

• General Description

The ZMD68601S 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
- Dual DIE in one package

• Application

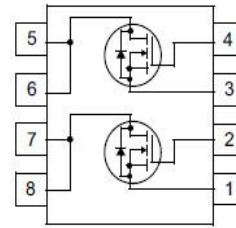
- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems

• Ordering Information:

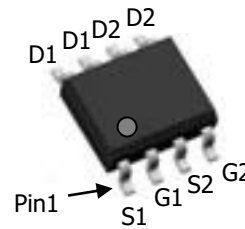
Part NO.	ZMD68601S
Marking	ZMD68601
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D @ T_C = 25^\circ\text{C}$	6.5	A
	$I_D @ T_C = 75^\circ\text{C}$	5.0	A
	$I_D @ T_C = 100^\circ\text{C}$	4.0	A
Pulsed Drain Current ^①	I_{DM}	19.5	A
Total Power Dissipation	$P_D @ T_C = 25^\circ\text{C}$	3.6	W
Total Power Dissipation	$P_D @ T_A = 25^\circ\text{C}$	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}	90	mJ

• Product Summary


$V_{DS1} = 60\text{V}$
 $V_{DS2} = 60\text{V}$
 $R_{DS(ON)1} = 23\text{m}\Omega$
 $R_{DS(ON)2} = 23\text{m}\Omega$
 $I_{D1} = 6.5\text{A}$
 $I_{D2} = 6.5\text{A}$



SOP8



•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	60			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, 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 =13A		23	27	mΩ
		V _{GS} =4.5V, I _D =10A		27	35	mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =8A		10		s
Source-drain voltage	V _{SD}	I _S =13A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	1850	-	pF
Output capacitance	C _{oss}		-	330	-	
Reverse transfer capacitance	C _{rss}		-	205	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 25V	-	22	-	nC
Gate - Source charge	Q _{gs}	I _D =8A	-	6	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	8	-	

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

Fig.1 Power Dissipation

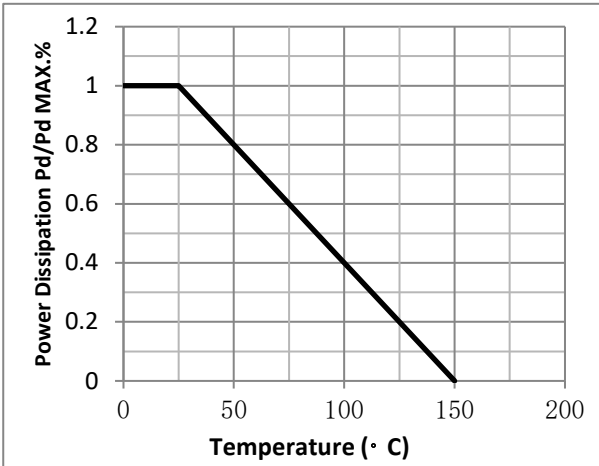


Fig.2 Typical output Characteristics

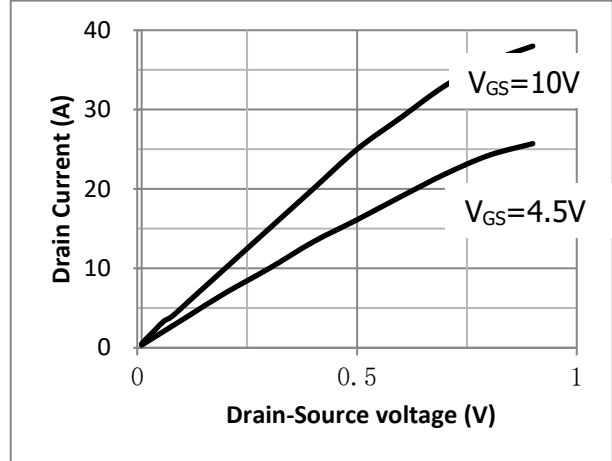


Fig.3 Threshold Voltage V.S Junction Temperature

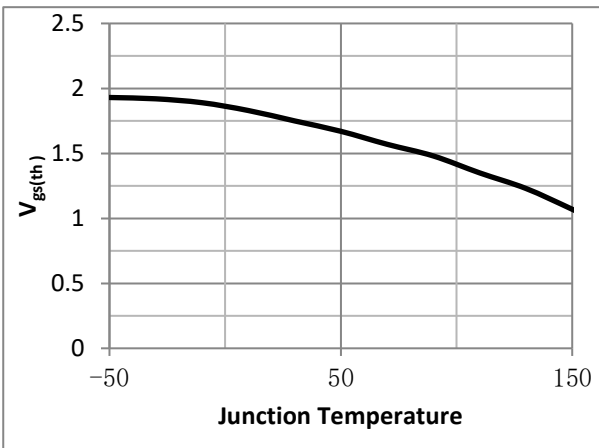


Fig.4 Resistance V.S Drain Current

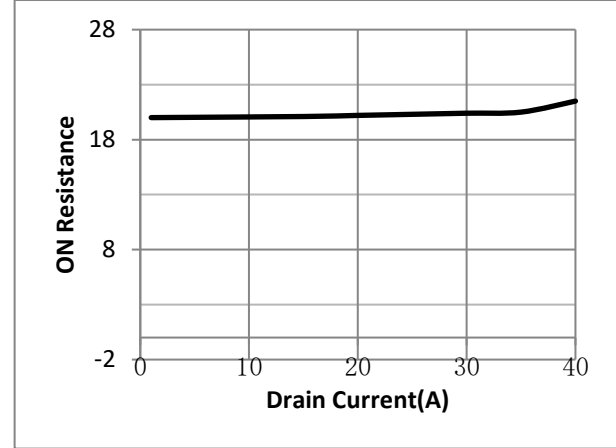


Fig.5 On-Resistance VS Gate Source Voltage

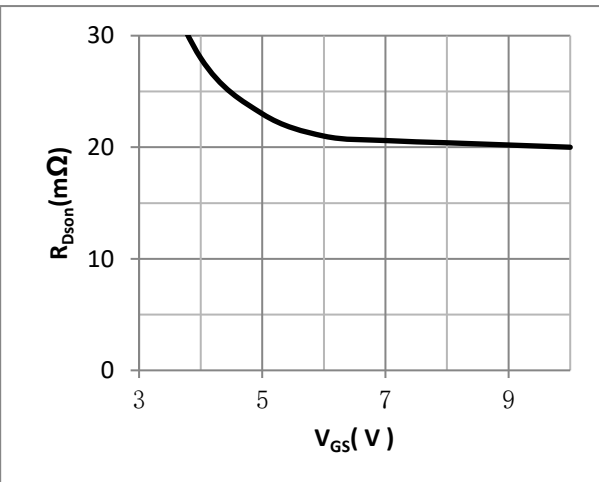


Fig.6 On-Resistance V.S Junction Temperature

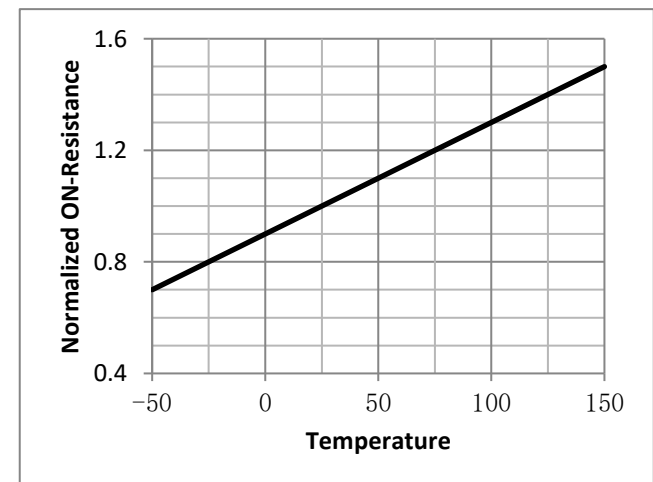


Fig.7 Switching Time Measurement Circuit

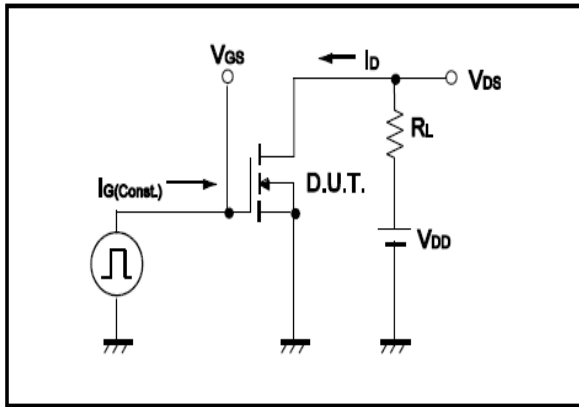


Fig.8 Gate Charge Waveform

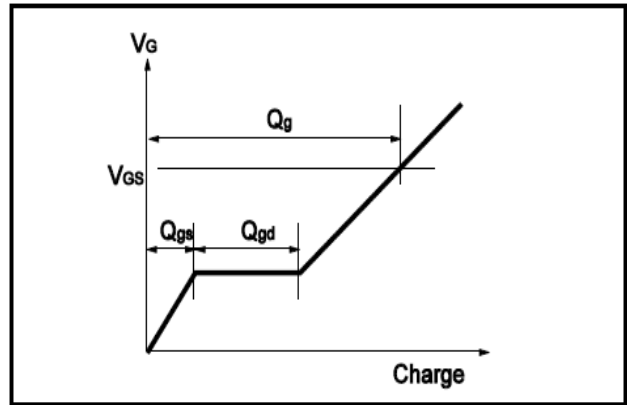


Fig.9 Switching Time Measurement Circuit

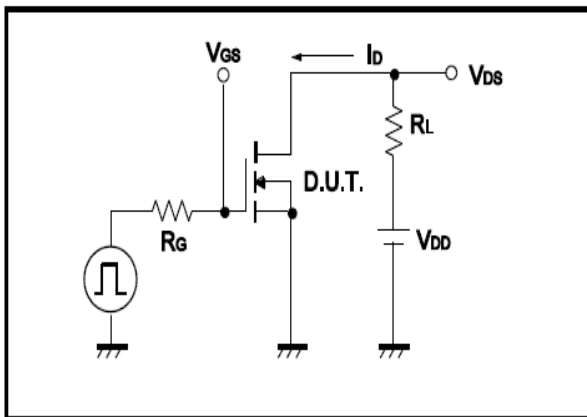


Fig.10 Gate Charge Waveform

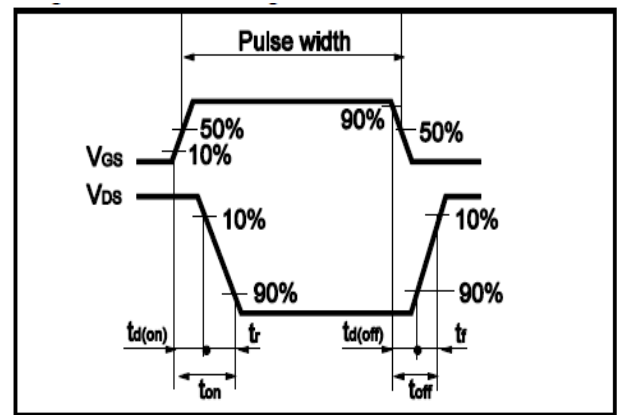


Fig.11 Avalanche Measurement Circuit

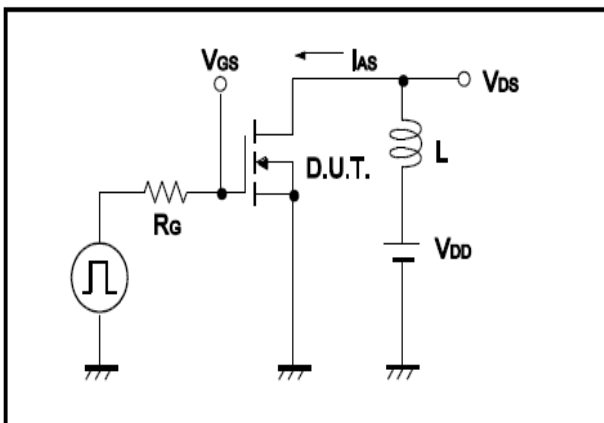
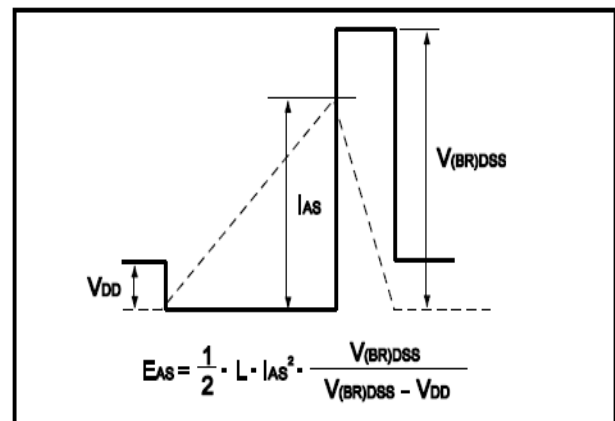


Fig.12 Avalanche Waveform



●Dimensions(SOP8)

Unit: mm

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.25	C	1.30		1.75
A1	0.37		0.49	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.10	0.20	0.23
B1	3.80		4.10	D		1.05	
B2		5.00		D1	0.40		0.62

