

• General Description

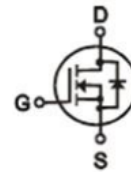
It combines advanced MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• Features

- Advance device constructure
- Low $R_{DS(ON)}$ to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

• Application

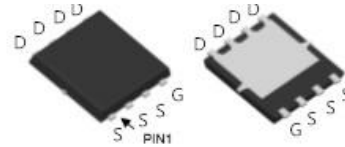
- Synchronous Rectification for AC-DC/DC-DC converter
- Power Tools

• Product Summary


$V_{DS} = 65V$

$R_{DS(ON)} = 5.4m\Omega$

$I_D = 45A$



DFN3 x 3

• Ordering Information:

Part NO.	ZMS054N06S
Marking	054N06
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}	65	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D @ TC=25^\circ C$	45	A
	$I_D @ TC=75^\circ C$	34	A
	$I_D @ TC=100^\circ C$	28	A
Pulsed Drain Current ①	I_{DM}	135	A
Total Power Dissipation	$P_D @ TC=25^\circ C$	43	W
Total Power Dissipation	$P_D @ TA=25^\circ C$	2.3	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy @ $L=0.1mH$	E_{AS}	95	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R _{thJC}	-	-	2.9	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	54	° 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	65			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.5		2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 0.8 BV _{DSS} , 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 = 10A		5.4	6.5	mΩ
		V _{GS} = 4.5V, I _D = 5A		7.0	8.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 25V, I _D = 10A		16		s
Source-drain voltage	V _{SD}	I _S = 10A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz V _{DS} = 25V	-	1910	-	pF
Output capacitance	C _{oss}		-	1070	-	
Reverse transfer capacitance	C _{rss}		-	22	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 25V	-	24	-	nC
Gate - Source charge	Q _{gs}	I _D = 8A	-	5	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	3.3	-	

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

Fig.1 Gate-Charge Characteristics

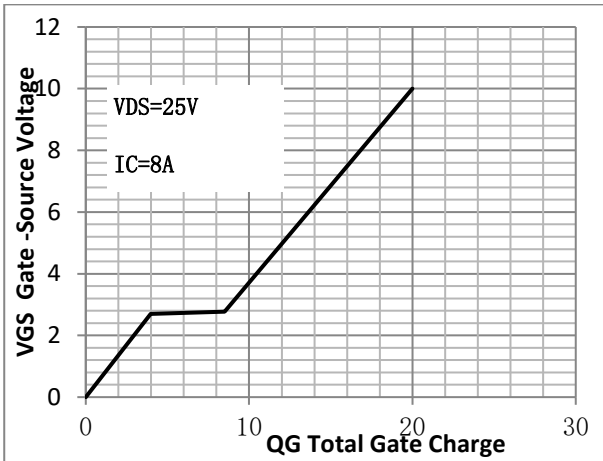


Fig.2 Capacitance Characteristics

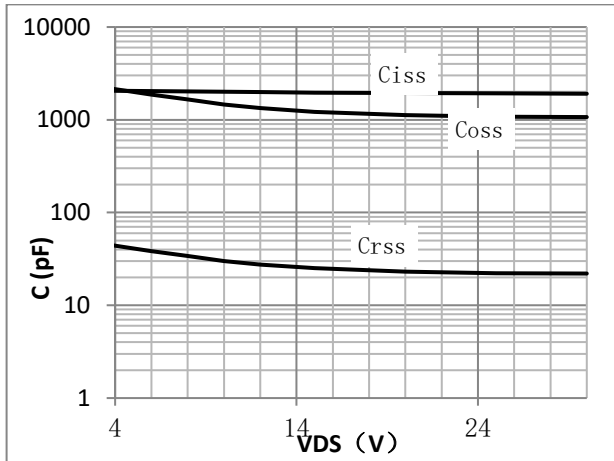


Fig.3 Power Dissipation

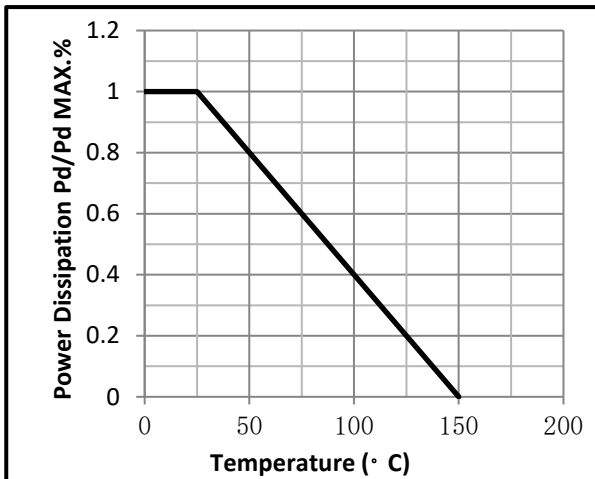


Fig.4 Typical output Characteristics

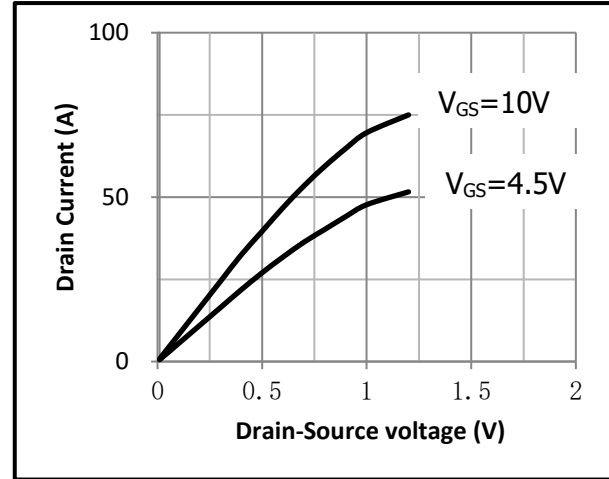


Fig.5 Threshold Voltage V.S Junction Temperature

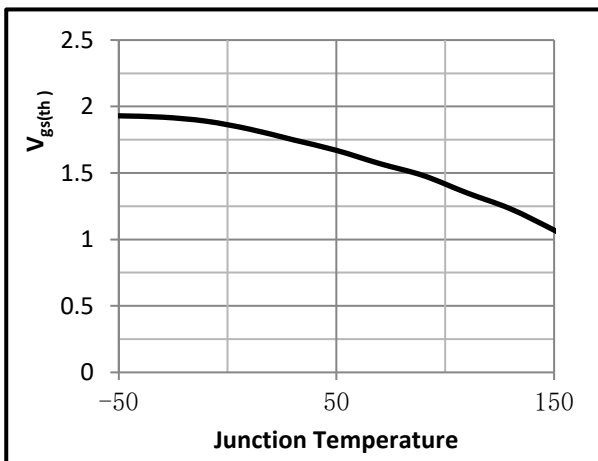


Fig.6 Resistance V.S Drain Current

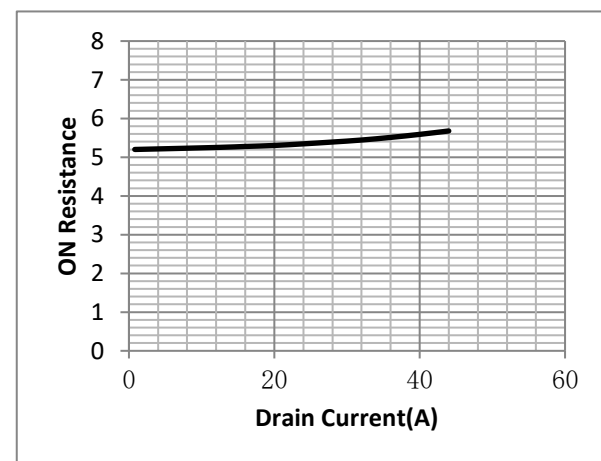


Fig.7 On-Resistance VS Gate Source Voltage

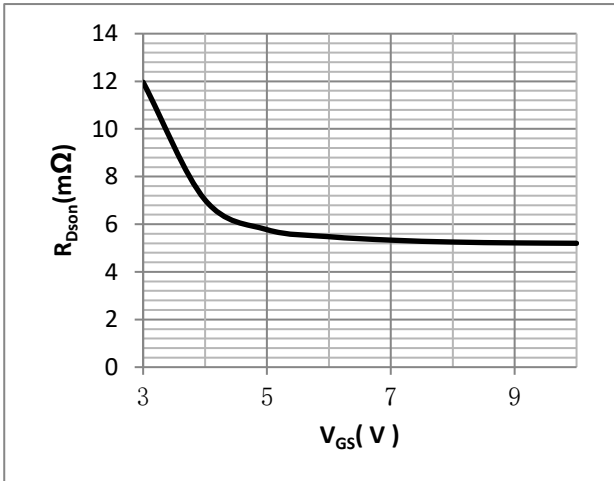


Fig.8 On-Resistance V.S Junction Temperature

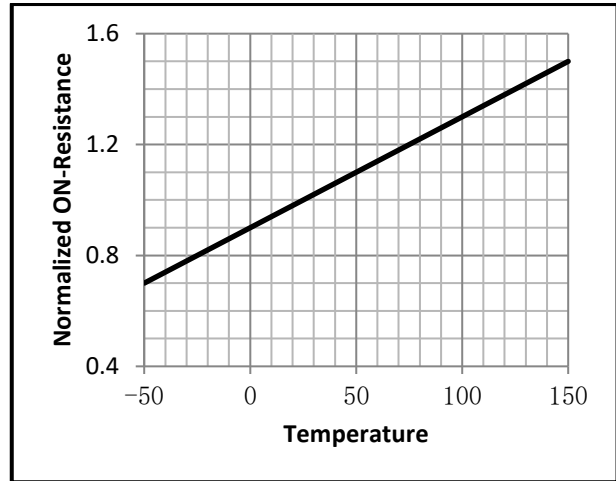


Fig.9 SOA Maximum Safe Operating Area

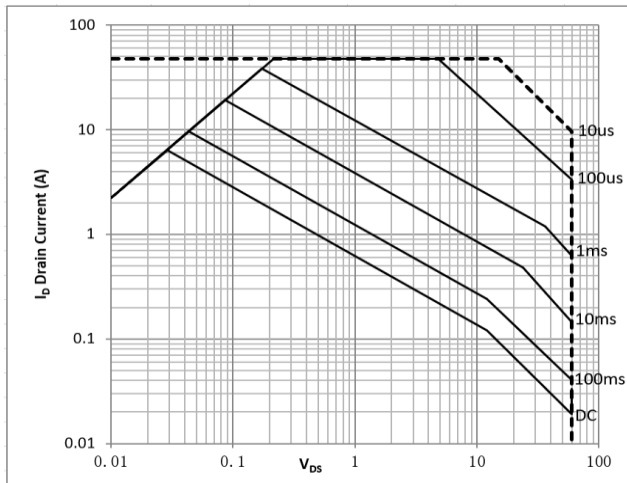


Fig.10 I_D -Junction Temperature

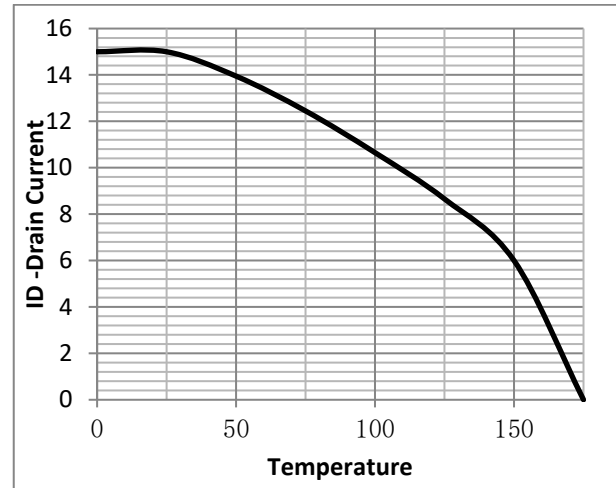


Fig.11 Switching Time Measurement Circuit

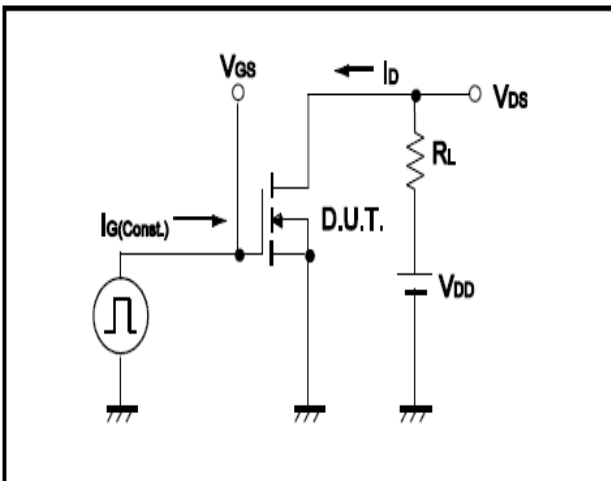


Fig.12 Gate Charge Waveform

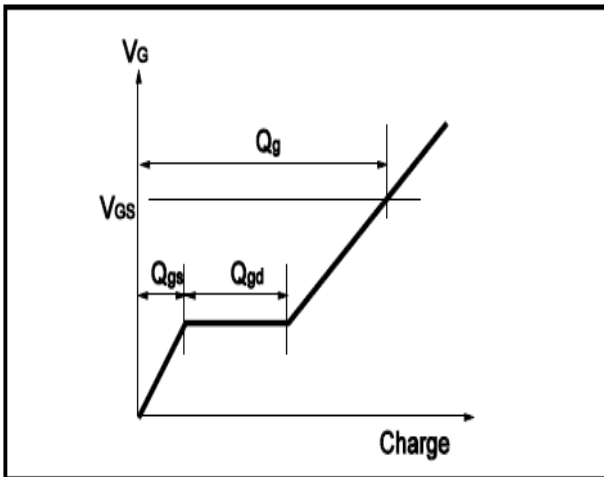


Fig.13 Switching Time Measurement Circuit

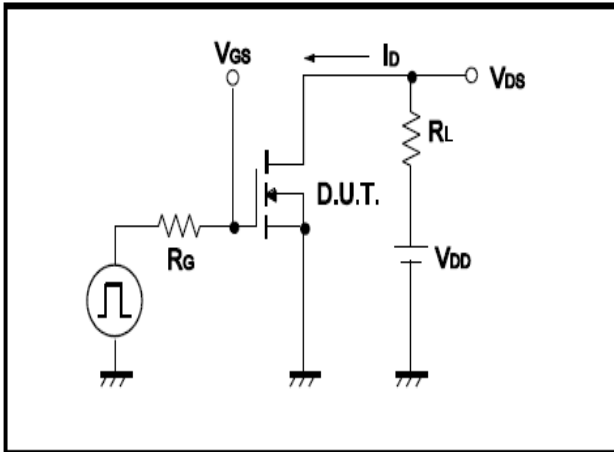
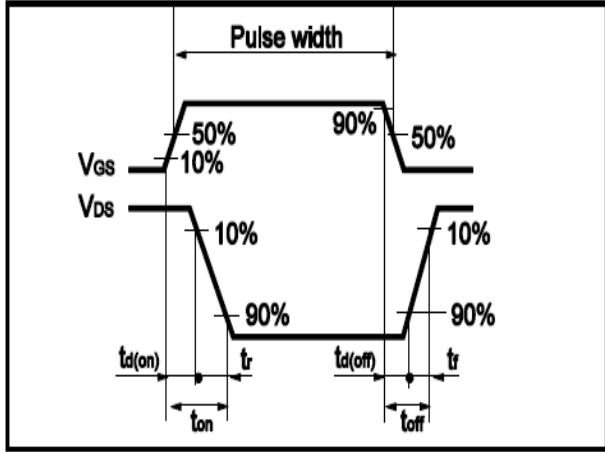


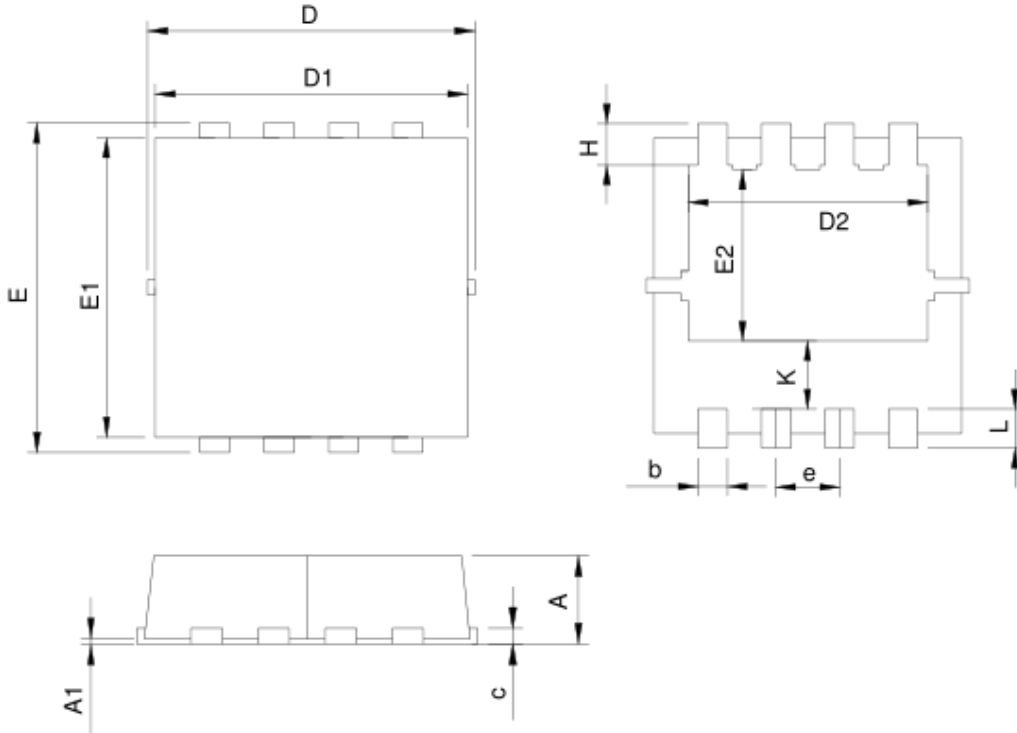
Fig.14 Gate Charge Waveform





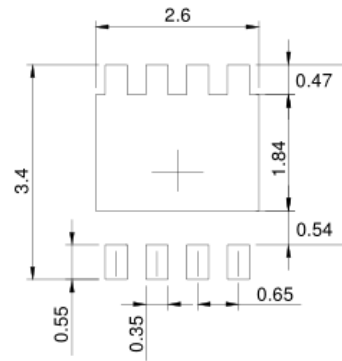
•Dimensions(DFN3x3)

Unit: mm



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm