

**• 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**

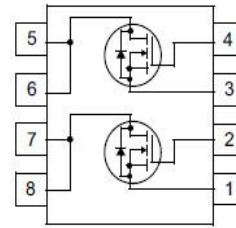
- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems

**• Ordering Information:**

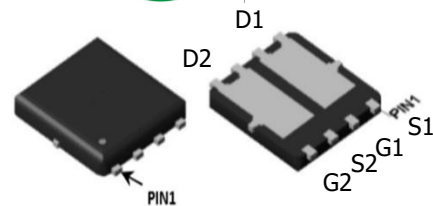
Part NO.	ZMD68304M
Marking	68304
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	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 <sup>①</sup>	$I_{DM}$	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 <sub>thJC</sub>	-	-	2.5	° C/W
Thermal resistance, junction - ambient	R <sub>thJA</sub>	-	-	70	° C/W
Soldering temperature, wavesoldering for 10s	T <sub>sold</sub>	-	-	265	° C

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2		2.5	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1.0	uA
Gate- Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Static Drain-source On Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		10	13	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		14	18	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =25V, I <sub>D</sub> =10A		9		s
Source-drain voltage	VSD	I <sub>S</sub> =10A			1.28	V

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C <sub>iss</sub>	f = 1MHz	-	850	-	pF
Output capacitance	C <sub>oss</sub>		-	210	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	105	-	

**•Gate Charge characteristics(T<sub>a</sub> = 25°C)**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q <sub>g</sub>	VDD = 25V	-	12	-	nC
Gate - Source charge	Q <sub>gs</sub>	I <sub>D</sub> = 5A	-	4	-	
Gate - Drain charge	Q <sub>gd</sub>	V <sub>GS</sub> = 10V	-	6	-	

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

Fig.1 Power Dissipation

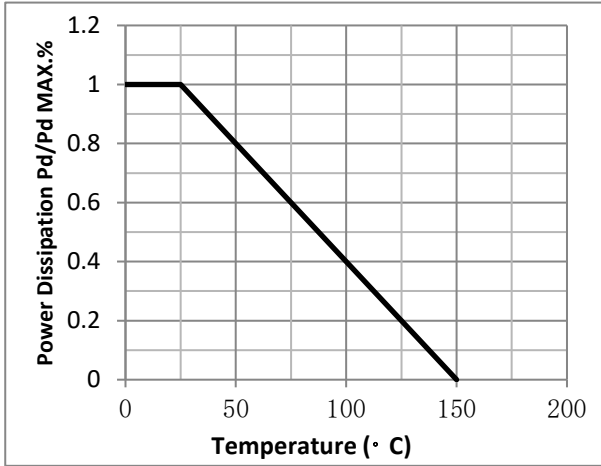


Fig.2 Typical output Characteristics

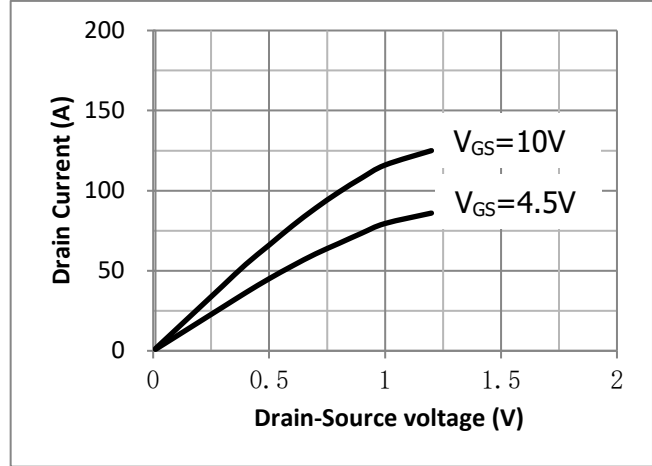


Fig.3 Threshold Voltage V.S Junction Temperature

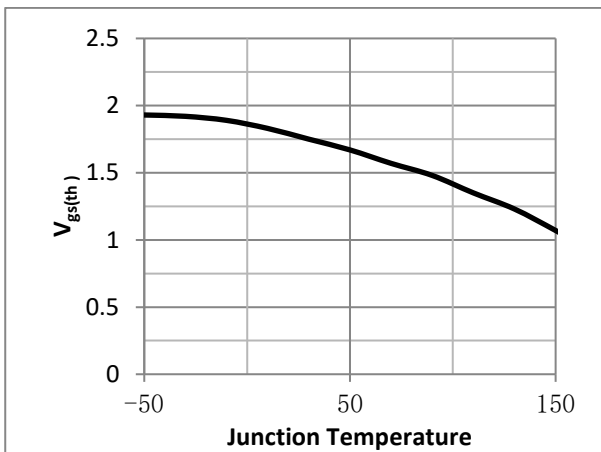


Fig.4 Resistance V.S Drain Current

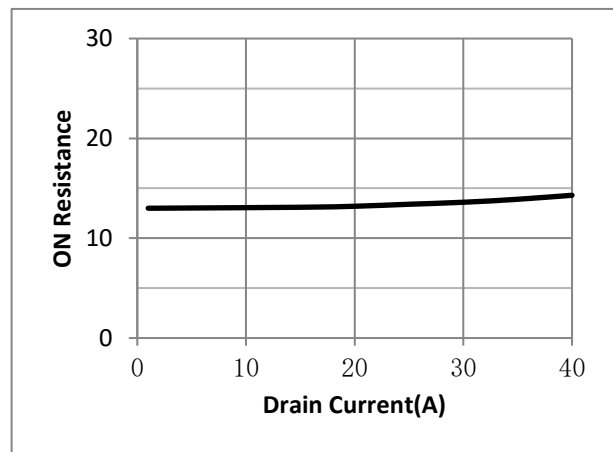


Fig.5 On-Resistance VS Gate Source Voltage

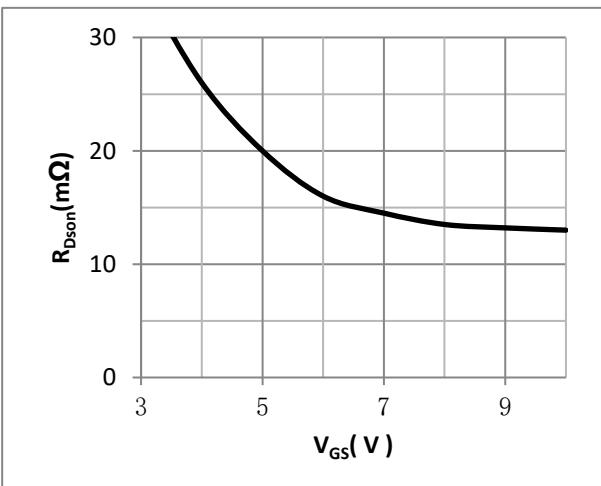


Fig.6 On-Resistance V.S Junction Temperature

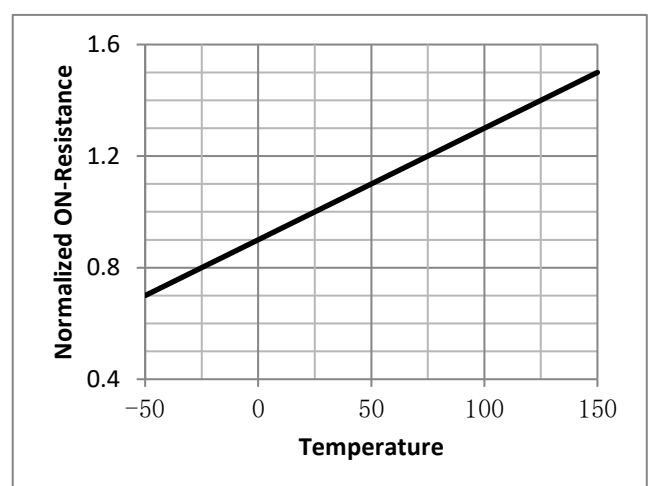


Fig.7 Switching Time Measurement Circuit

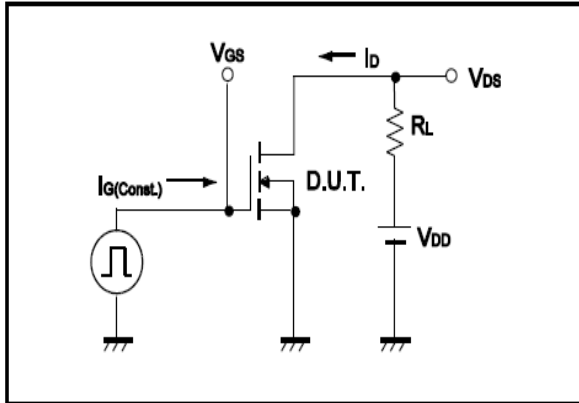


Fig.8 Gate Charge Waveform

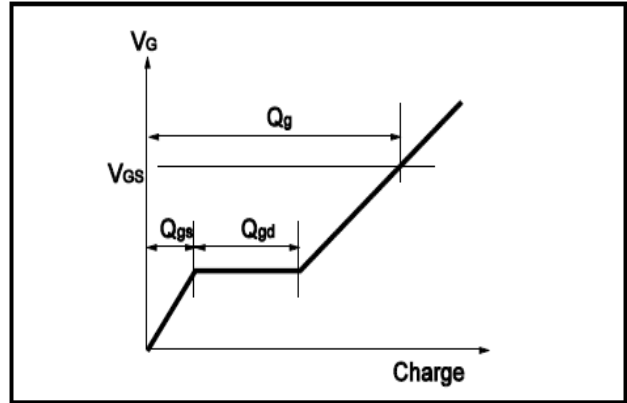


Fig.9 Switching Time Measurement Circuit

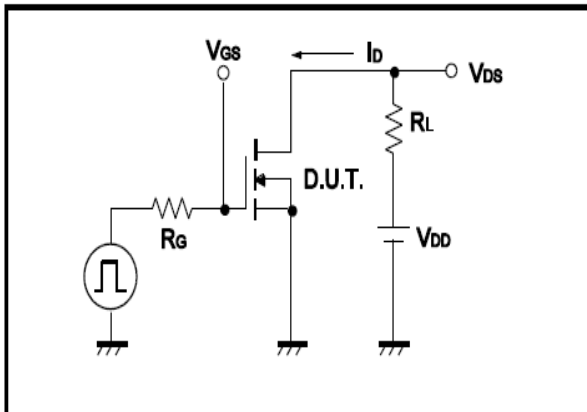


Fig.10 Gate Charge Waveform

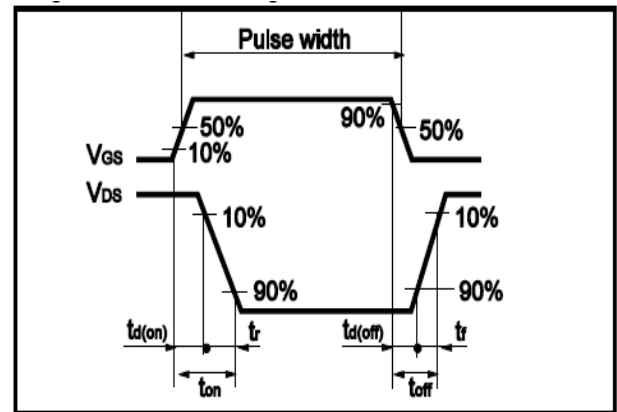


Fig.11 Avalanche Measurement Circuit

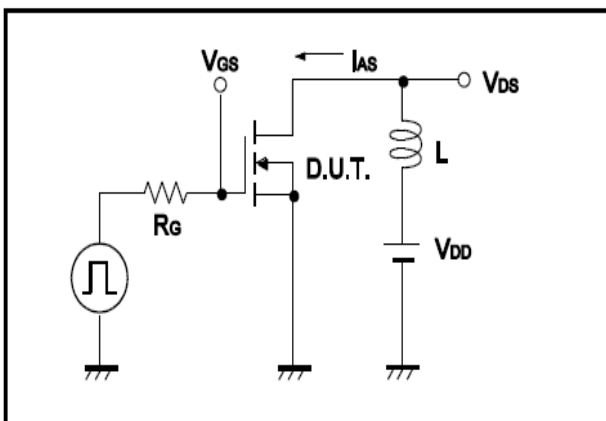
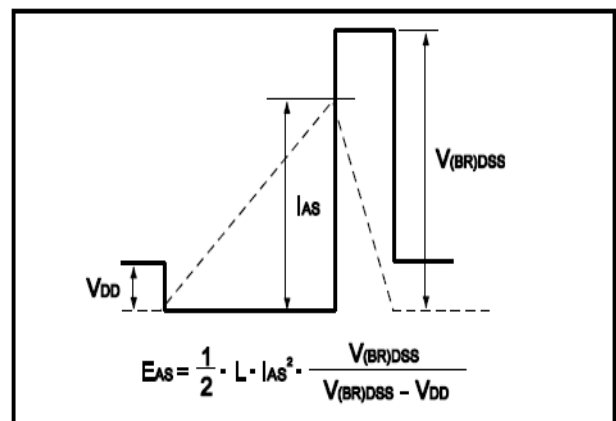


Fig.12 Avalanche Waveform





•Dimensions(DFN3\*3)

Unit: mm

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

