ACE5212A

N-Channel Enhancement Mode MOSFET

Description

The ACE5212A is the N-Channel enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance and provide superior switching performance.

These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching, low in-line power loss, and resistance to transients are needed.

Features

- 20V/0.65A, $R_{DS(ON)}$=380mΩ@VGS=4.5V
- 20V/0.55A,$R_{DS(ON)}$=450mΩ@VGS=2.5V
- 20V/0.45A, $R_{DS(ON)}$ =800mΩ@VGS=1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability

Application

- Drivers : Relays/Solenoids/Lamps/Hammers
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

ACE5212A

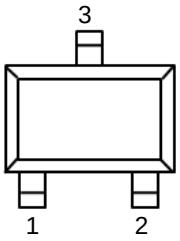
N-Channel Enhancement Mode MOSFET

Absolute Maximum Ratings

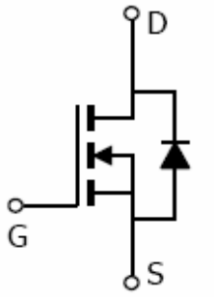
Parameter		Symbol	Max	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current (T_J=150℃)	T_A=25℃	I_D	0.65	A
	T_A=80℃		0.45	
Pulsed Drain Current		I_{DM}	1.0	A
Continuous Source Current (Diode Conduction)		I_S	0.3	A
Power Dissipation	T_A=25℃	P_D	0.27	W
	T_A=70℃		0.16	
Operating Junction Temperature		T_J	-55/150	°C
Storage Temperature Range		T_{STG}	-55/150	°C

Packaging Type

SOT-523



SOT-323	Description
1	Gate
2	Source
3	Drain



Ordering information

ACE5212A KM + H

- Halogen - free
- Pb - free
- KM : SOT-523

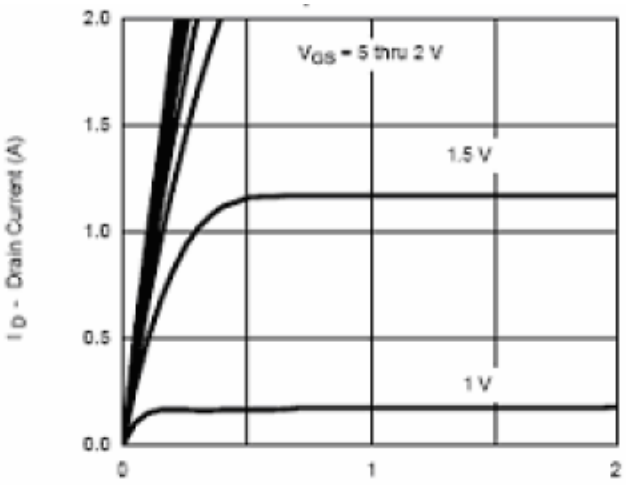
Electrical Characteristics

T_A=25℃, unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.35		1	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	uA
		V_{DS}=20V, V_{GS}=0V T_J=55℃			5	
		V_{DS}≧4.5V, V_{GS}=5V	0.7			A
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.65A		0.26	0.38	Ω
		V_{GS}=2.5V, I_D=0.55A		0.32	0.45	
		V_{GS}=1.8V, I_D=0.45A		0.42	0.80	
Forward Transconductance	Gfs	V_{DS}=10V,I_D=0.4A		1.0		S
Diode Forward Voltage	V_{SD}	I_S=0.15A, V_{GS}=0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_D=0.6A		1.2	1.5	nC
Gate-Source Charge	Q_{gs}			0.2		
Gate-Drain Charge	Q_{gd}			0.3		
Turn-On Time	td(on)	V_{DD}=10V, R_L=10Ω, V_{GEN}=4.5V, I_D=0.5A ,R_G=6Ω		5	10	nS
	tr			8	15	
Turn-Off Time	td(off)			10	18	
	tf			1.2	2.8	

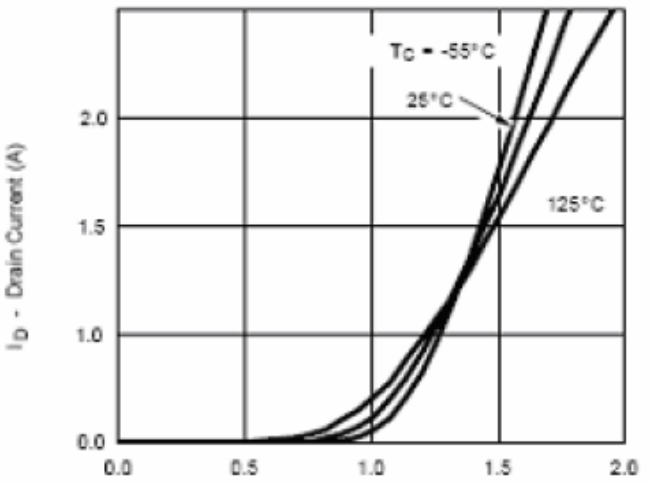
Typical Performance Characteristics

Output Characteristics



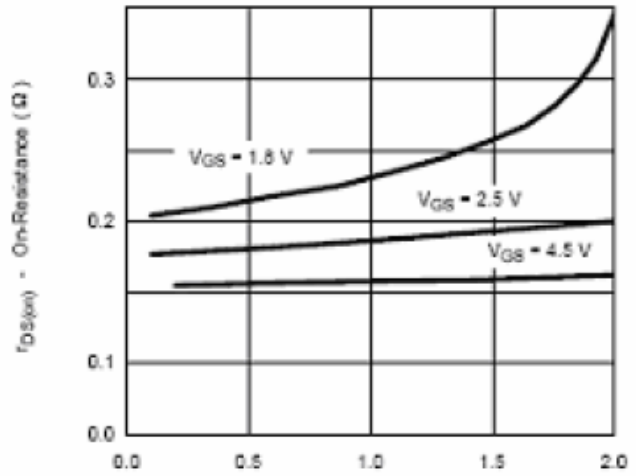
V_{DS}-Drain-to-Source Voltage (V)

Transfer Characteristics



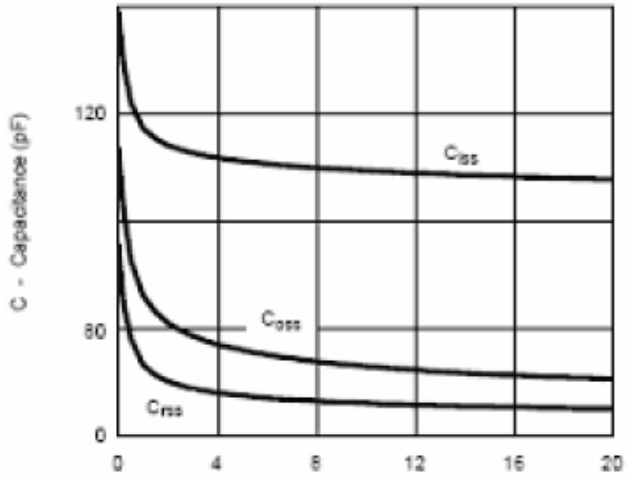
V_{GS}-Gate-to-Source Voltage (V)

On-Resistance vs. Drain Current



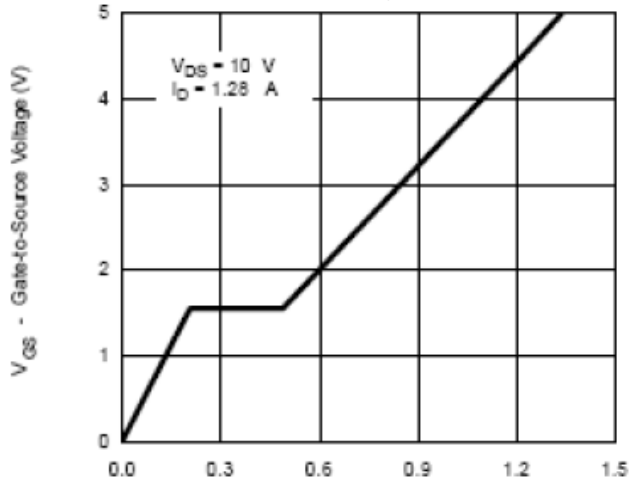
I_D-Drain Current (A)

Capacitance



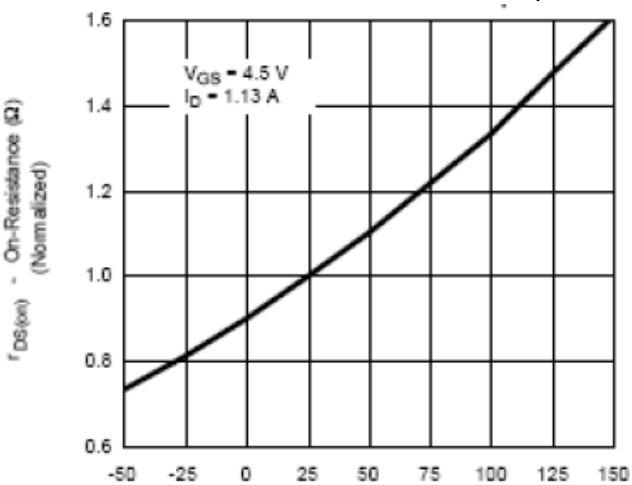
V_{DS}-Drain-to-Source Voltage (V)

Gate Charge



Q_g-Total Gate Charge (nC)

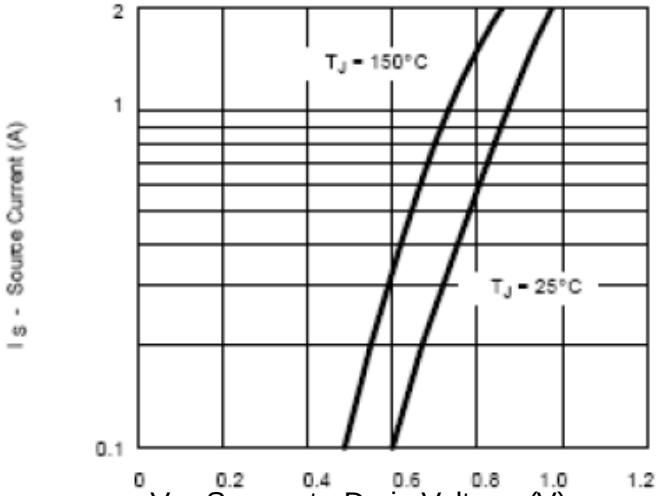
On-Resistance vs. Junction Temperature



T_J-Junction Temperature (℃)

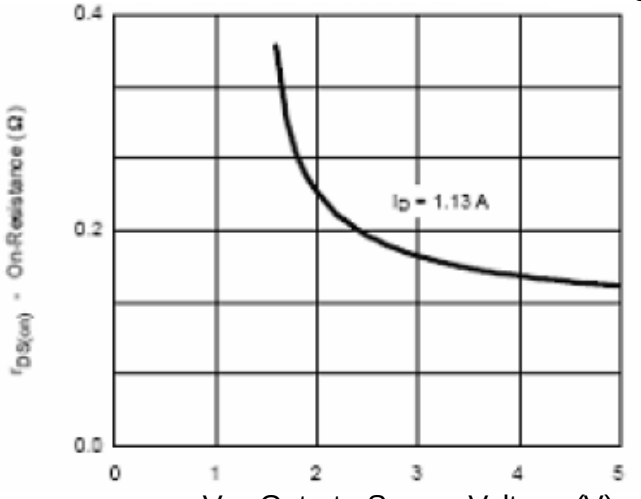
Typical Performance Characteristics

Source-Drain Diode Forward Voltage



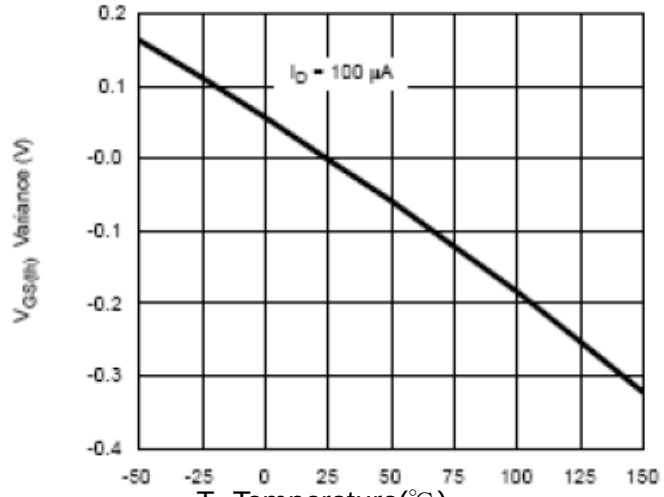
V_{SD}-Source-to-Drain Voltage (V)

On-Resistance vs. Gate-to-Source Voltage



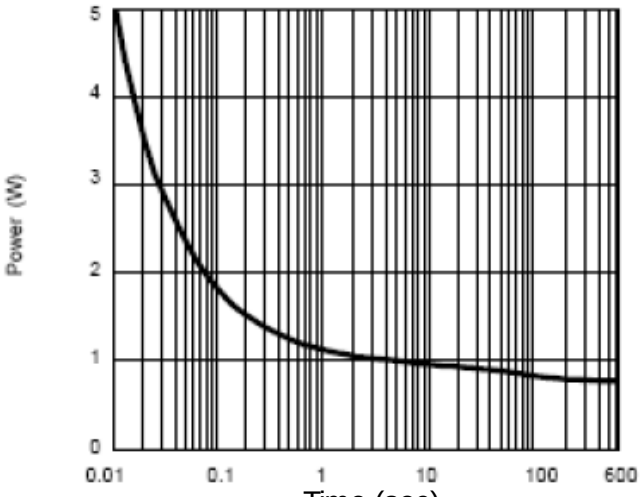
V_{GS}-Gate-to-Source Voltage (V)

Threshold Voltage



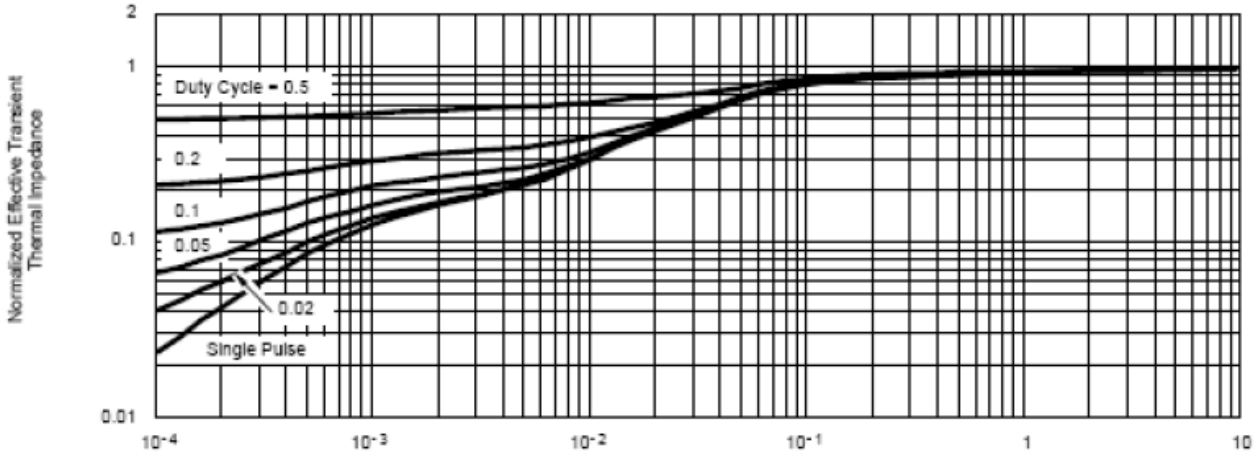
T_J-Temperature(℃)

Single Pulse Power (Jumction-to-Ambient)



Time (sec)

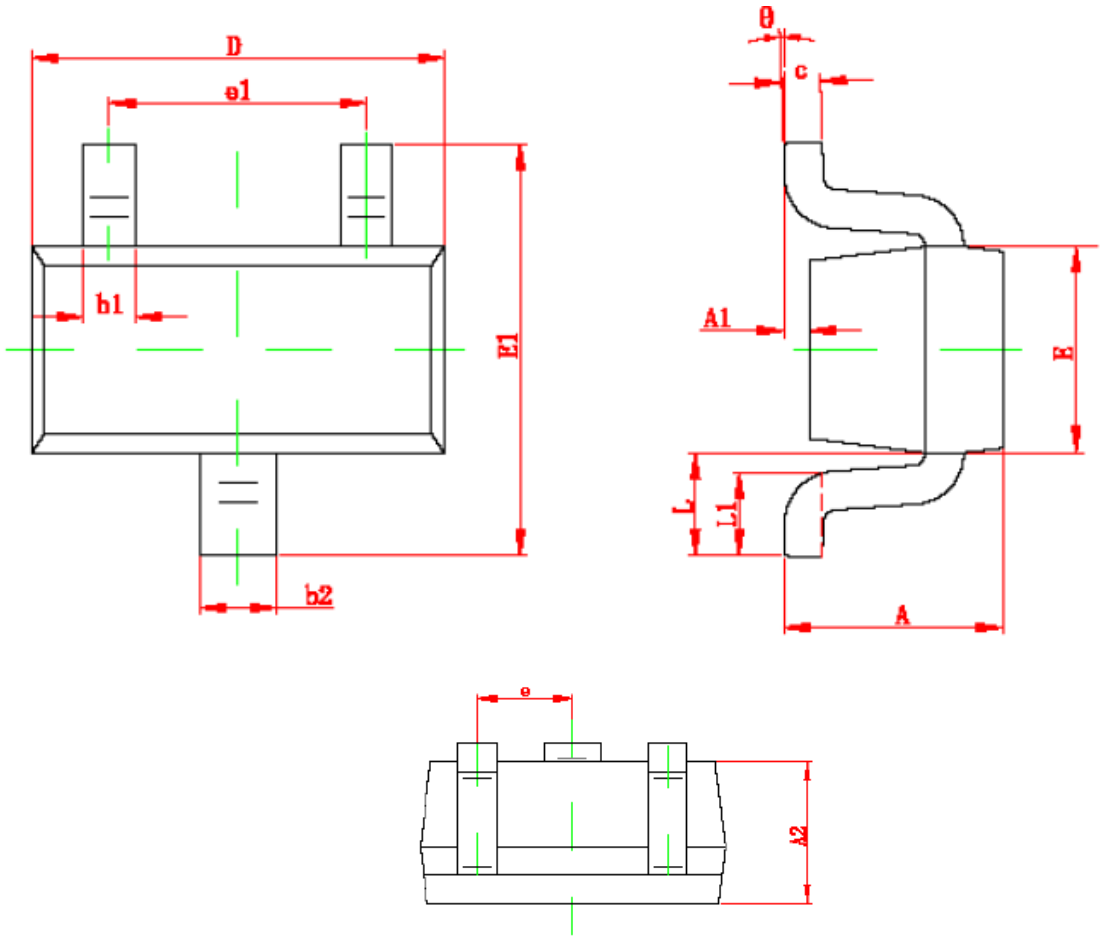
Normalized Thermal Transient Impedance, Junction-to Foot



Square Wave Pulse Duration (sec)

Packing Information

SOT-523



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.325	0.010	0.013
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.750	0.850	0.030	0.033
E1	1.450	1.750	0.057	0.069
e	0.500 TYP		0.020 TYP	
e1	0.900	1.100	0.035	0.043
L	0.550 REF		0.022 REF	
L1	0.280	0.440	0.011	0.017
θ	0°	4°	0°	4°

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.

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