ACE6604B

N-Channel Enhancement Mode Power MOSFET

Description

ACE6604B 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=85A
- $R_{DS(ON)}$@ V_{GS} = 10V , TYP= 4.6mΩ
- $R_{DS(ON)}$@ V_{GS} = 4.5V , TYP= 5.3mΩ

Absolute Maximum Ratings@TA=25℃ unless otherwise noted

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	85	A
	T_A=100℃		54	
Drain Current (Pulsed)*B		I_{DM}	340	A
Power Dissipation	T_A=25℃	P_D	135	W
Operating temperature / Storage temperature		T_J/T_{STG}	-55~150	℃

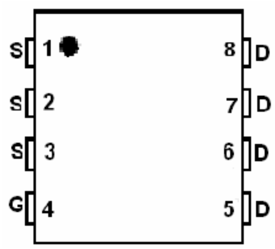
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

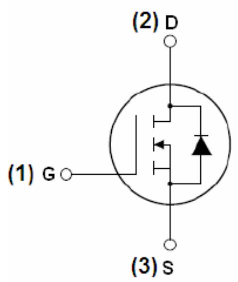
B: Repetitive rating, pulse width limited by junction temperature.

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

Packaging Type

DFN5*6-EP





Ordering information

ACE6604B XX + H

- Halogen - free
- Pb - free
- PN: DFN5*6-EP

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_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_{DS}=250μA	1.2	1.6	2.5	V
Gate leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	μA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		4.6	5.6	mΩ
		V_{GS}=4.5V, I_D=15A		5.3	7	
Forward Trans conductance	g_{FS}	V_{DS} =10V, I_D= 3A		15		S
Diode forward voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V			1.2	V
Maximum body-diode continuous current	I_S				85	A
Switching						
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=30V, I_D=10A		33		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			12		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, I_D=1A, V_{GS}=10V,R_G=3.3Ω		21		ns
Turn-on Rise Time	t_r			17		
Turn-off Delay Time	$t_{d(off)}$			72		
Turn-off Fall Time	t_f			21		
Dynamic						
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		4750		pF
Output Capacitance	Coss			330		
Reverse Transfer Capacitance	Crss			161		

Typical Performance Characteristics

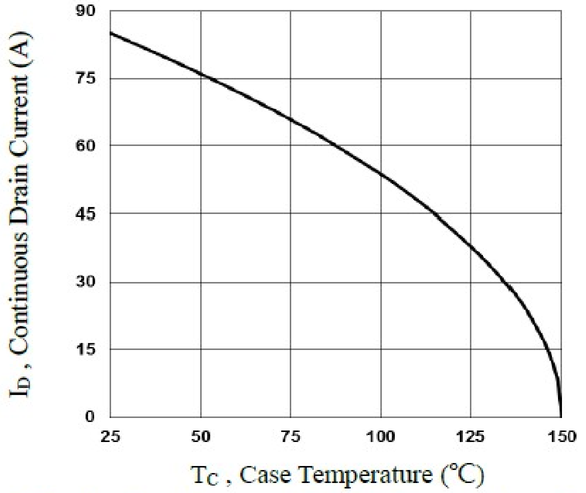


Fig.1 Continuous Drain Current vs. T_c

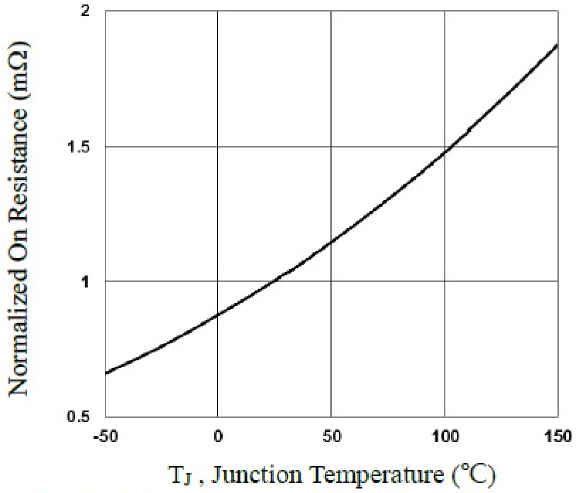


Fig.2 Normalized RDSON vs. T_J

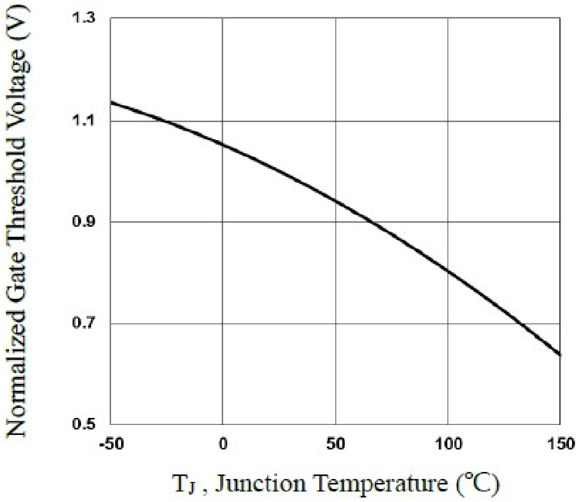


Fig.3 Normalized V_{th} vs. T_J

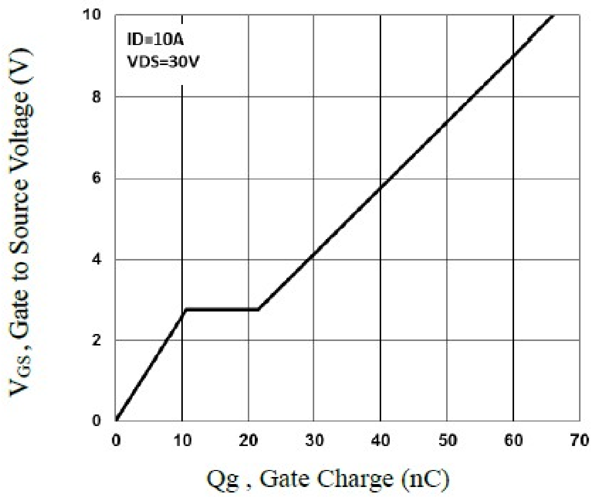


Fig.4 Gate Charge Waveform

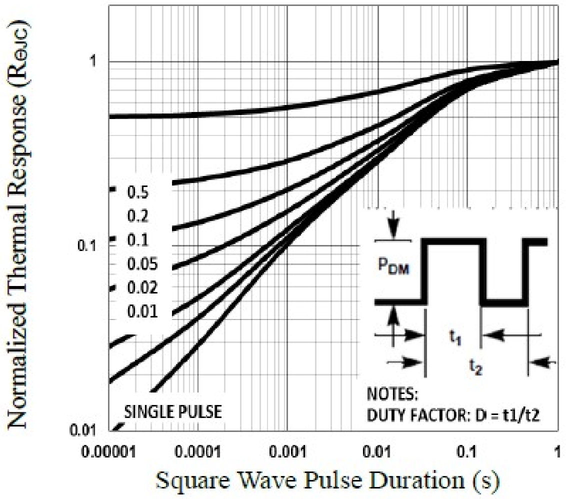


Fig.5 Normalized Transient Response

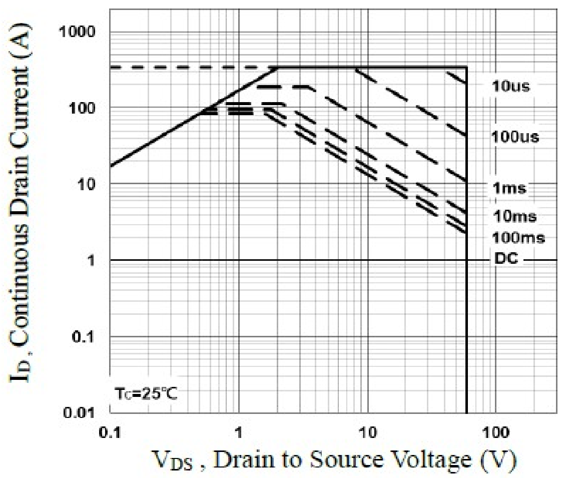
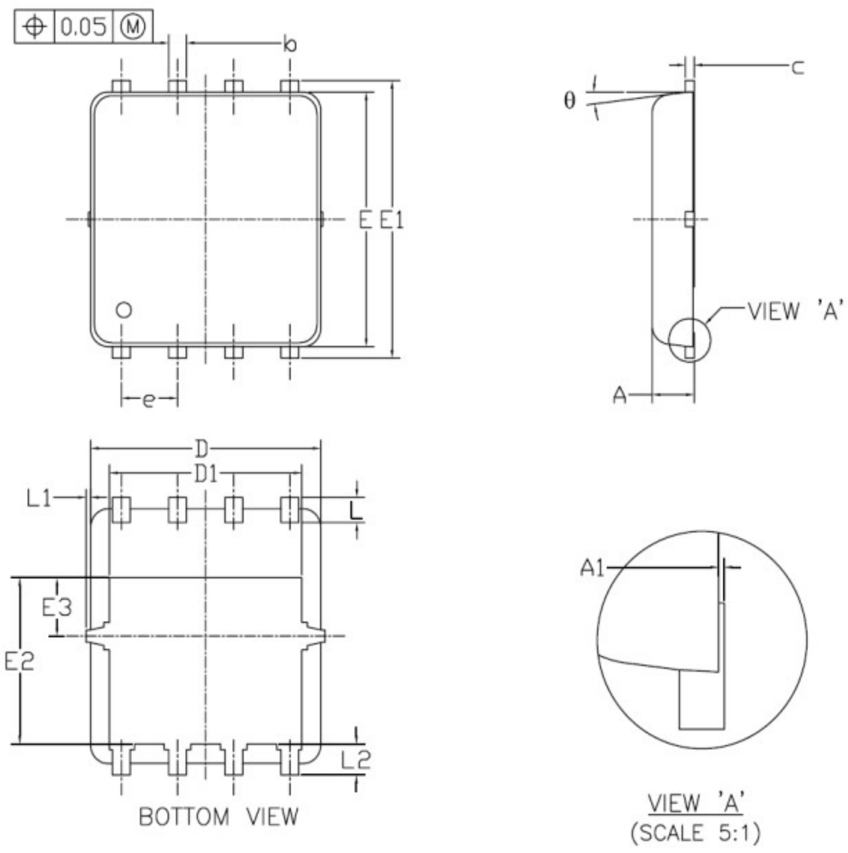


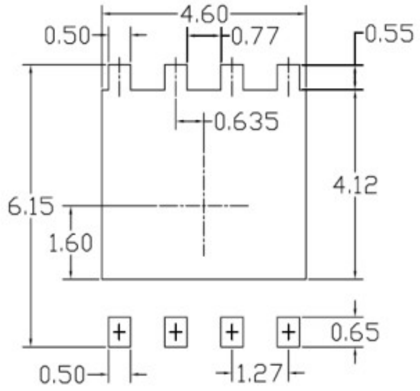
Fig.6 Maximum Safe Operation Area

Packing Information

DFN5*6-EP



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00	——	0.05	0.000	——	0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D1	4.35 BSC			0.171 BSC		
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	3.625 BSC			0.143 BSC		
E3	1.275 BSC			0.050 BSC		
e	1.27 BSC			0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	——	0.15	0	——	0.006
L2	0.68 REF			0.027 REF		
θ	0°	——	10°	0°	——	10°

UNIT: mm

NOTE
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
   MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
2. CONTROLLING DIMENSION IS MILLIMETER.
   CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

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.