

• General Description

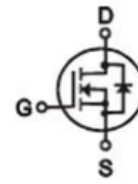
It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

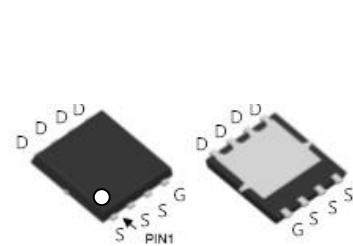
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

• Product Summary


$V_{DS} = 100V$

$R_{DS(ON)} = 5.2m\Omega$

$I_D = 110A$


DFN5 x 6
• Ordering Information:

Part NO.	ZMS050N10N
Marking	ZMS050N10
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

• Absolute Maximum Ratings (T_C = 25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_D @ TC=25^\circ C$	110	A
	$I_D @ TC=75^\circ C$	83	A
	$I_D @ TC=100^\circ C$	69	A
Pulsed Drain Current ①	I_{DM}	330	A
Total Power Dissipation	$P_D @ TC=25^\circ C$	85	W
Total Power Dissipation	$P_D @ TA=25^\circ C$	3.4	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Single Pulse Avalanche Energy @ L=0.1mH	E_{AS}	240	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	1.5	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	37	° C/W
Soldering temperature, wave soldering 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	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 =25A @ TC=25°C		5.2	6.8	mΩ
		V _{GS} =10V, I _D =25A @ TC=125°C		6.7		mΩ
		V _{GS} =4.5V, I _D =15A @ TC=25°C		6.5	8.5	mΩ
		V _{GS} =4.5V, I _D =15A @ TC=125°C		8.6		mΩ
Forward Transconductance	g _{FS}	V _{DS} =25V, I _D =10A		28		s
Source-drain voltage	V _{SD}	I _S =25A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V f = 1MHz	-	2820	-	pF
Output capacitance	C _{oss}		-	1270	-	
Reverse transfer capacitance	C _{rss}		-	31	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 25V	-	34	-	nC
Gate - Source charge	Q _{gs}	I _D = 8A	-	6.4	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	3.4	-	

Body Diode Reverse Recovery Time	trr	$I_F=20A,$ $di/dt=100A/\mu s$	23	nS
Body Diode Reverse Recovery Charge	Qrr	$I_F=20A,$ $di/dt=100A/\mu s$	120	nC

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

Fig.1 Gate-Charge Characteristics

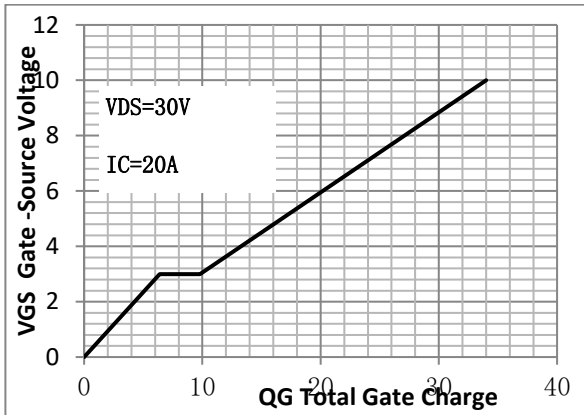


Fig.2 Capacitance Characteristics

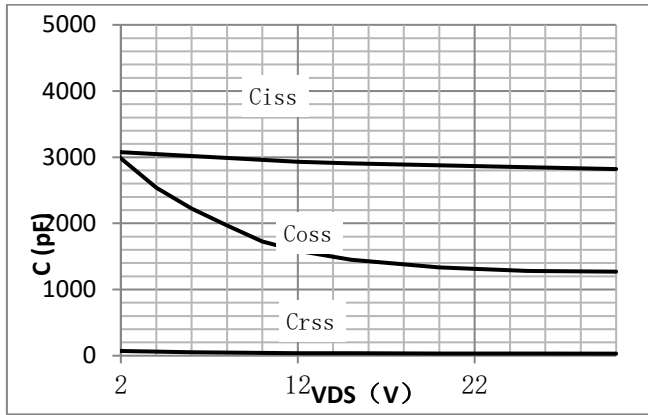


Fig.3 Power Dissipation

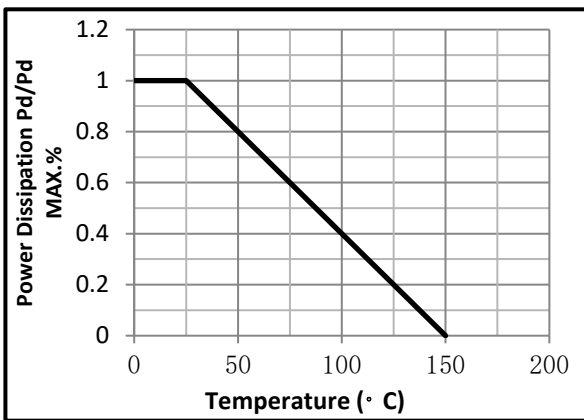


Fig.4 Typical output Characteristics

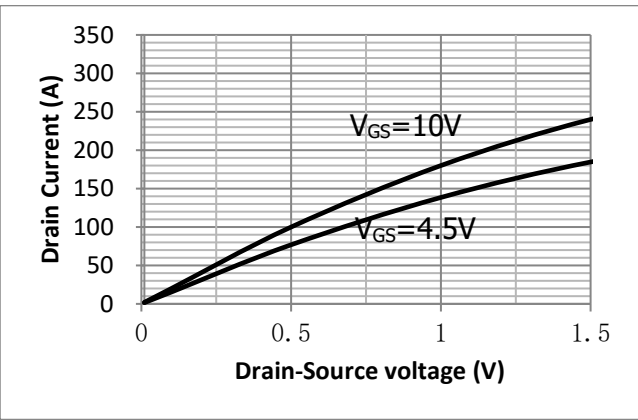


Fig.5 Threshold Voltage V.S Junction Temperature

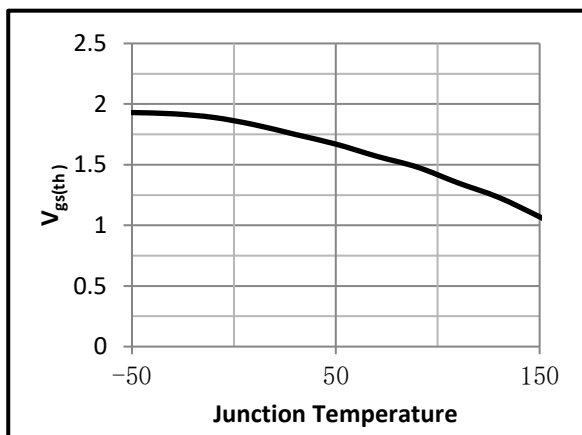


Fig.6 Resistance V.S Drain Current

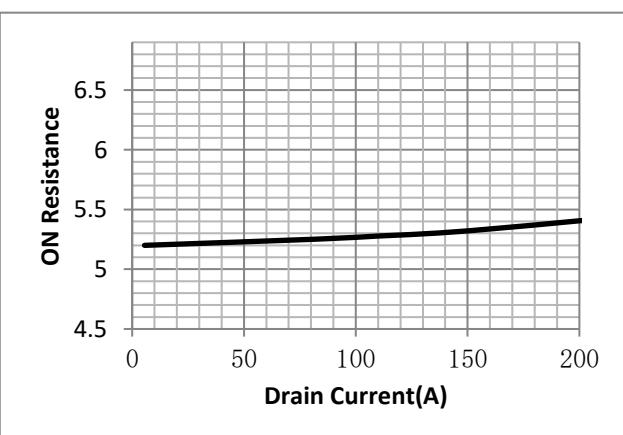


Fig.7 On-Resistance VS Gate Source Voltage

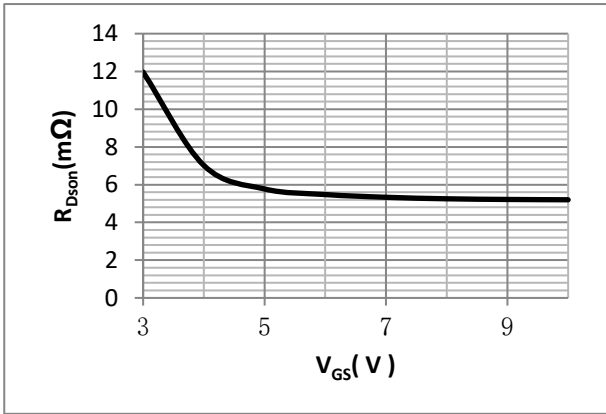


Fig.8 On-Resistance V.S Junction Temperature

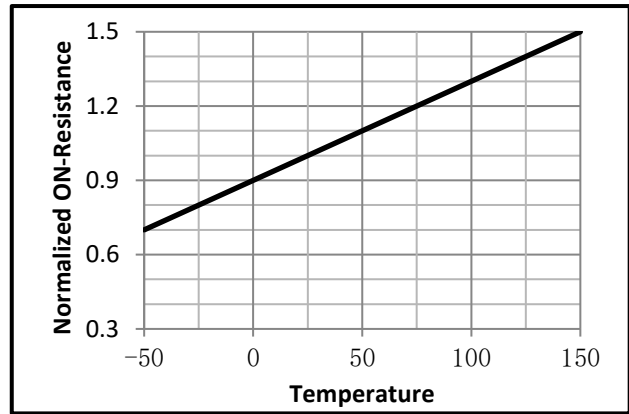


Fig.9 SOA Maximum Safe Operating Area

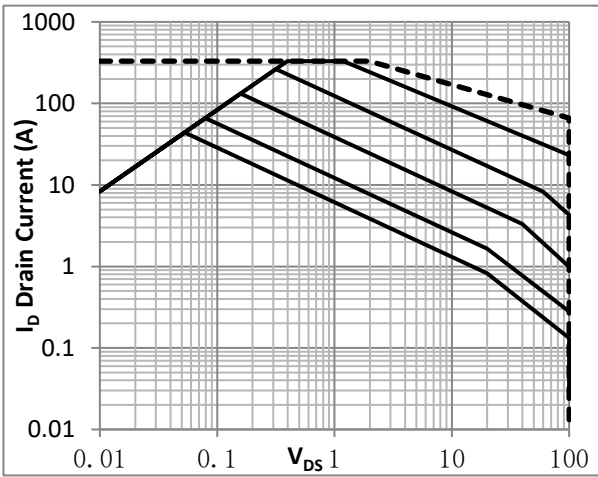


Fig.10 I_D -Junction Temperature

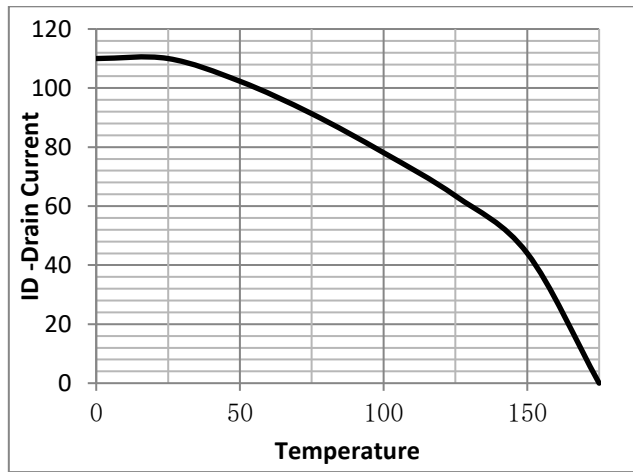


Fig.11 Switching Time Measurement Circuit

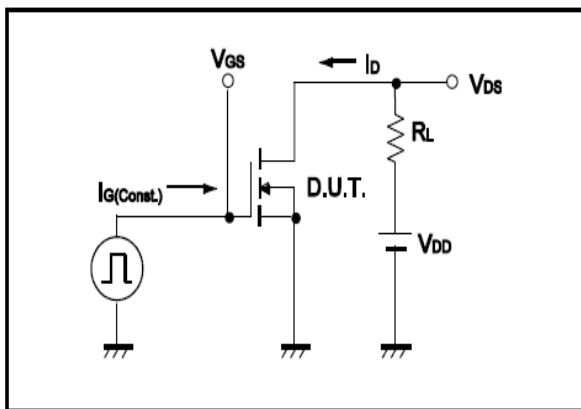


Fig.12 Gate Charge Waveform

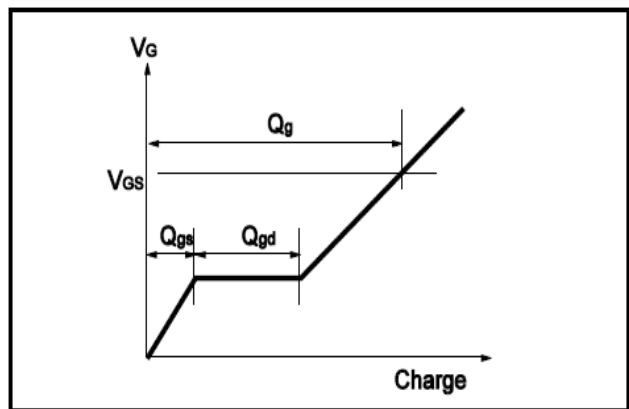


Fig.13 Switching Time Measurement Circuit

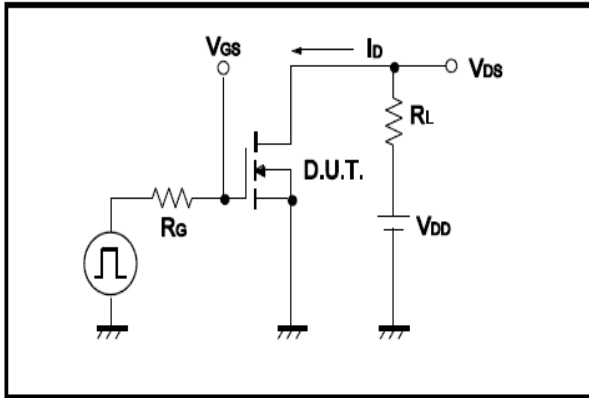


Fig.14 Gate Charge Waveform

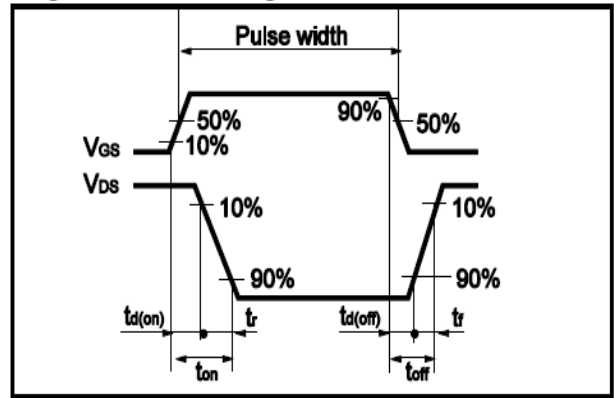


Fig.15 Avalanche Measurement Circuit

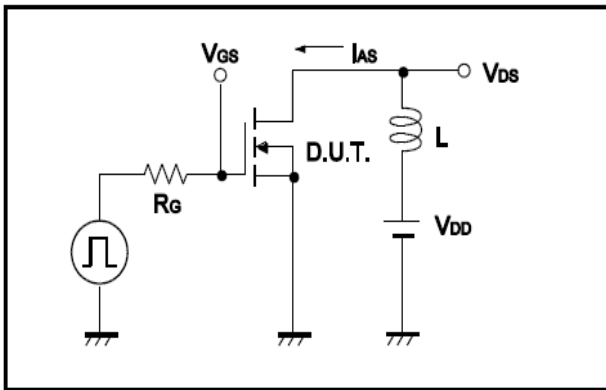
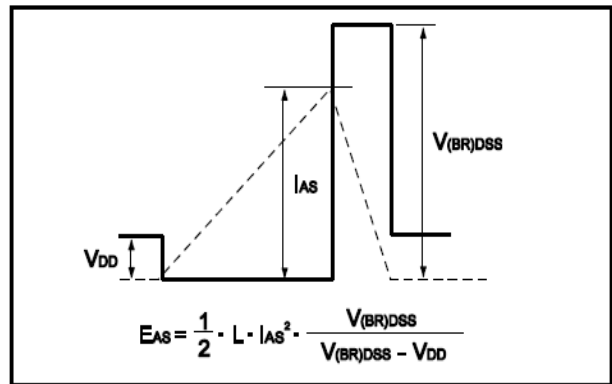


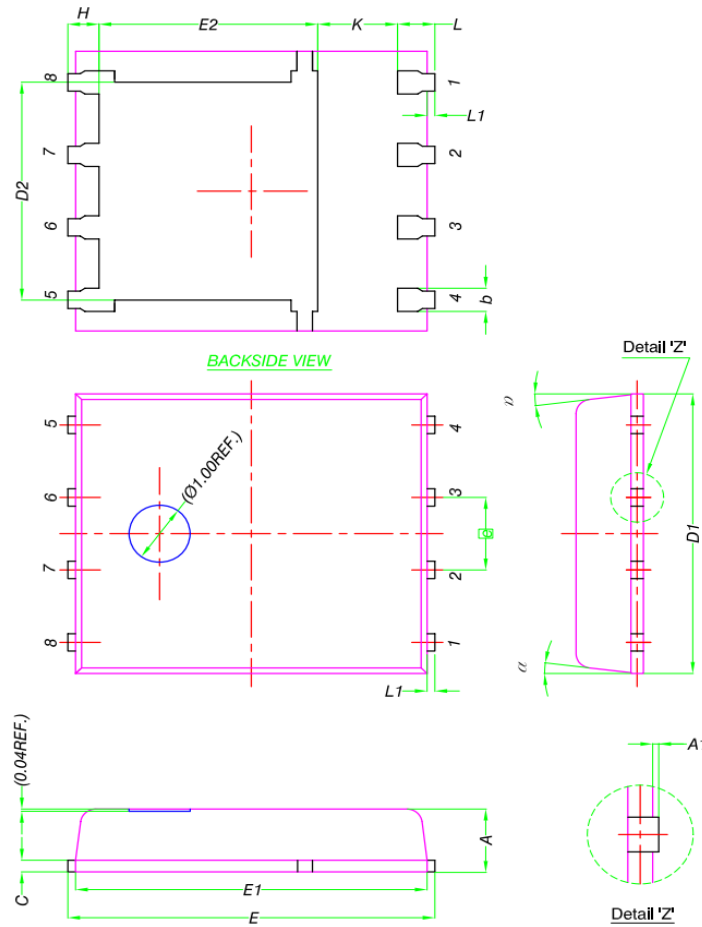
Fig.16 Avalanche Waveform





•Dimensions (DFN5x6)

Unit: mm



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°