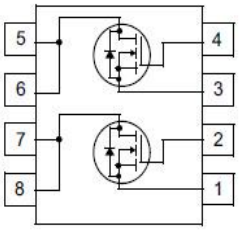
● General Description

The ZMD68401N combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

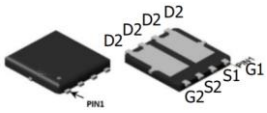
● Features

- ■ Advance high cell density Trench technology
- ■Low $R_{DS(ON)}$ to minimize conductive loss
- ■Low Gate Charge for fast switching
- ■Dual DIE in one package

● Product Summary



V_{DS1} =40V
V_{DS2} =40V
$R_{DS(ON)1}$ =10mΩ
$R_{DS(ON)2}$ =10mΩ
I_{D1} =30A
I_{D2} =30A



DFN 5x6

●Application

- ■ Power Management in Notebook Computer,
- ■ Portable Equipment and Battery Powered Systems

●Ordering Information:

Part NO.	ZMD68401N
Marking	ZMD68401
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℃	30	A
	$I_{D@}$TC=75℃	23	A
	$I_{D@}$TC=100℃	19	A
Pulsed Drain Current ①	I_{DM}	60	A
Total Power Dissipation	P_D@TC=25℃	60	W
Total Power Dissipation	P_D@TA=25℃	1.8	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	66	mJ

Avalanche Current	I_{AS} I_{AR}	25	A

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.1	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	70	° 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	40			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1.2		2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=40V, 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		10	13	mΩ
		V_{GS}=4.5V, I_D=10A		13	17	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=10A		9		s

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz	-	1580	-	pF
Output capacitance	Coss		-	270	-	
Reverse transfer capacitance	Crss		-	140	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = 25V	-	17	-	nC
Gate - Source charge	Qgs	I_D = 5A	-	8	-	
Gate - Drain charge	Qgd	V_{GS} = 10V	-	10	-	

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

Fig.1 Power Dissipation

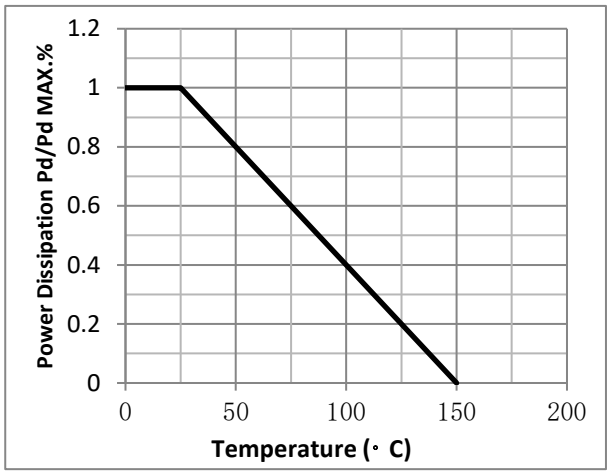


Fig.2 Typical output Characteristics

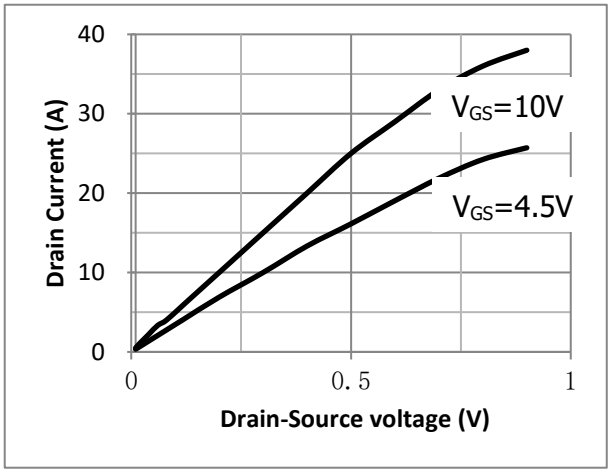


Fig.3 Threshold Voltage V.S Junction Temperature

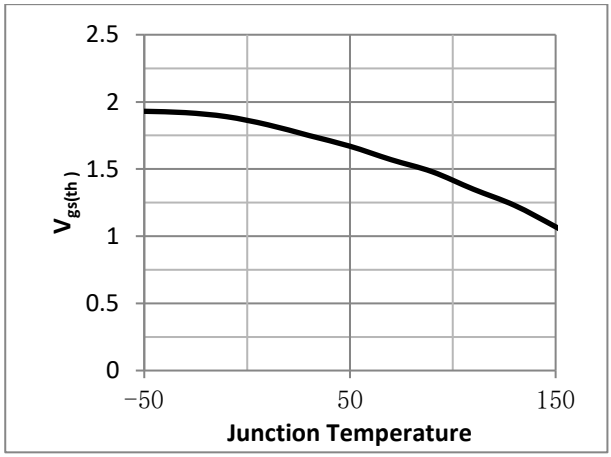


Fig.4 Resistance V.S Drain Current

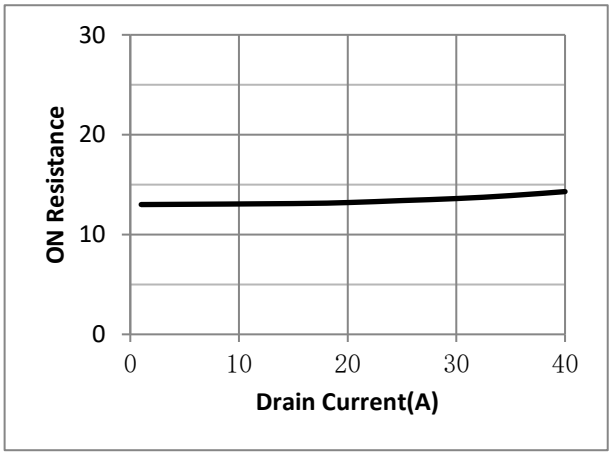


Fig.5 On-Resistance VS Gate Source Voltage

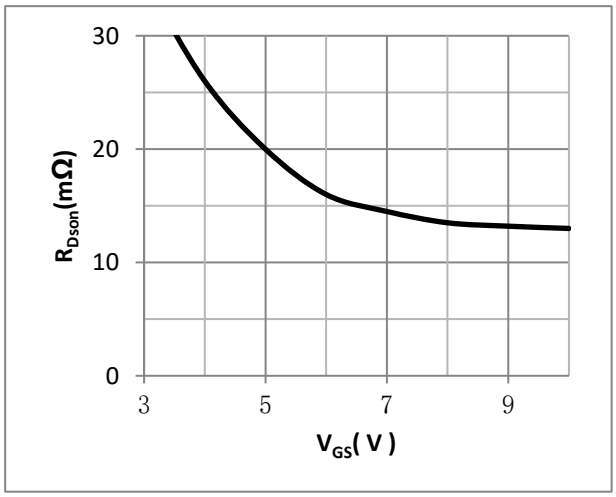


Fig.6 On-Resistance V.S Junction Temperature

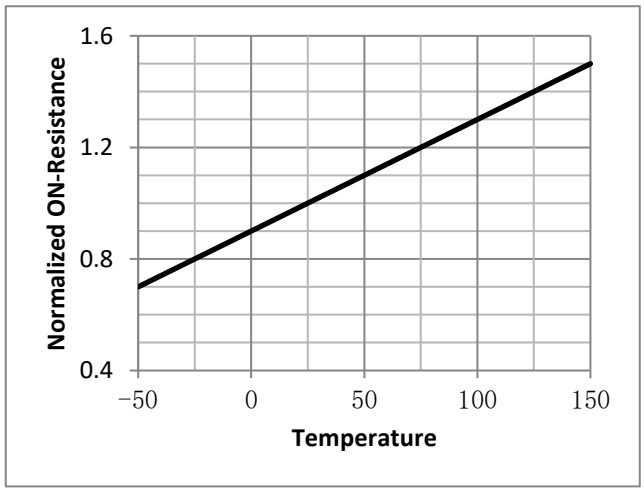


Fig.7 Switching Time Measurement Circuit

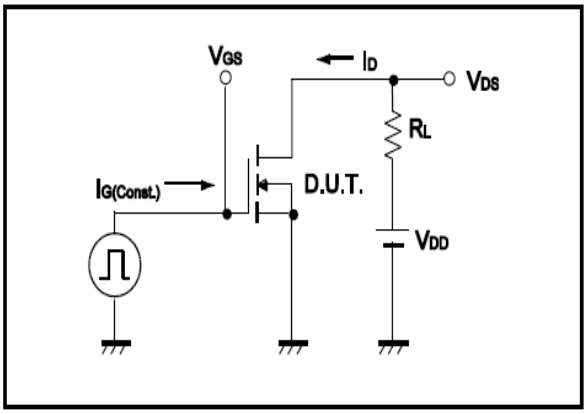


Fig.8 Gate Charge Waveform

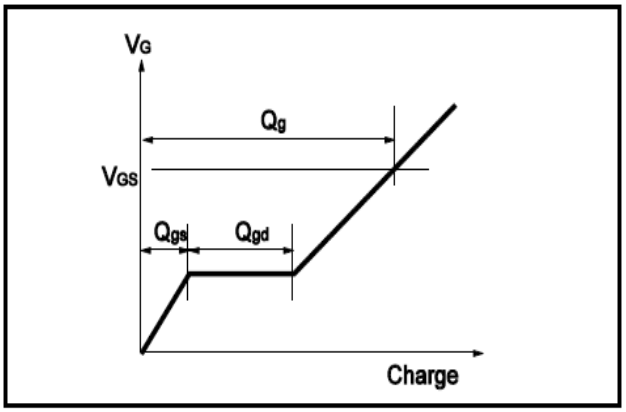


Fig.9 Switching Time Measurement Circuit

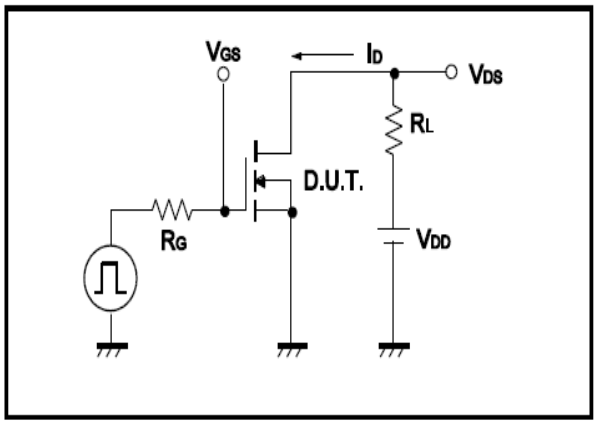


Fig.10 Gate Charge Waveform

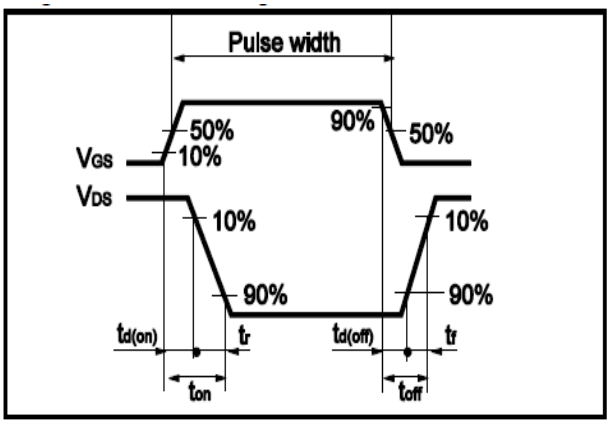


Fig.11 Avalanche Measurement Circuit

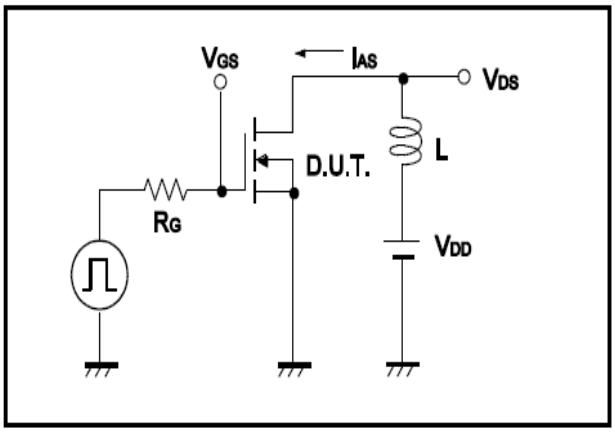
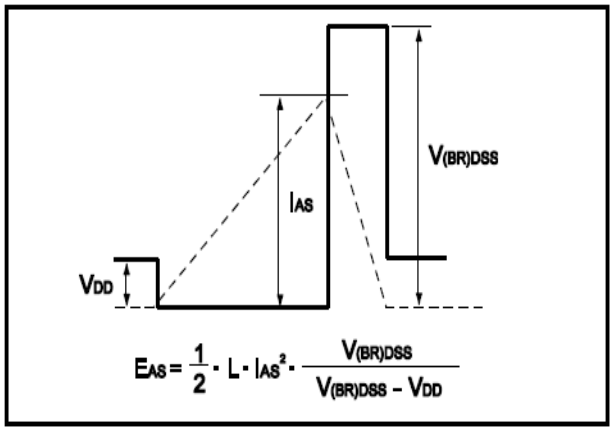
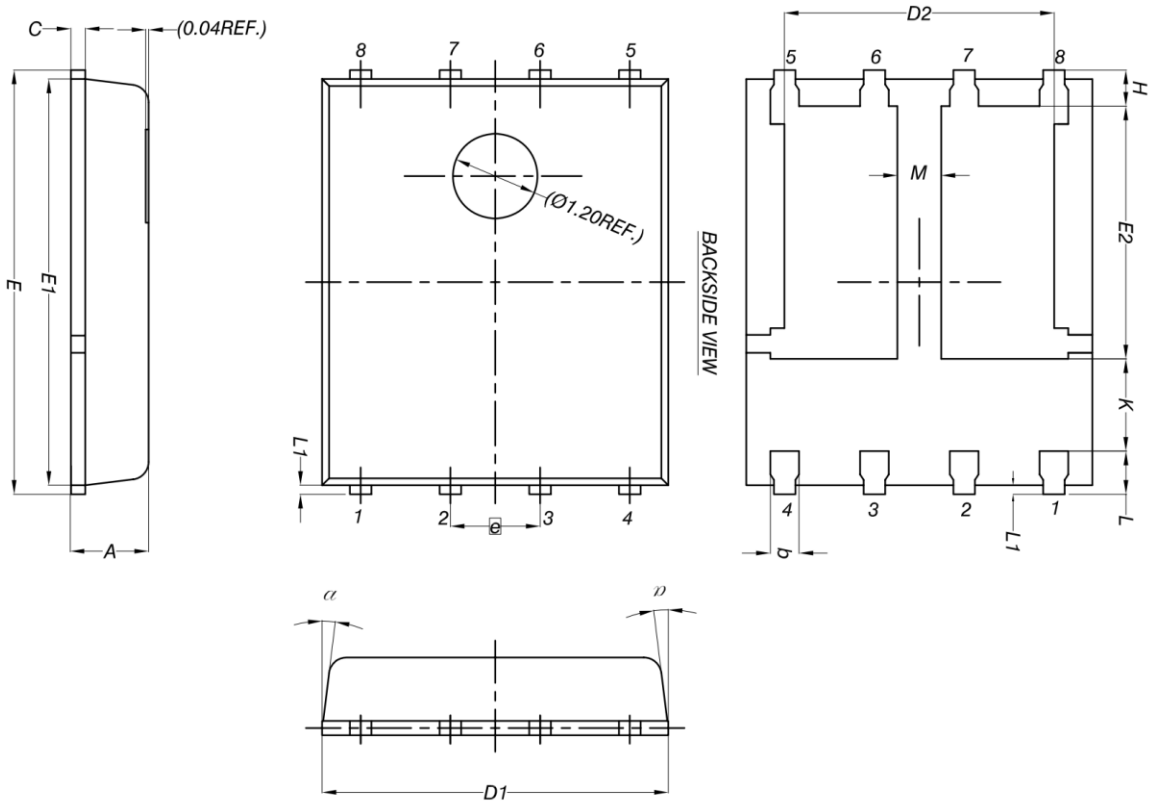


Fig.12 Avalanche Waveform



•Dimensions（DFN5×6）



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
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
M	0.50	-	-
α	0°	-	12°

Land Pattern
(Only for Reference)