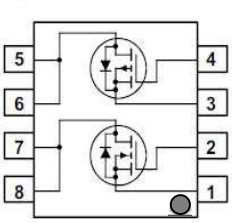
• General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. It combines one N Channel MOSFET and one P channel MOSFET.

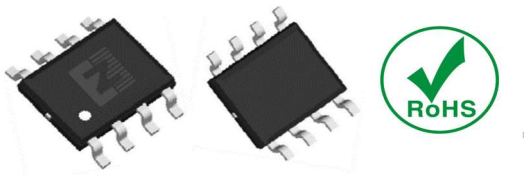
• Product Summary



V_{DS1} =100V
V_{DS2} =-100V
$R_{DS(ON)1}$ =40mΩ
$R_{DS(ON)2}$ =170mΩ
I_{D1} =7.0A
I_{D2} =-2.0A

• 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



SOP8

•Application

- ■ Power Management in Notebook Computer
- ■ BLDC Motor driver

•Ordering Information:

Part NO.	ZMC88103S
Marking	ZMC88103
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

•N Channel Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current②	I_D	7.0	A
Pulsed Drain Current ①	I_{DM}	21	A
Total Power Dissipation②	P_D@TC=25℃	3.4	W
Total Power Dissipation	P_D@TA=25℃	0.69	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃

●P Channel Absolute Maximum Ratings (T_C =25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-2.0	A
Pulsed Drain Current ①	I_{DM}	-6	A
Total Power Dissipation②	P_D@TC=25℃	3.4	W
Total Power Dissipation	P_D@TA=25℃	0.69	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	36	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	180	° C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	° C

●N Channel Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	100			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}=100V, 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=4A		40	52	mΩ
		V_{GS}=6V, I_D=3A		50	65	mΩ
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D=4A		10		s
Source-drain voltage	V_{SD}	Is=4A			1.20	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	VDS=25V f = 1MHz	-	570	-	pF
Output capacitance	Coss		-	270	-	

Reverse transfer capacitance	Crss		-	48	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} =15V	-	8.4	-	nC
Gate - Source charge	Qgs	I_D =4A	-	2.2	-	
Gate - Drain charge	Qgd	V_{GS} = 10V	-	1.9	-	

●P Channel Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =-250uA	-100			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =-250uA	-1.0		-2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-100V, 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=-2A		170	221	mΩ
		V_{GS}=-4.5V, I_D=-2A		185	240	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-2A		16		s
Source-drain voltage	V_{SD}	Is=-2A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	VDS=25V f = 1MHz	-	1670	-	pF
Output capacitance	Coss		-	88	-	
Reverse transfer capacitance	Crss		-	49	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = -15V	-	22.4	-	nC
Gate - Source charge	Qgs	I_D = -2A	-	4.2	-	
Gate - Drain charge	Qgd	V_{GS} = -10V	-	2.8	-	

•N Channel characteristics curve

Fig.1 Power Dissipation Derating Curve

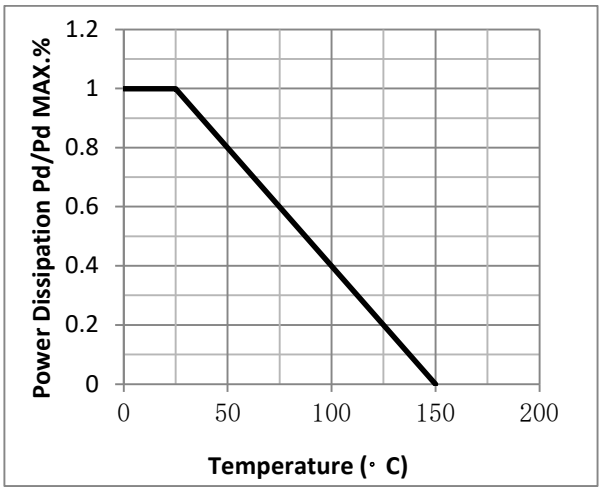


Fig.2 Typical output Characteristics

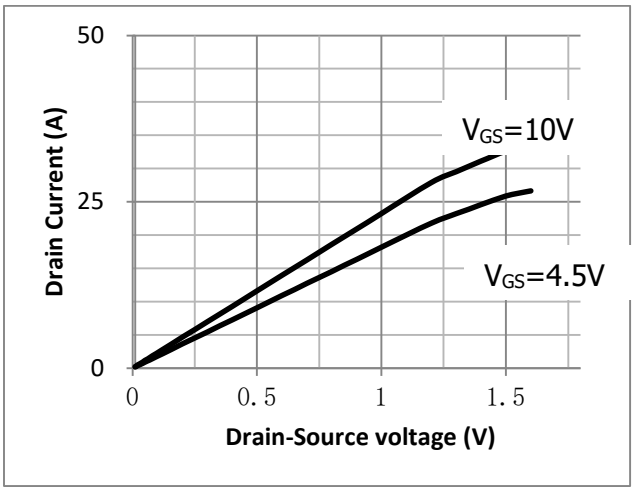


Fig.3 Threshold Voltage V.S Junction Temperature

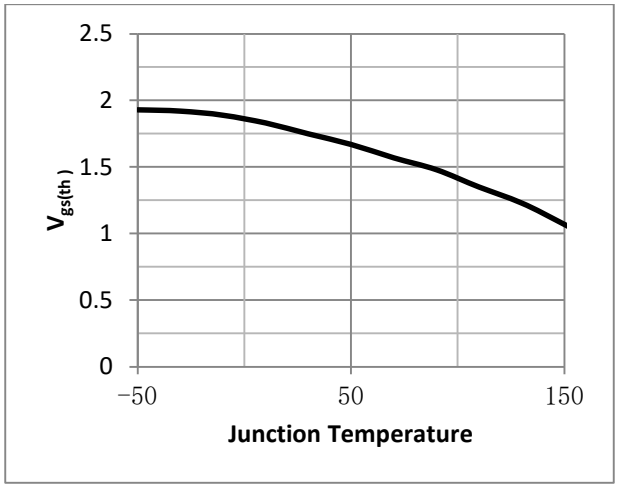


Fig.4 Resistance V.S Drain Current

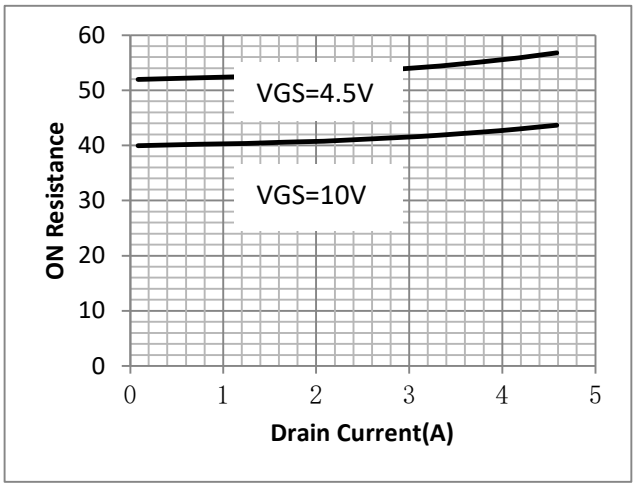


Fig.5 On-Resistance VS Gate Source Voltage

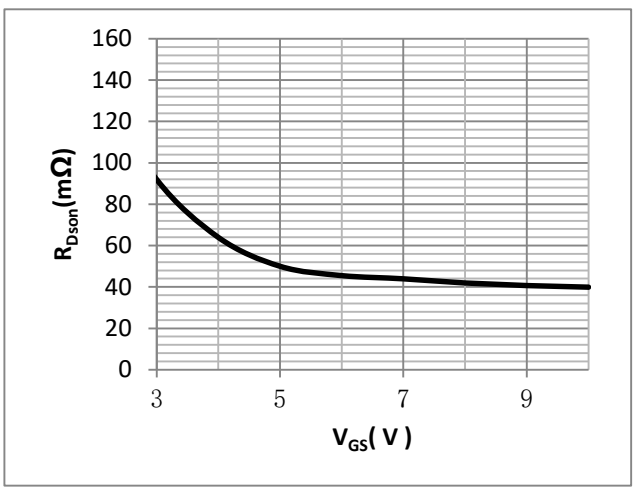
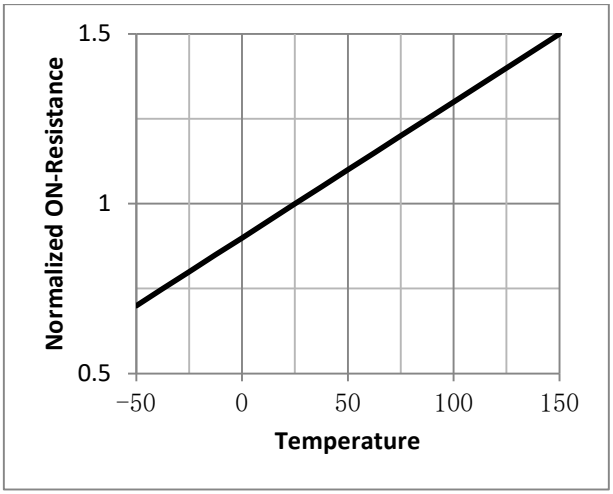


Fig.6 On-Resistance V.S Junction Temperature



•P Channel characteristics curve

Fig.1 Power Dissipation Derating Curve

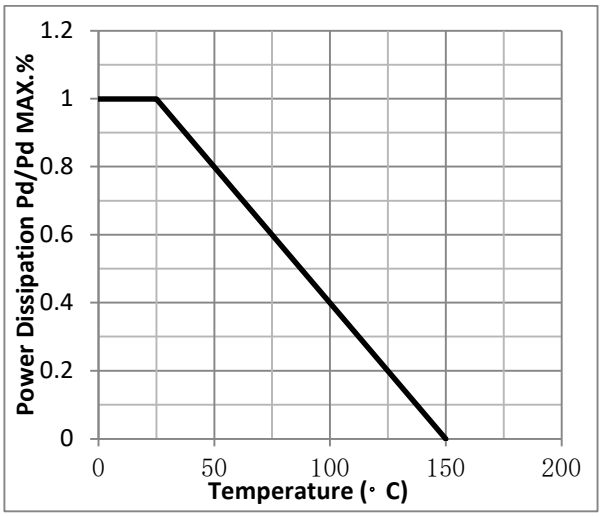


Fig.2 Typical output Characteristics

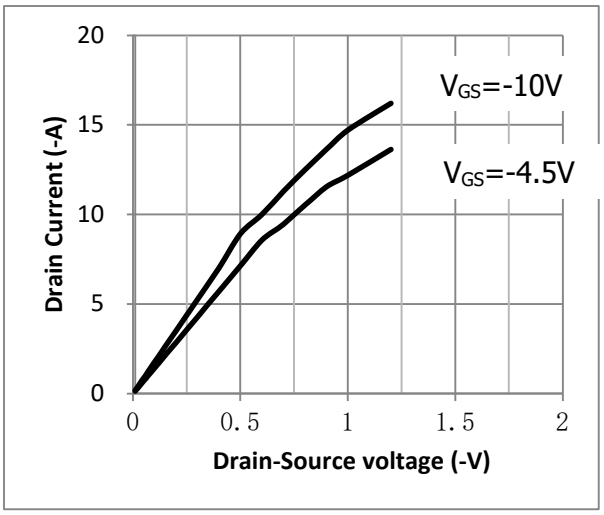


Fig.3 Threshold Voltage V.S Junction Temperature

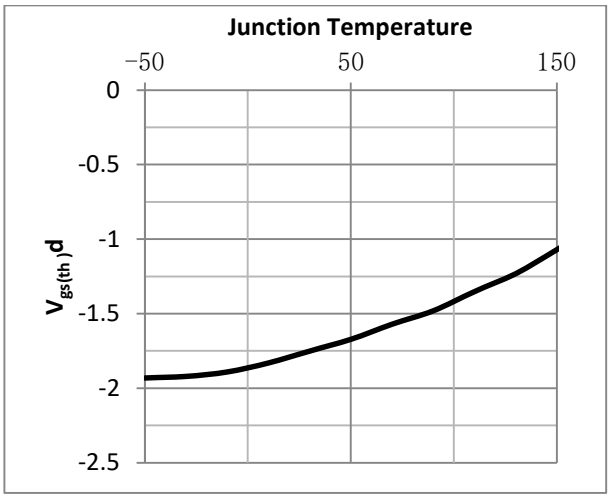


Fig.4 Resistance V.S Drain Current

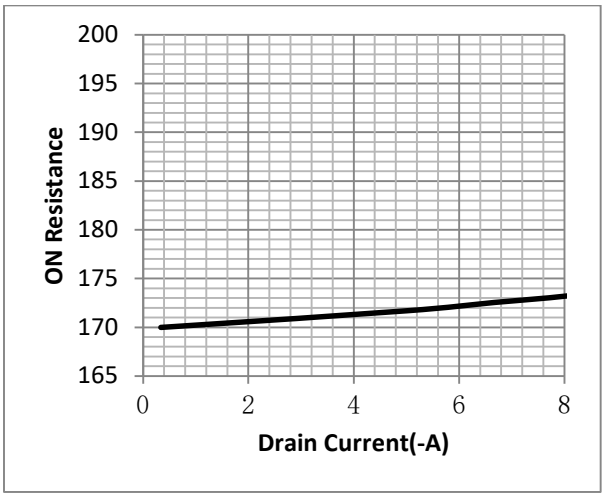


Fig.5 On-Resistance VS Gate Source Voltage

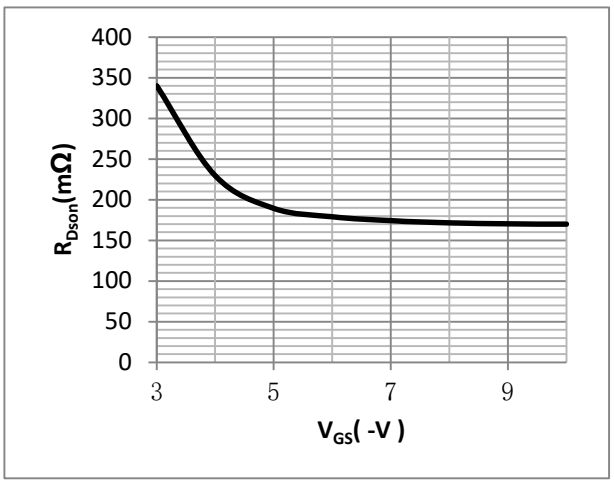
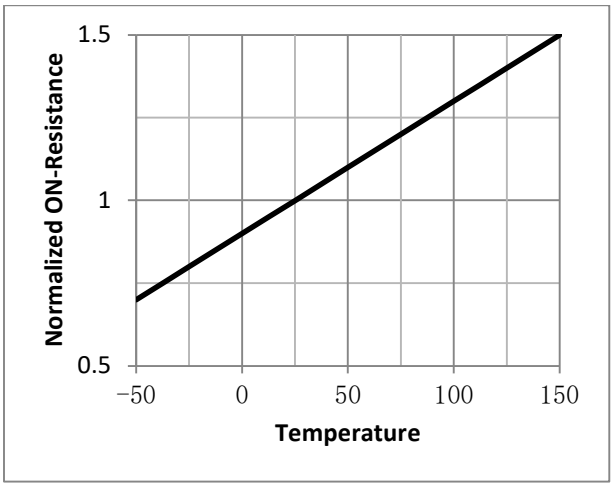


Fig.6 On-Resistance V.S Junction Temperature



•Test Circuit

Fig.1 Gate Charge Measurement Circuit

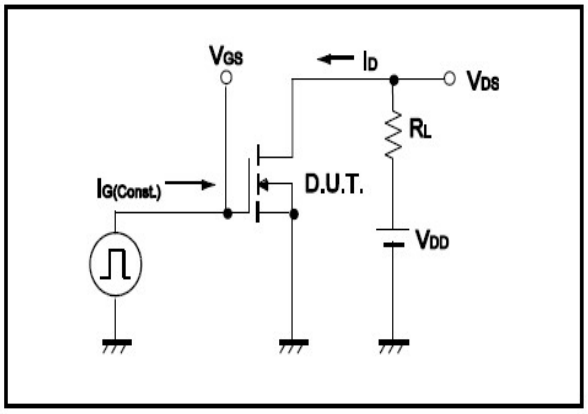


Fig.2 Gate Charge Waveform

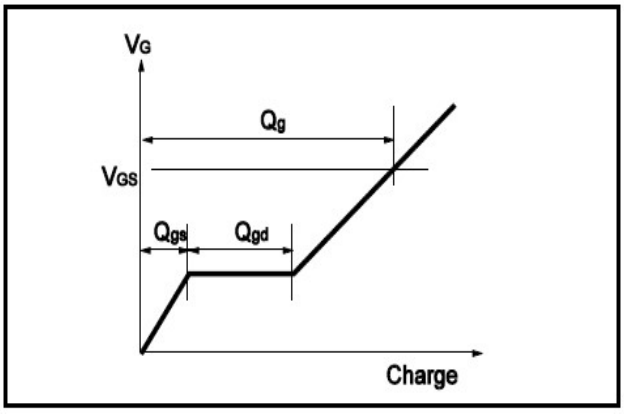


Fig.3 Switching Time Measurement Circuit

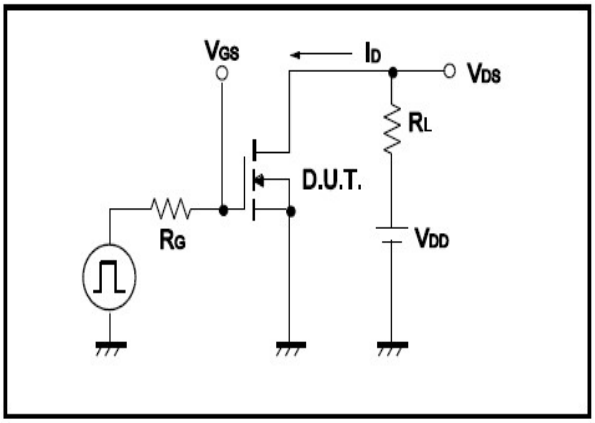


Fig.4 Switching Time Waveform

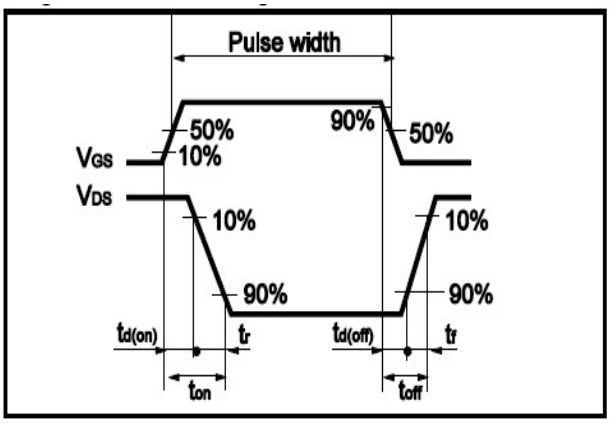


Fig.5 Avalanche Measurement Circuit

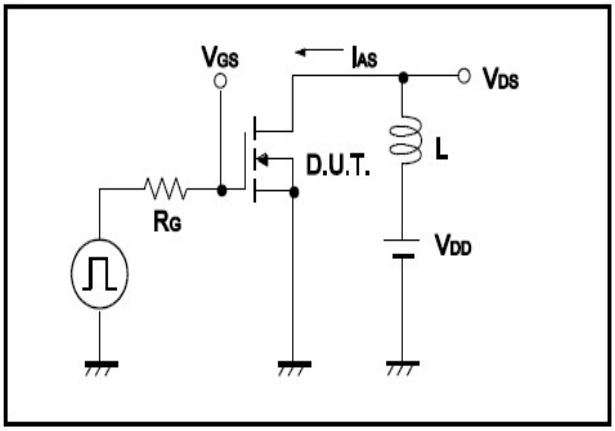
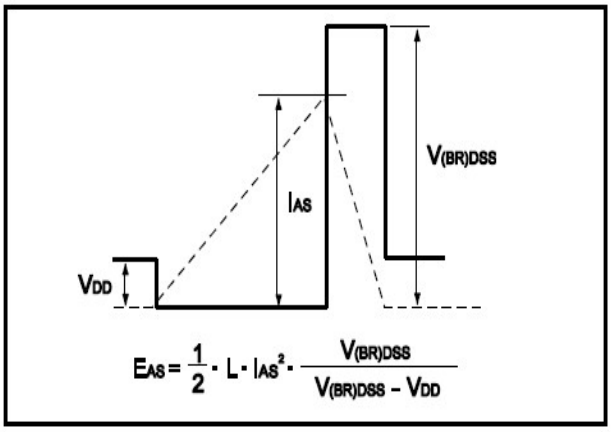


Fig.6 Avalanche Waveform



•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