• General Description

The ZMD68405S 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.

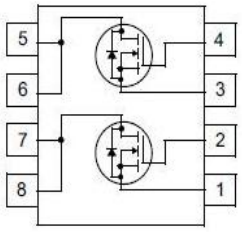
• Features

- ■ 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

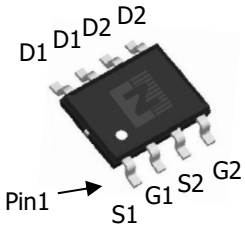
•Application

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

• Product Summary



V_{DS1} =40V
V_{DS2} =40V
$R_{DS(ON)1}$ =22mΩ
$R_{DS(ON)2}$ =22mΩ
I_{D1} =6.5A
I_{D2} =6.5A



SOP8

•Ordering Information:

Part NO.	ZMD68405S
Marking	ZMD68405
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

•Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@}$TC=25℃	6.5	A
	$I_{D@}$TC=75℃	4.9	A
	$I_{D@}$TC=100℃	4.1	A
Pulsed Drain Current ①	I_{DM}	30	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	3.6	W
Total Power Dissipation(TA=25℃)	P_D@TA=25℃	0.69	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	25	mJ
Avalanche Current	I_{AS} I_{AR}	25	A

●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	40			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}=40V, 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=6.5A		22	28	mΩ
		V_{GS}=4.5V, I_D=5.5A		28	36	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=1A		4		s

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz VDS=25V	-	850	-	pF
Output capacitance	Coss		-	193	-	
Reverse transfer capacitance	Crss		-	130	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = 25V	-	9.8	-	nC
Gate - Source charge	Qgs	I_D = 5A	-	3.9	-	
Gate - Drain charge	Qgd	V_{GS} = 10V	-	5.2	-	

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

Fig.1 Power Dissipation

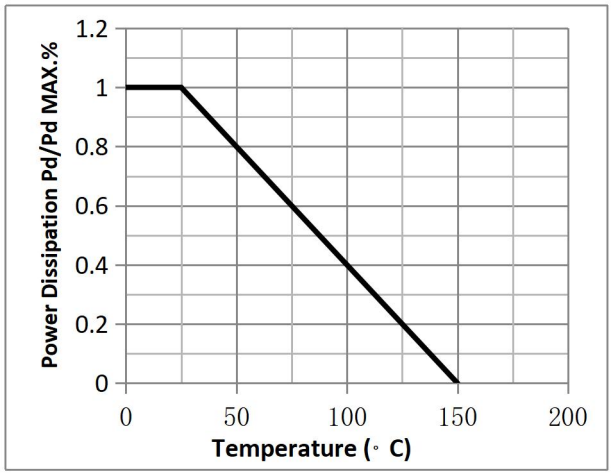


Fig.2 Typical output Characteristics

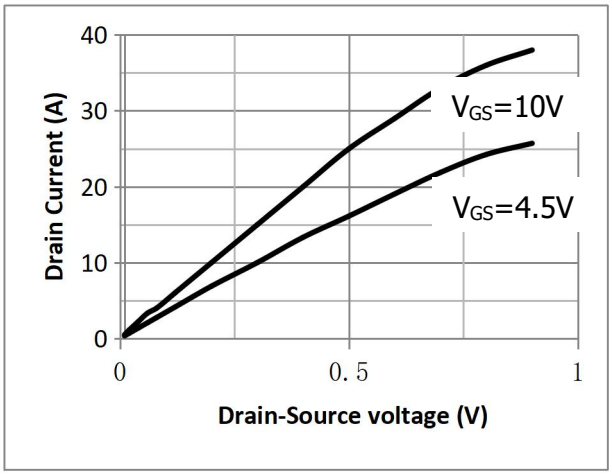


Fig.3 Threshold Voltage V.S Junction Temperature

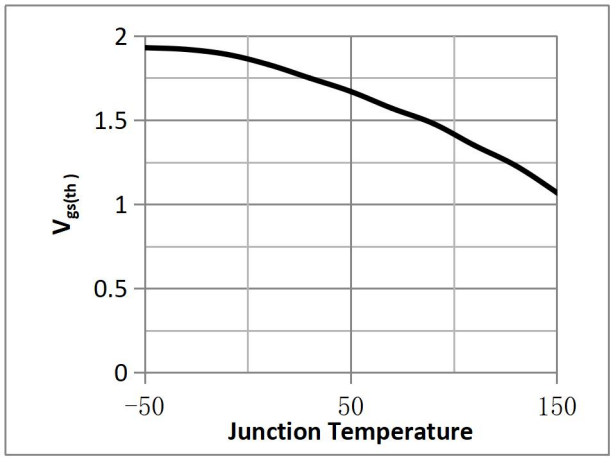


Fig.4 Resistance V.S Drain Current

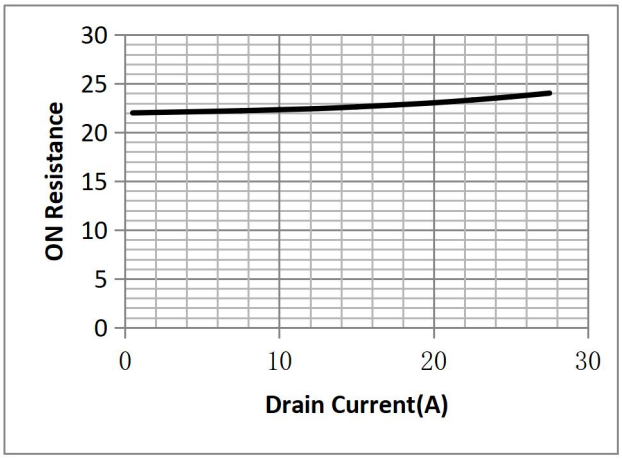


Fig.5 On-Resistance VS Gate Source Voltage

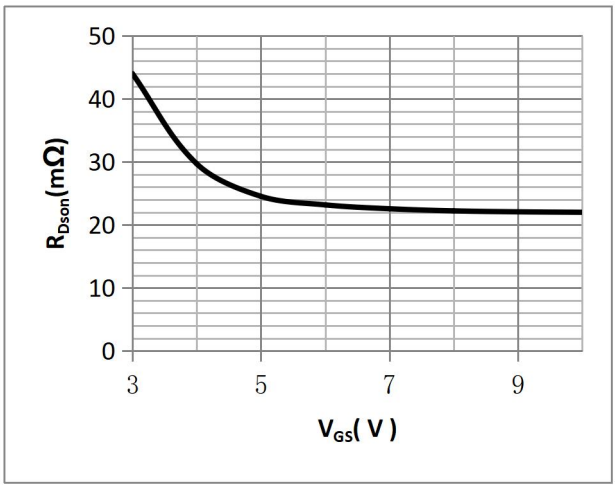


Fig.6 On-Resistance V.S Junction Temperature

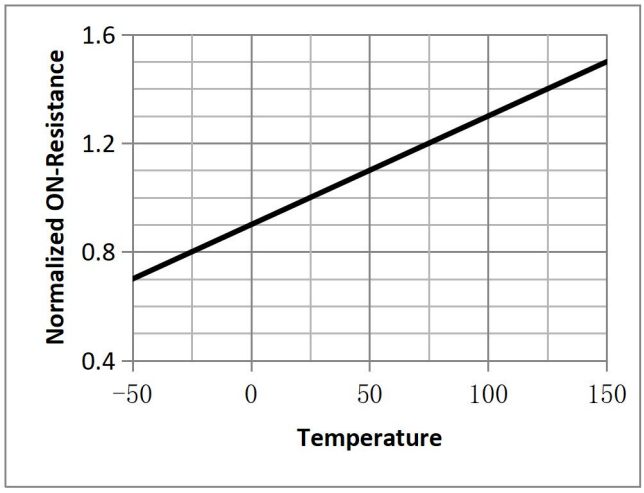


Fig.7 Switching Time Measurement Circuit

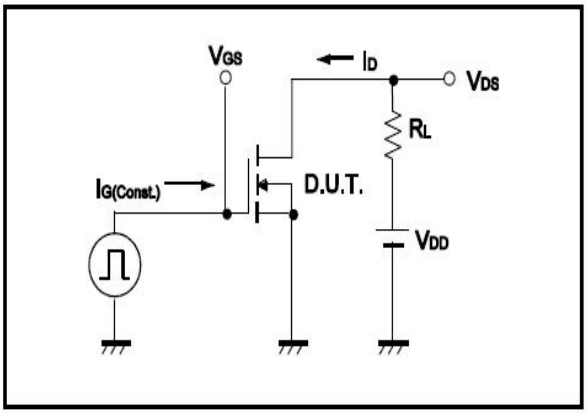


Fig.8 Gate Charge Waveform

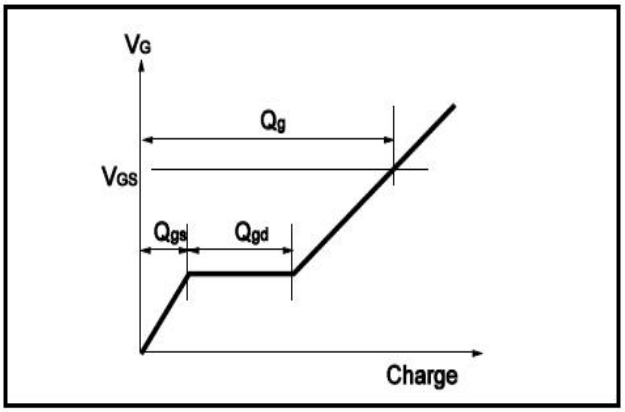


Fig.9 Switching Time Measurement Circuit

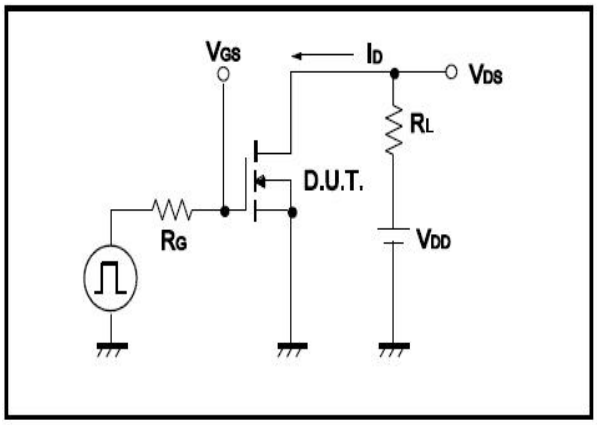


Fig.10 Gate Charge Waveform

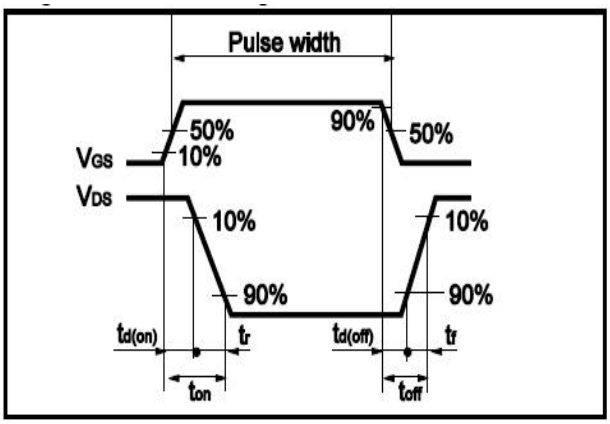


Fig.11 Avalanche Measurement Circuit

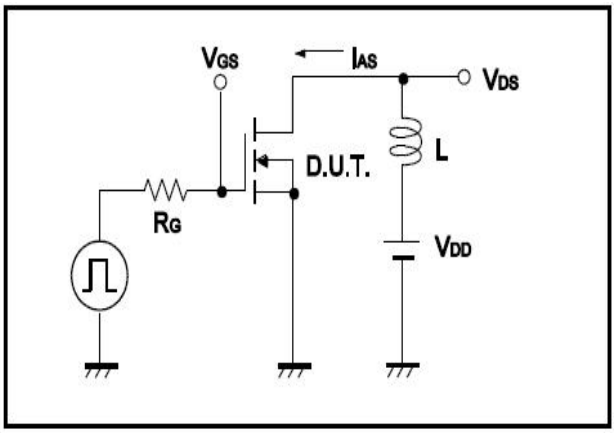
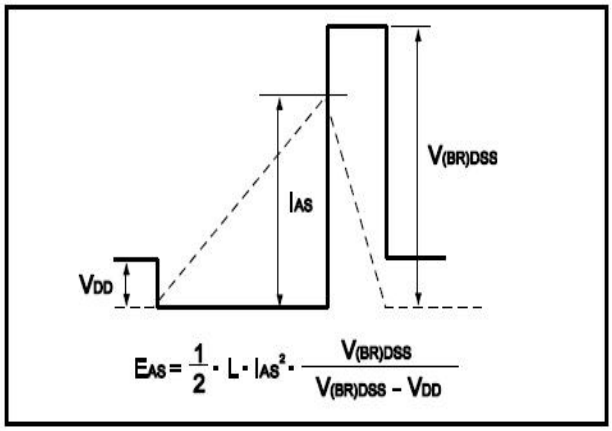


Fig.12 Avalanche Waveform



•Dimensions(SOP8)

Unit: mm

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	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	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62