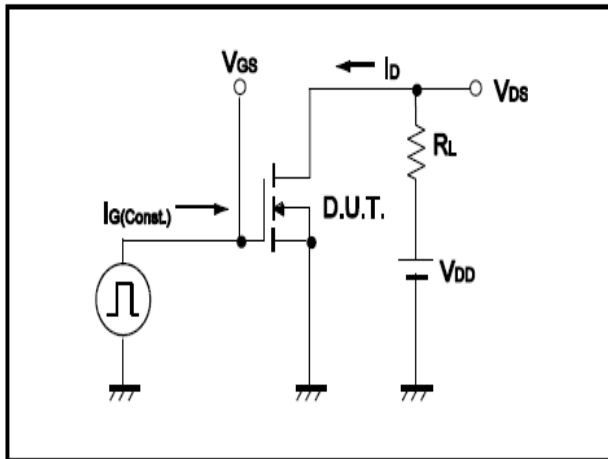


Fig.10 Gate Charge Waveform

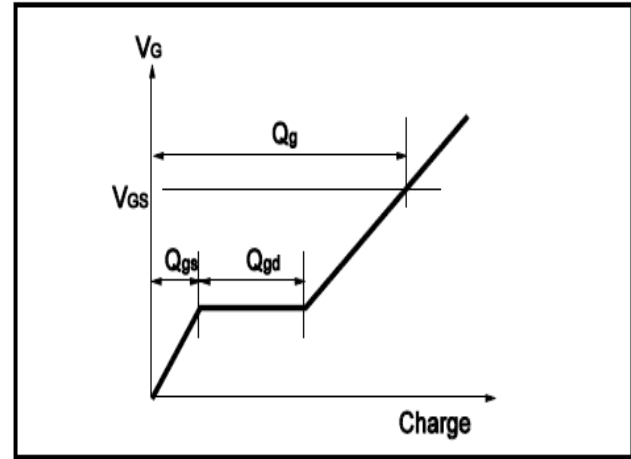


Fig.11 Switching Time Measurement Circuit

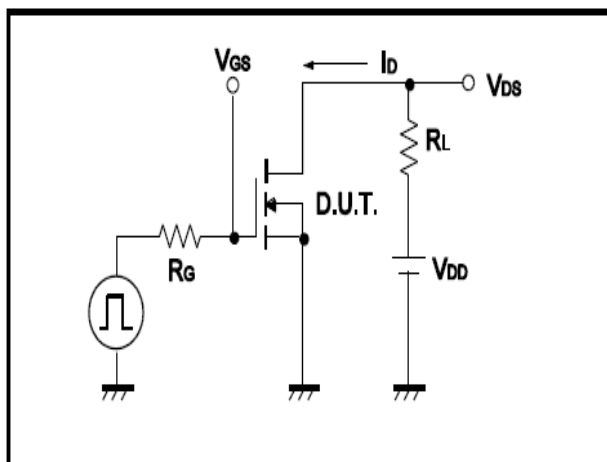
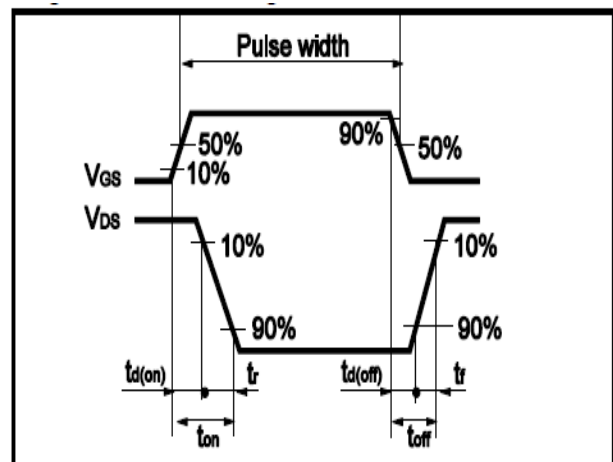


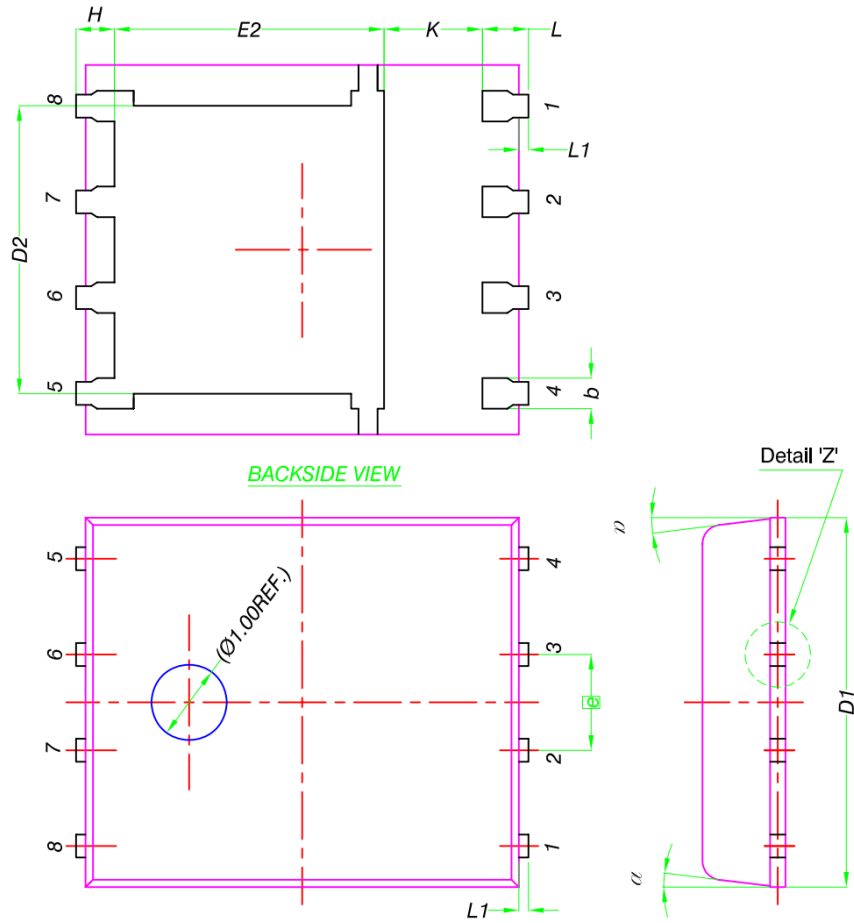
Fig.12 Gate Charge Waveform





•Dimensions (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
\square 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°