● General Description

The ZM150N03T 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.

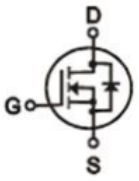
● Features

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

●Application

- ■MB/VGA Vcore
- ■SMPS 2nd Synchronous Rectifier
- ■POL application
- ■BLDC Motor driver

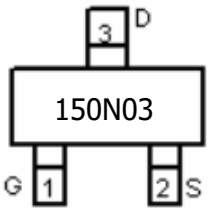
● Product Summary



V_{DS}=30V

$R_{DS(ON)}$=15mΩ

I_D=8A



SOT23

RoHS

●Ordering Information:

Part NO.	ZM150N03T
Marking	150N03
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@}$TC=25℃	8	A
	$I_{D@}$TC=75℃	6.1	A
	$I_{D@}$TC=100℃	5	A
Pulsed Drain Current ①	I_{DM}	24	A
Total Power Dissipation②	P_D@TC=25℃	10	W
Total Power Dissipation	P_D@TA=25℃	0.7	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	20	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case②	R_{thJC}	-	-	13	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	180	° 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	30			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}=30V, 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=8A		15	19	mΩ
		V_{GS}=4.5V, I_D=6A		18	23	mΩ
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D=1A		10		s
Source-drain voltage	V_{SD}	Is=8A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz	-	560	-	pF
Output capacitance	Coss		-	81	-	
Reverse transfer capacitance	Crss		-	49	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	R_g	f = 1MHz		2		Ω
Total gate charge	Q_g	V_{DD} =25V	-	10	-	nC
Gate - Source charge	Q_{gs}	I_D = 8A	-	1.6	-	
Gate - Drain charge	Qgd	VGS = 10V	-	2.8	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DS} =25V		5		ns
Turn-on Rise time Rise Time	t_r	I_D = 8A		3		ns
Turn-off Delay Time	$t_{d(off)}$	V_{GS}=10V		18		ns

Turn-off Fall Time	t_f	R_{GEN}=3Ω		3		ns

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

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate；

Fig.1 Gate-Charge Characteristics

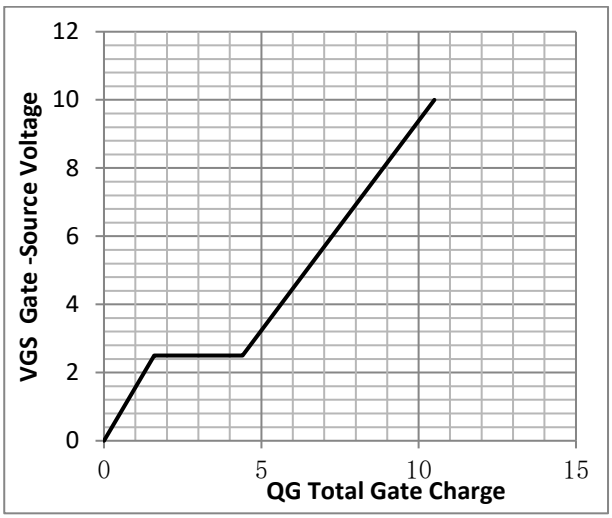


Fig.2 Capacitance Characteristics

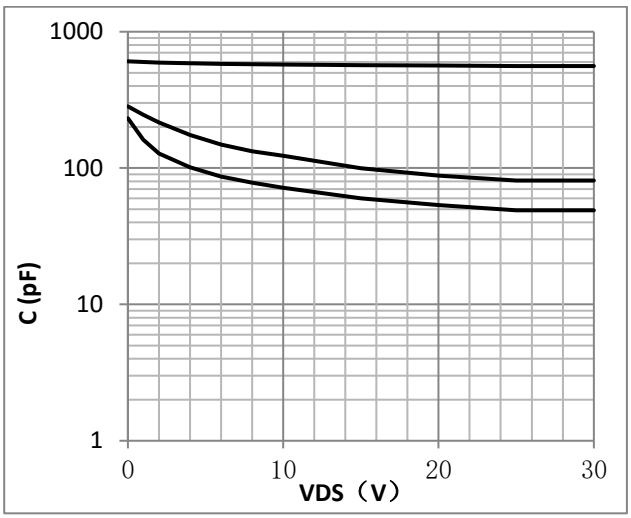


Fig.2 Power Dissipation Derating Curve

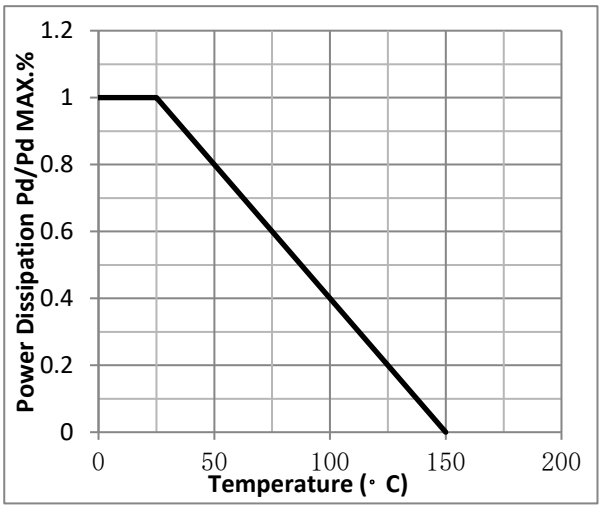


Fig.3 Typical output Characteristics

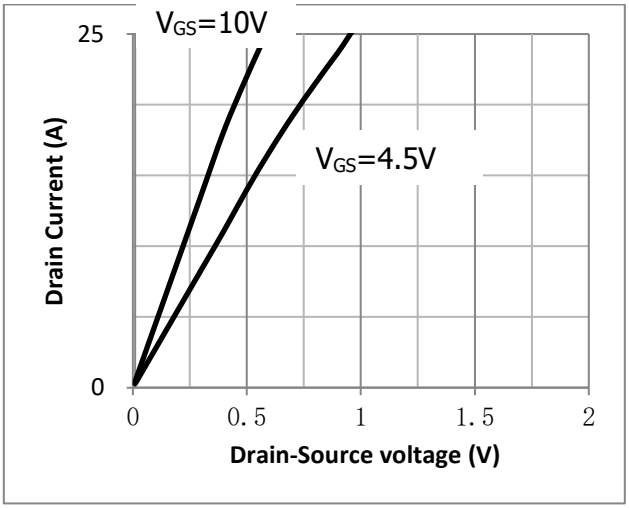


Fig.4 Threshold Voltage V.S Junction Temperature

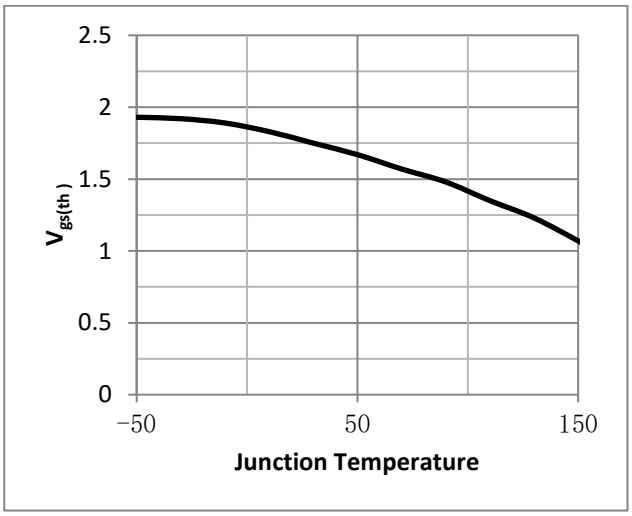


Fig.5 Resistance V.S Drain Current

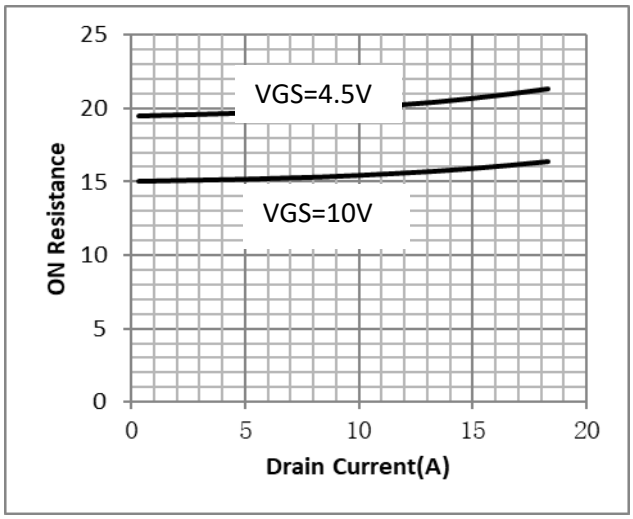


Fig.6 On-Resistance VS Gate Source Voltage

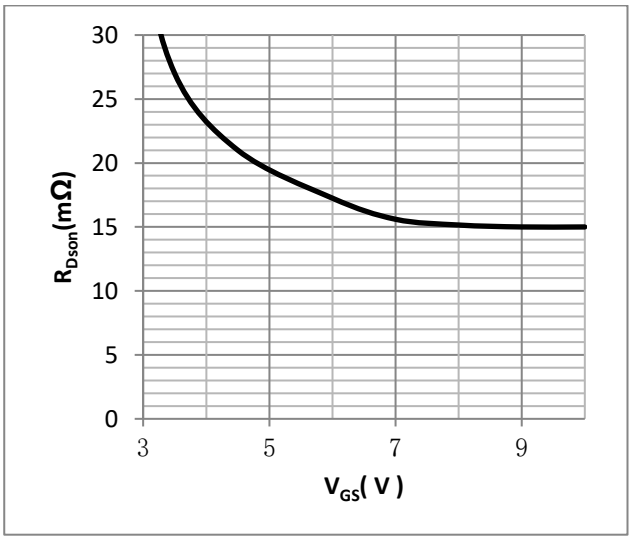


Fig.7 On-Resistance V.S Junction Temperature

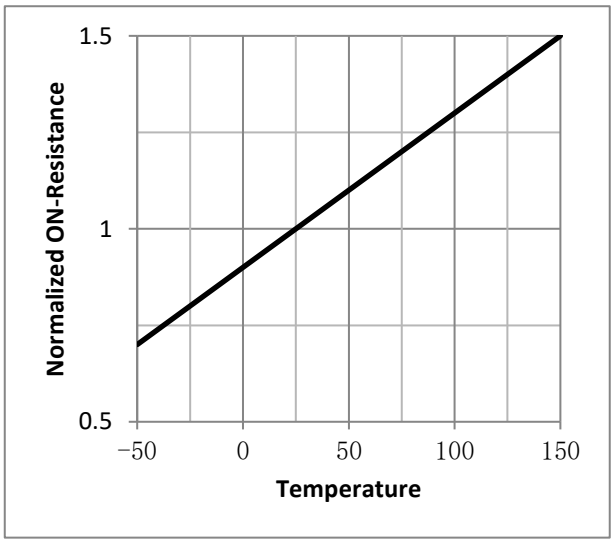


Fig.8 Maximum Forward Biased Safe Operating Area

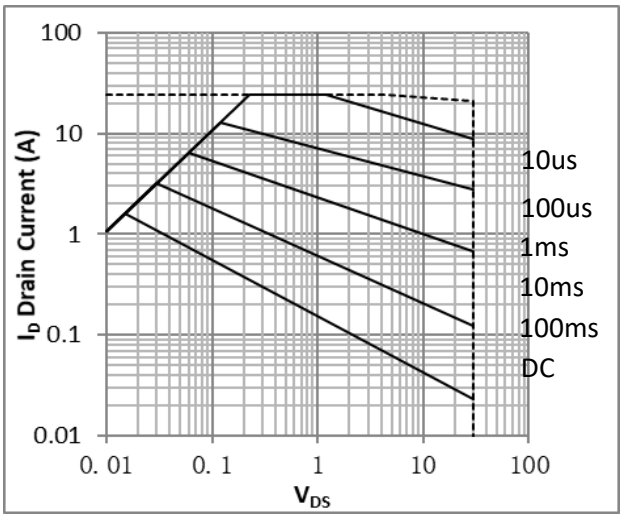


Fig.9 ID-Junction Temperature

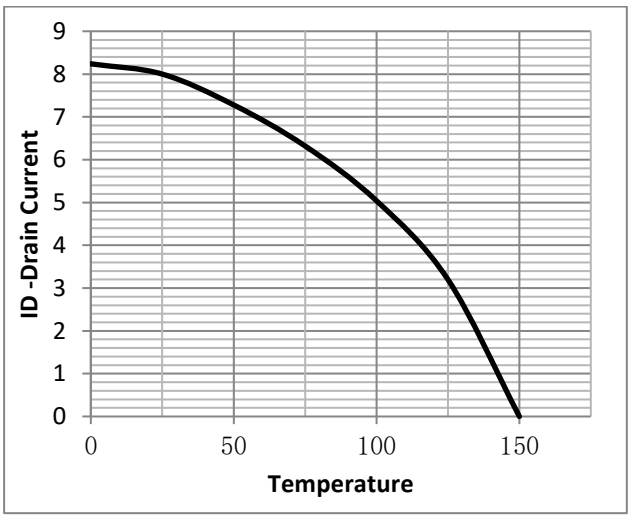


Fig.10 Switching Time Measurement Circuit

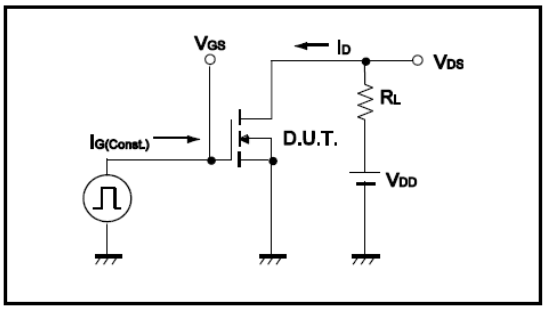


Fig.11 Gate Charge Waveform

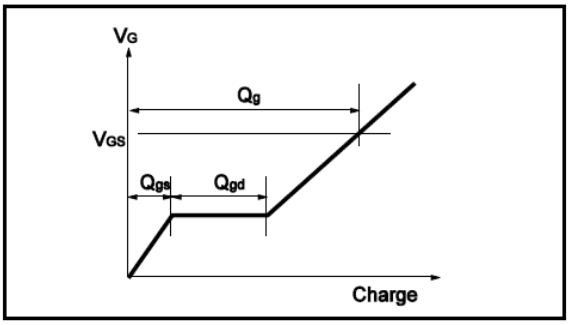


Fig.12 Switching Time Measurement Circuit

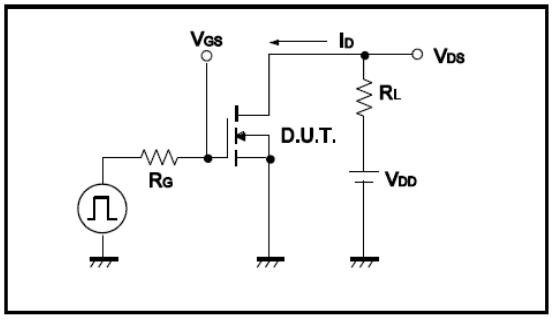


Fig.13 Gate Charge Waveform

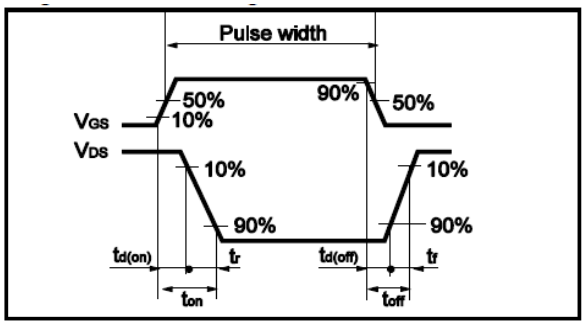


Fig.14 Avalanche Measurement Circuit

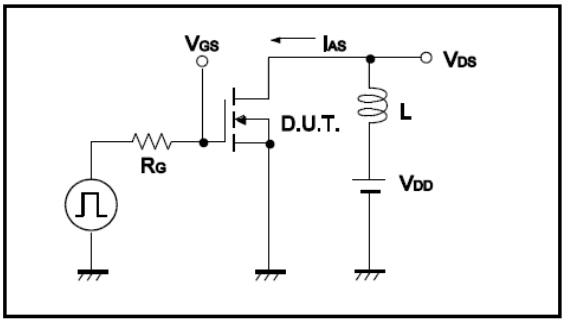
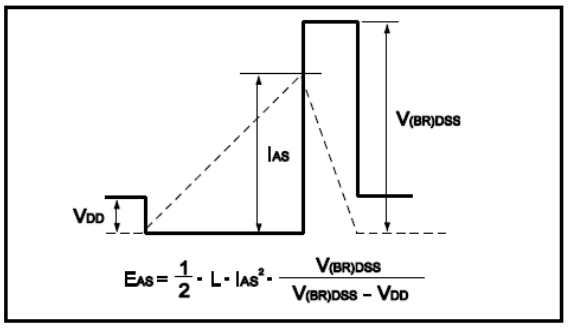
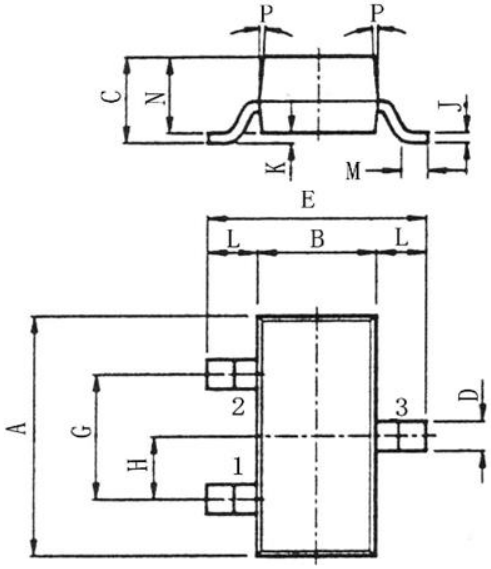


Fig.15 Avalanche Waveform



●Dimensions(SOT23)

Unit：mm



SYMBOL	min	nom	max
A	2.70	2.9	3.10
B	1.15	1.3	1.50
C			1.30
D	0.35	0.4	0.55
E	2.20	2.4	2.70
G	1.70	1.9	2.10
H	0.85	0.95	1.05
J	0.05	0.10	0.20
K	0.00		0.10
L	0.45	0.55	0.65
M	0.20		
N	0.90	1.00	1.20
P		7°	