ACE114480B

N-Channel Enhancement Mode Power MOSFET

Description

- DC/DC conversion
- Battery protection
- Load switching
- DC/AC inverters

Features

- V_{DS}=40V
- I_D=61.7A
- $R_{DS(ON)}$@V_{GS}=10V, TYP 3.7mΩ
- $R_{DS(ON)}$@V_{GS}=4.5V, TYP 5.6mΩ

Absolute Maximum Ratings @T_A=25°C unless otherwise noted

Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	40	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous)*C	T_C=25℃	I_D	61.7	A
	T_C=70℃		49.4	
Drain Current (Pulsed)*B		I_{DM}	247	A
Power Dissipation	T_C=25℃	P_D	34.7	W
Operating temperature / storage temperature		T_J/T_{STG}	-55~150	°C

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient *A	Steady State	R_{thJA}	70	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R_{thJC}	3.6	

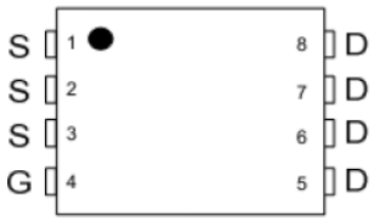
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

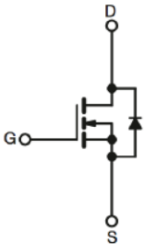
B: Repetitive rating, pulse width limited by junction temperature.

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

Packaging Type

DFN5*6-8L





Ordering information

ACE114480B XX + H

- Halogen - free
- Pb - free
- PN: DFN5*6-8L

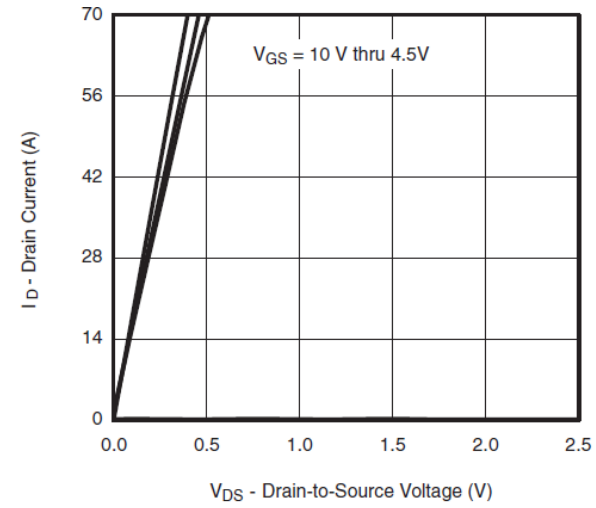
Electrical Characteristics T_A=25℃, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static *B						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	40			V
Zero Gate Voltage Drain Current	I_{DSS1}	V_{DS} = 32V, V_{GS} = 0V			1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	1		2.5	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= 12A		3.7	4.8	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D= 8A		5.6	7.3	
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}= 0V			1.2	V
Diode Forward Current *A	I_S	T_C=25°C			28.9	A
Switching						
Total Gate Charge	Q_g	V_{DS}= 20V, I_D= 20A, V_{GS}= 10V		22.7		nC
Gate-Source Charge	Q_{gs}			4		nC
Gate-Drain Charge	Q_{gd}			5.34		nC
Turn-on Delay Time	$t_{d(on)}$	V_{DS}= 20V, I_{DS}= 20A, V_{GEN}= 10V, R_G= 3.9Ω R_L= 1Ω		5.4		ns
Turn-on Rise Time	t_r			40.3		ns
Turn-off Delay Time	$t_{d(off)}$			25.2		ns
Turn-off Fall Time	t_f			23.5		ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}= 0V, f= 1.0MHz		932.7		pF
Output Capacitance	C_{oss}			421		pF
Reverse Transfer Capacitance	C_{rss}			49.7		pF

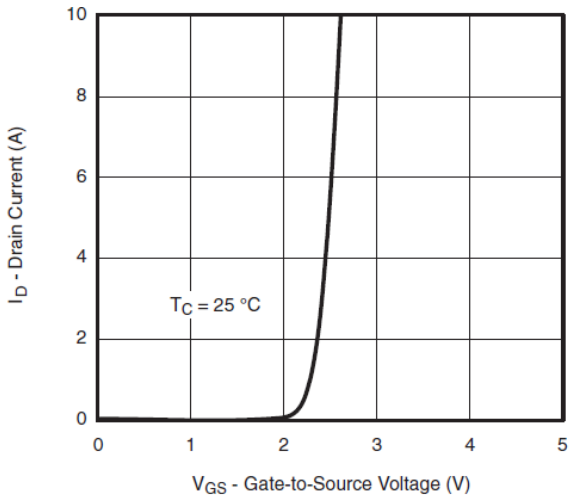
A: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

B: Pulse Test：Pulse Wide≤ 300μs，Duty Cycle≤ 2%.

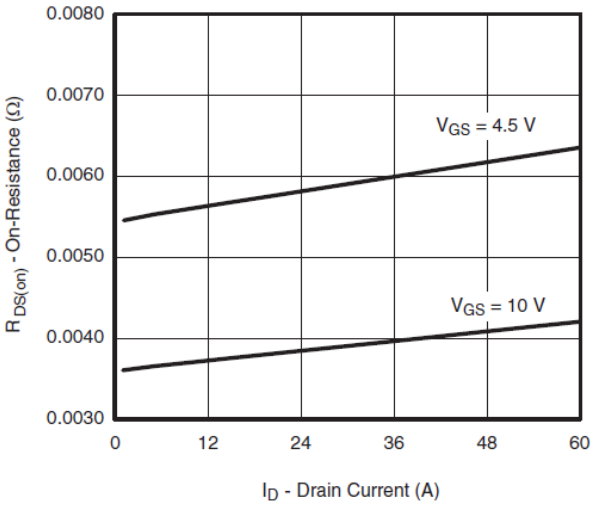
Typical Performance Characteristics TJ = 25 °C, unless otherwise noted



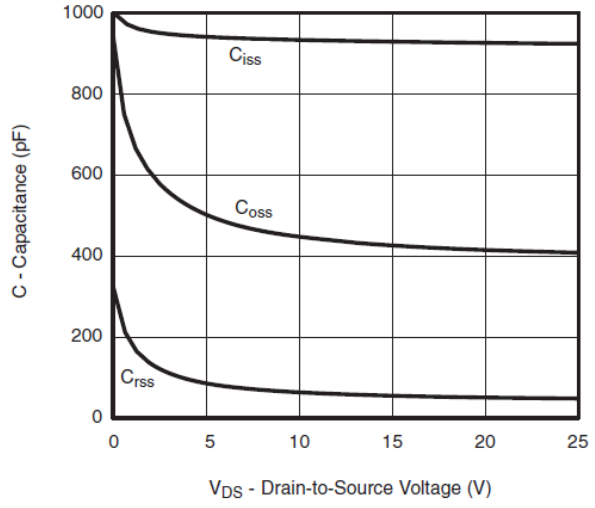
Output Characteristics



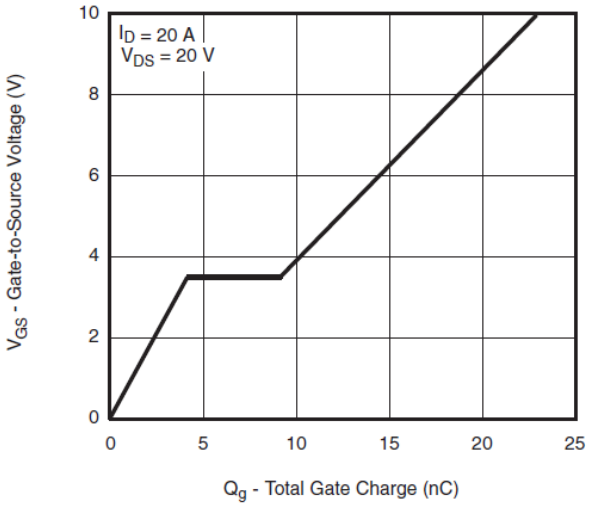
Transfer Characteristics



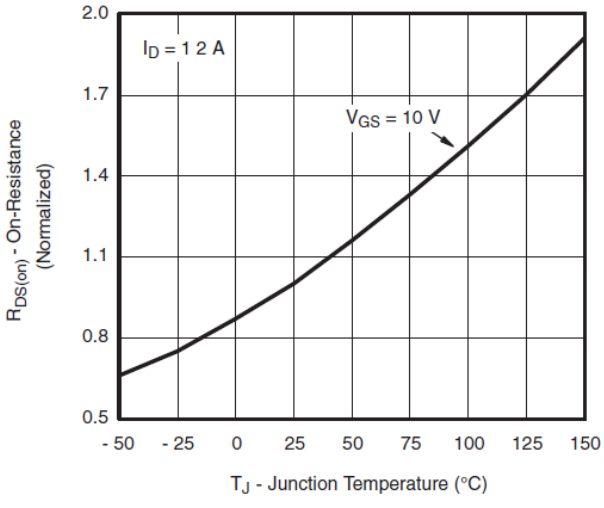
On-Resistance vs. Drain Current and Gate Voltage



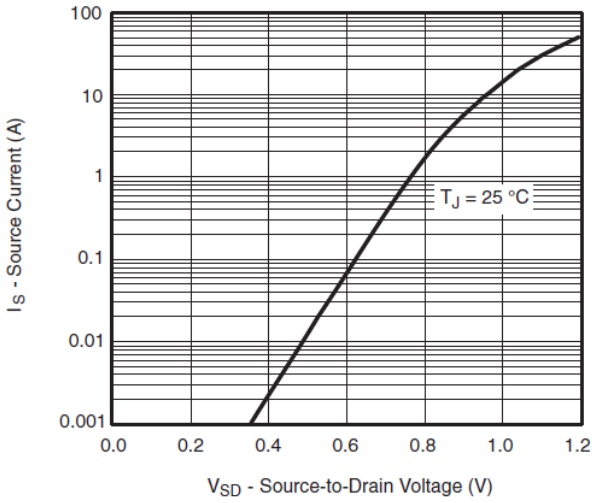
Capacitance



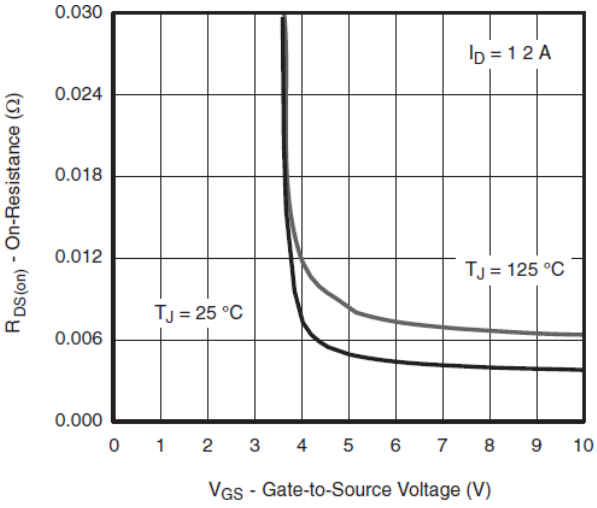
Gate Charge



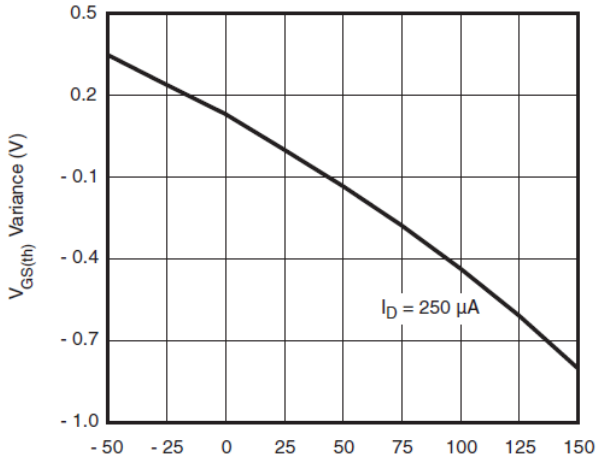
On-Resistance vs. Junction Temperature



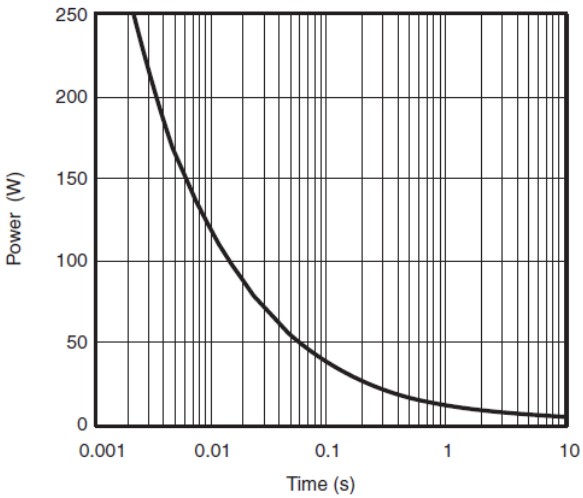
Source-Drain Diode Forward Voltage



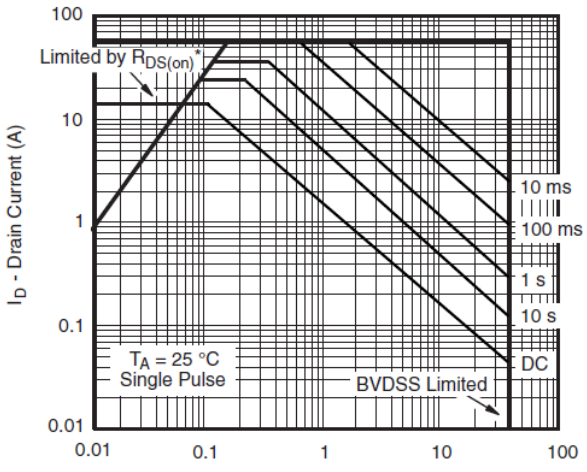
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

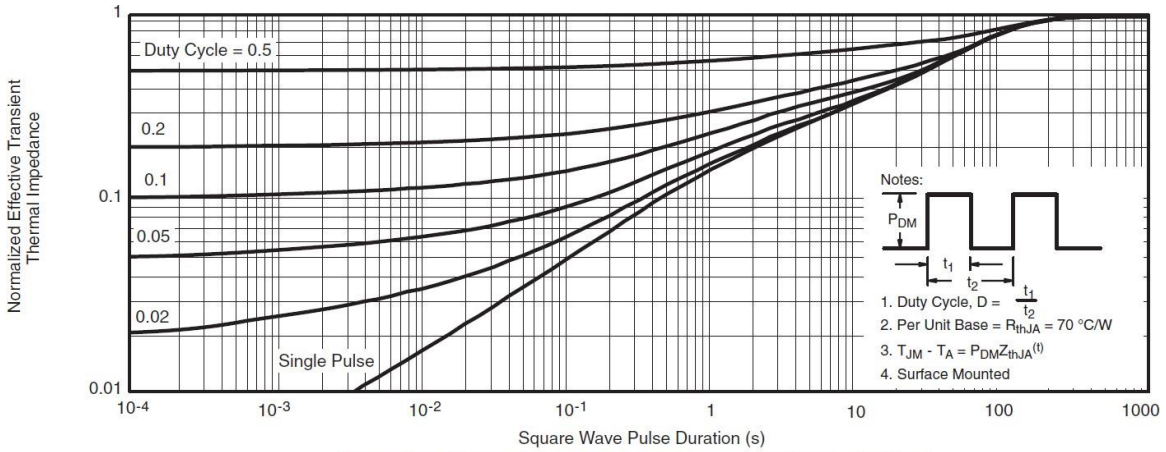


Single Pulse Power (Junction-to-Ambient)

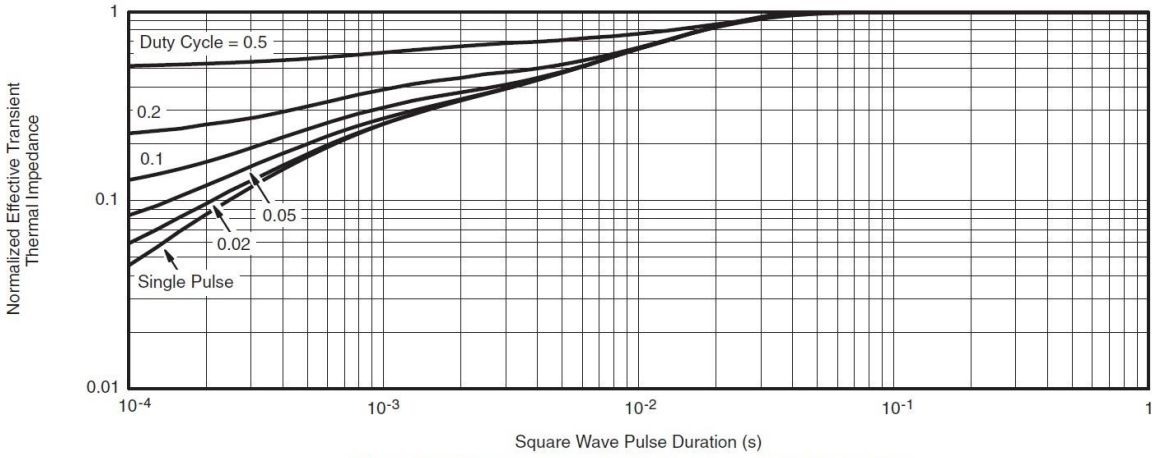


* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient



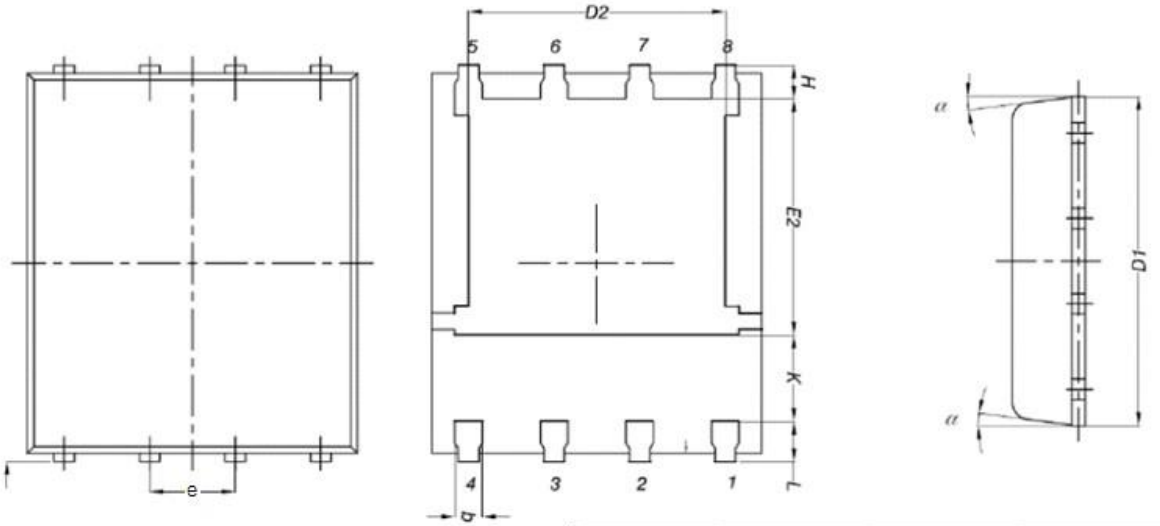
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

Packing Information

DFN5*6-EP



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.8	--	1.1
b	0.2	--	0.51
C	0.15	--	0.35
D1	4.8	--	5.3
D2	3.61	--	4.15
E	5.85	--	6.3
E1	5.45	--	6
E2	3.3	--	4.2
e	--	1.27	--
H	0.41	--	0.71
K	1.1	--	1.5
L	0.45	--	0.74
a	0°	--	12°

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 Technology 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.