ACEDC6904B

N-Channel Enhancement Mode Power MOSFET

Description

ACEDC6904B uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features

- V_{DS}=60V , I_D=29A
- $R_{DS(ON)}$ @ V_{GS}=10V, TYP 10mΩ
- $R_{DS(ON)}$ @ V_{GS}=4.5V , TYP 12mΩ

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous)*AC	T_A=25℃	I_D	29	A
	T_A=100℃		20	
Drain Current (Pulsed)*B		I_{DM}	168	A
Single Pulse Avalanche Energy2		EAS	48	mJ
Single Pulse Avalanched Current2		IAS	17	A
Power Dissipation	T_A=25℃	P_D	21	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	℃

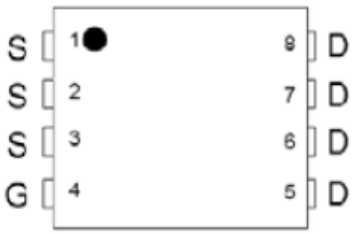
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

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

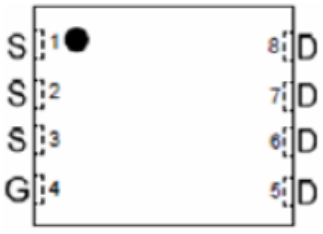
C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

Packaging Type

PDFN3*3-8L



DFN3*3-8L



ACEDC6904B

N-Channel Enhancement Mode Power MOSFET

Ordering information

ACEDC6904B XX + H

- Halogen - free
- Pb - free
- PD: PDFN3*3-8L
  NN: DFN3*3-8L

Electrical Characteristics

T_A=25℃, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS1}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS} , I_{DS}= 250μA	1.2	1.6	2.2	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±20V , V_{DS}=0V			±100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V , I_D= 10A		10	12	mΩ
		V_{GS} = 4.5V , I_D= 8A		12	15	
Forward Trans Conductance	g_{FS}	V_{DS}= 10V , I_D= 6A		11.7		S
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}= 0V			1	V
Diode Forward Current	I_S				17	A
Switching						
Total Gate Charge	Q_g	V_{DS}= 30V, I_D= 10A, V_{GS}= 10V		39.2	59	nC
Gate-Source Charge	Q_{gs}			5.9	9	nC
Gate-Drain Charge	Q_{gd}			8.5	15	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,I_D= 1A, V_{GS}= 10V,R_G= 6Ω		9.6	18	ns
Turn-on Rise Time	t_r			28.2	54	ns
Turn-off Delay Time	$t_{d(off)}$			45.3	86	ns
Turn-off Fall Time	t_f			10.9	21	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}= 0V, f= 1.0MHz		2100	3050	pF
Output Capacitance	C_{oss}			165	240	pF
Reverse Transfer Capacitance	C_{rss}			80	120	pF
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, F=1MHz		1.6	3.2	Ω

Typical Performance Characteristics

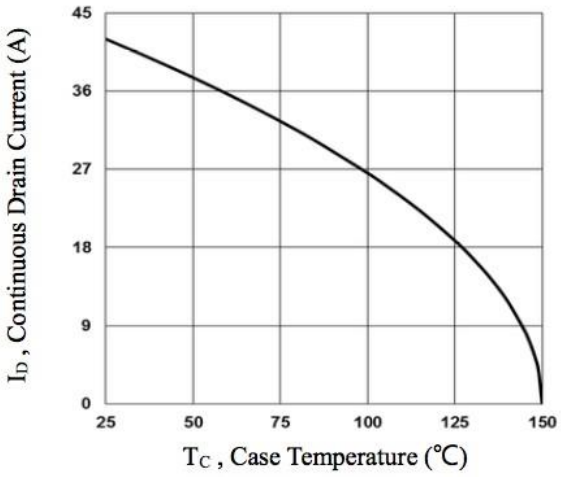


Fig.1 Continuous Drain Current vs. T_C

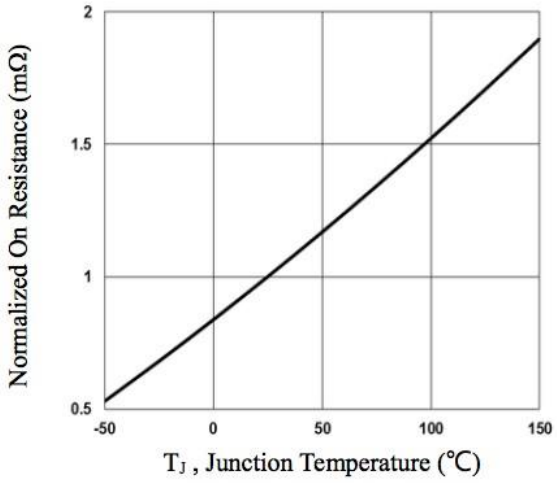


Fig.2 Normalized RDSON vs. T_J

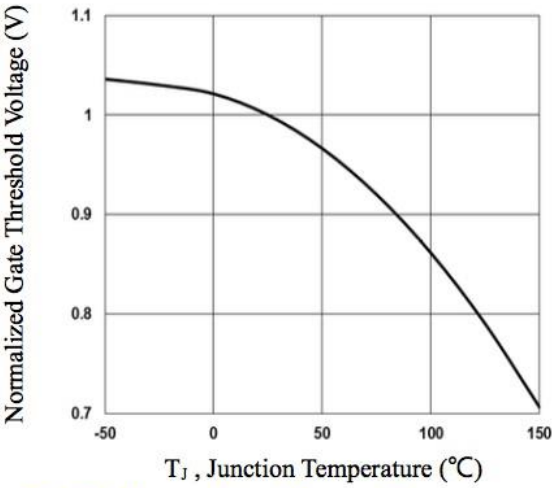


Fig.3 Normalized V_{th} vs. T_J

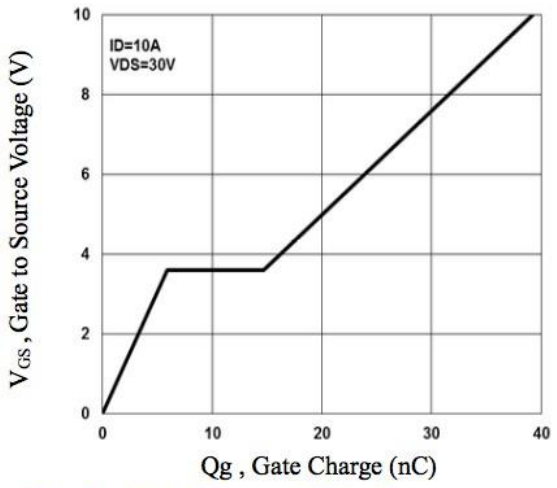


Fig.4 Gate Charge Waveform

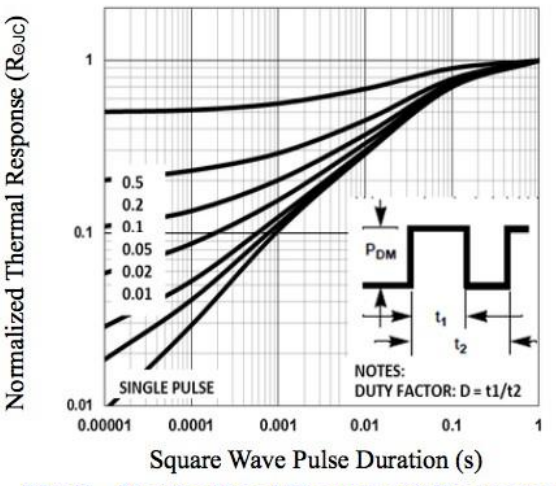


Fig.5 Normalized Transient Response

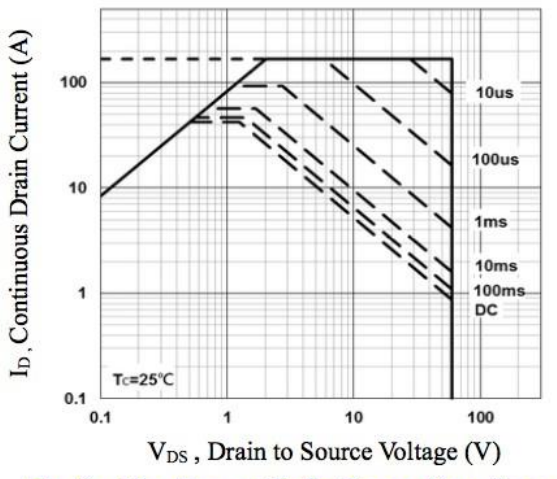


Fig.6 Maximum Safe Operation Area

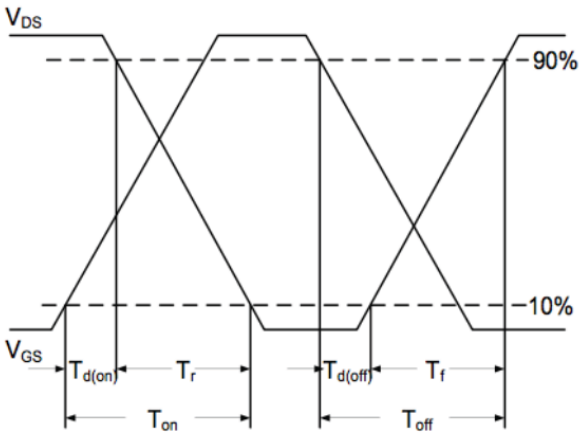


Fig.7 Switching Time Waveform

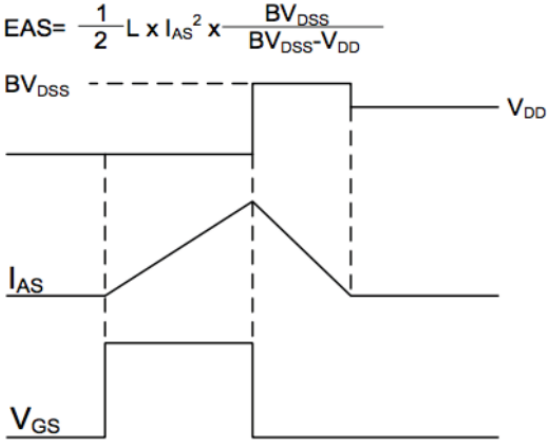
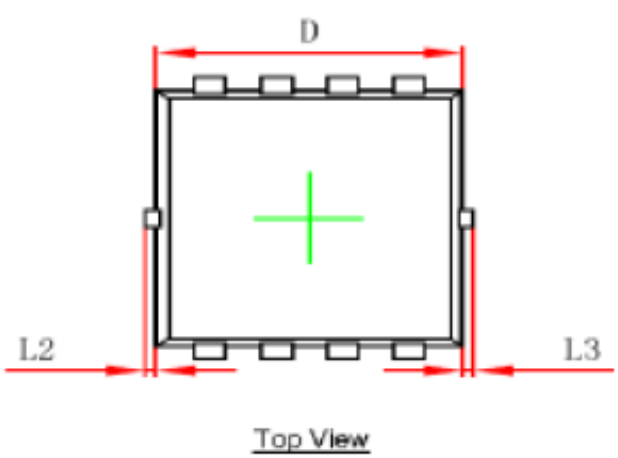


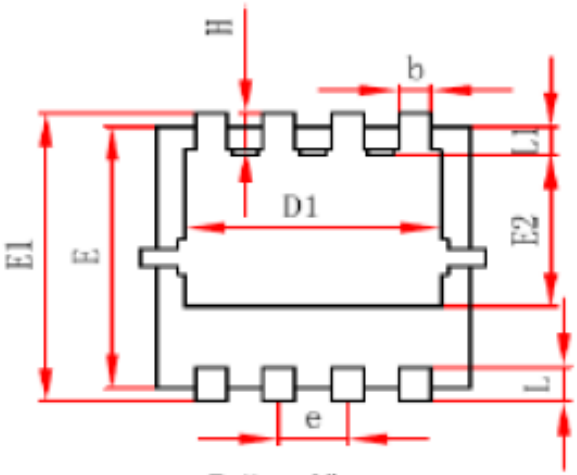
Fig.8 EAS Waveform

Packing Information

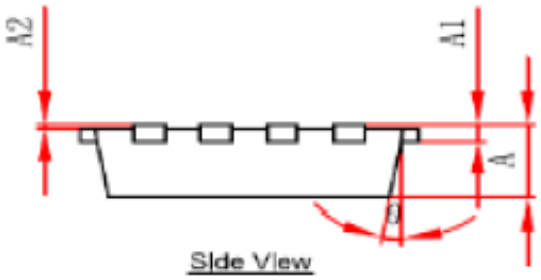
PDFN3*3-8L



Top View



Bottom View

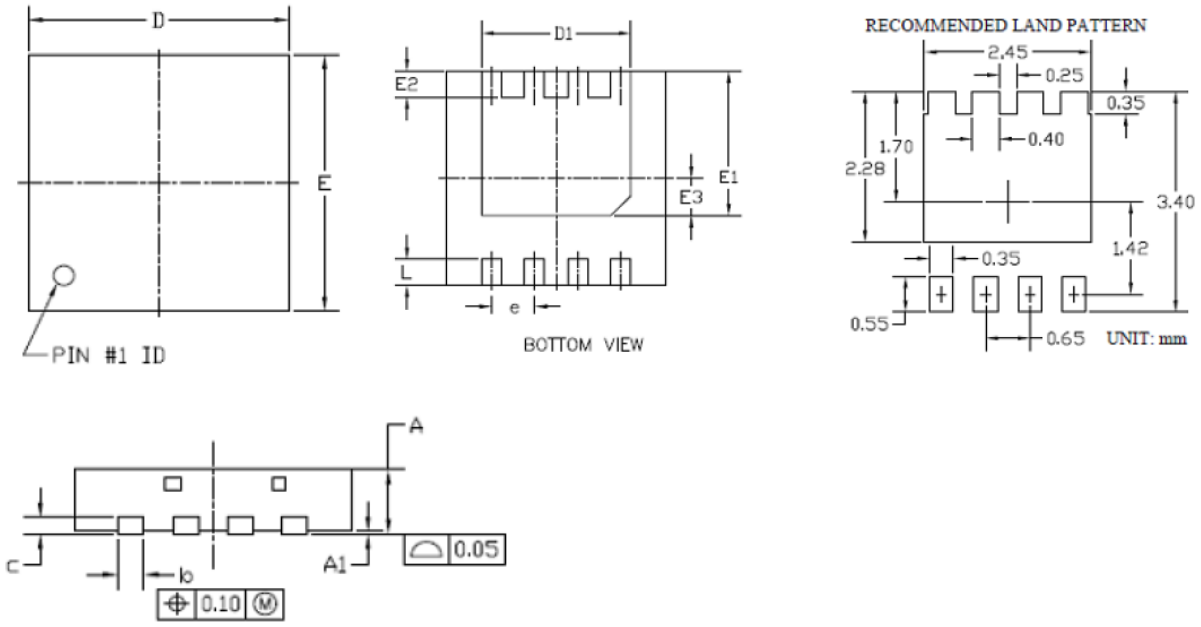


Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF		0.008 REF	
A2	0-0.05		0-0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.078
b	0.200	0.400	0.008	0.018
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

Packing Information

DFN3*3-8L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	NOM	Max.	Min.	NOM	Max.
A	0.70	0.75	0.80	0.028	0.030	0.031
A1			0.05			0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	3.20	3.30	3.40	0.126	0.130	0.134
D1	2.15	2.25	2.35	0.085	0.089	0.093
E	3.20	3.30	3.40	0.126	0.130	0.134
E1	2.13	2.23	2.33	0.084	0.088	0.092
E2	0.30	0.40	0.50	0.012	0.016	0.020
E3	0.48	0.58	0.68	0.019	0.023	0.027
e	0.65BSC			0.026BSC		
L	0.30	0.40	0.50	0.012	0.016	0.020

Notes

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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.