

**• General Description**

The ZMP68301S combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . Two P 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**

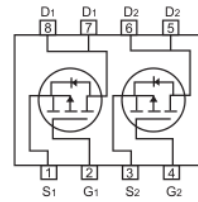
- Power Management in Notebook Computer
- BLDC Motor driver

**• Ordering Information:**

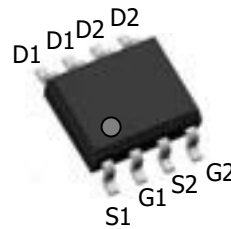
Part NO.	ZMP68301S
Marking	ZMP68301
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

**• P Channel 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	$I_{D@TC=25^\circ\text{C}}$	-10	A
	$I_{D@TC=75^\circ\text{C}}$	-7.6	A
	$I_{D@TC=100^\circ\text{C}}$	-6.3	A
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	-24	A
Total Power Dissipation	$P_D@TC=25^\circ\text{C}$	3.6	W
Total Power Dissipation	$P_D@TA=25^\circ\text{C}$	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	$E_{AS}$	75	mJ

**• Product Summary**


$V_{DS1} = -30\text{V}$   
 $V_{DS2} = -30\text{V}$   
 $R_{DS(ON)1} = 15\text{m}\Omega$   
 $R_{DS(ON)2} = 15\text{m}\Omega$   
 $I_{D1} = -10\text{A}$   
 $I_{D2} = -10\text{A}$



SOP8

**•Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	$R_{thJC}$	-	-	34	$^{\circ}C/W$
Thermal resistance, junction - ambient	$R_{thJA}$	-	-	180	$^{\circ}C/W$
Soldering temperature, wavesoldering for 10s	$T_{sold}$	-	-	265	$^{\circ}C$

**Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2		-2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=-20V, I_D=-20A$		13	17	m $\Omega$
		$V_{GS}=-10V, I_D=-20A$		15	19.5	m $\Omega$
		$V_{GS}=-4.5V, I_D=-10A$		20	26	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-5A$		12		s
Source-drain voltage	$V_{SD}$	$I_S=-20A$			1.28	V

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	$C_{iss}$	f = 1MHz	-	1650	1980	pF
Output capacitance	$C_{oss}$		-	330	396	
Reverse transfer capacitance	$C_{rss}$		-	213	255	

**•Gate Charge characteristics( $T_a = 25^{\circ}C$ )**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD}=25V$	-	18	-	nC
Gate - Source charge	$Q_{gs}$	$I_D=8A$	-	6	-	
Gate - Drain charge	$Q_{gd}$	$V_{GS}=10V$	-	9	-	

•P Channel characteristics curve

Fig.1 Power Dissipation Derating Curve

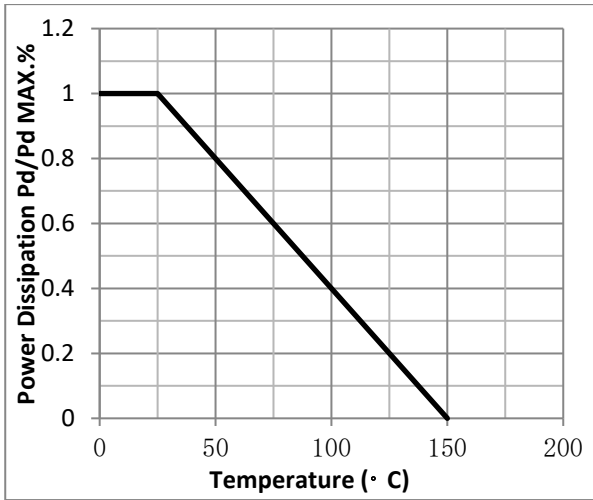


Fig.2 Typical output Characteristics

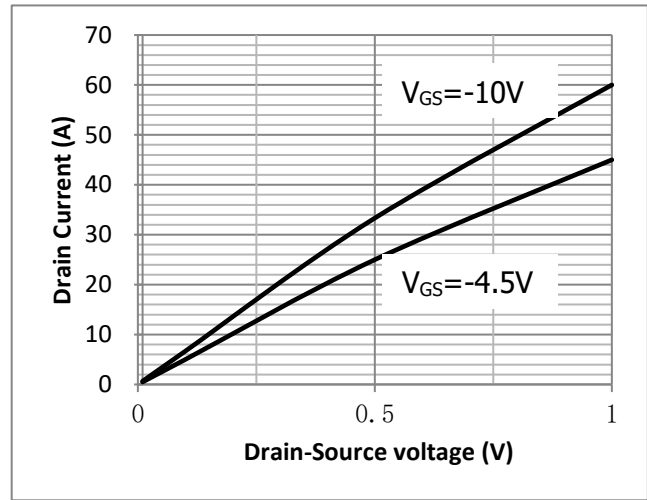


Fig.3 Threshold Voltage V.S Junction Temperature

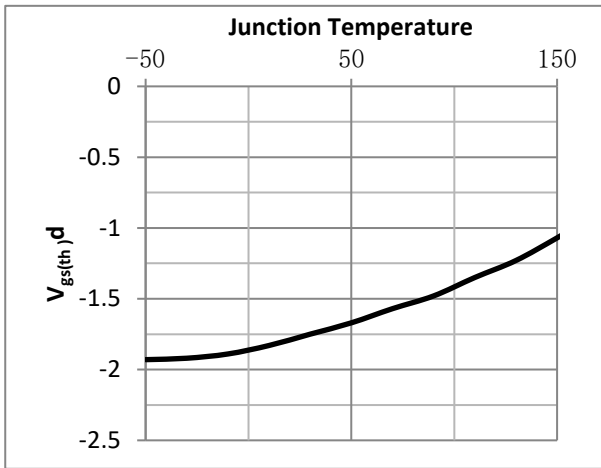


Fig.4 Resistance V.S Drain Current

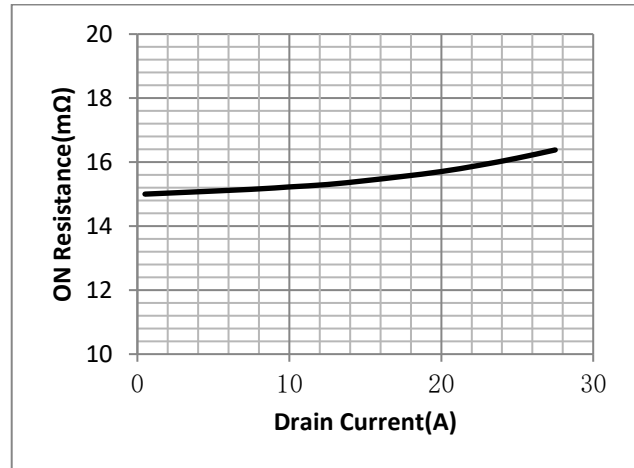


Fig.5 On-Resistance VS Gate Source Voltage

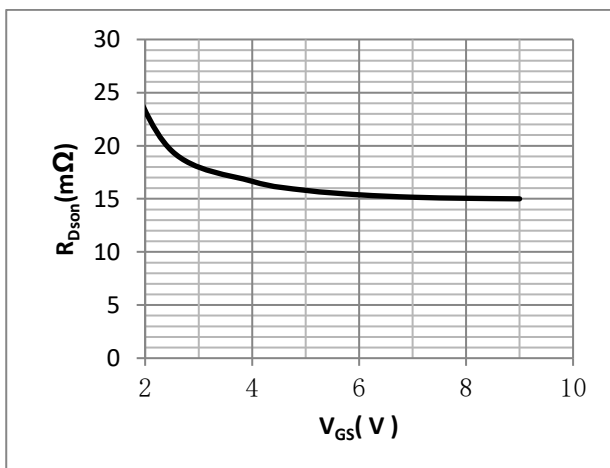


Fig.6 On-Resistance V.S Junction Temperature

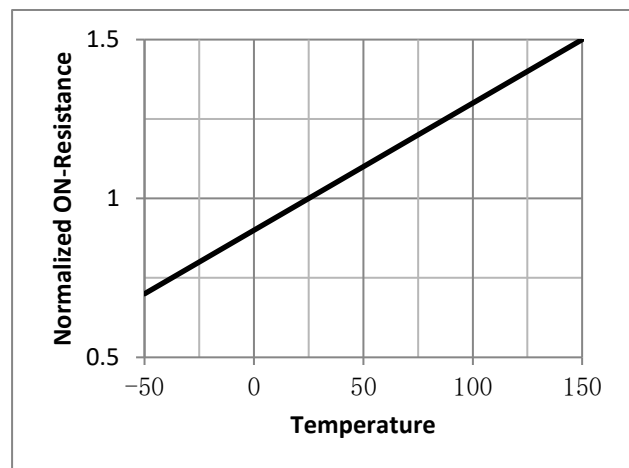


Fig.7 SOA Maximum Safe Operating Area

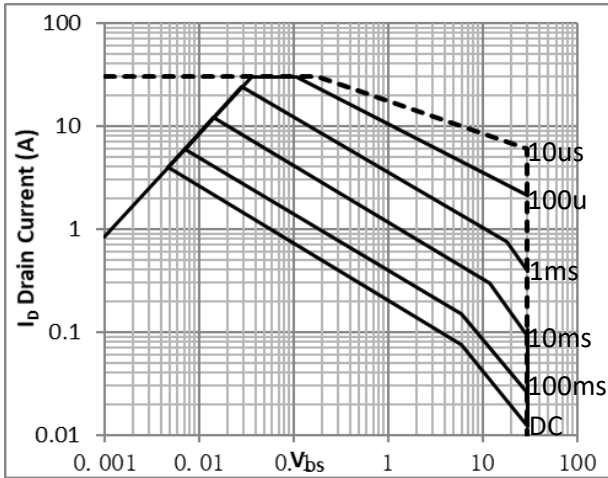


Fig.8 Single Pulse Power Rating Junction-to-Ambient

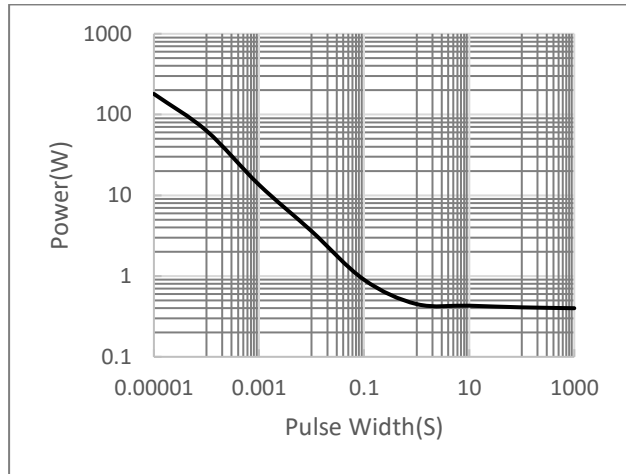


Figure 9. Diode Forward Voltage vs. Current

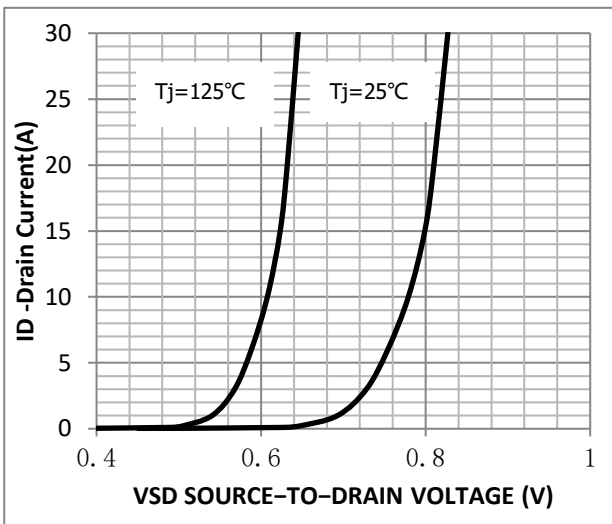
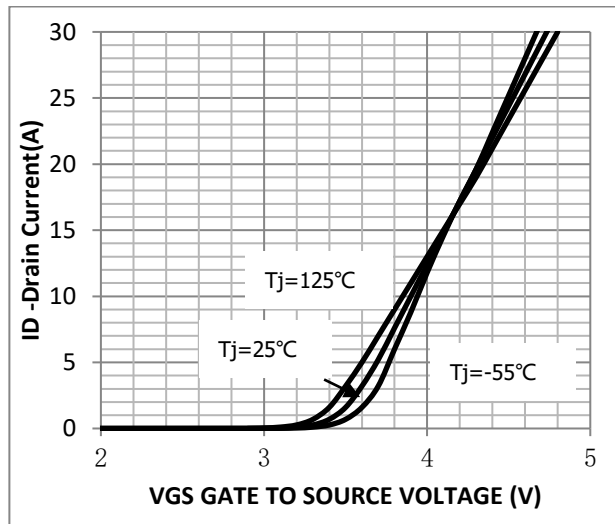


Figure 10. Transfer Characteristics



•Test Circuit

Fig.11 Switching Time Measurement Circuit

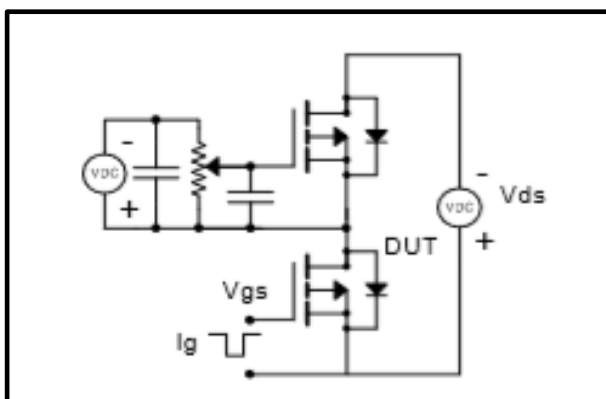


Fig.12 Gate Charge Waveform

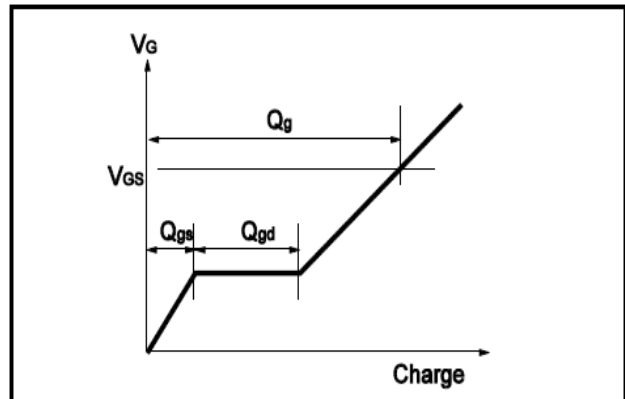


Fig.13 Switching Time Measurement Circuit

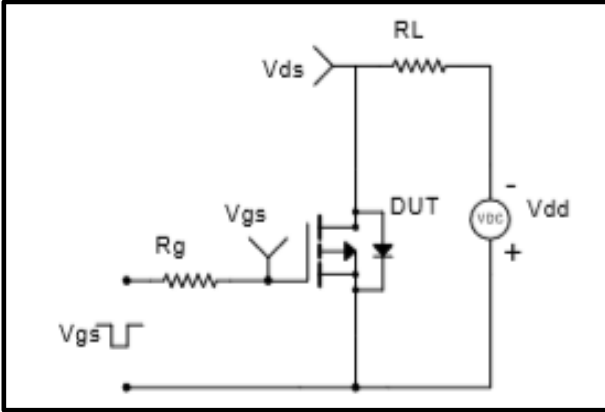


Fig.14 Gate Charge Waveform

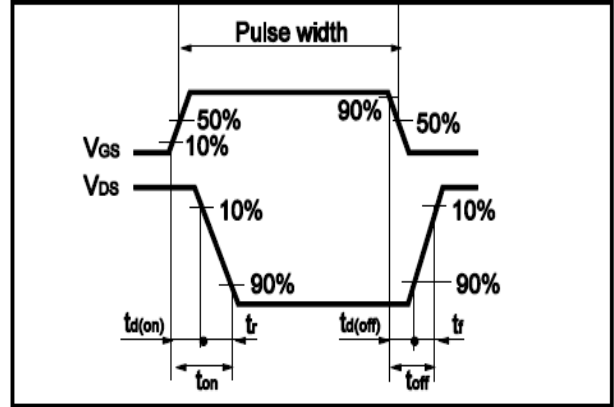


Fig.15 Avalanche Measurement Circuit

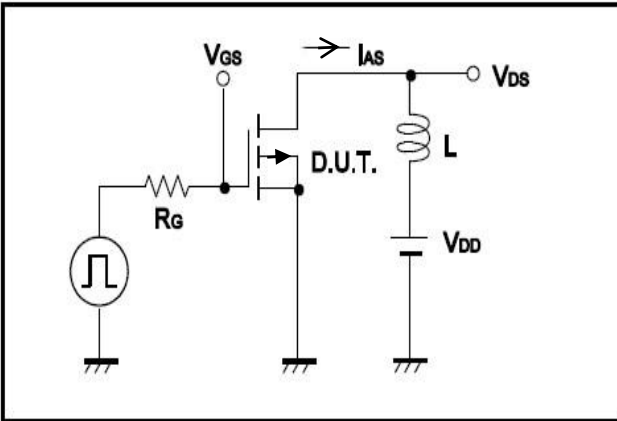
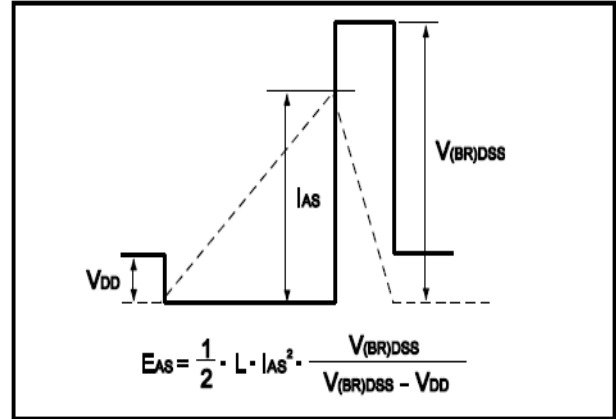


Fig.16 Avalanche Waveform



●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

