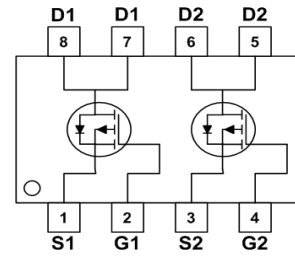




- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology



Description

The WLB4805A is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The WLB4805A meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOP8 Pin Configuration



Product Summary

BVDSS	RDSON	ID
-30V	18mΩ	-9.5A

Absolute Maximum Ratings (TA=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units	
V _{DSS}	Drain- Source Voltage	-30	V	
V _{GSS}	Gate- Source Voltage	±20	V	
I _D	Continuous Drain Current	T _A = 25°C	-9.5	A
		T _A = 100 °C	-5.9	A
I _{DM}	Pulsed Drain Current ^{note1}	-36	A	
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	25	mJ	
P _D	Power Dissipation	T _A = 25 °C	3.3	W
R _{θJA}	Thermal Resistance, Junction to Ambient	38	°C/W	
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to + 150	°C	



Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain- Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	---	-0.022	---	V/ $^\circ\text{C}$
$R_{DS(ON)}$	Static Drain- Source On-Resistance ²	$V_{GS}=-10V, I_D=-6A$	---	18	25	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-4A$	---	25	42	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	---	-2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.6	---	mV/ $^\circ\text{C}$
I_{DSS}	Drain- Source Leakage Current	$V_{DS}=-24V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-24V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	-5	
I_{GSS}	Gate- Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V, I_D=-6A$	---	17	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	13	---	Ω
Q_g	Total Gate Charge (-4.5V)	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-6A$	---	12.6	---	nC
Q_{gs}	Gate- Source Charge		---	4.8	---	
Q_{gd}	Gate- Drain Charge		---	4.8	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-15V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-6A$	---	4.6	---	ns
T_r	Rise Time		---	14.8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	41	---	
T_f	Fall Time		---	19.6	---	
C_{iss}	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$	---	1345	---	PF
C_{oss}	Output Capacitance		---	194	---	
C_{rss}	Reverse Transfer Capacitance		---	158	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	---	---	-6.5	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	-26	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-6A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	16.3	---	ns
Q_{rr}	Reverse Recovery Charge		---	5.9	---	nC

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}, I_{AS}=-38A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.



Typical Performance Characteristics

Figure 1 : Output Characteristics

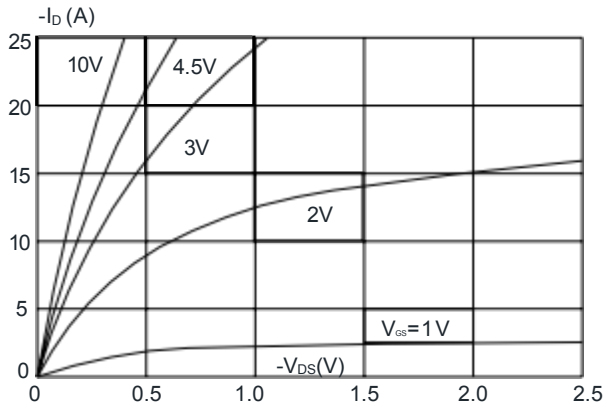


Figure 2 : Typical Transfer Characteristics

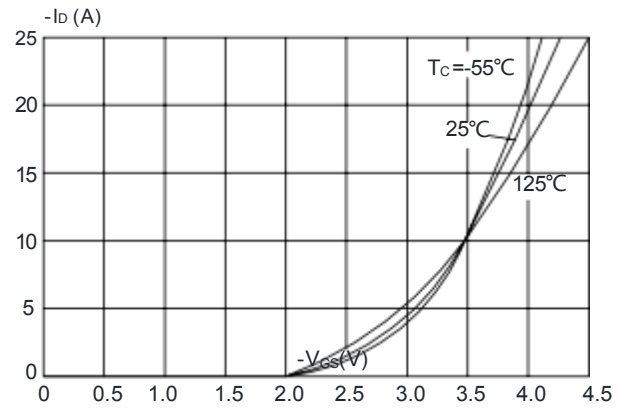


Figure 3 : On-resistance vs. Drain Current

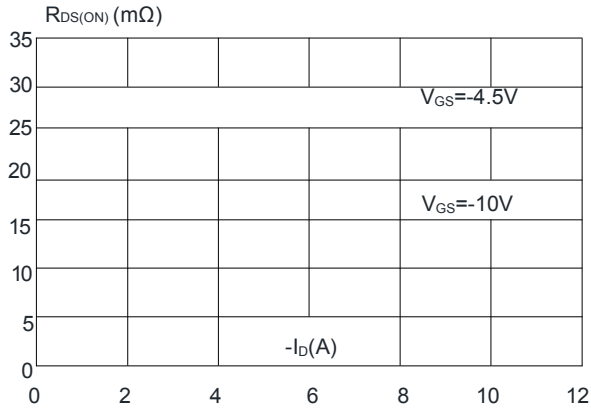


Figure 4 : Body Diode Characteristics

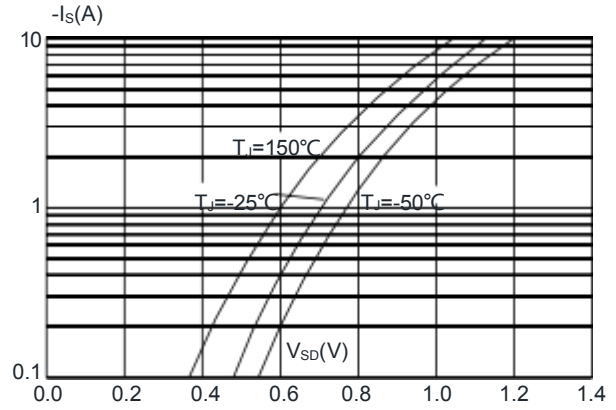


Figure 5 : Gate Charge Characteristics

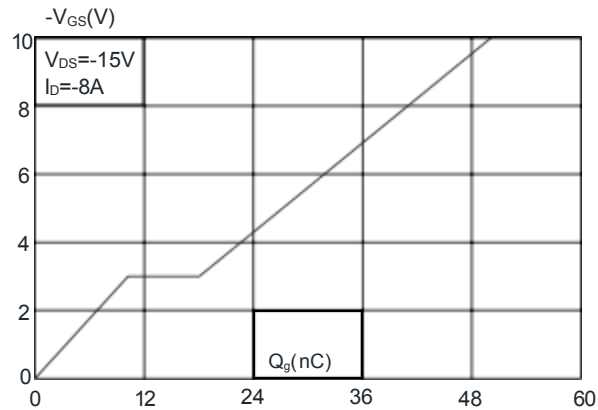


Figure 6 : Capacitance Characteristics

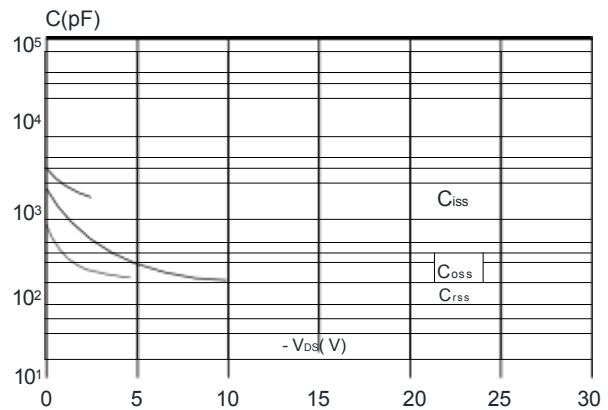




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

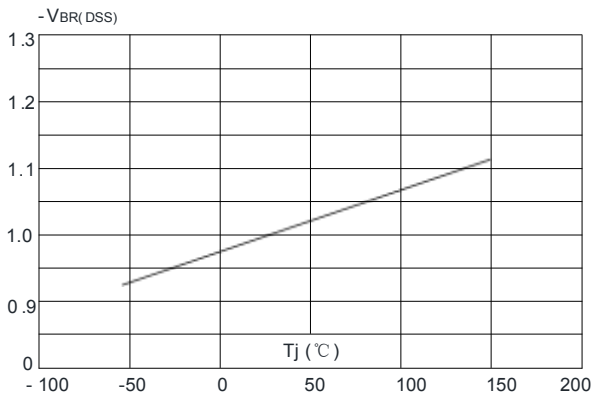


Figure 8: Normalized on Resistance vs. Junction Temperature

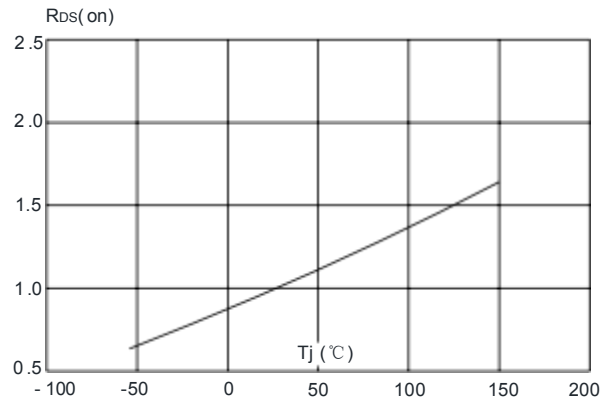


Figure 9: Maximum Safe Operating Area

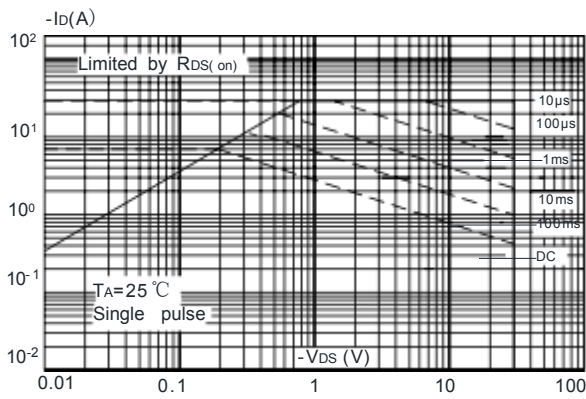
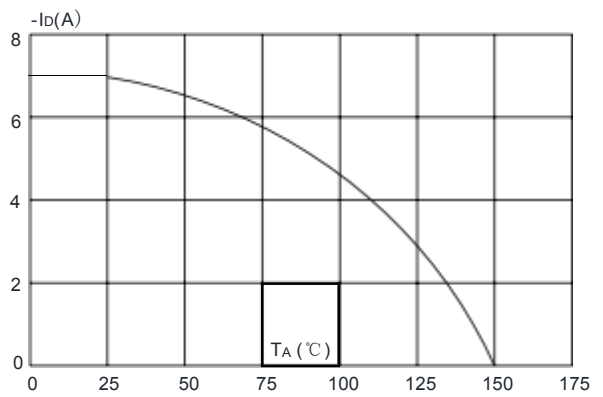
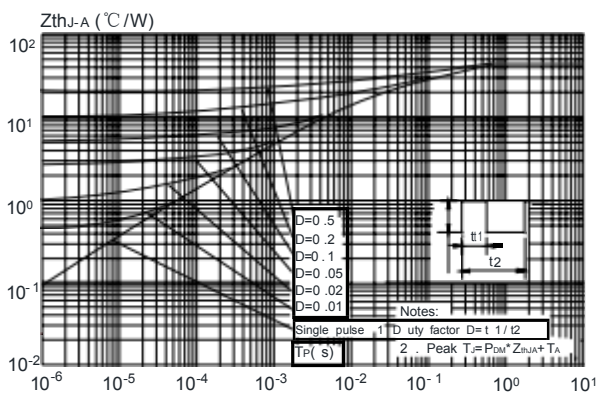


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

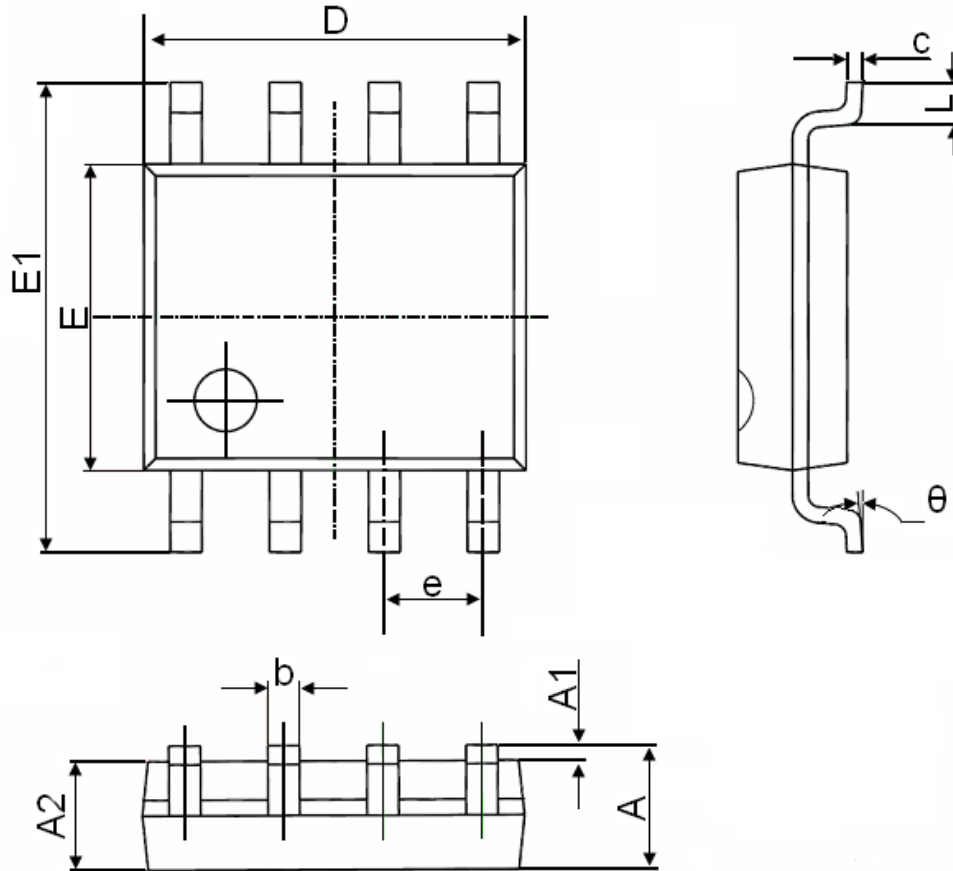


Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





Package Mechanical Data-SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



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