

• General Description

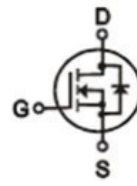
The ZM019N03B combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• 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

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

• Product Summary


$V_{DS} = 30V$

$R_{DS(ON)} = 2m\Omega$

$I_D = 176A$


TO-263
• Ordering Information:

Part NO.	ZM019N03B
Marking	ZM019N03
Packing Information	Bulk Tube
Basic ordering unit (pcs)	500

• Absolute Maximum Ratings ($T_C=25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	176	A
	$I_{D@TC=75^\circ C}$	133.8	A
	$I_{D@TC=100^\circ C}$	110.9	A
Pulsed Drain Current ①	I_{DM}	350	A
Total Power Dissipation($TC=25^\circ C$)	$P_D@TC=25^\circ C$	100	W
Total Power Dissipation($TA=25^\circ C$)	$P_D@TA=25^\circ C$	3.2	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}	240	mJ
Avalanche Current@ $L=0.1mH$	I_{AS}	70	A

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	1.5	$^{\circ}C/W$
Thermal resistance, junction - ambient	R_{thJA}	-	-	40	$^{\circ}C/W$
Soldering temperature, wave soldering for 10s	T_{sold}	-	-	265	$^{\circ}C$

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2		2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=24A$		2	2.5	m Ω
		$V_{GS}=4.5V, I_D=12A$		2.5	3.3	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=10A$		35		s
Source-drain voltage	V_{SD}	$I_S=24A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=20V$ $f = 1MHz$	-	5200	-	pF
Output capacitance	C_{oss}		-	650	-	
Reverse transfer capacitance	C_{rss}		-	500	-	

•Gate Charge characteristics($T_a = 25^{\circ}C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = 25V$ $I_D = 30A$ $V_{GS} = 10V$	-	92	-	nC
Gate - Source charge	Q_{gs}		-	21	-	
Gate - Drain charge	Q_{gd}		-	19	-	

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

Fig.1 Gate-Charge Characteristics

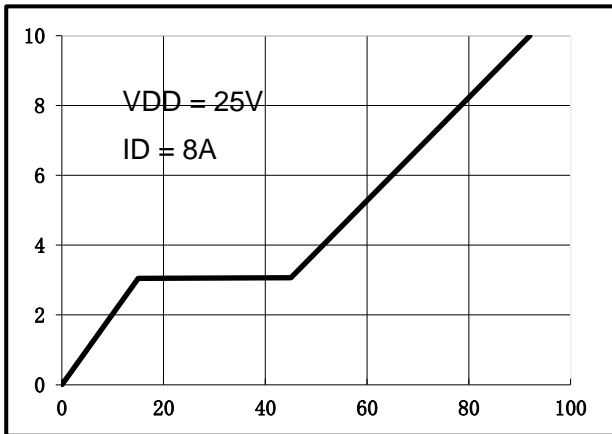


Fig.2 Capacitance Characteristics

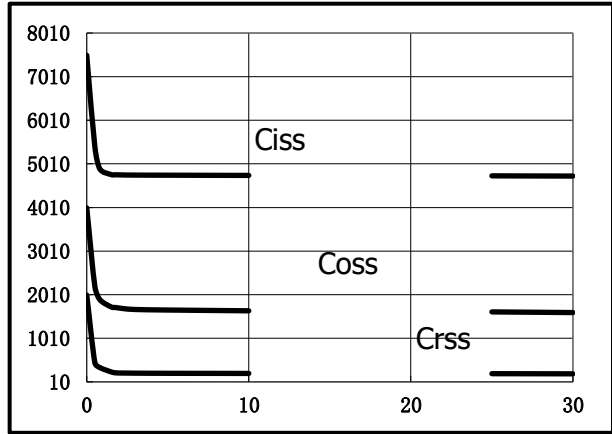


Fig.3 Power Dissipation

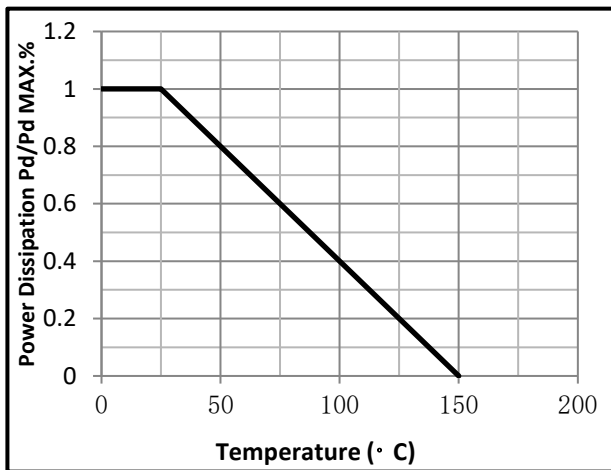


Fig.4 Typical output Characteristics

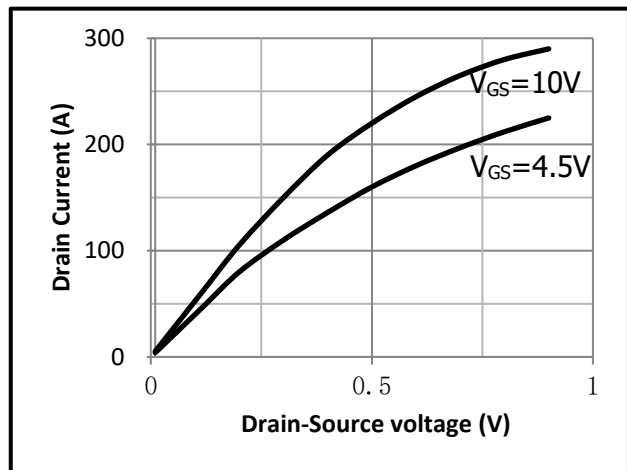


Fig.5 Threshold Voltage V.S Junction Temperature

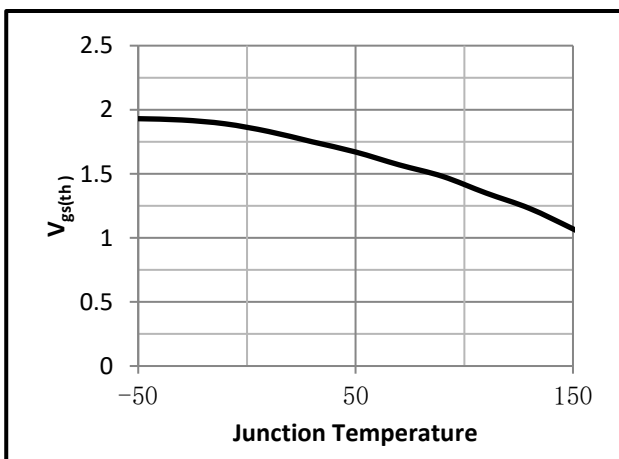


Fig.6 Resistance V.S Drain Current

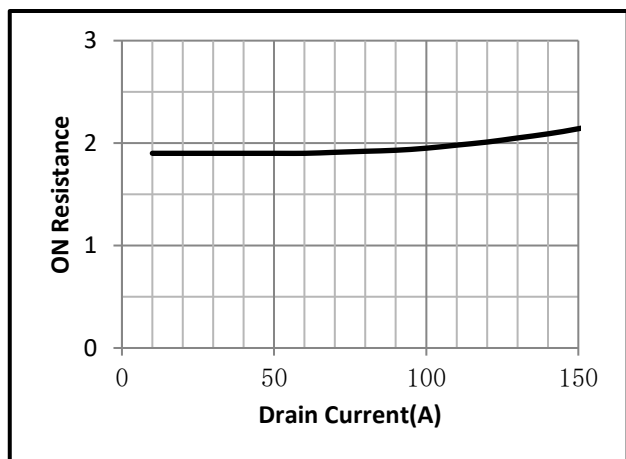


Fig.7 On-Resistance VS Gate Source Voltage

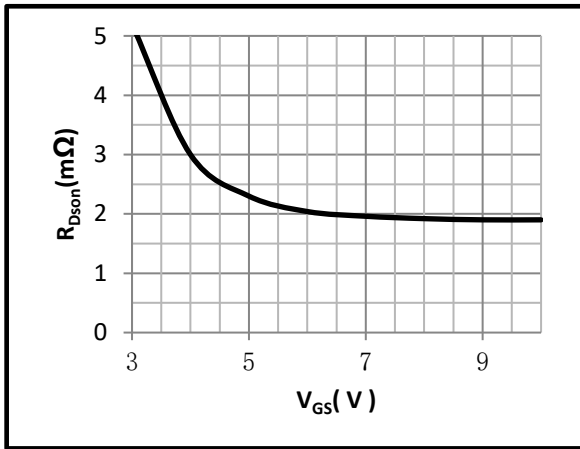


Fig.8 On-Resistance V.S Junction Temperature

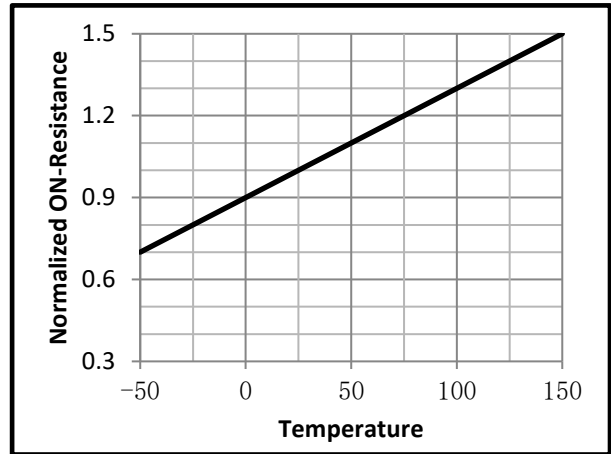


Fig.9 Switching Time Measurement Circuit

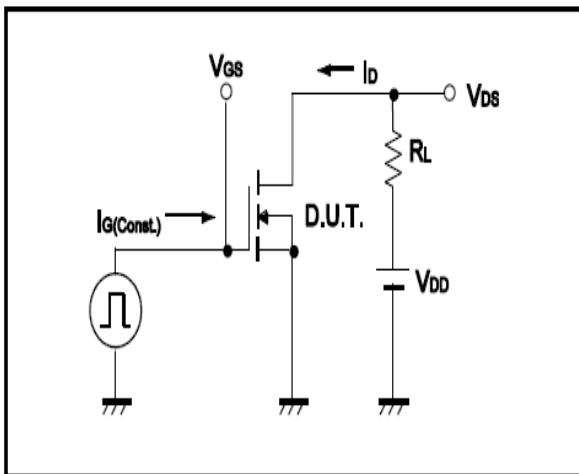


Fig.10 Gate Charge Waveform

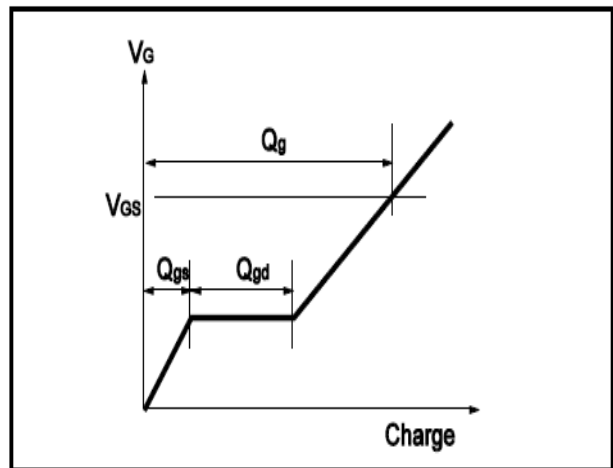


Fig.11 Switching Time Measurement Circuit

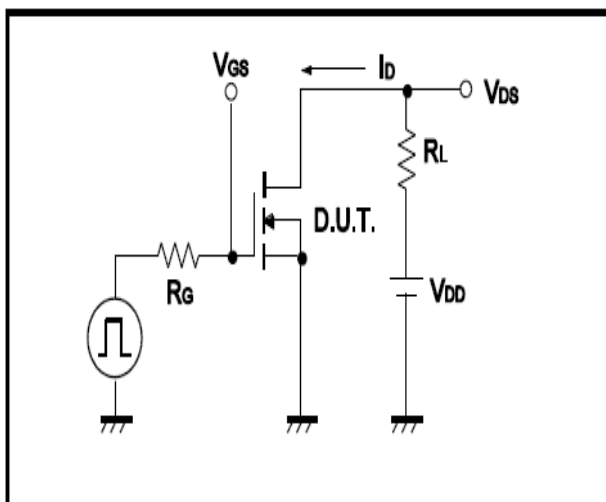
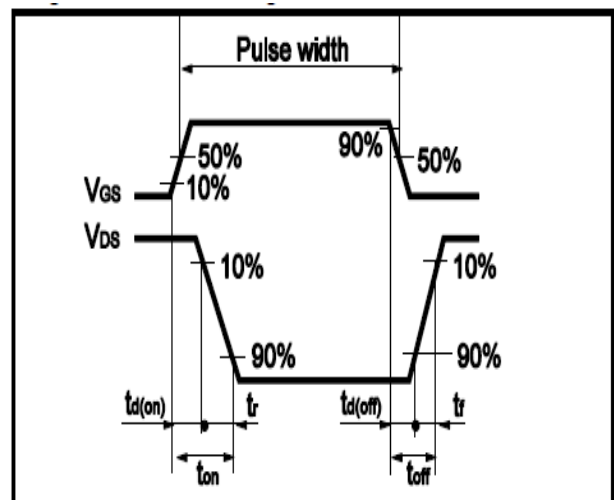


Fig.12 Gate Charge Waveform



• Dimensions (TO-263)

Unit: mm

SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.3		1.75
D	9.95		10.25				

