

**• General Description**

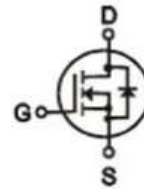
The ZM065N02D combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

**• 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**

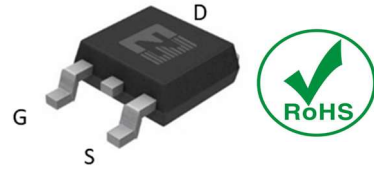
- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

**• Product Summary**


$V_{DS} = 20V$

$R_{DS(ON)} = 6.5m\Omega$

$I_D = 50A$



TO-252

**• Ordering Information:**

Part NO.	ZM065N02D
Marking	ZM065N02
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

**• Absolute Maximum Ratings (T<sub>C</sub> = 25°C)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Continuous Drain Current	$I_{D@TC=25^{\circ}C}$	50	A
	$I_{D@TC=75^{\circ}C}$	38	A
	$I_{D@TC=100^{\circ}C}$	32	A
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	100	A
Total Power Dissipation(TC=25°C)	$P_D@TC=25^{\circ}C$	50	W
Total Power Dissipation(TA=25°C)	$P_D@TA=25^{\circ}C$	2.0	W
Operating Junction Temperature	$T_J$	-55 to 150	°C
Storage Temperature	$T_{STG}$	-55 to 150	°C
Single Pulse Avalanche Energy	$E_{AS}$	70	mJ

**●Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	$R_{thJC}$	-	-	2.5	$^{\circ}C/W$
Thermal resistance, junction - ambient	$R_{thJA}$	-	-	65	$^{\circ}C/W$
Soldering temperature, wave soldering for 10s	$T_{sold}$	-	-	265	$^{\circ}C$

**●Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	0.3	0.65	1.0	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$			1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 16A$		6.5	8.4	m $\Omega$
		$V_{GS} = 2.5V, I_D = 12A$		8.3	10.8	m $\Omega$
Forward Trans conductance	$g_{FS}$	$V_{DS} = 25V, I_D = 10A$		10		s

**●Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	$C_{iss}$	$V_{DS} = 15V$ $f = 1MHz$	-	1100	-	pF
Output capacitance	$C_{oss}$		-	230	-	
Reverse transfer capacitance	$C_{rss}$		-	110	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD} = 15V$ $I_D = 16A$ $V_{GS} = 10V$	-	12	-	nC
Gate - Source charge	$Q_{gs}$		-	4	-	
Gate - Drain charge	$Q_{gd}$		-	6	-	

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

Fig.1 Power Dissipation

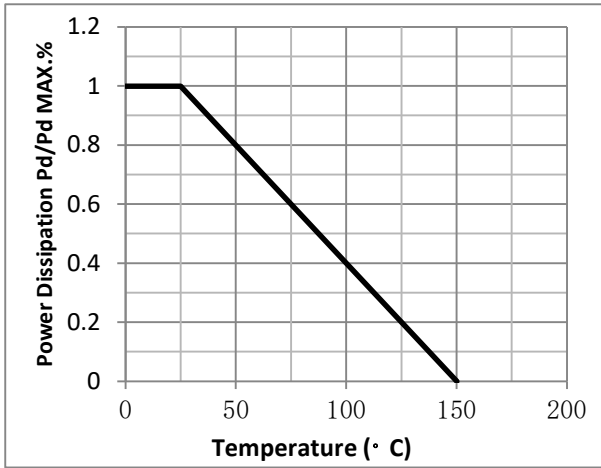


Fig.2 Typical output Characteristics

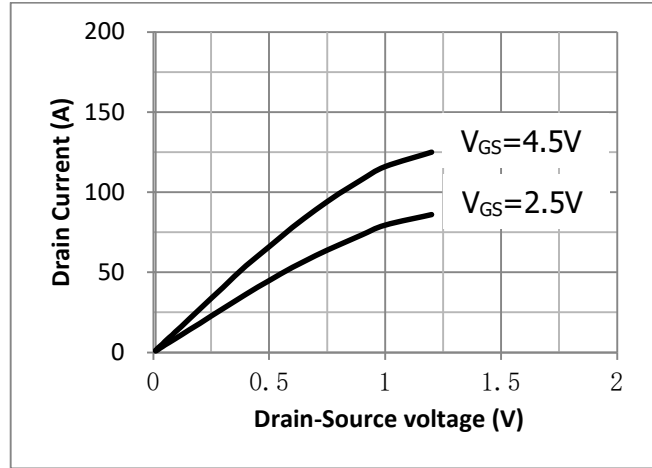


Fig.3 Threshold Voltage V.S Junction Temperature

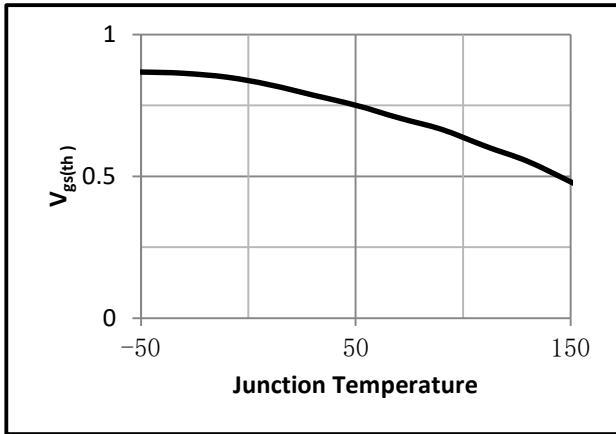


Fig.4 Resistance V.S Drain Current

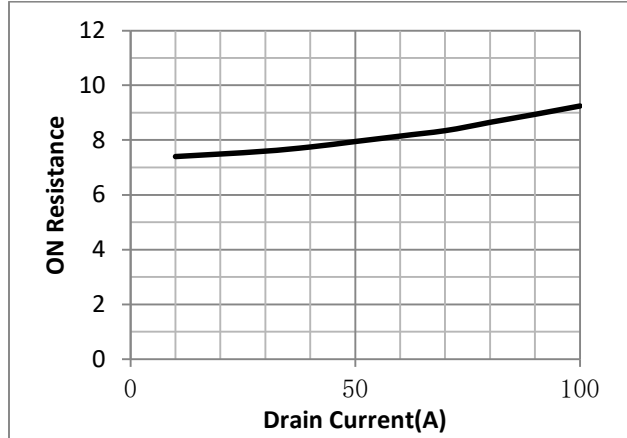


Fig.5 On-Resistance VS Gate Source Voltage

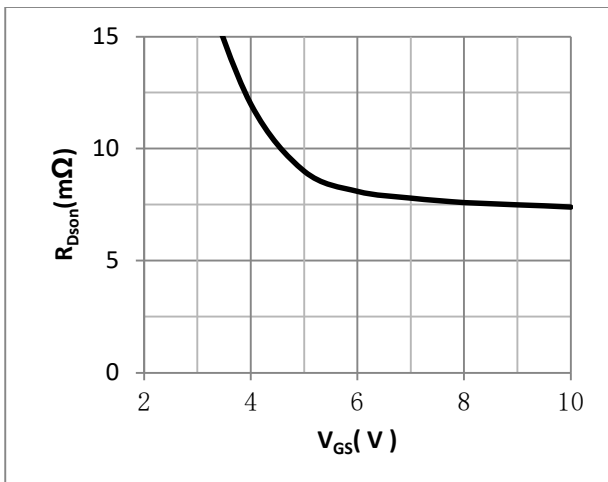


Fig.6 On-Resistance V.S Junction Temperature

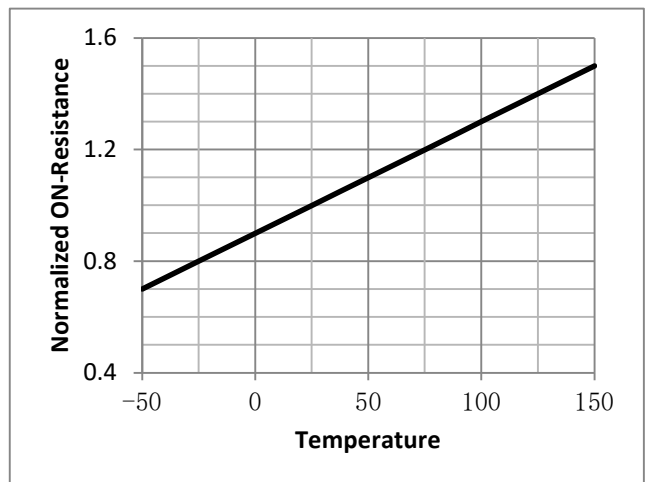


Fig.7 Gate Charge Measurement Circuit

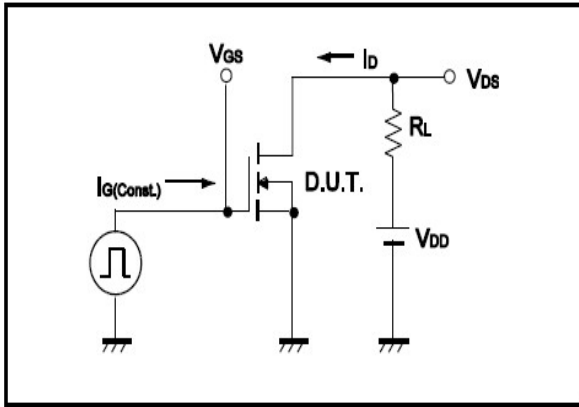


Fig.8 Gate Charge Waveform

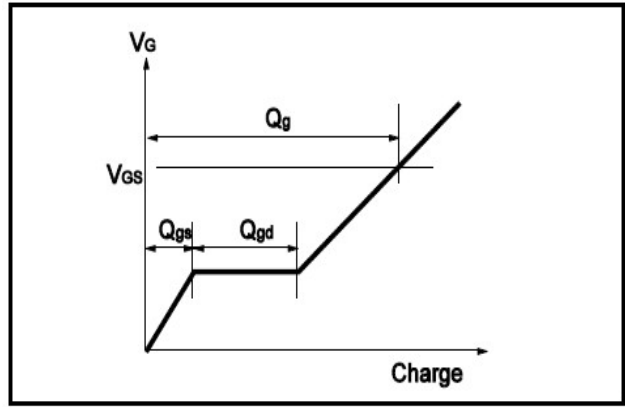


Fig.9 Switching Time Measurement Circuit

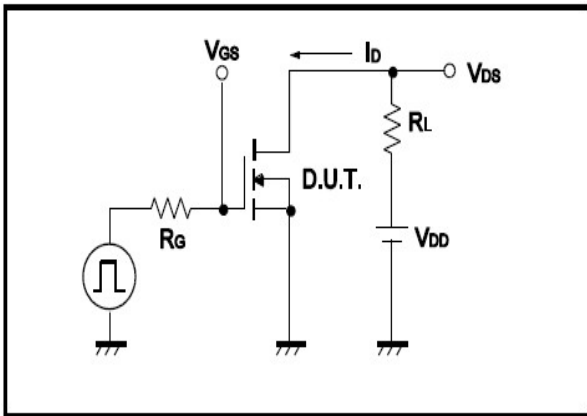


Fig.10 Switching Time Waveform

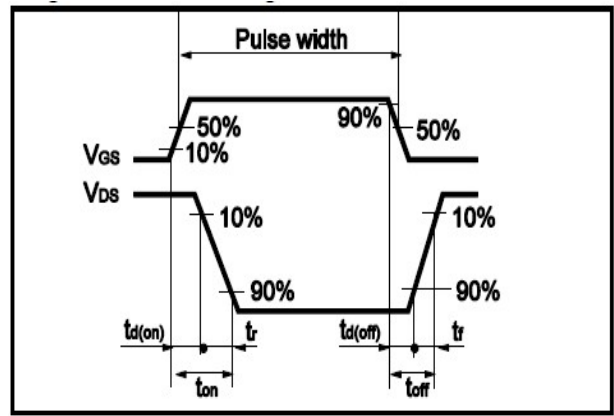


Fig.11 Avalanche Measurement Circuit

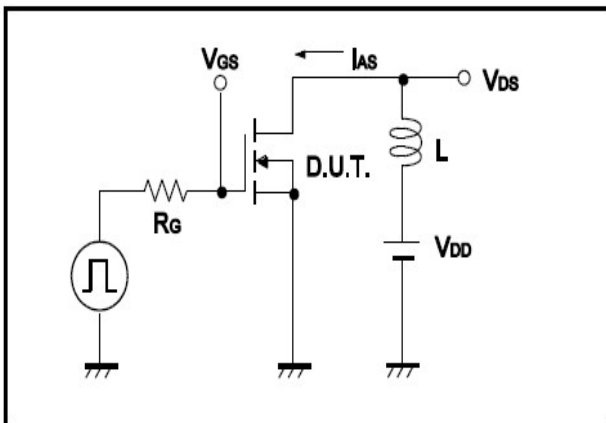
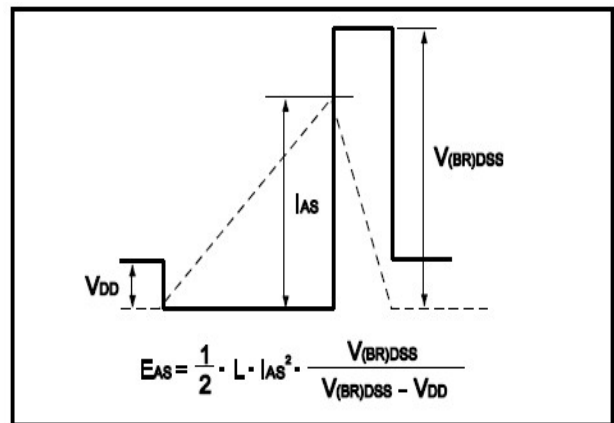
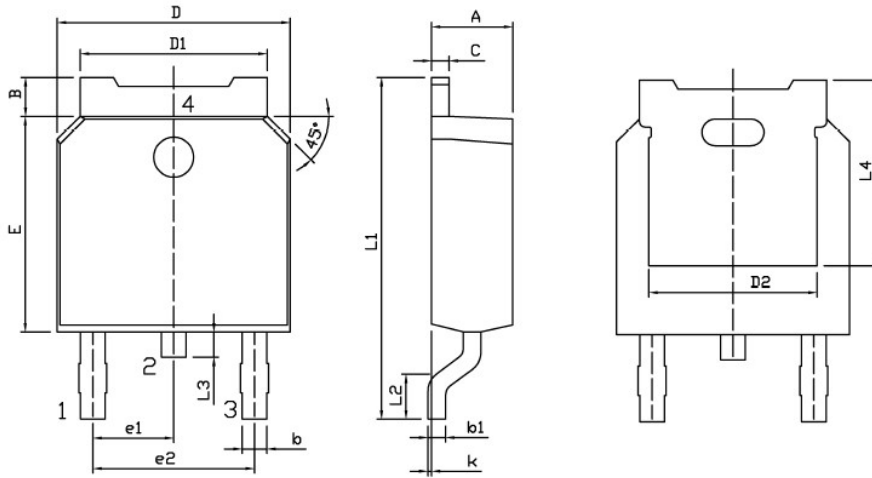


Fig.12 Avalanche Waveform





• Dimensions (TO-252)



Land Pattern  
(Only for Reference)

Dimensions In Millimeters					
Symbol	MIN	MAX	Symbol	MIN	MAX
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	L4	5.05	
D2	4.85		k	0.00	0.10

