ACE5022AE

Dual N-Channel Enhancement Mode MOSFET

Description

The ACE5022AE is the Dual 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

- N-Channel
  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 RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-563 (SC-89-6L) package design

Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Absolute Maximum Ratings (T_A=25℃ Unless otherwise noted)

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	0.35	W
	T_A=70℃		0.19	
Operating Junction Temperature		T_J	-55/150	°C
Storage Temperature Range		T_{STG}	-55/150	°C

ACE5022AE

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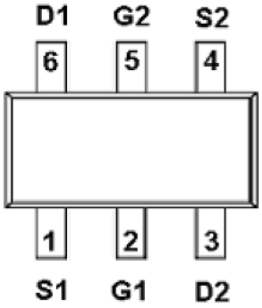
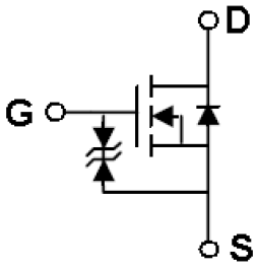
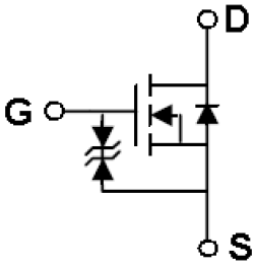
Packaging Type

SOT-563







Pin Description

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	D2	Drain 2
4	S2	Source 2
5	G2	Gate 2
6	D1	Drain1

Ordering information

ACE5022AE XX + H

- Halogen - free
- Pb - free
- KG: SOT-563

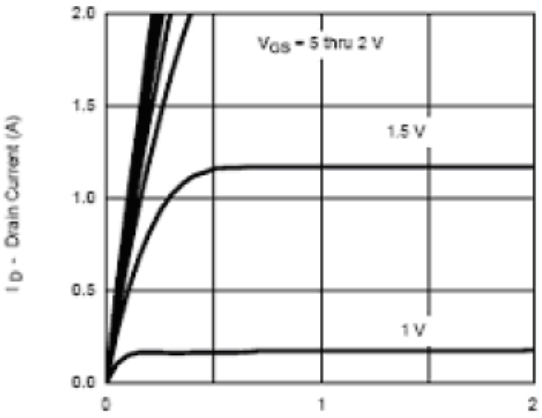
Electrical Characteristics

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		1.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			30	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	
On-State Drain Current	$I_{D(ON)}$	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 Trans conductance	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, I_D=0.5A,V_{GEN}=4.5V, R_G=6Ω		5	10	nS
	tr			8	15	
Turn-Off Time	td(off)			10	18	
	tf			1.2	2.8	

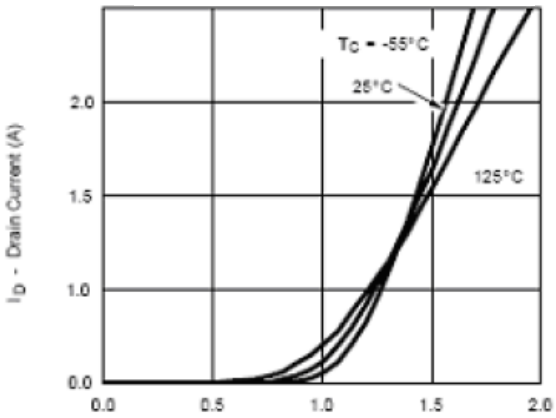
Typical Performance Characteristics

Output Characteristics



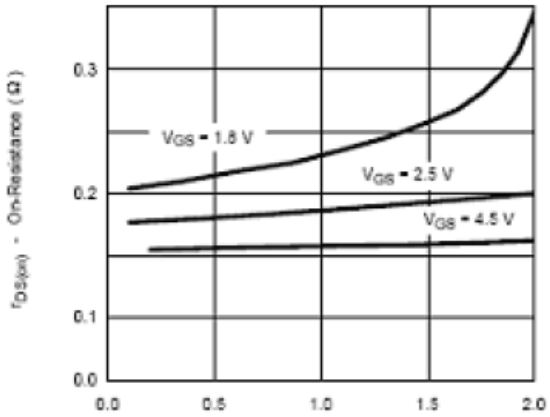
V_{DS}-Drain-to-Source Voltage (V)

Transfer Characteristics



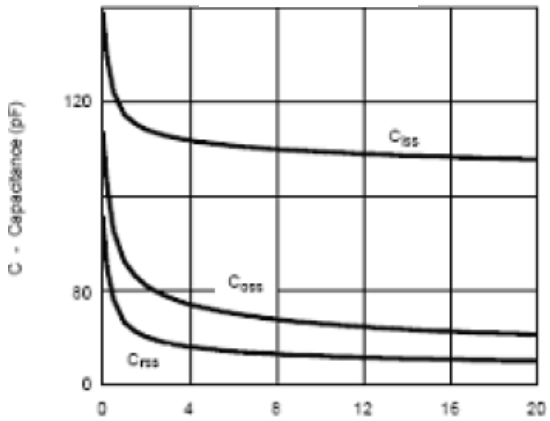
V_{GS}-Gate-to-Source Voltage (V)

On-Resistance vs. Drain Current



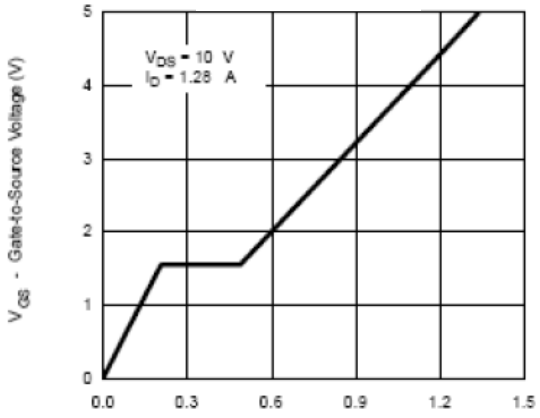
I_D-Drain Current (A)

Capacitance



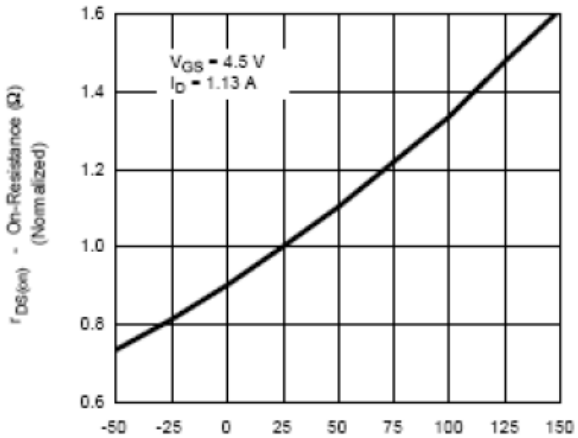
V_{DS}-Drain-to-Source Voltage (V)

Gate Charge



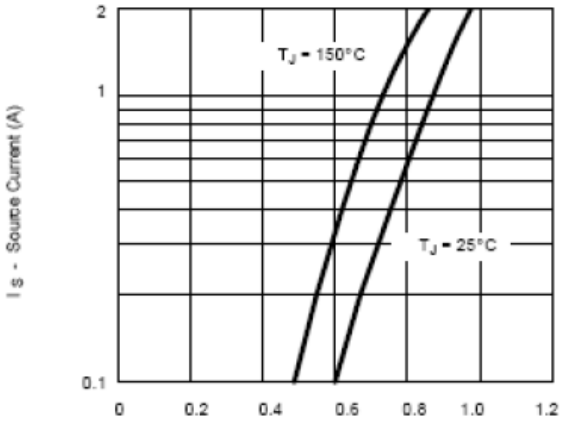
Q_g-Total Gate Charge (nC)

On-Resistance vs. Junction Temperature



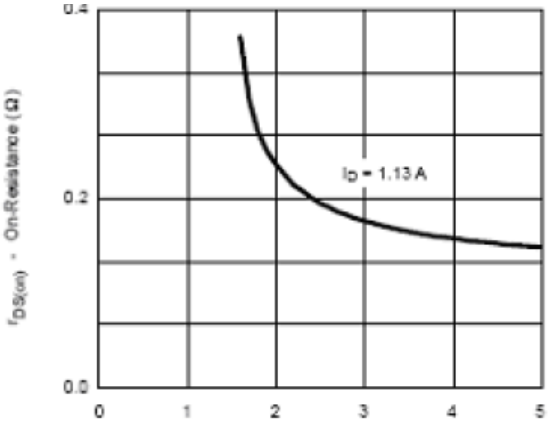
T_J-Junction Temperature (℃)

Source-Drain Diode Forward Voltage



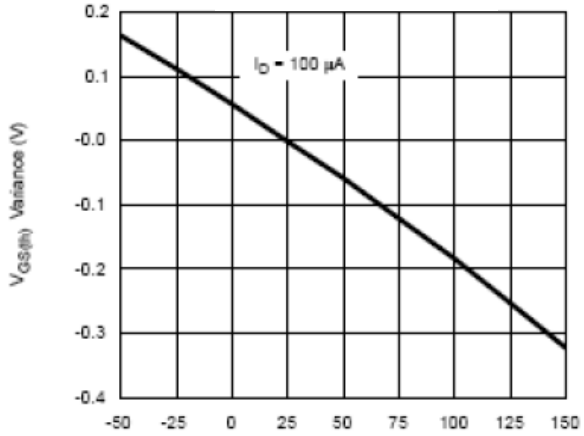
V_{SD}-Source-to-Drain Voltage (V)

On-Resistance vs. Gate-to-Source Voltage



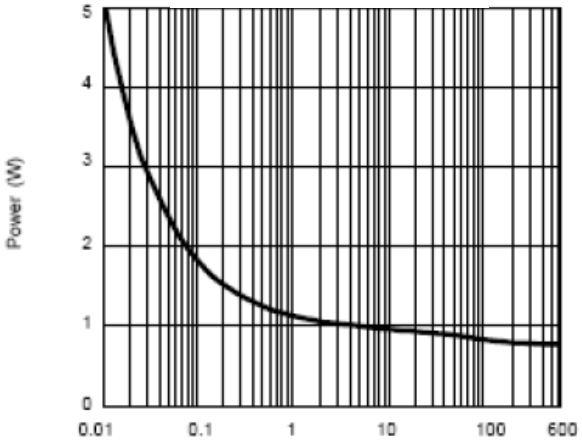
V_{GS}-Gate-to-Source Voltage (V)

Threshold Voltage



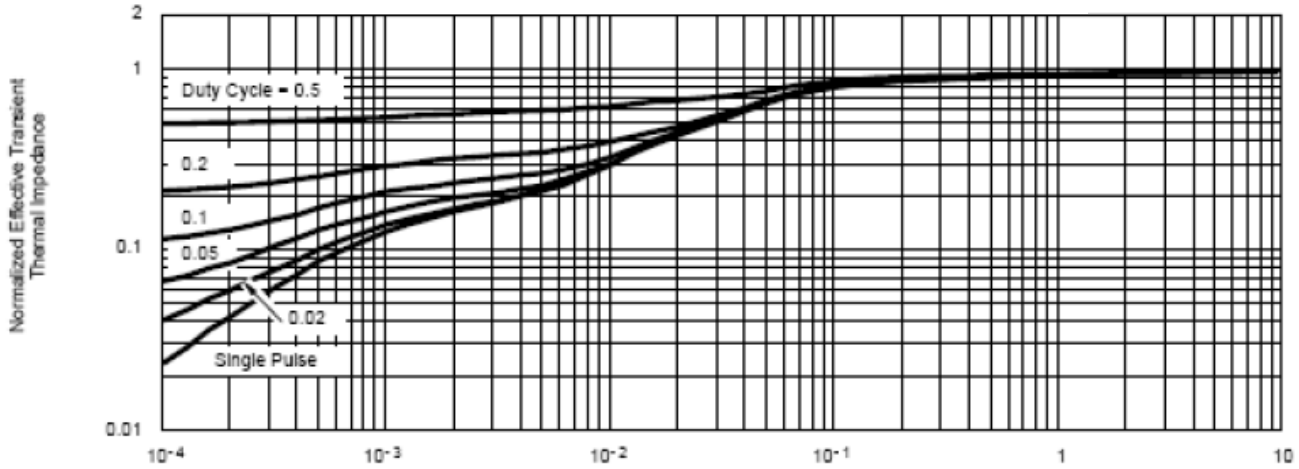
T_J-Temperature(℃)

Single Pulse Power



Time (sec)

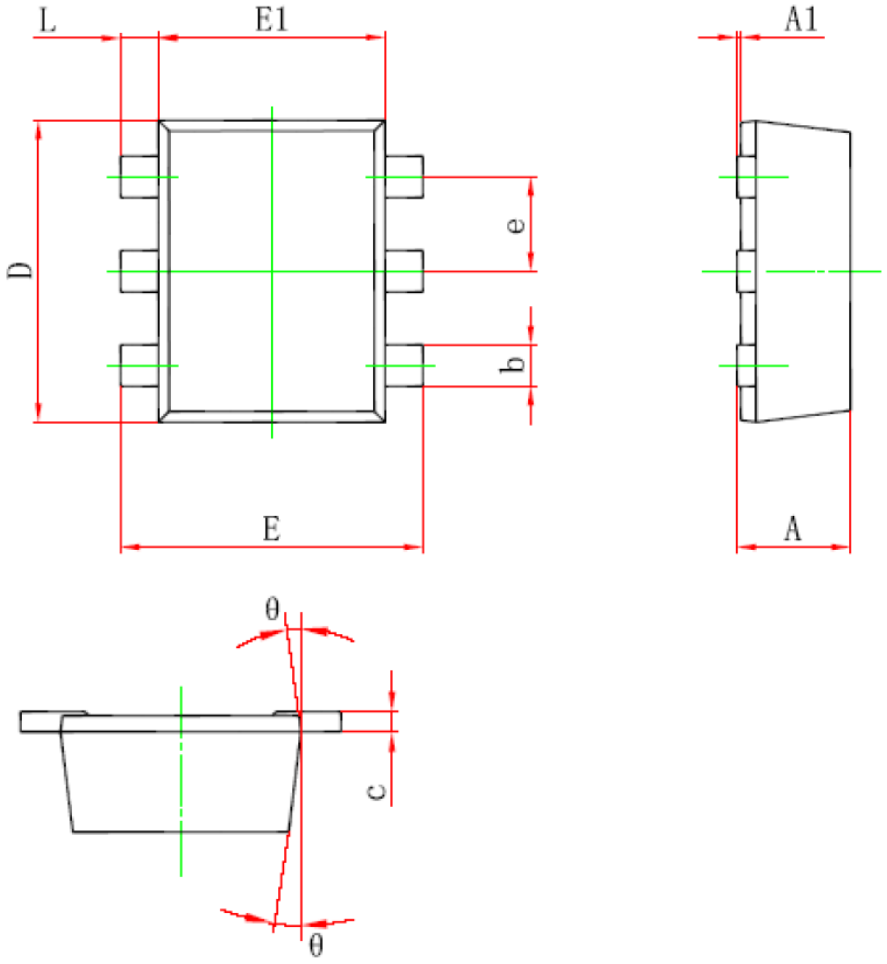
Normalized Thermal Transient Impedance, Junction-to Foot



Square Wave Pulse Duration (sec)

Packing Information

SOT-563



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7 °REF.		7 °REF.	

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.