

• General Description

The ZMD68304M 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

• Application

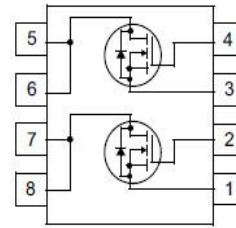
- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems

• Ordering Information:

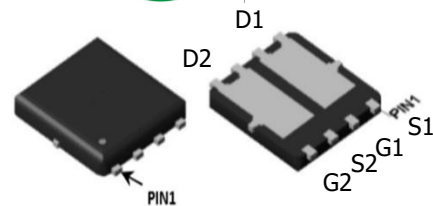
Part NO.	ZMD68304M
Marking	68304
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ\text{C}}$	30	A
	$I_{D@TC=75^\circ\text{C}}$	23	A
	$I_{D@TC=100^\circ\text{C}}$	19	A
Pulsed Drain Current ^①	I_{DM}	70	A
Total Power Dissipation($TC=25^\circ\text{C}$)	$P_D@TC=25^\circ\text{C}$	3.6	W
Total Power Dissipation($TA=25^\circ\text{C}$)	$P_D@TA=25^\circ\text{C}$	0.69	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	E_{AS}	30	mJ

• Product Summary


$V_{DS1} = 30\text{V}$
 $V_{DS2} = 30\text{V}$
 $R_{DS(ON)1} = 10\text{m}\Omega$
 $R_{DS(ON)2} = 10\text{m}\Omega$
 $I_{D1} = 30\text{A}$
 $I_{D2} = 30\text{A}$



DFN3*3

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	2.5	° 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	30			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} =30V, 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		14	18	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =10A		9		s
Source-drain voltage	VSD	I _S =10A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	850	-	pF
Output capacitance	C _{oss}		-	210	-	
Reverse transfer capacitance	C _{rss}		-	105	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	VDD = 25V	-	12	-	nC
Gate - Source charge	Q _{gs}	I _D = 5A	-	4	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	6	-	

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

Fig.1 Power Dissipation

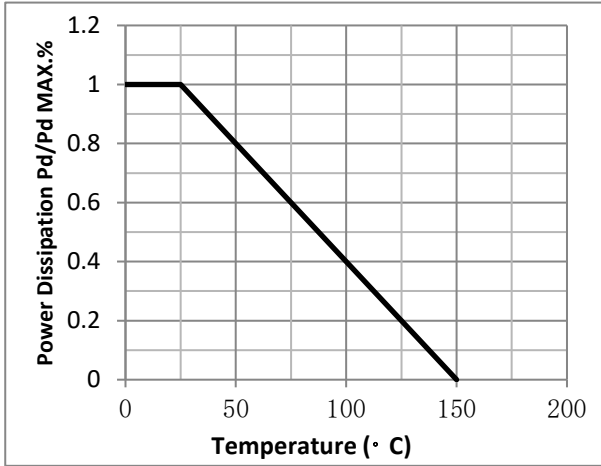


Fig.2 Typical output Characteristics

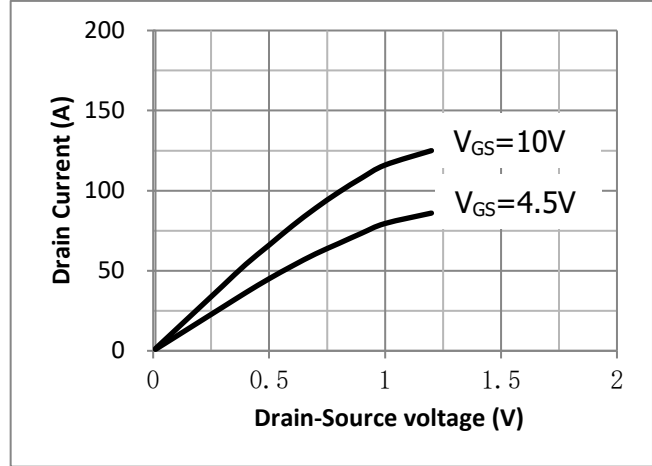


Fig.3 Threshold Voltage V.S Junction Temperature

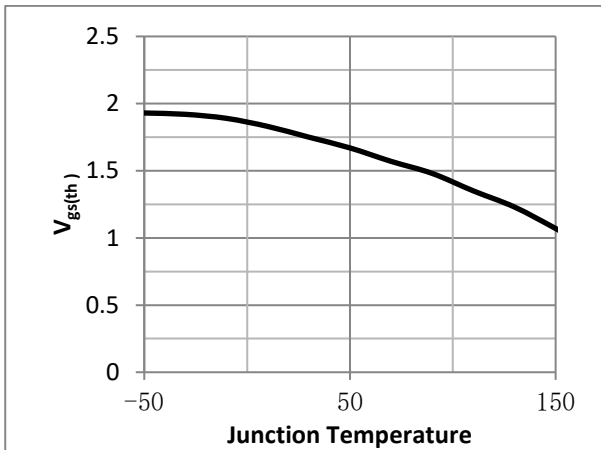


Fig.4 Resistance V.S Drain Current

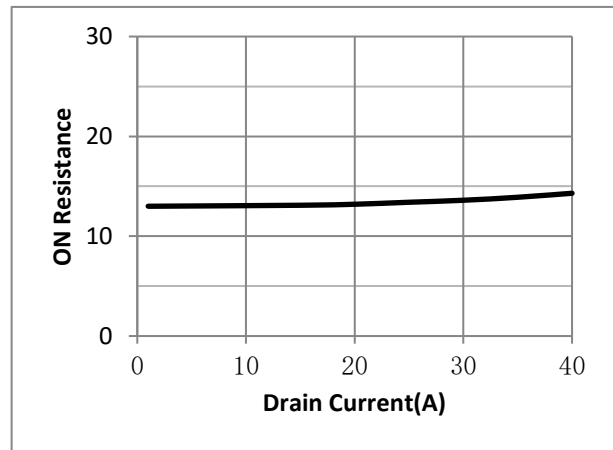


Fig.5 On-Resistance VS Gate Source Voltage

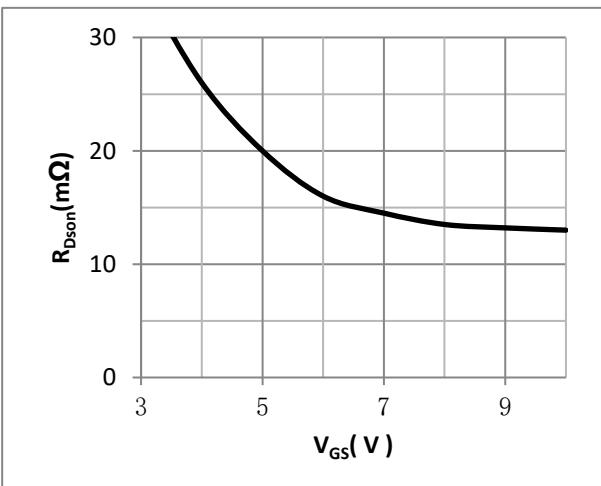


Fig.6 On-Resistance V.S Junction Temperature

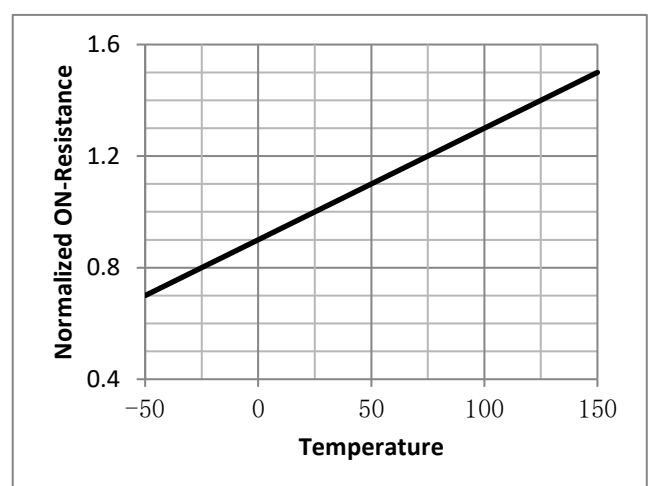


Fig.7 Switching Time Measurement Circuit

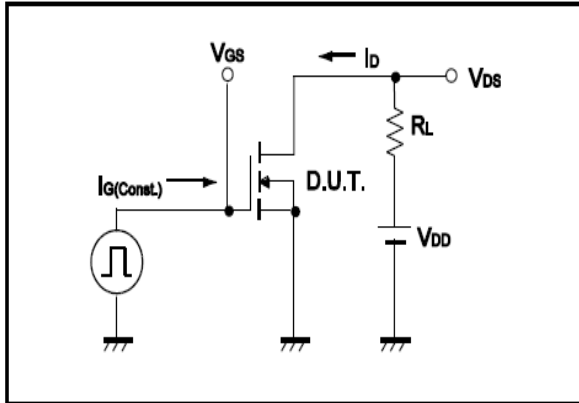


Fig.8 Gate Charge Waveform

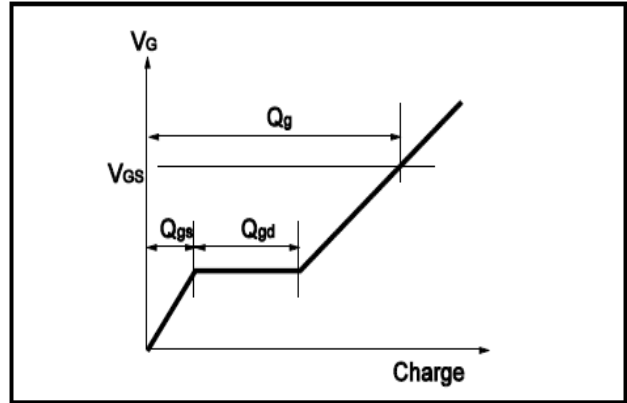


Fig.9 Switching Time Measurement Circuit

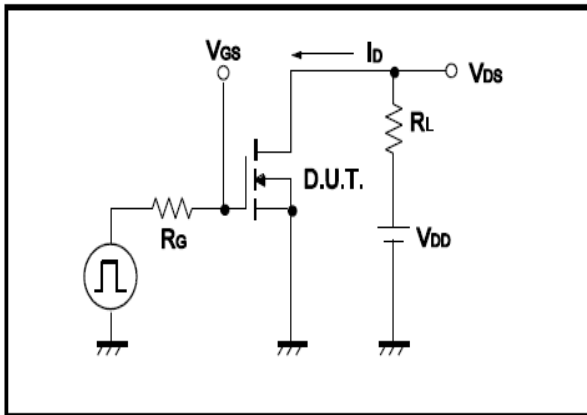


Fig.10 Gate Charge Waveform

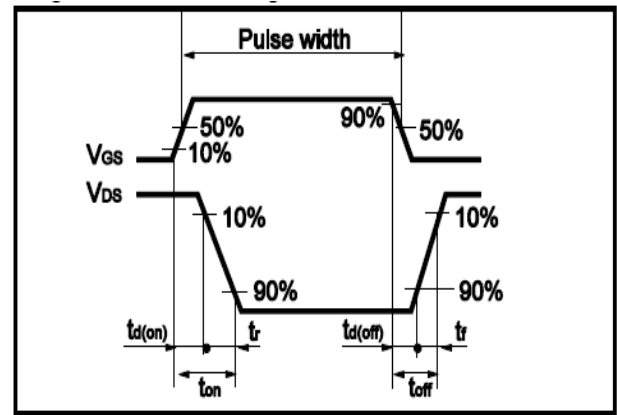


Fig.11 Avalanche Measurement Circuit

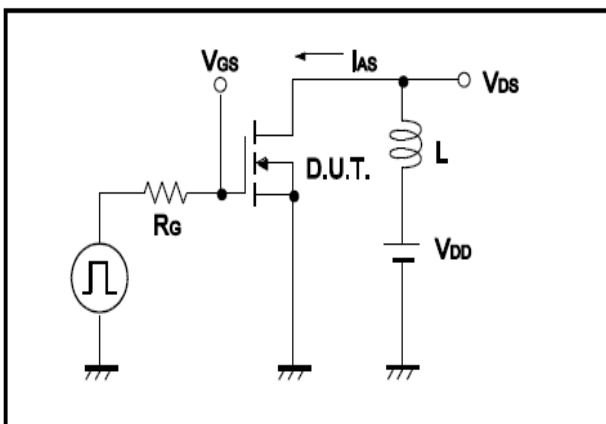
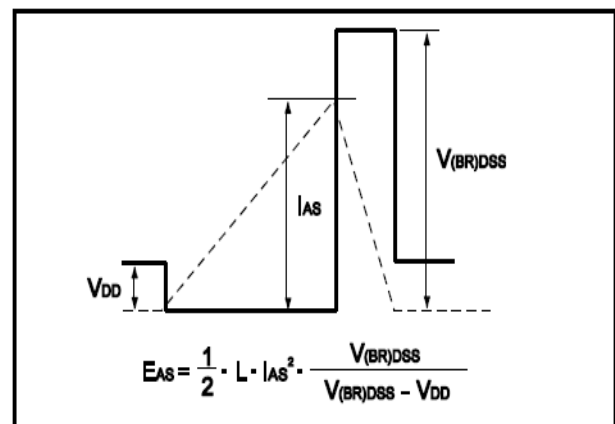


Fig.12 Avalanche Waveform

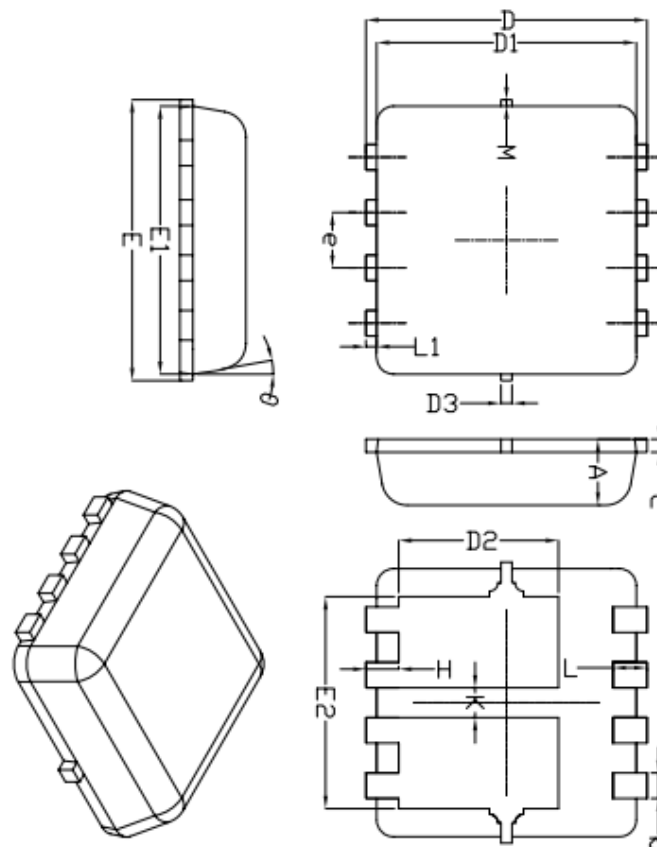




•Dimensions(DFN3*3)

Unit: mm

<i>A</i>	0.70	0.75	0.80
<i>b</i>	0.25	0.30	0.35
<i>c</i>	0.10	0.15	0.25
<i>D</i>	3.25	3.35	3.45
<i>D1</i>	3.00	3.10	3.20
<i>D2</i>	1.78	1.88	1.98
<i>D3</i>	---	0.13	---
<i>E</i>	3.20	3.30	3.40
<i>E1</i>	3.00	3.15	3.20
<i>E2</i>	2.39	2.49	2.59
<i>e</i>	0.65BSC		
<i>H</i>	0.30	0.39	0.50
<i>L</i>	0.30	0.40	0.50
<i>L1</i>	---	0.13	---
<i>K</i>	0.30	---	---
θ	---	10°	12°
<i>M</i>	*	*	0.15



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[>>ZMJSEMI\(真茂佳\)](#)