

• General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

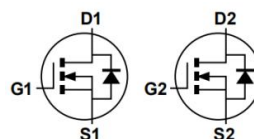
• Features

- 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

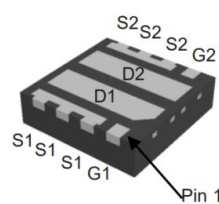
• Application

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

• Product Summary



$V_{DS1} = 40V$
 $V_{DS2} = 40V$
 $R_{DS(ON)1} = 21m\Omega$
 $R_{DS(ON)2} = 21m\Omega$
 $I_{D1} = 24A$
 $I_{D2} = 24A$



DFN3 x 3

• Ordering Information:

Part NO.	ZMD68405M
Marking	68405
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}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	24	A
	$I_{D@TC=75^\circ C}$	18	A
	$I_{D@TC=100^\circ C}$	15	A
Pulsed Drain Current ^①	I_{DM}	48	A
Total Power Dissipation($TC=25^\circ C$)	$P_{D@TC=25^\circ C}$	20	W
Total Power Dissipation($TA=25^\circ C$)	$P_{D@TA=25^\circ C}$	1.7	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}	30	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	6	°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}	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.8	2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=13A$		21	27	m Ω
		$V_{GS}=4.5V, I_D=10A$		27	35	m Ω
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 V _{DS} =25V	-	850	-	pF
Output capacitance	C_{oss}		-	193	-	
Reverse transfer capacitance	C_{rss}		-	130	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD}=25V$	-	9.8	-	nC
Gate - Source charge	Q_{gs}	$I_D=8A$	-	3.9	-	
Gate - Drain charge	Q_{gd}	$V_{GS}=10V$	-	5.2	-	

Note: ① Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

Fig.1 Power Dissipation

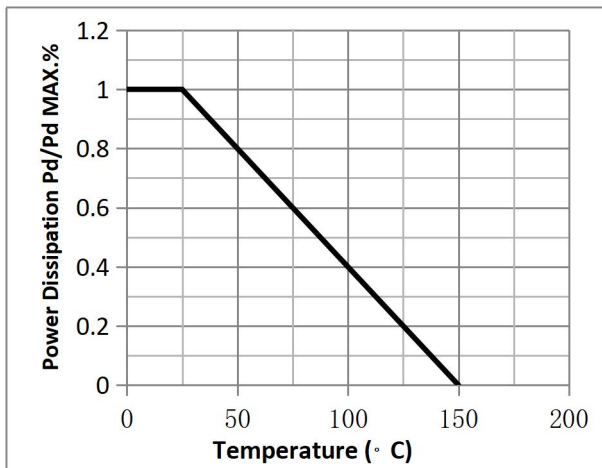


Fig.2 Typical output Characteristics

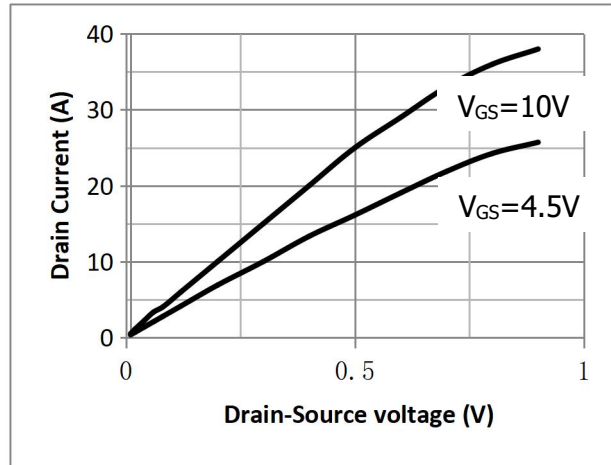


Fig.3 Threshold Voltage V.S Junction Temperature

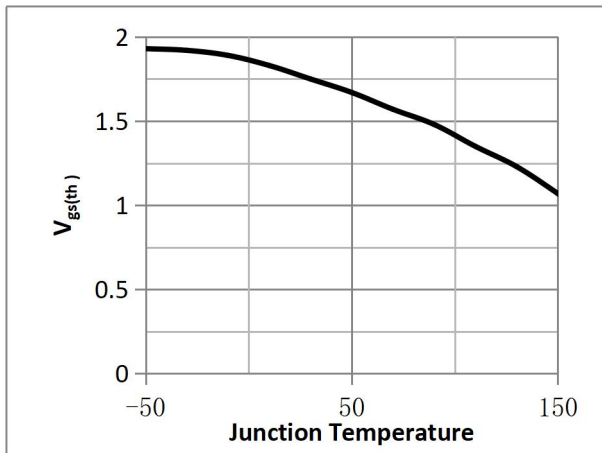


Fig.4 Resistance V.S Drain Current

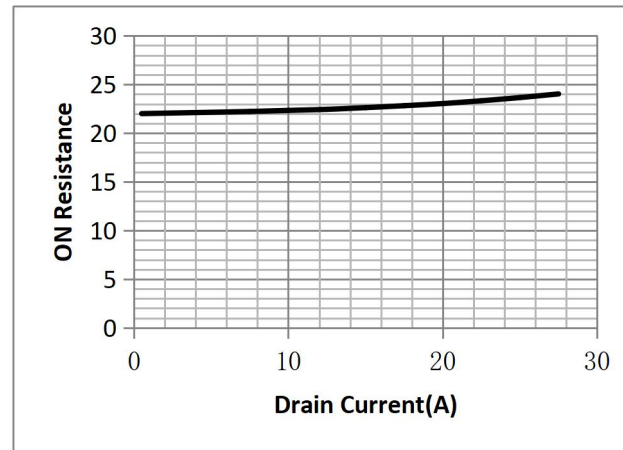


Fig.5 On-Resistance VS Gate Source Voltage

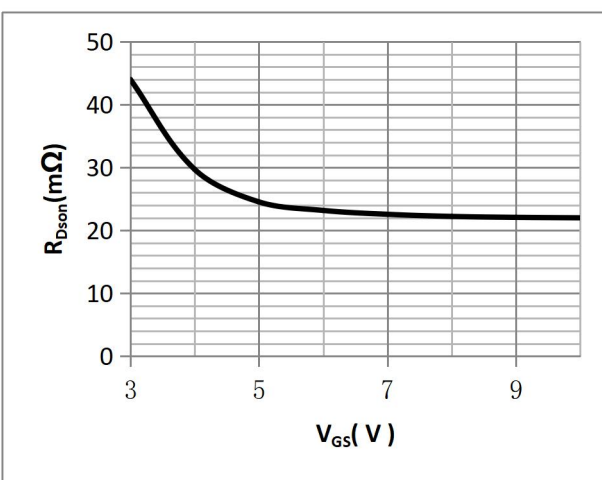


Fig.6 On-Resistance V.S Junction Temperature

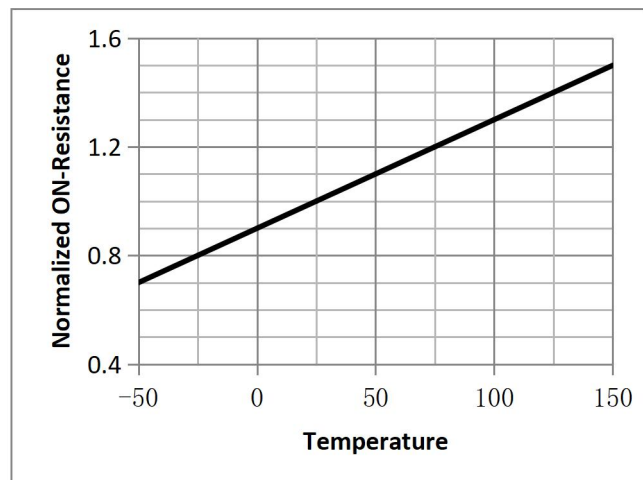


Fig.7 Switching Time Measurement Circuit

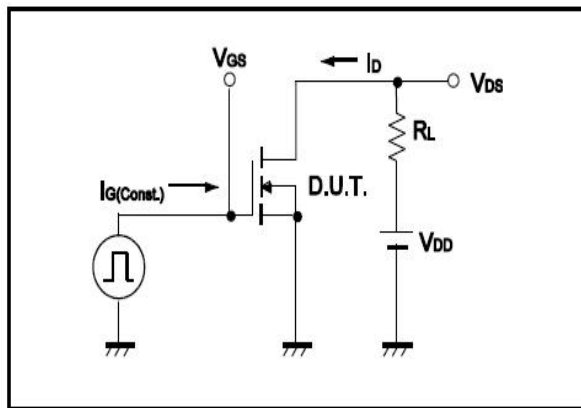


Fig.8 Gate Charge Waveform

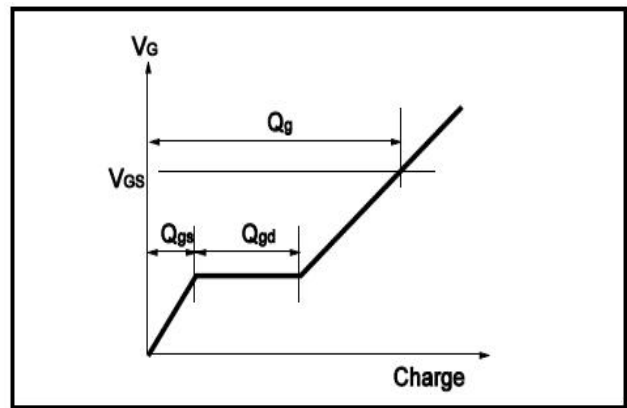


Fig.9 Switching Time Measurement Circuit

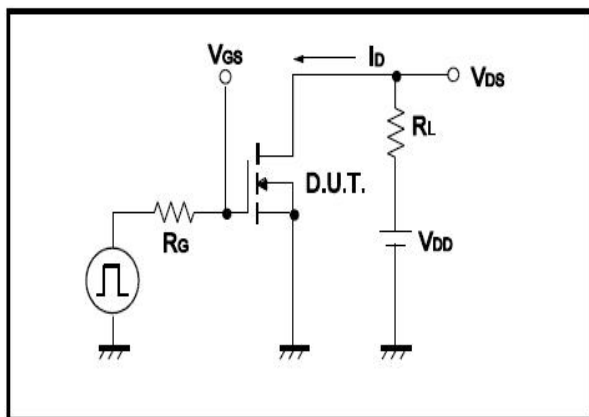


Fig.10 Gate Charge Waveform

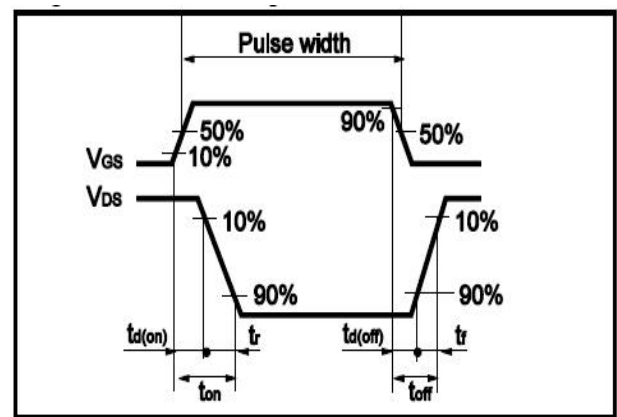


Fig.11 Avalanche Measurement Circuit

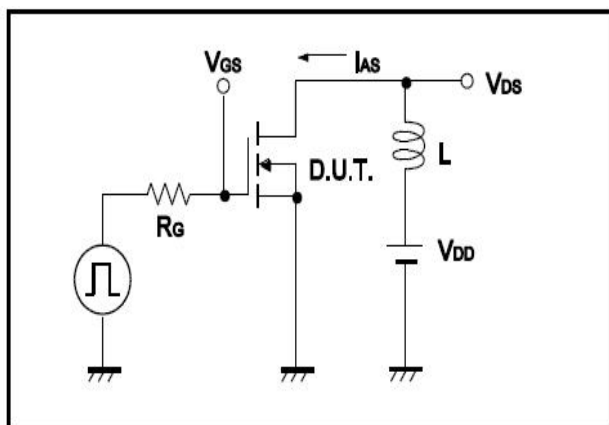


Fig.12 Avalanche Waveform

