

**• General Description**

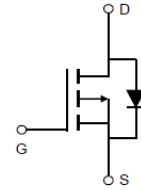
The ZM260P04L combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . This device is ideal for load switch and battery protection applications.

**• 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**

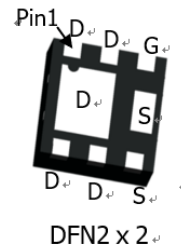
- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

**• Product Summary**


$V_{DS} = -40V$

$R_{DS(ON)} = 26m\Omega$

$I_D = -6A$


**• Ordering Information:**

Part NO.	ZM260P04L
Marking	260P04
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-40	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D@TC=25^\circ C$	-6	A
	$I_D@TC=75^\circ C$	-4.5	A
	$I_D@TC=100^\circ C$	-3.7	A
Pulsed Drain Current ①	$I_{DM}$	-18	A
Total Power Dissipation(TC=25°C)	$P_D@TC=25^\circ C$	55	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	$E_{AS}$	260	mJ

**•Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	$R_{thJC}$	-	-	2.3	$^{\circ}C/W$
Thermal resistance, junction - ambient	$R_{thJA}$	-	-	62	$^{\circ}C/W$
Soldering temperature, wavesoldering for 10s	$T_{sold}$	-	-	265	$^{\circ}C$

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-1.2	-1.6	-2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = -40V, V_{GS} = 0V$			-1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -6A$		26	34	m $\Omega$
		$V_{GS} = -4.5V, I_D = -4A$		38	49	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = -10V, I_D = -1A$		10		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	-	1150	-	pF
Output capacitance	$C_{oss}$		-	290	-	
Reverse transfer capacitance	$C_{rss}$		-	205	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD} = -25V$	-	20	-	nC
Gate - Source charge	$Q_{gs}$	$I_D = -6A$	-	8	-	
Gate - Drain charge	$Q_{gd}$	$V_{GS} = -10V$	-	11	-	

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

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

Fig.1 Power Dissipation Derating Curve

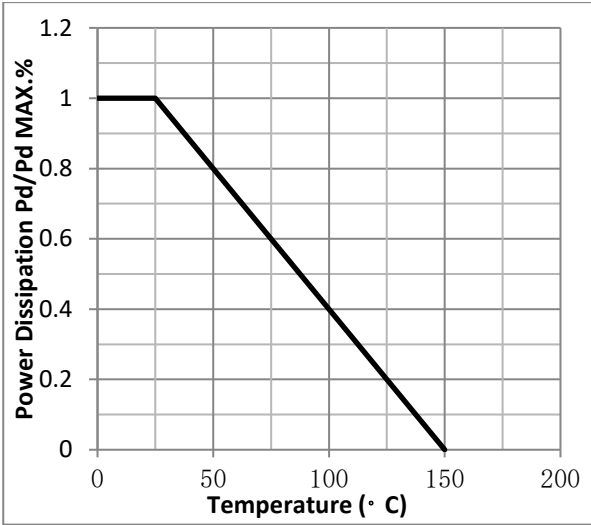


Fig.2 Typical output Characteristics

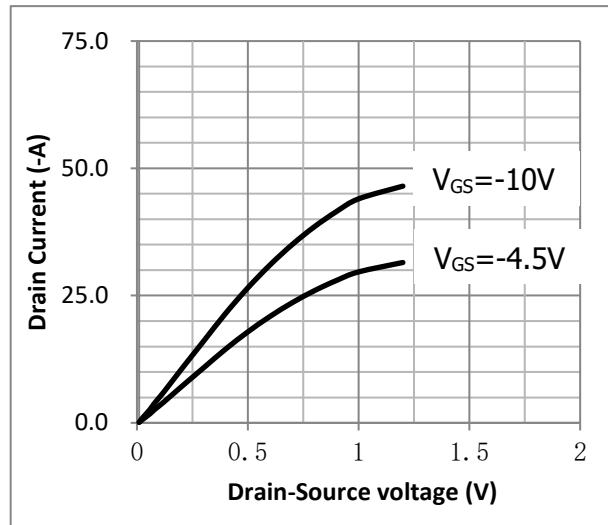


Fig.3 Threshold Voltage V.S Junction Temperature

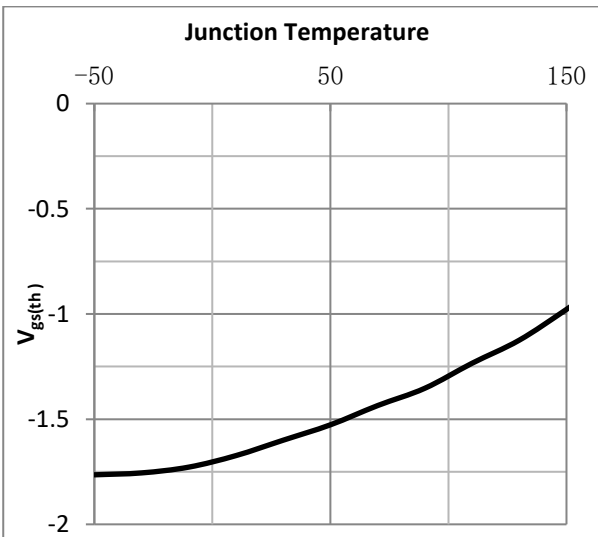


Fig.4 Resistance V.S Drain Current

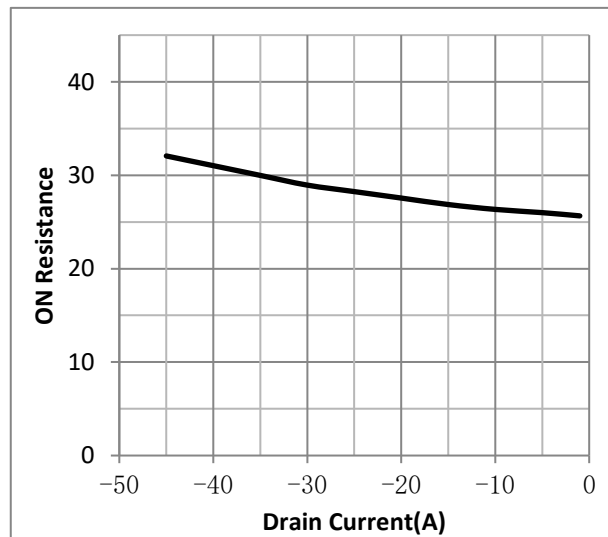


Fig.5 On-Resistance VS Gate Source Voltage

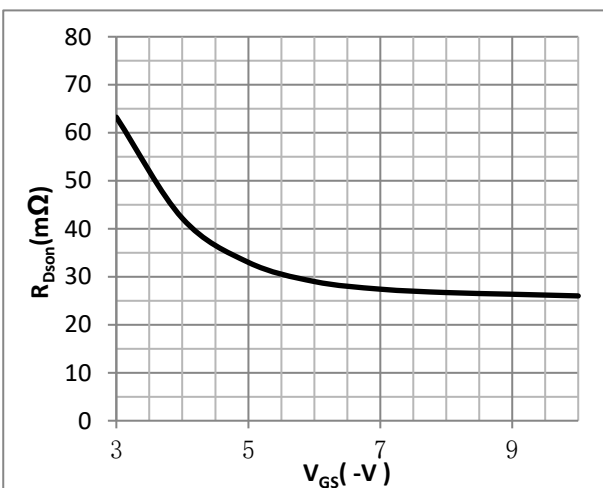


Fig.6 On-Resistance V.S Junction Temperature

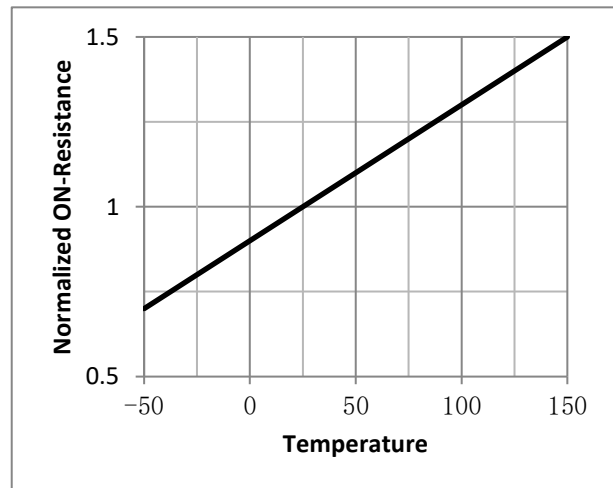


Fig.7 Switching Time Measurement Circuit

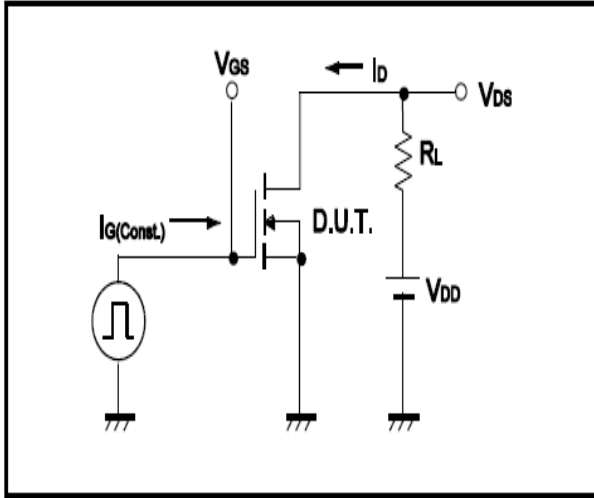


Fig.8 Gate Charge Waveform

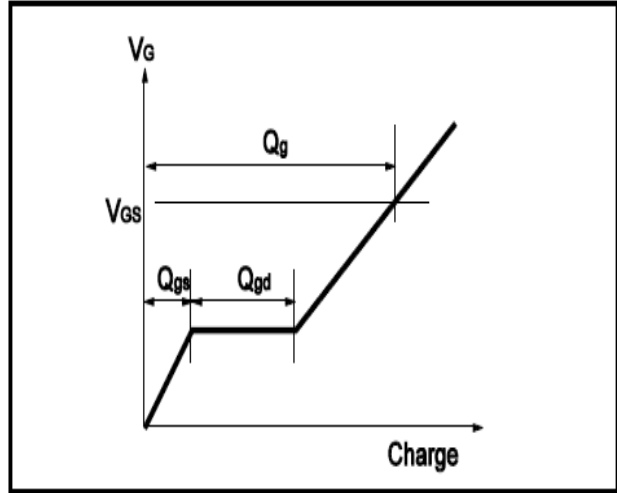


Fig.9 Switching Time Measurement Circuit

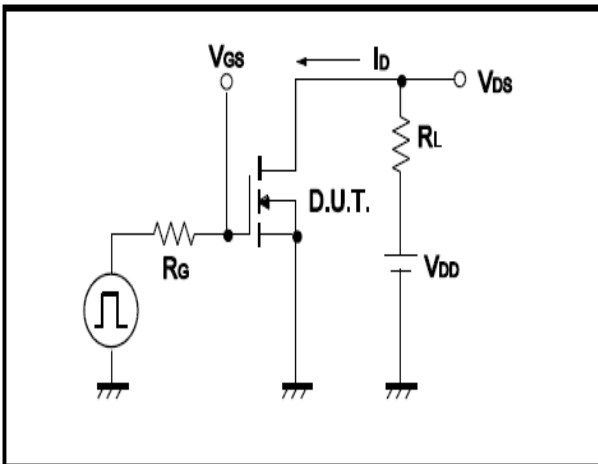


Fig.10 Gate Charge Waveform

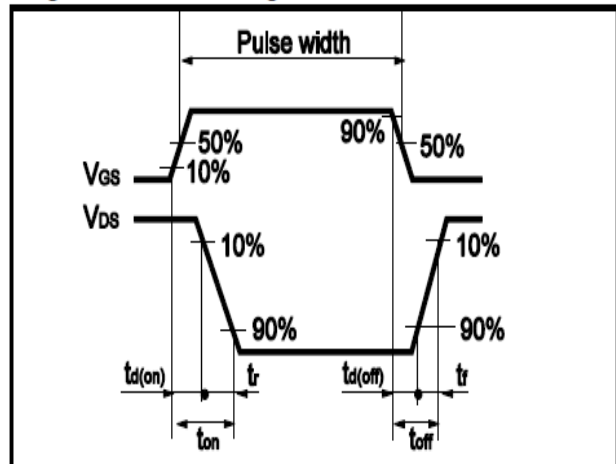


Fig.11 Avalanche Measurement Circuit

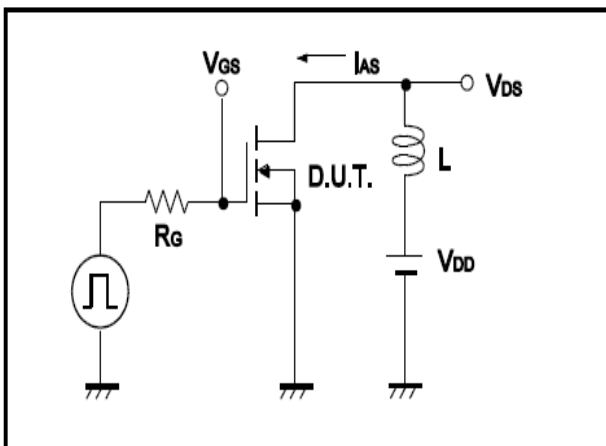
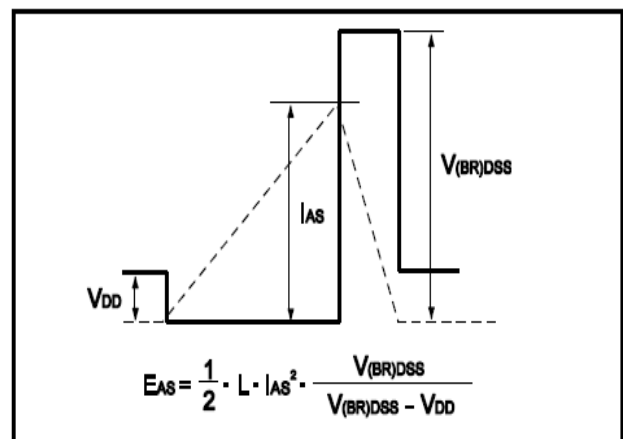
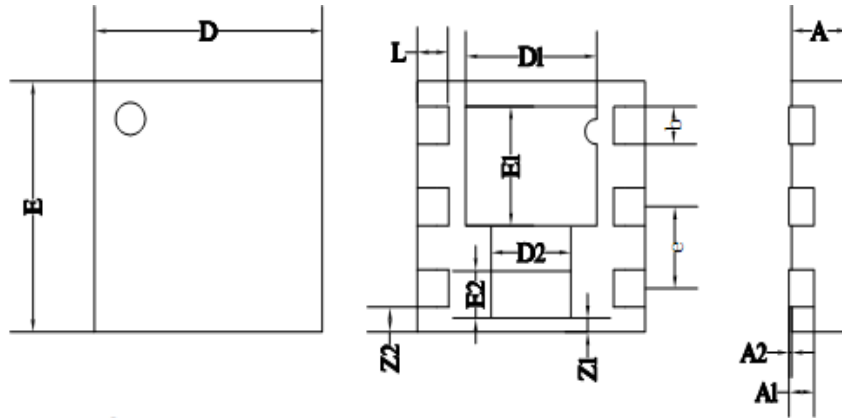


Fig.12 Avalanche Waveform



•Dimensions(DFN2\*2)

Unit: mm



NOTE:  
 All dimensions are in mm

	MIN	NOM	MAX
<b>D</b>	1.95	2.00	2.05
<b>E</b>	1.95	2.00	2.05
<b>D1</b>	1.10	1.15	1.20
<b>E1</b>	0.90	0.95	1.00
<b>D2</b>	0.65	0.70	0.75
<b>E2</b>	0.33	0.38	0.43
<b>L</b>	0.225	0.275	0.325
<b>b</b>	0.25	0.30	0.35
<b>e</b>	0.65BSC		
<b>A</b>	0.45	0.50	0.55
<b>A1</b>	0.20REF		
<b>A2</b>	0.00	-	0.05
<b>Z1</b>	0.06	0.11	0.16
<b>Z2</b>	0.15	0.20	0.25