ACE15803B

P-Channel Enhancement Mode Power MOSFET

Features

- V_{DS} (V) = -15V
- I_D = -18A
- $R_{DS(ON)}$ = 11mΩ@V_{GS}= -4.5V
- $R_{DS(ON)}$ = 13.5mΩ@V_{GS}= -2.5V

General Description

- DC-DC Converters
- Power Management Functions
- Battery Management Application

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	-15	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous) *AC	T_C=25°C	I_D	-18	A
	T_C=70°C		-14.5	
Drain Current (Pulse)*B		I_{DM}	-70	
Power Dissipation	T_C=25°C	P_D	5	W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B. Repetitive rating, pulse width limited by junction temperature .

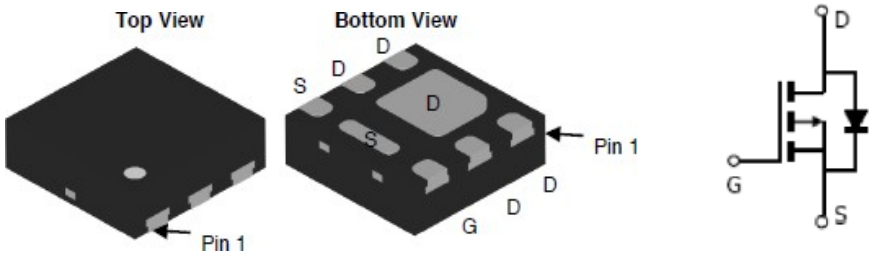
C. The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient	t ≤10s	RthJA	63	°C/W

Packaging Type

DFN2*2-6L



Ordering information

ACE15803B XX + H

- Halogen - free
- Pb - free
- MN: DFN2*2-6L

Electrical Characteristics T_A=25 °C unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250uA	-15			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-12V, V_{GS}=0V			-1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=-250uA	-0.4	-0.7	-1	V
Gate 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=-8A		11	13	mΩ
		V_{GS}=-2.5V, I_D=-6A		13.5	19	
Diode Forward Voltage	V_{SD}	I_{SD}=-1A, V_{GS}=0V			-1.2	V
Diode Forward Current[*AC]	I_S	TC =25°C			-18	A
Switching						
Total Gate Charge	Q_g	V_{DS}=-6V, I_D=-10A V_{GS}=-4.5V		26		nC
Gate-Source Charge	Q_{gs}			3.3		
Gate-Drain Charge	Q_{gd}			8.1		
Turn-On Delay Time	$T_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-6V R_G=1Ω, ID=-8A		7		ns
Turn-On Rise Time	t_f			10.6		
Turn-Off Delay Time	$t_{d(off)}$			62.2		
Turn-Off Fall Time	t_f			61		
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V f=1.0MHz		1860		pF
Output Capacitance	C_{oss}			498		
Reverse Transfer Capacitance	C_{rss}			416		

Typical Performance Characteristics

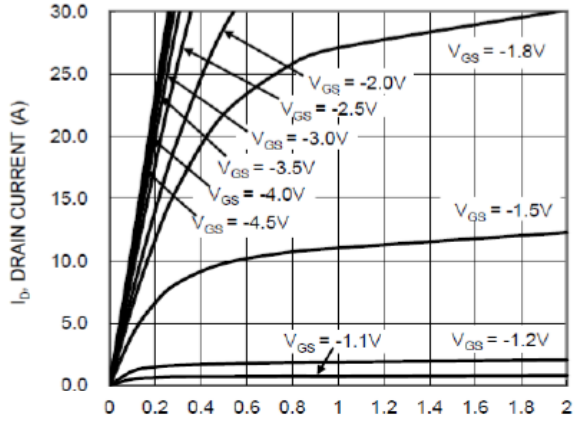


Figure 1. Typical Output Characteristic

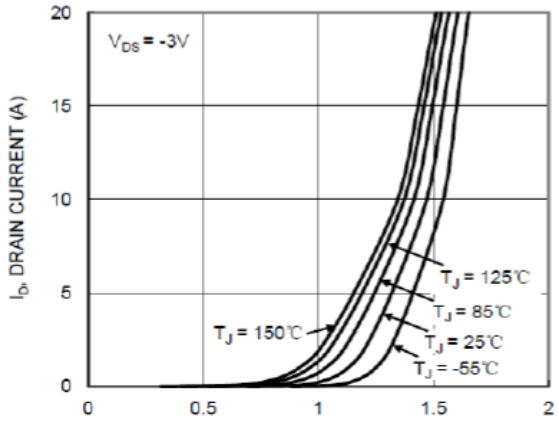


Figure 2. Typical Transfer Characteristic

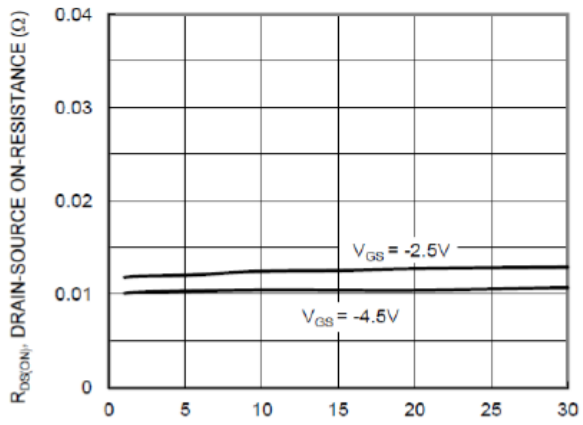


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

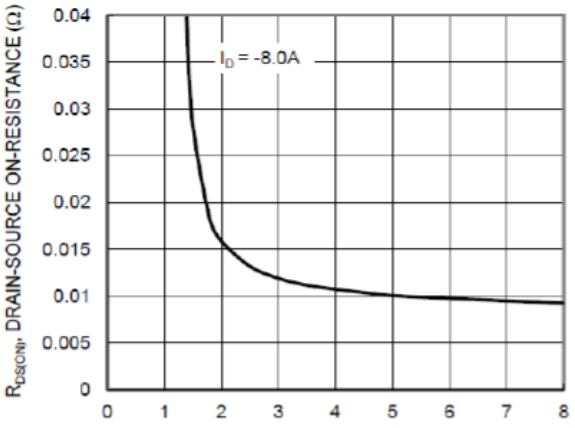


Figure 4. Typical Transfer Characteristic

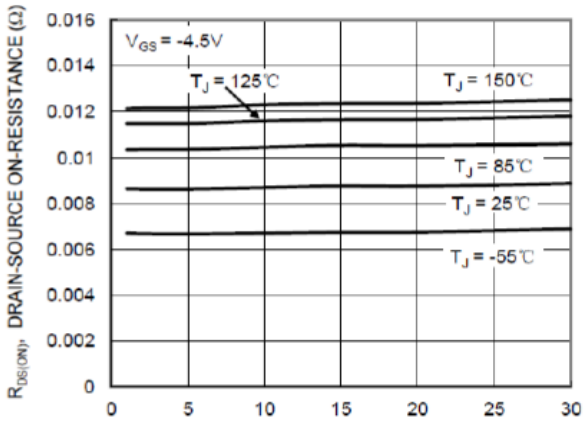


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

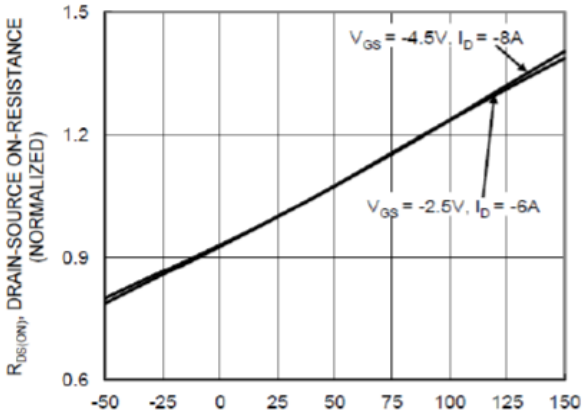


Figure 6. On-Resistance Variation with Temperature

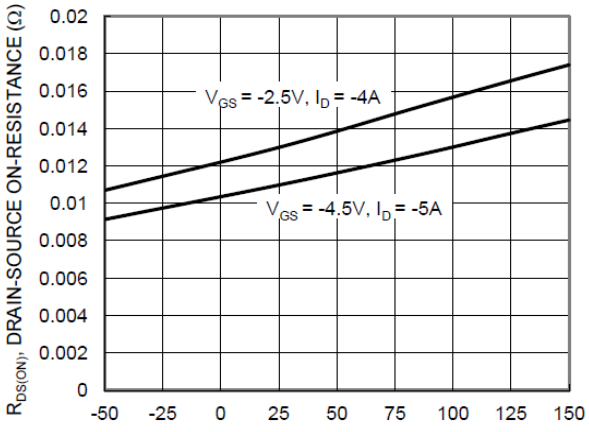


Figure 7. On-Resistance Variation with Temperature

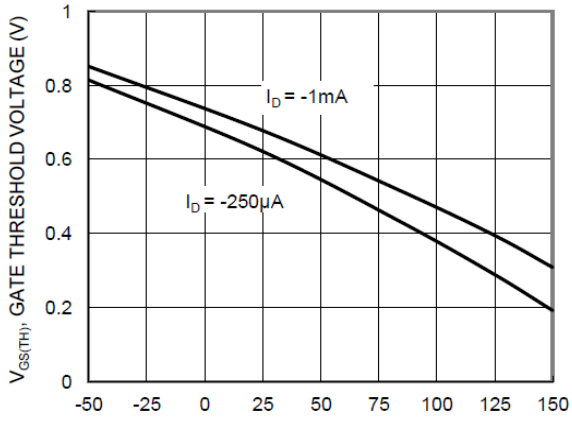


Figure 8. Gate Threshold Variation vs. Junciton Temperature

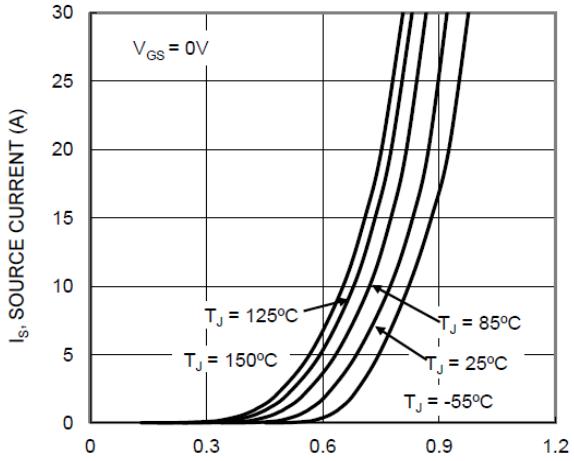


Figure 9. Diode Forward Voltage vs. Current

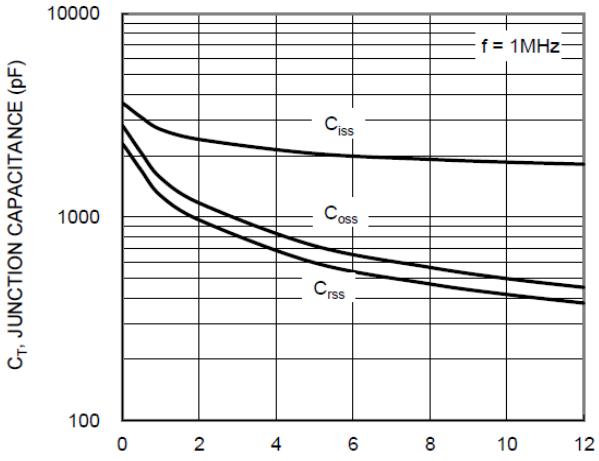


Figure 10. Typical Junction Capacitance

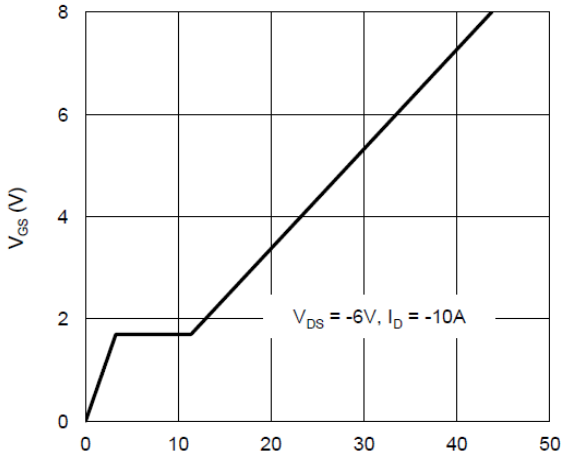


Figure 11. Gate Charge

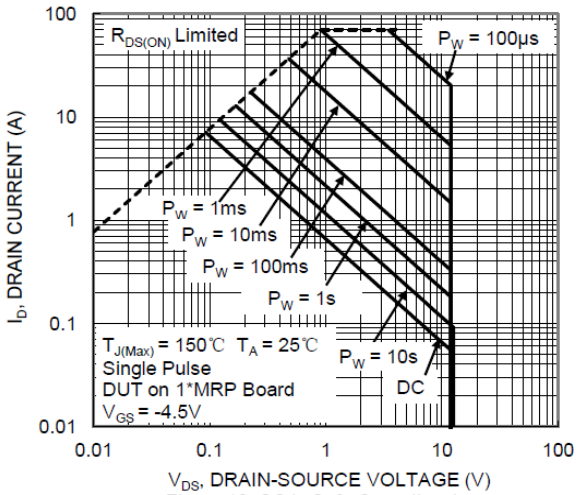


Figure 12. SOA, Safe Operation Area

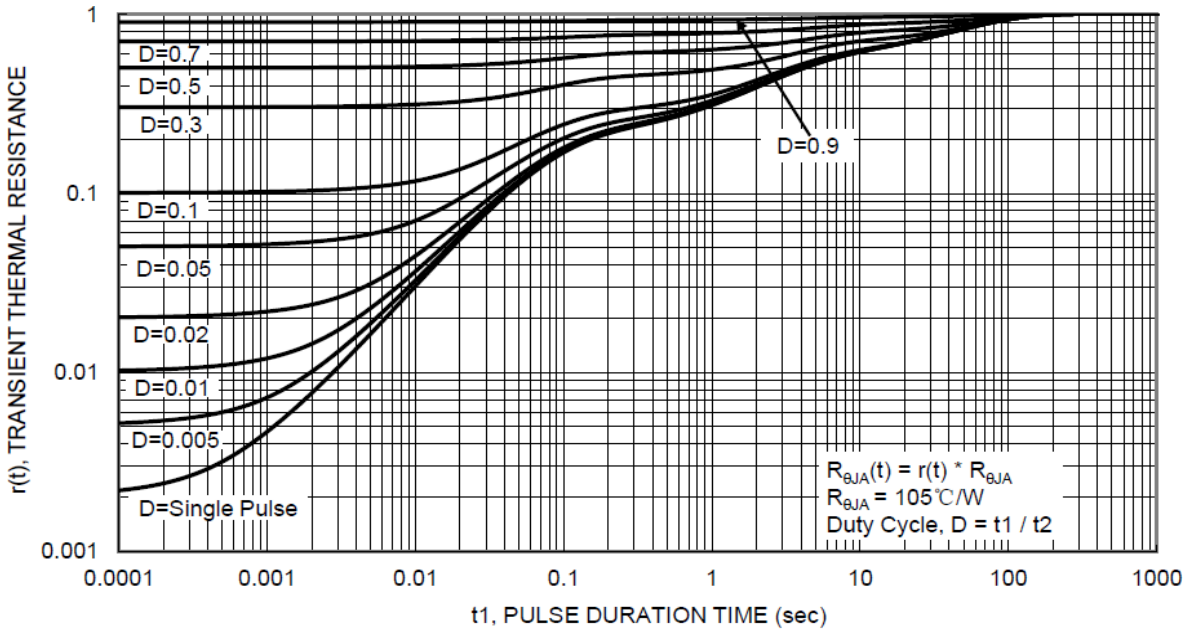
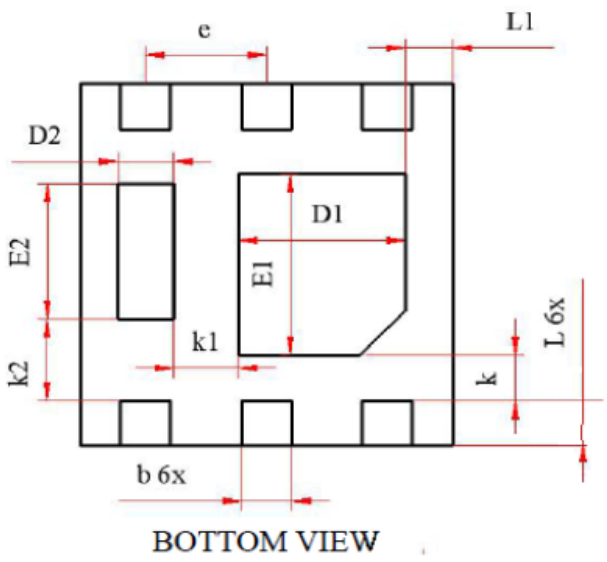
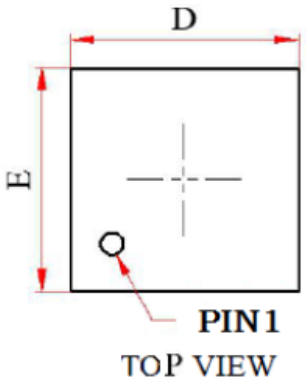


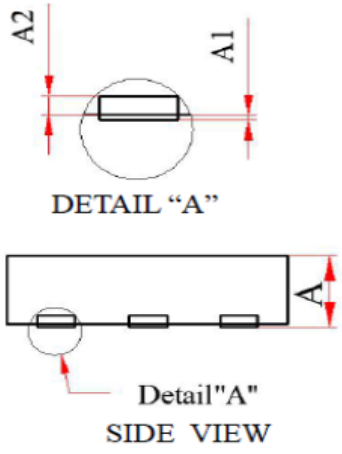
Figure 13. Transient Thermal Resistance

Packing Information

DFN2*2-6L







Symbol	Dimension In Millimeters			Dimension In Inches		
	Normal	Min	Max	Normal	Min	Max
	--	0.500	0.600	--	0.020	0.024
A1	--	--	0.005	--	--	0.000
A2	--	0.050	0.150	--	0.002	0.006
D	2.000	1.950	2.070	0.079	0.077	0.081
E	2.000	1.950	2.070	0.079	0.077	0.081
D1	0.900	0.800	1.000	0.035	0.031	0.039
E1	1.000	0.900	1.100	0.039	0.035	0.043
D2	0.300	0.200	0.400	0.012	0.008	0.016
E2	0.750	0.650	0.850	0.030	0.026	0.033
b	0.270	0.200	0.340	0.011	0.008	0.013
L	0.250	0.200	0.350	0.010	0.008	0.014
L1	0.250	0.200	0.300	0.010	0.008	0.012
e	0.650 BSC			0.026 BSC		
k	0.250 REF			0.010 REF		
k1	0.350 REF			0.014 REF		
k2	0.450 REF			0.018 REF		

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.