

• General Description

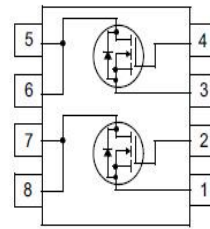
The ZMD68309M combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. Two N Channel MOSFET inside for dual DIE implication.

• Features

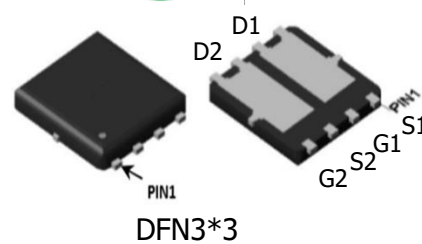
- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Dual DIE in one package

• Application

- Power Management in Notebook Computer
- BLDC Motor driver

• Product Summary


$V_{DS1} = 30V$
 $V_{DS2} = 30V$
 $R_{DS(ON)1} = 8.0m\Omega$
 $R_{DS(ON)2} = 8.0m\Omega$
 $I_{D1} = 36A$
 $I_{D2} = 36A$


• Ordering Information:

Part NO.	ZMD68309M
Marking	68309
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

Absolute Maximum Ratings ($T_C = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	36	A
	$I_{D@TC=75^\circ C}$	27	A
	$I_{D@TC=100^\circ C}$	22	A
Pulsed Drain Current ^①	I_{DM}	72	A
Total Power Dissipation($TC=25^\circ C$)	$P_D@TC=25^\circ C$	3.6	W
Total Power Dissipation($TA=25^\circ C$)	$P_D@TA=25^\circ C$	0.69	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy	E_{AS}	102	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	34	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	180	° 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 =10A		9.5	12	mΩ
		V _{GS} =4.5V, I _D =8A		12	15	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =5A		6		s
Source-drain voltage	V _{SD}	I _S =10A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	1200	-	pF
Output capacitance	C _{oss}		-	235	-	
Reverse transfer capacitance	C _{rss}		-	120	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} =25V	-	12	-	nC
Gate - Source charge	Q _{gs}	I _D = 8A	-	4	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	6	-	
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=100A/μs		6.5		nS
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =20A, di/dt=100A/μs		7		nC

•N Channel characteristics curve

Fig.1 Power Dissipation Derating Curve

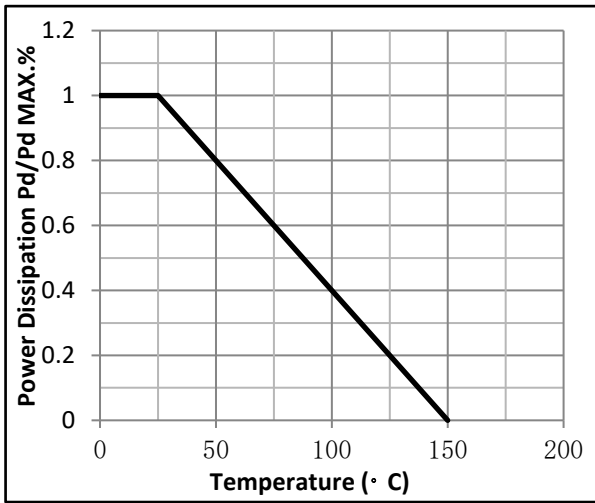


Fig.2 Typical output Characteristics

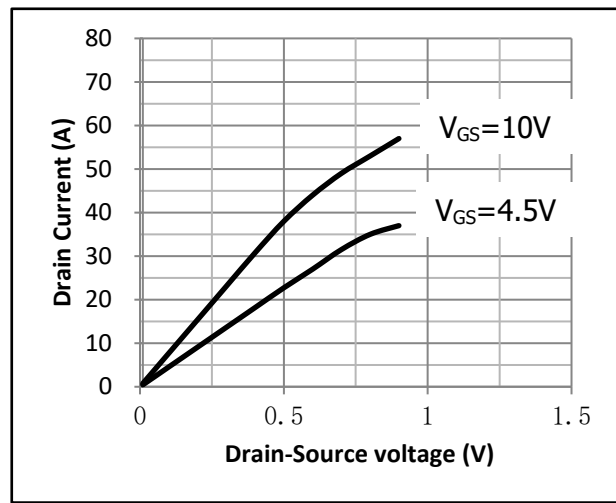


Fig.3 Threshold Voltage V.S Junction Temperature

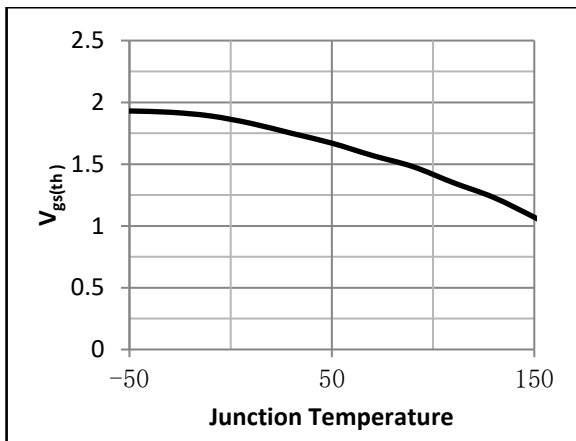


Fig.4 Resistance V.S Drain Current

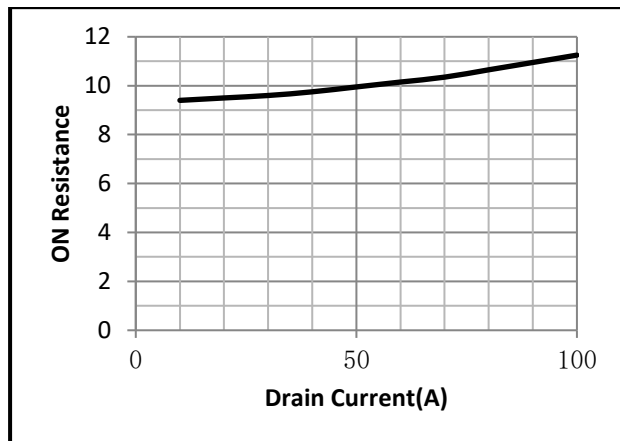


Fig.5 On-Resistance VS Gate Source Voltage

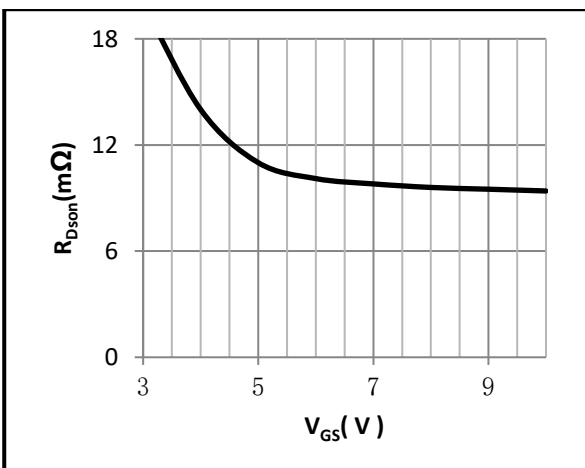
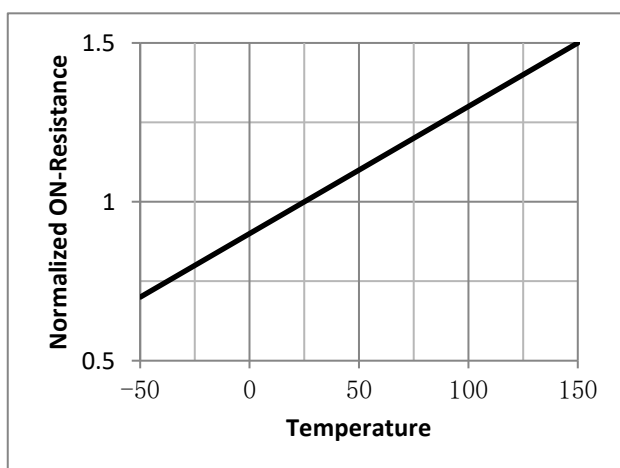


Fig.6 On-Resistance V.S Junction Temperature



•Test Circuit

Fig.1 Switching Time Measurement Circuit

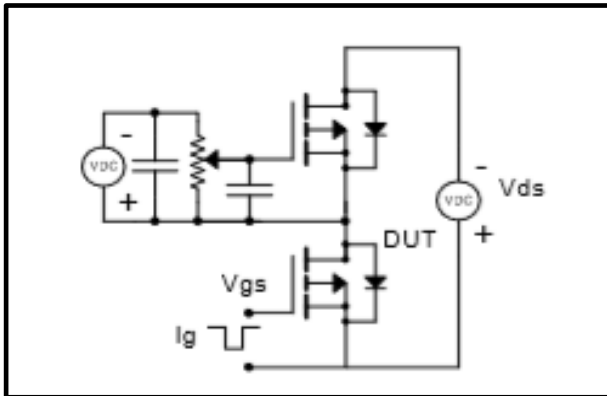


Fig.2 Gate Charge Waveform

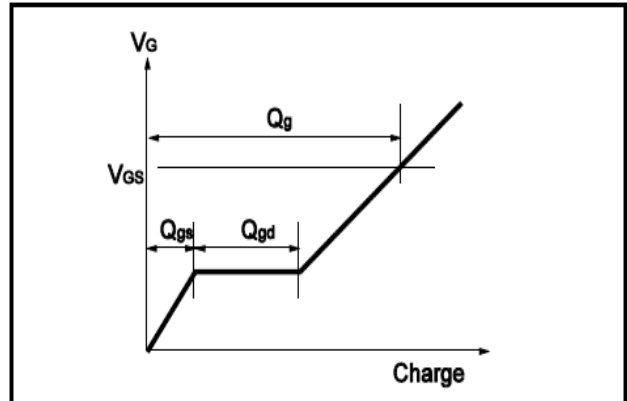


Fig.3 Switching Time Measurement Circuit

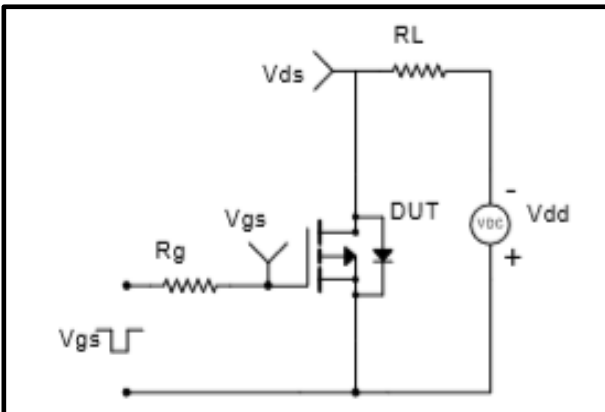


Fig.4 Gate Charge Waveform

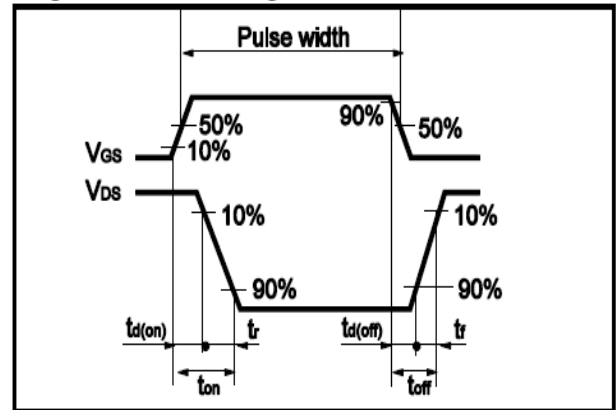


Fig.5 Avalanche Measurement Circuit

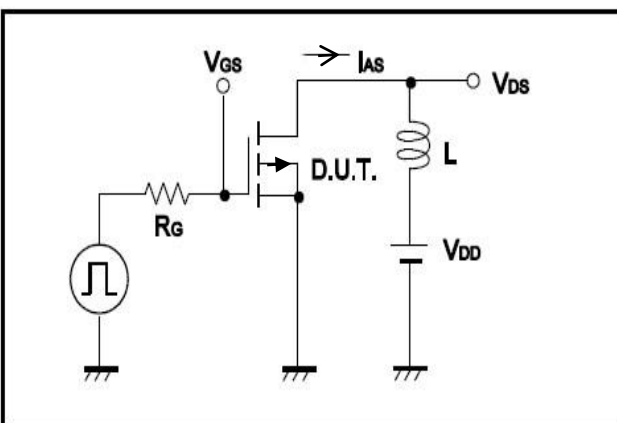
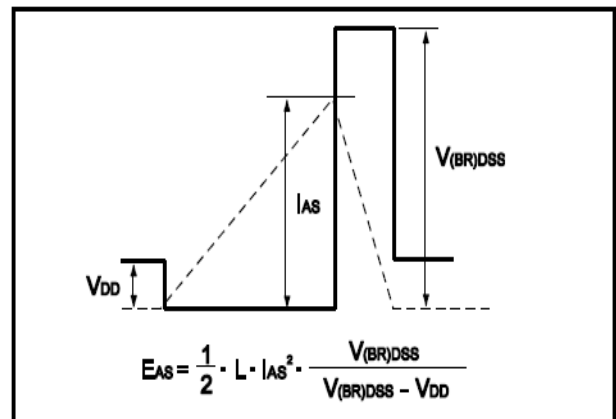
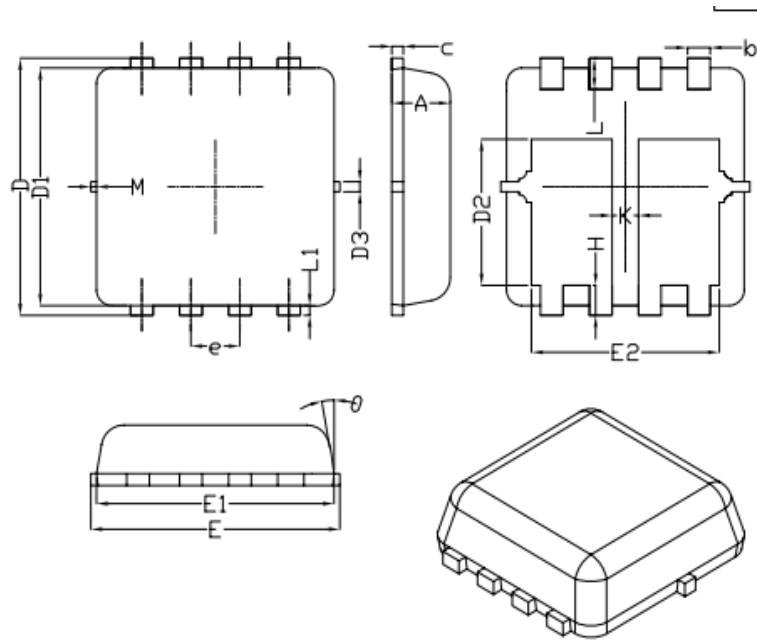


Fig.6 Avalanche Waveform



•Dimensions (DFN3×3)

Unit: mm



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
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
* Not specified			