

# ZLM0206AB规格书 V1.0

N-Channel Trench Power MOSFET

ZLW-QW-EN-G153



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## N-Channel Enhancement Mode Power MOSFET

### General Description

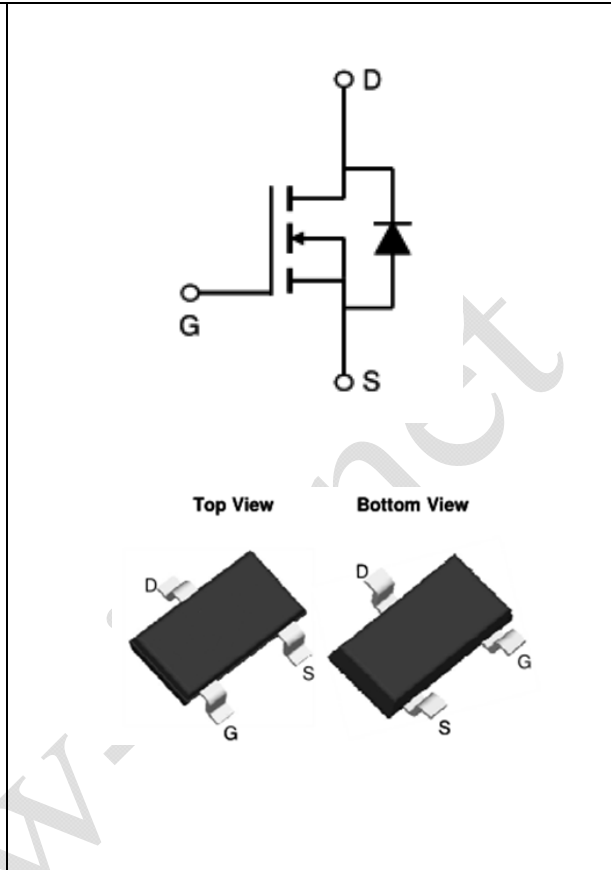
The ZLM0206AB combines advanced trench MOSFET Technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . This device is suitable for use as a load switch or in PWM applications.

### General Features

- $V_{DS}=20V, I_D=7A$   
 $R_{DS(ON)} < 47m\Omega$  (Typ.  $34m\Omega$ ) @  $V_{GS}=2.5V$   
 $R_{DS(ON)} < 41m\Omega$  (Typ.  $26m\Omega$ ) @  $V_{GS}=4.5V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

### Applications

- load switch
- Battery protection
- Power management
- model airplane



### Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	4.5
		$T_A=70^\circ C$	3.0
Pulsed Drain Current <sup>(NOTE 1)</sup>	$I_{DM}$	18	A
Power Dissipation	$P_D$	$T_A=25^\circ C$	1.25
		$T_A=70^\circ C$	0.9
Storage Temperature Range	$T_{STG}$	-55 to +150	°C
Operating Junction Temperature Range	$T_J$	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient <sup>(NOTE 2)</sup>	$R_{\theta JA}$	100	°C/W

**Electrical Characteristics (Ta=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$I_D=250\mu A, V_{GS}=0V$	20			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
$I_{GSS}$	Gate-Bodyleakagecurrent	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA
<b>On Characteristics<sup>(NOTE 3)</sup></b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.6	1.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=3A$		26	41	$m\Omega$
		$V_{GS}=2.5V, I_D=2A$		34	47	$m\Omega$
$g_{FS}$	Forward Transconductance	$V_{DS}=10V, I_D=3A$		10		S
<b>Drain-Source Diode Characteristics<sup>(NOTE 3)</sup></b>						
$V_{SD}$	Diode Forward Voltage <sup>(NOTE 3)</sup>	$I_{DS}=1.7A, V_{GS}=0V$			1.4	V
$I_S$	Diode Forward Current <sup>(NOTE 2)</sup>				5	A
<b>DYNAMIC PARAMETERS</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=10V,$ $f=1MHz$		535		pF
$C_{oss}$	Output Capacitance			140		pF
$C_{riss}$	Reverse Transfer Capacitance			40		pF
<b>SWITCHING PARAMETERS</b>						
$Q_g$	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=10V,$ $I_D=3A$		12		nC
$Q_{gs}$	Gate Source Charge			1.5		nC
$Q_{gd}$	Gate Drain Charge			2.1		nC
$t_{D(on)}$	Turn-On Delay Time	$V_{GS}=4.5V, V_{DD}=10V,$ $R_L=6\Omega, R_{GEN}=10\Omega$		11		ns
$t_r$	Turn-On Rise Time			36		ns
$t_{D(off)}$	Turn-Off Delay Time			40		ns
$t_f$	Turn-Off Fall Time			24		ns

**Notes:**

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2.Surface Mounted on FR4 Board,  $t \leq 10$  sec.
- 3.Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
- 4.Guaranteed by design, not subject to production.



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

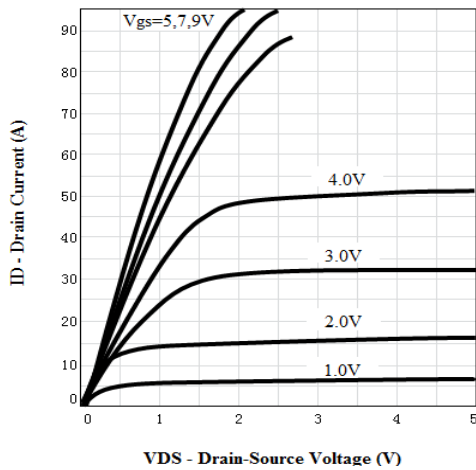


Fig 1: Output Characteristics

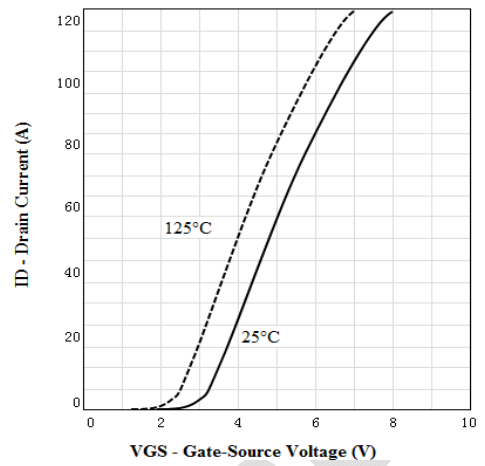


Figure 2: Transfer Characteristics

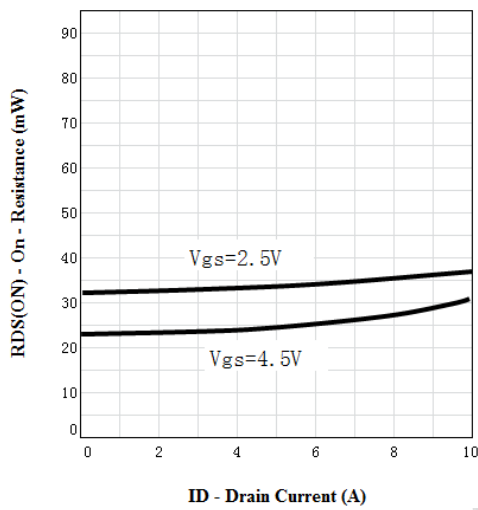


Figure 3: Rdson-Drain Current

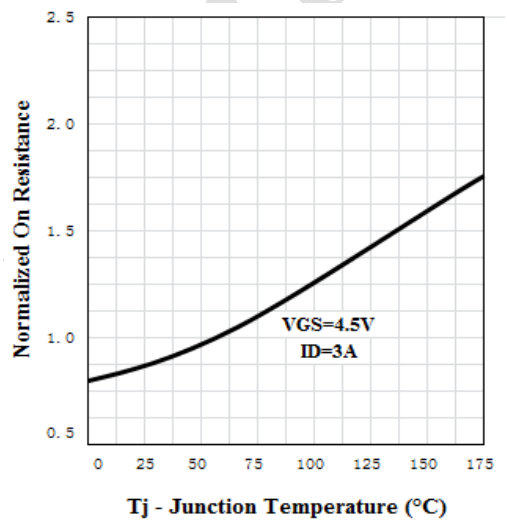


Figure 4: Resistance vs. Junction Temperature

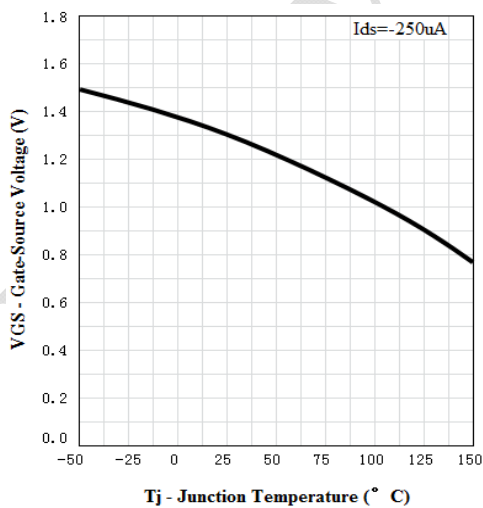


Figure 5: Gate-Source Voltage vs Junction Temperature

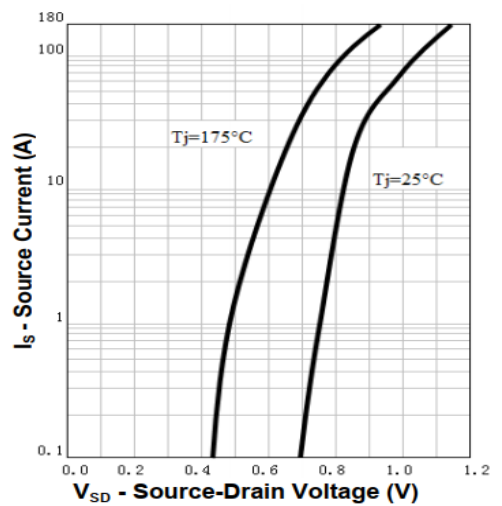


Figure 6: Source- Drain Diode Forward



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

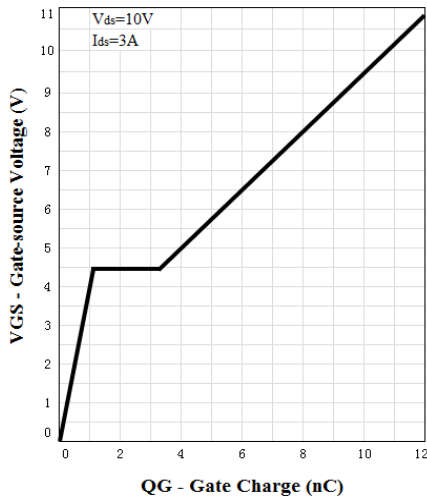


Figure 7: QG Gate Characteristics

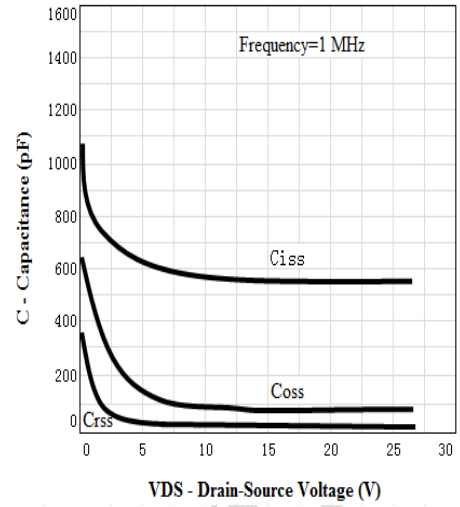


Figure 8: Capacitance Characteristics

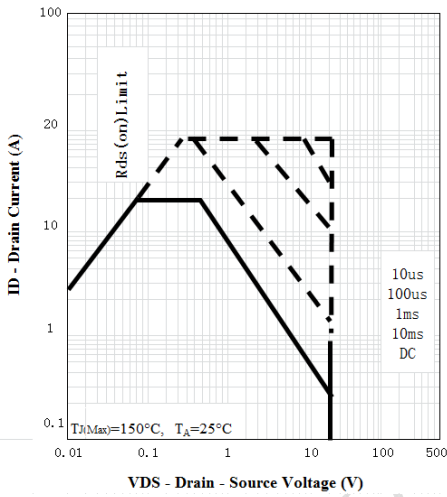


Figure 9: Maximum Forward Biased Safe Operating Area

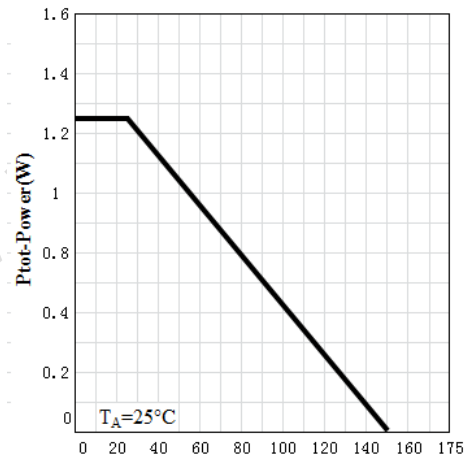


Figure 10: Power De-rating

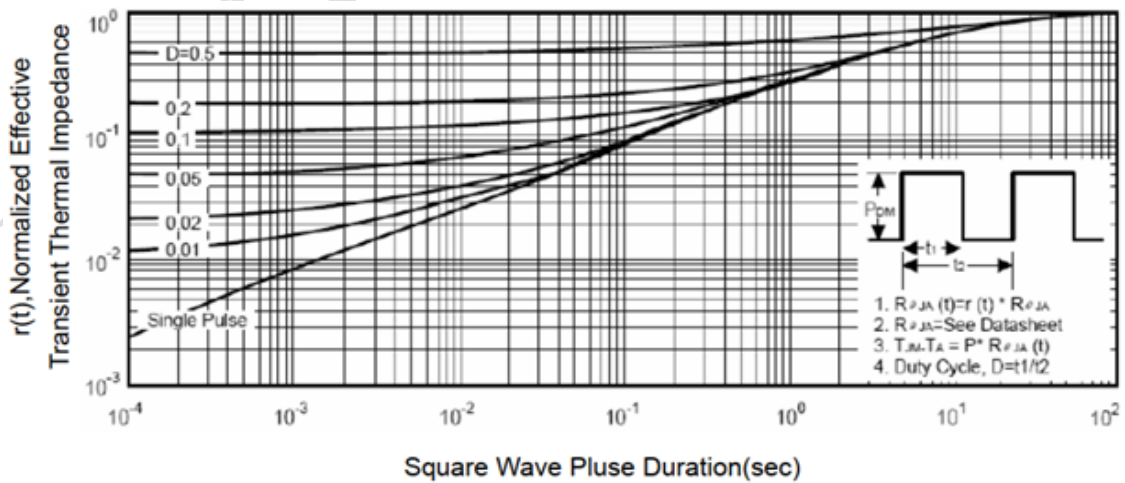
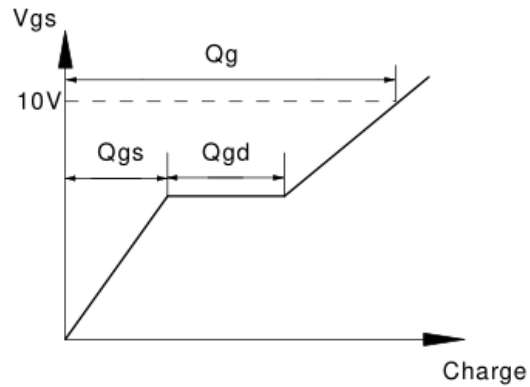
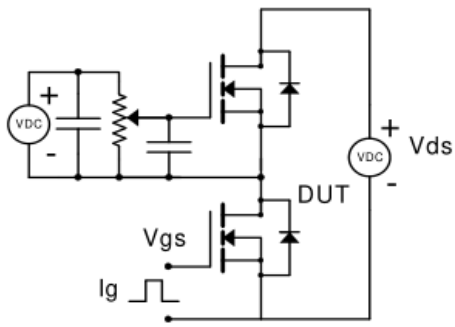


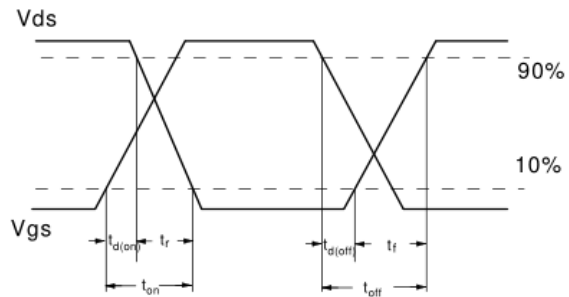
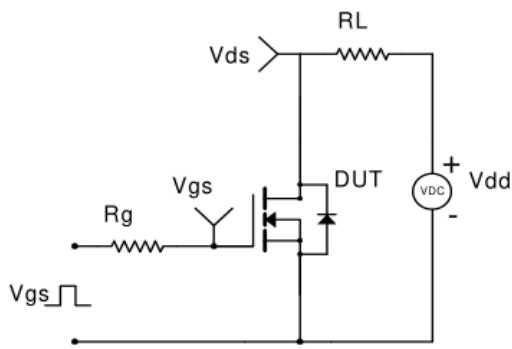
Figure 11: Normalized Maximum Transient Thermal Impedance



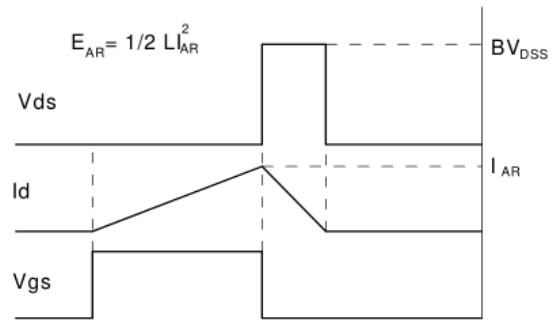
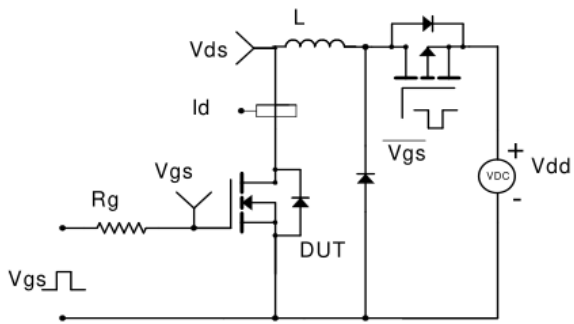
Gate Charge Test Circuit & Waveform



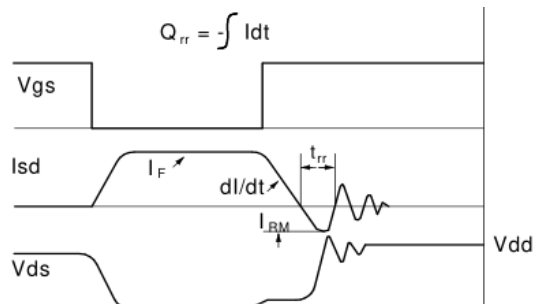
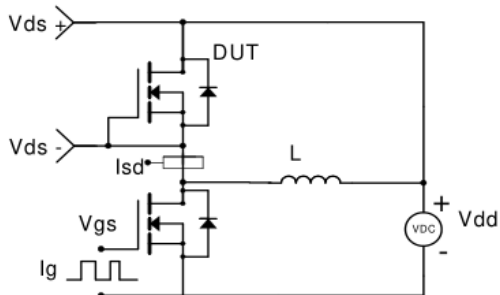
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



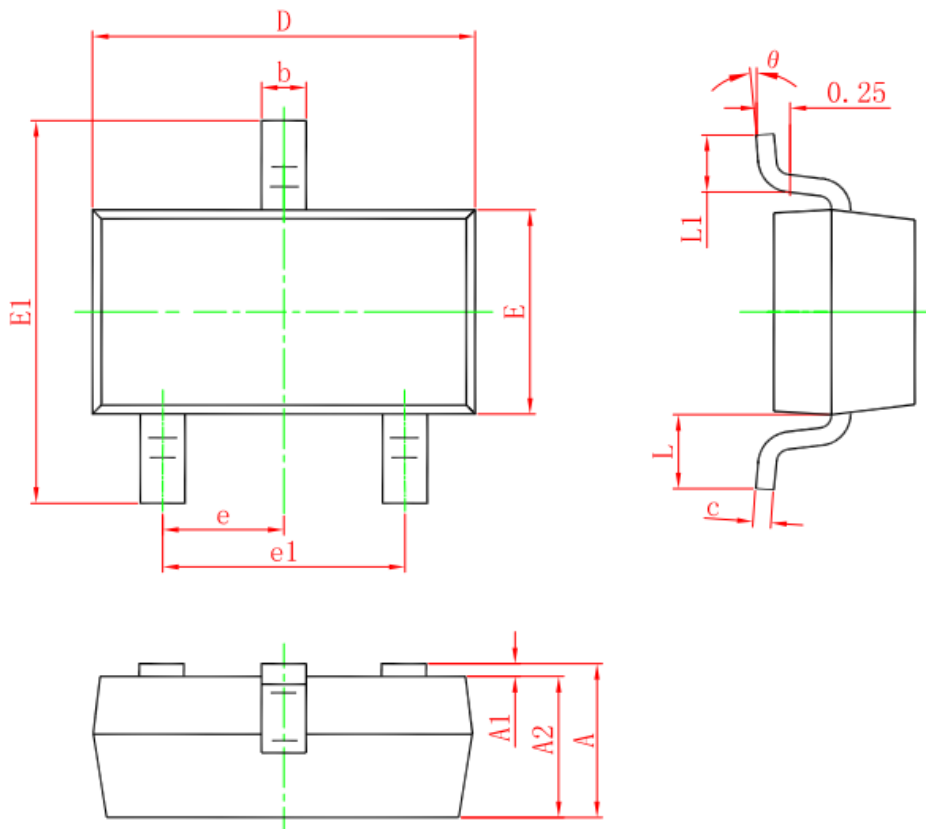
Diode Recovery Test Circuit & Waveforms





Package Information

SOT23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°