

• General Description

The ZM100N02U 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

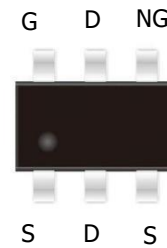
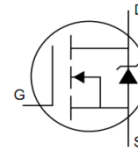
- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

• Product Summary

$V_{DS} = 20V$

$R_{DS(ON)} = 13m\Omega$

$I_D = 10A$



SOT23-6

• Ordering Information:

Part NO.	ZM100N02U
Marking	ZM100N02
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}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	$I_{D@TC=25^{\circ}C}$	10	A
	$I_{D@TC=75^{\circ}C}$	7.6	A
	$I_{D@TC=100^{\circ}C}$	6.3	A
Pulsed Drain Current ^①	I_{DM}	46	A
Total Power Dissipation ^②	P_D	15	W
Total Power Dissipation(TA=25°C)	$P_{D@TA=25^{\circ}C}$	1.3	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R _{thJC}	-	-	8	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	95	° 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	20			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	0.5	0.8	1.2	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1.0	uA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V			±100	nA
Static Drain-source On Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6A		13	16	mΩ
		V _{GS} =2.5V, I _D =3A		16	19	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =5A		8		s
Source-drain voltage	V _{SD}	I _S =6A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	950	-	pF
Output capacitance	C _{oss}		-	230	-	
Reverse transfer capacitance	C _{rss}		-	100	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} =15V	-	12	-	nC
Gate - Source charge	Q _{gs}	I _D = 4A	-	4	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	6	-	

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

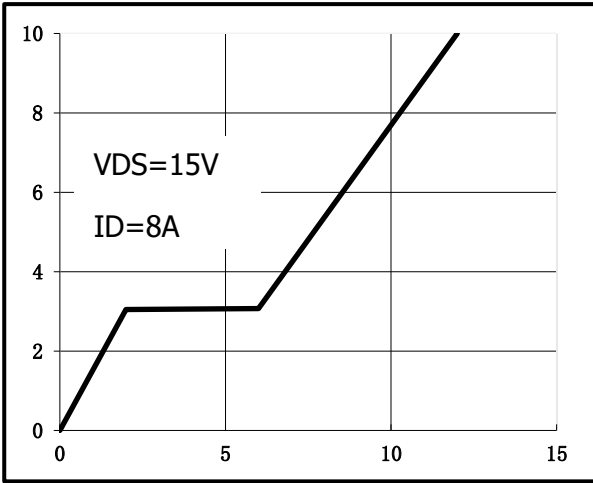


Fig.2 Capacitance Characteristics

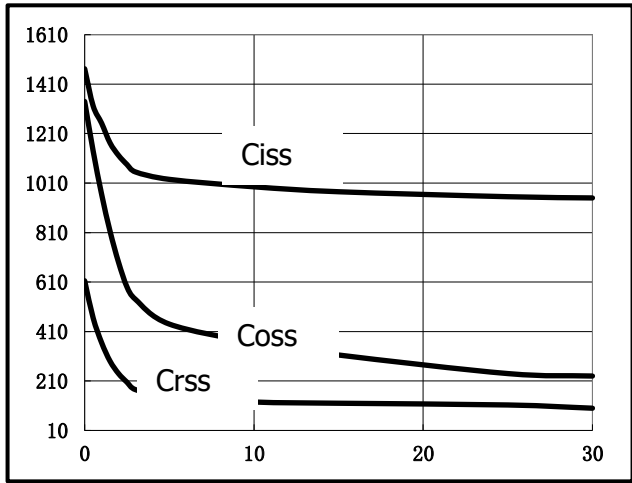


Fig.3 Power Dissipation Derating Curve

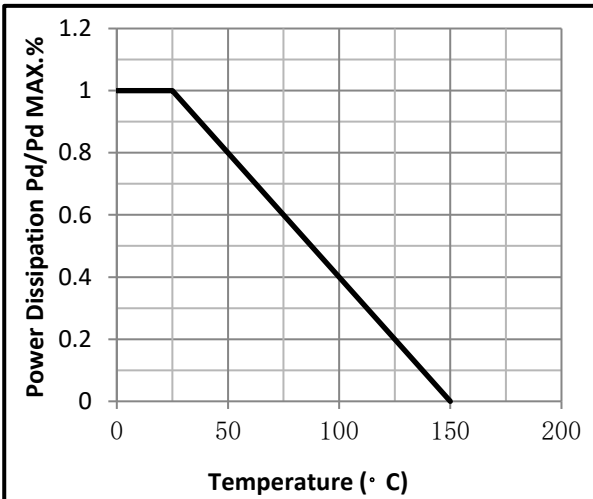


Fig.4 Typical output Characteristics

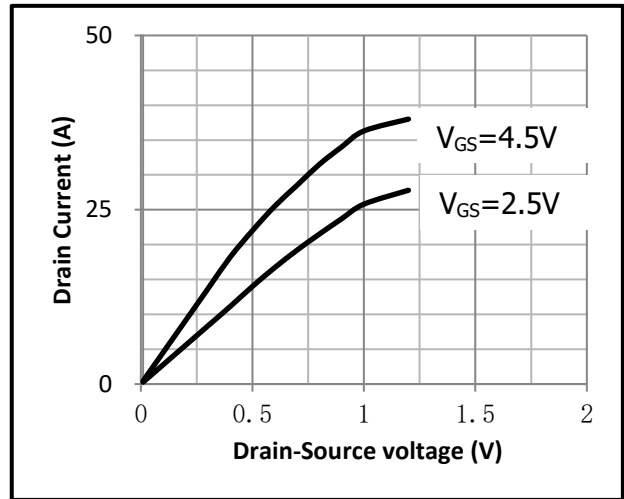


Fig.5 Threshold Voltage V.S Junction Temperature

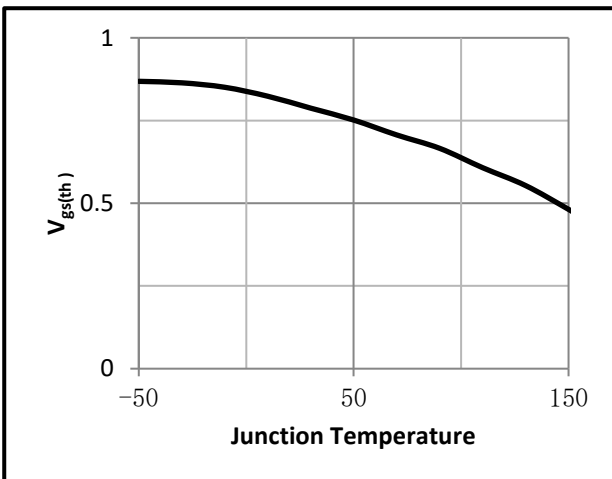


Fig.6 Resistance V.S Drain Current

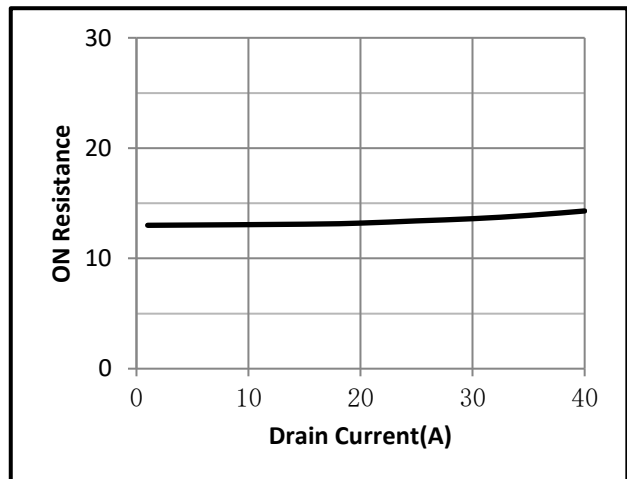


Fig.7 On-Resistance VS Gate Source Voltage

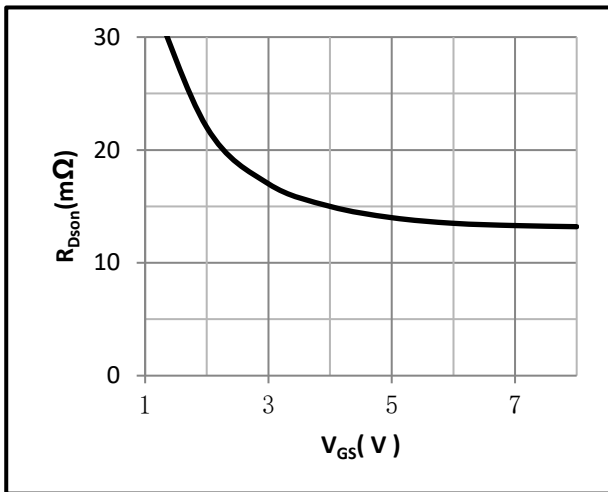


Fig.8 On-Resistance V.S Junction Temperature

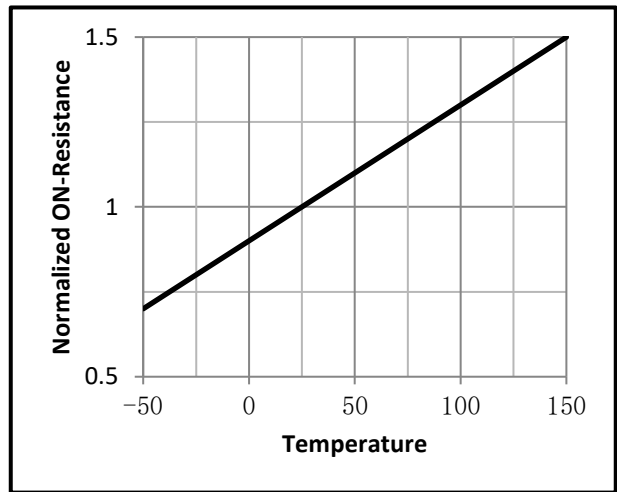


Fig.9 Switching Time Measurement Circuit

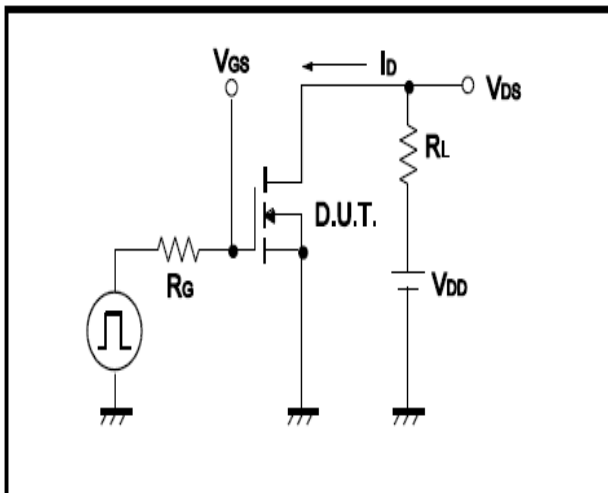


Fig.10 Gate Charge Waveform

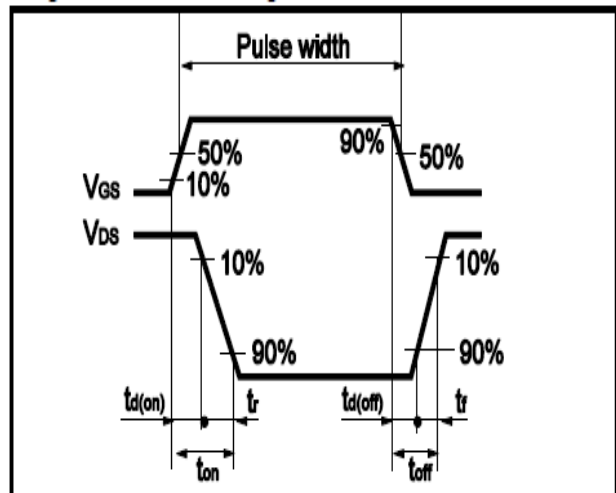


Fig.11 Avalanche Measurement Circuit

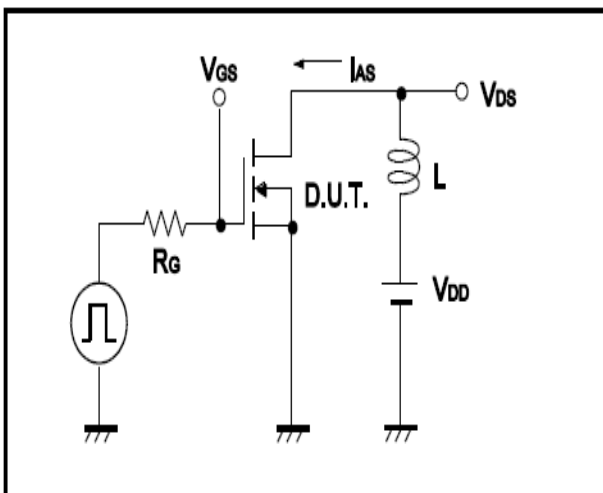
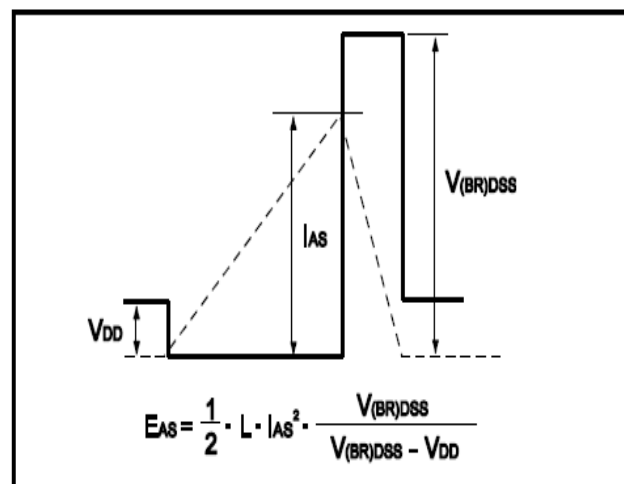


Fig.12 Avalanche Waveform



•Dimensions(SOT23-6)

Unit: mm

