ACE632

N&P Pair Enhancement Mode MOSFET

Description

The ACE632 is the N- and P-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/0.95A,$R_{DS(ON)}$=380mΩ@V_{GS}=4.5V
  20V/0.75A,$R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
  20V/0.65A,$R_{DS(ON)}$=800mΩ@V_{GS}=1.8V
- P-Channel
  -20V/1.0A,$R_{DS(ON)}$= 520mΩ@V_{GS}=-4.5V
  -20V/0.8A,$R_{DS(ON)}$= 700mΩ@V_{GS}=-2.5V
  -20V/0.7A,$R_{DS(ON)}$= 950mΩ@V_{GS}=-1.8V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

Application

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

Absolute Maximum Ratings

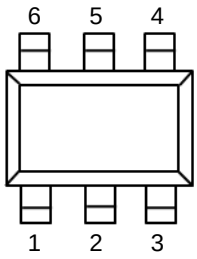
(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	±12	±12	V
Continuous Drain Current (T_J=150℃)	T_A=25℃	I_D	1.2	-1.0	A
	T_A=80℃		0.9	-0.7	
Pulsed Drain Current[1)]		I_{DM}	4	-3	A
Continuous Source Current (Diode Conduction)		I_S	0.6	-0.6	
Power Dissipation	T_A=25℃	P_D	0.3		W
	T_A=70℃		0.19		

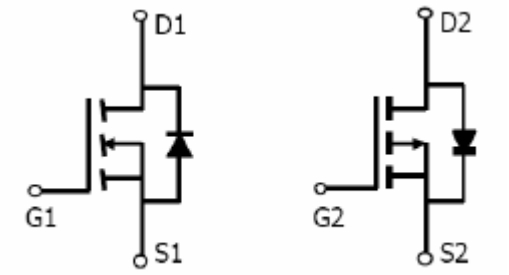
Operating Junction Temperature		T_J	-55 to 150		°C
Storage Temperature Range		T_{STG}	-55 to 150		°C
Thermal Resistance-Junction to Ambient	T≦10sec	$R_{\theta JA}$	360	360	°C/W
	Steady State		400	400	

Packaging Type

SC-70-6



SC-70-6	Description
1	Source 1
2	Gate 1
3	Drain 2
4	Source 2
5	Gate 2
6	Drain 1



N-Channel P-Channel

Ordering information

ACE632 XX + H

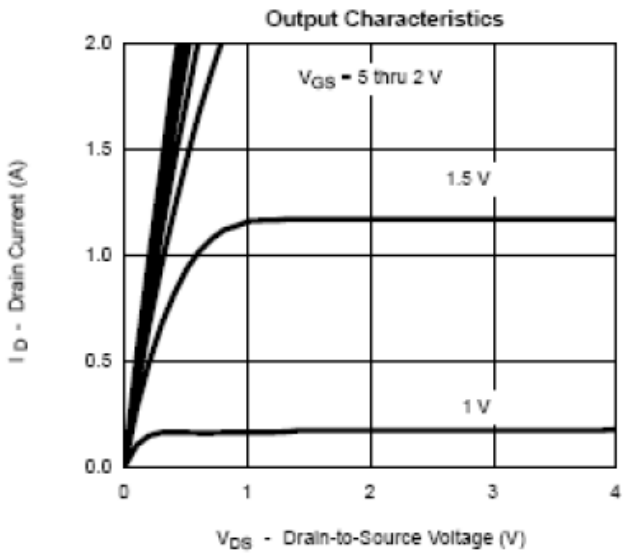
- H : Halogen - free
- XX : Pb - free
- HM : SC-70-6

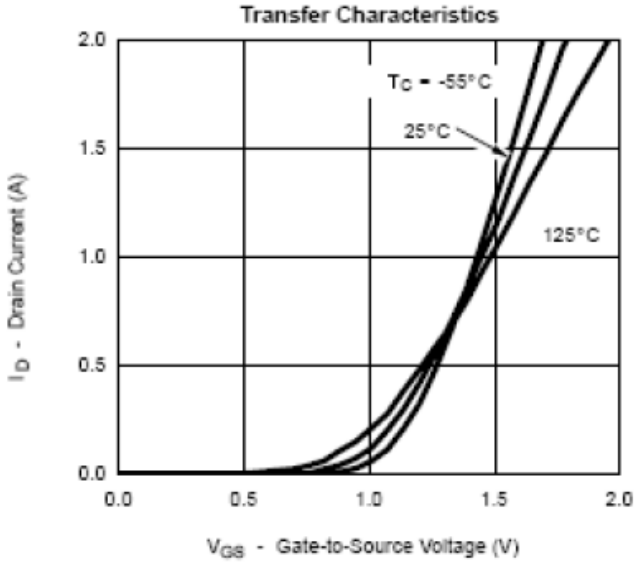
Electrical Characteristics

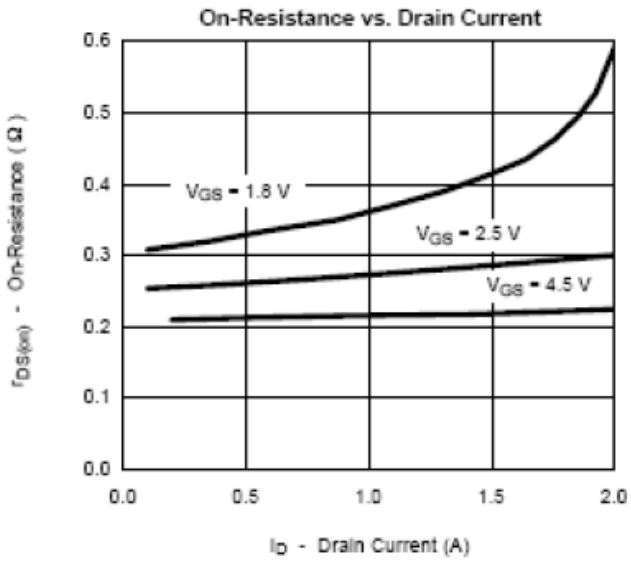
Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	N-Ch	20			V
		V_{GS}=0V, I_D=250uA	P-Ch	-20			
Drain-Source On Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.95A	N-Ch		0.26	0.38	Ω
		V_{GS}=-4.5V, I_D=-1.0A	P-Ch		0.42	0.52	
		V_{GS}=2.5V, I_D=0.75A	N-Ch		0.32	0.45	
		V_{GS}=-2.5V, I_D=-0.8A	P-Ch		0.58	0.70	
		V_{GS}=1.8V, I_D=0.65A	N-Ch		0.42	0.80	
		V_{GS}=-1.8V, I_D=-0.5A	P-Ch		0.75	0.95	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	N-Ch	0.35		1.0	V
		V_{DS}=V_{GS}, I_D=-250uA	P-Ch	-0.35		-1.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	N-Ch			100	nA
		V_{DS}=0V, V_{GS}=±12V	P-Ch			-100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	N-Ch			1	uA
		V_{DS}=-20V, V_{GS}=0V	P-Ch			-1	
		V_{DS}=20V, V_{GS}=0V T_J=55℃	N-Ch			5	
		V_{DS}=-20V, V_{GS}=0V T_J=55℃	P-Ch			-5	
On-State Drain Current	$I_{D(ON)}$	V_{DS}≧4.5V, V_{GS} =5V	N-Ch	2			A
		V_{DS}≦-4.5V, V_{GS} =-5V	P-Ch	-2			
Diode Forward Voltage	V_{SD}	I_S=0.5A, V_{GS}=0V	N-Ch		0.8	1.2	V
		I_S=-0.5A, V_{GS}=0V	P-Ch		-0.8	-1.2	
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=1.2A	N-Ch		2.6		S
		V_{DS}=-10V, I_D=-1.0A	P-Ch		1.5		
Dynamic							
Total Gate Charge	Q_g	N-Channel V_{DS}=10V, V_{GS}=4.5V, I_D≡1.2A P-Channel V_{DS}=-10V, V_{GS}=-4.5V, I_D≡-1.0A	N-Ch		1.2	2.0	nC
			P-Ch		1.1	1.8	
Gate-Source Charge	Q_{gs}		N-Ch		0.2		
			P-Ch		0.3		
Gate-Drain Charge	Q_{gd}		N-Ch		0.3		
			P-Ch		0.2		
Turn-On Time	$t_{d(on)}$	N-Channel V_{DD}=10V,RL=20Ω I_D=0.5A,	N-Ch		15	25	ns
			P-Ch		18	30	
	t_r		N-Ch		20	30	

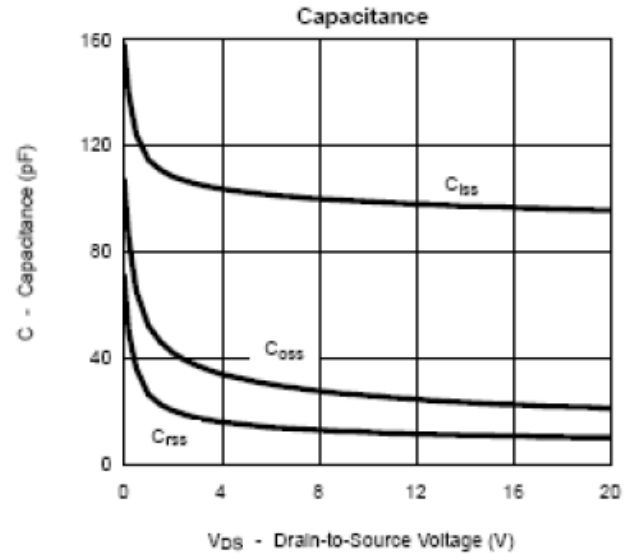
		V_{GEN}=4.5V,R_G=6Ω	P-Ch		25	40	
Turn-Off Time	$t_{d(off)}$	P-Channel	N-Ch		25	40	
		V_{DD}=-10V,RL=20Ω	P-Ch		20	30	
	t_f	I_D=-0.5A, V_{GEN}=-4.5V,	N-Ch		12	20	
		R_G=6Ω	P-Ch		12	20	

Typical Characteristics (N-Channel)









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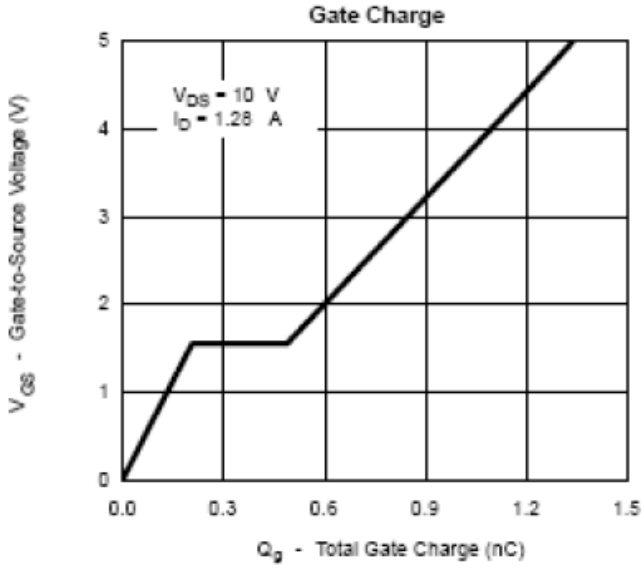

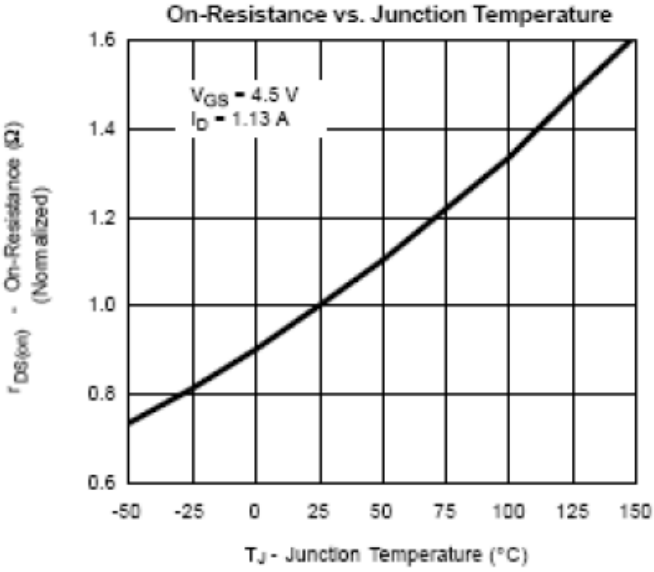

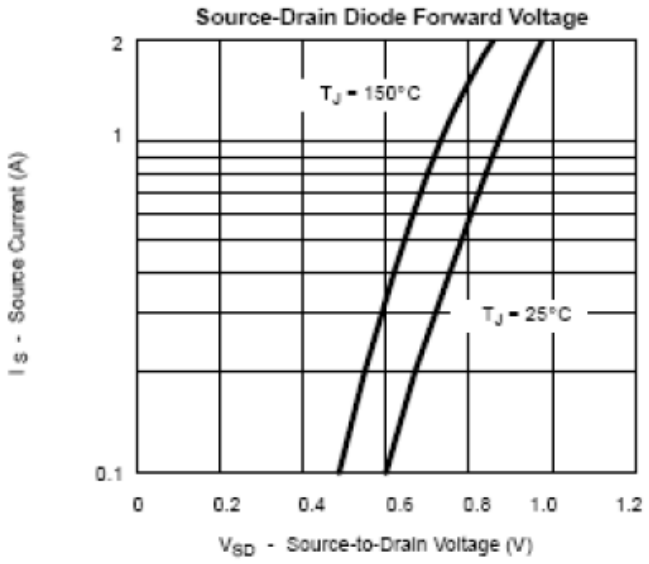

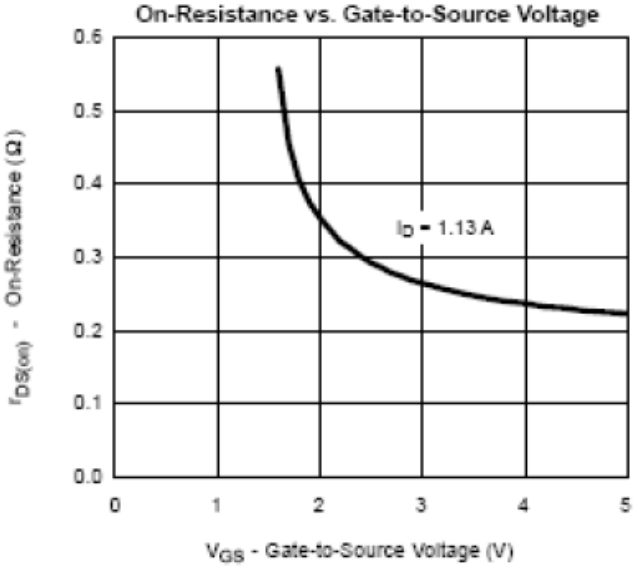

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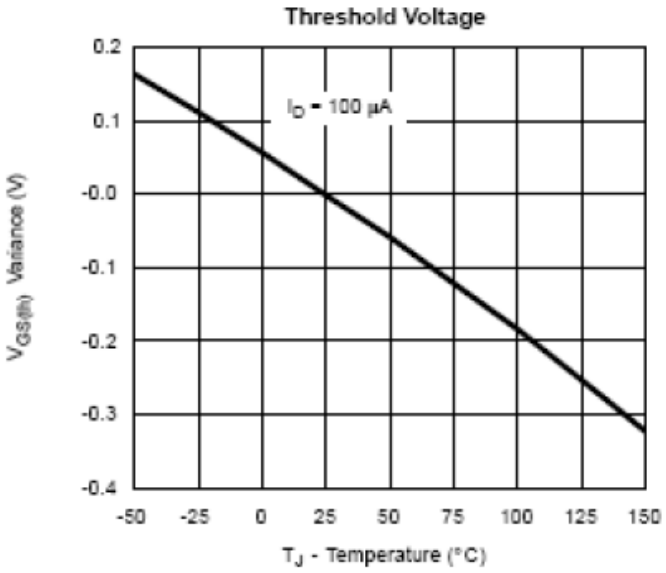
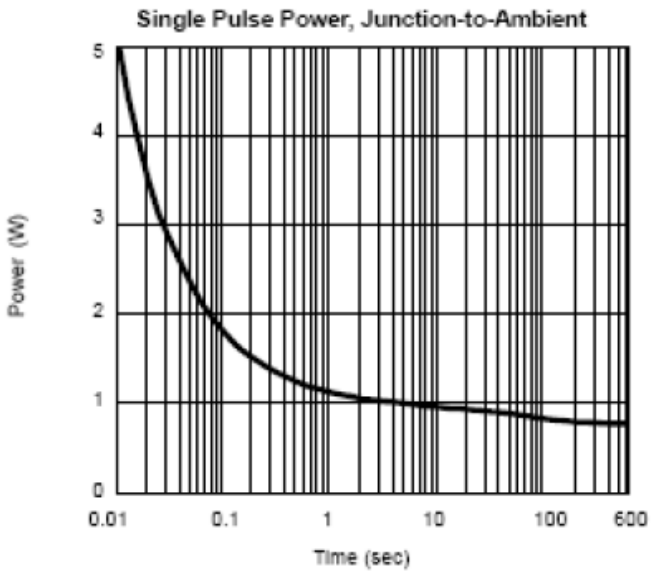
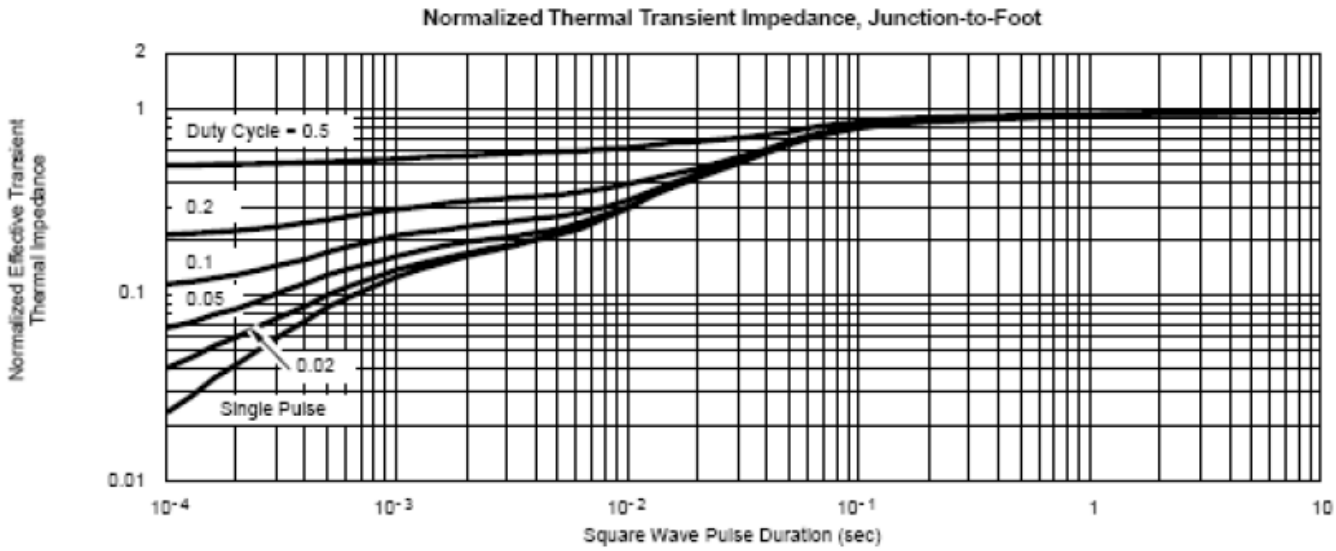
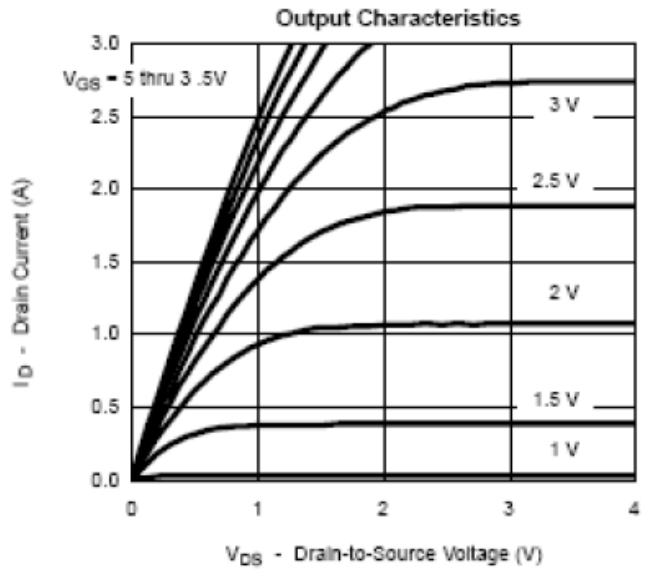
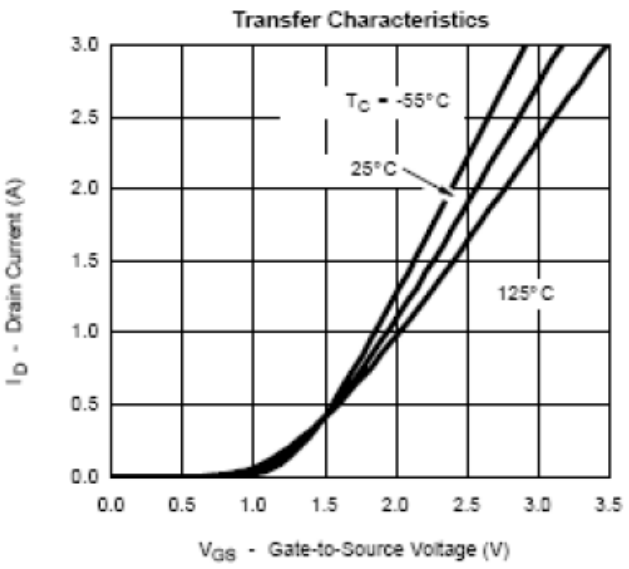


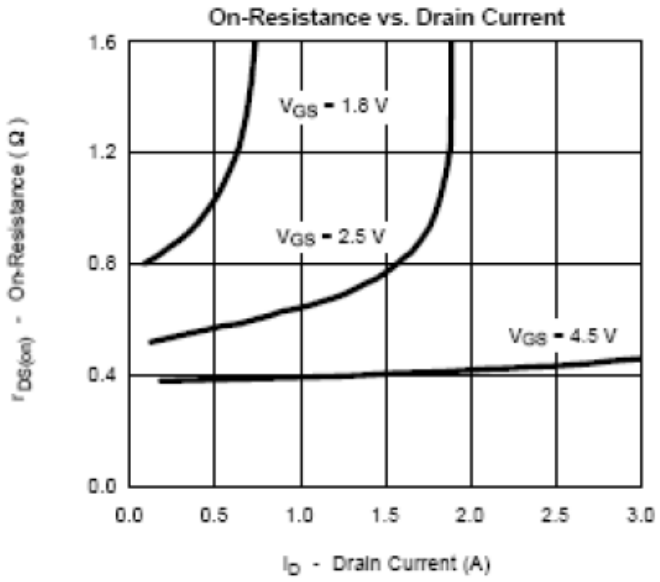


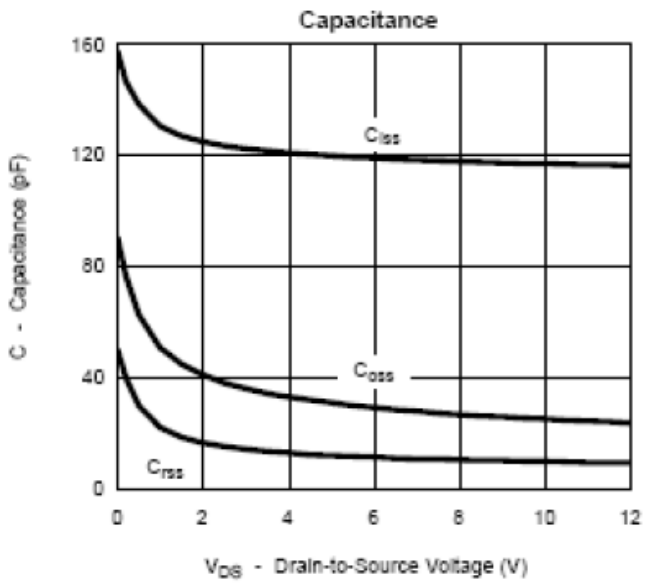


Typical Characteristics (P-Channel)









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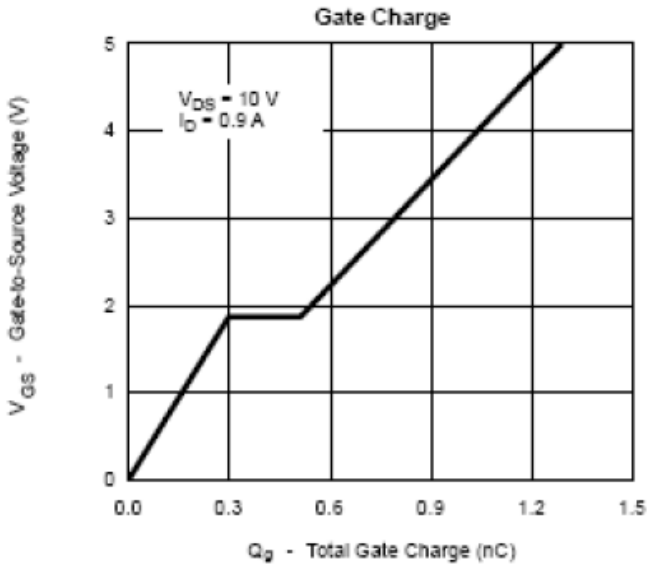

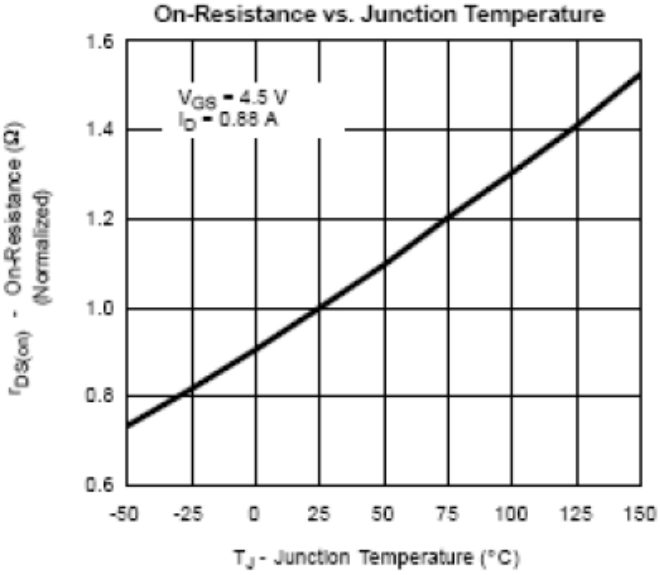

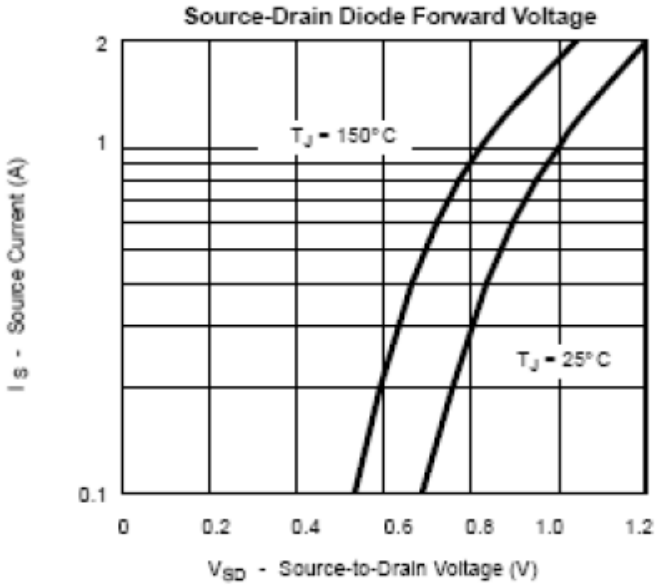

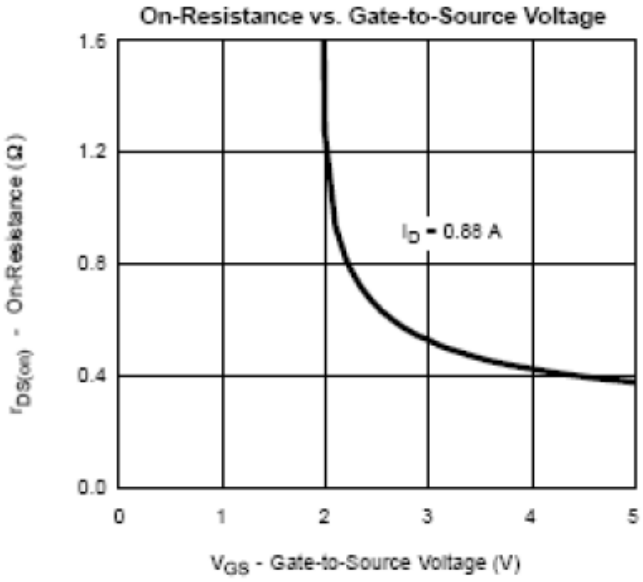

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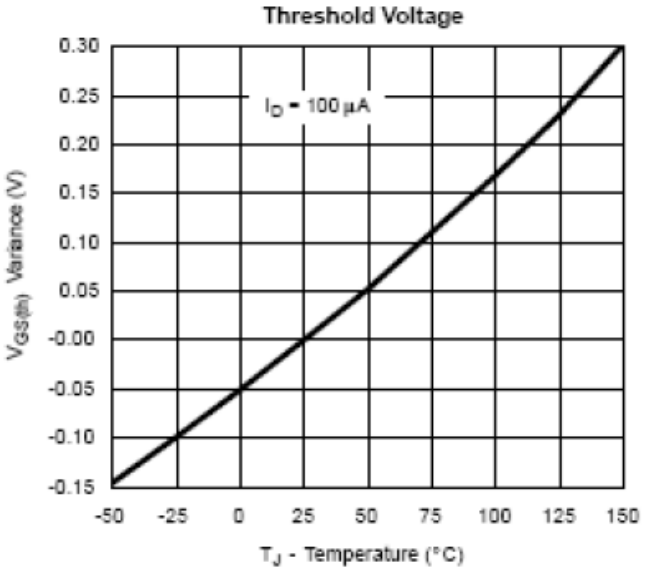
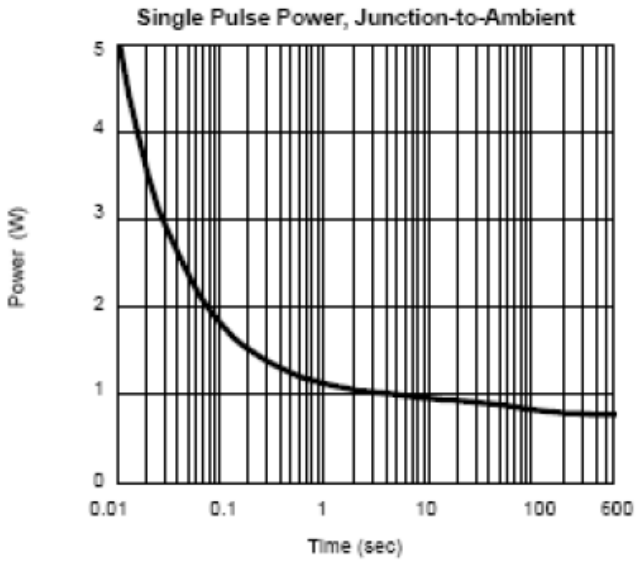
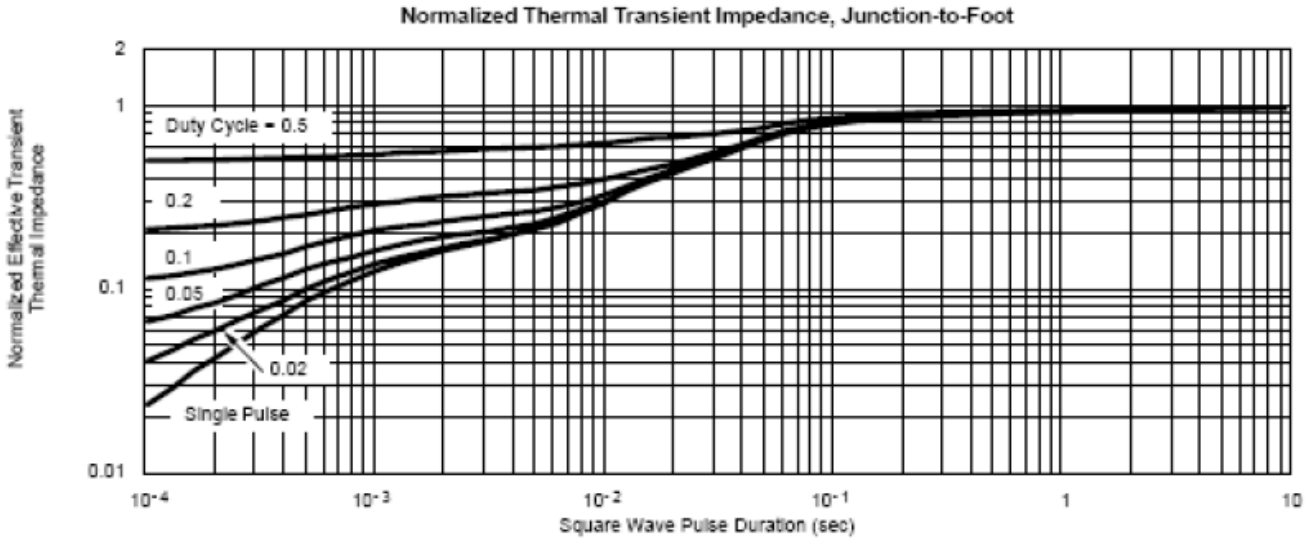
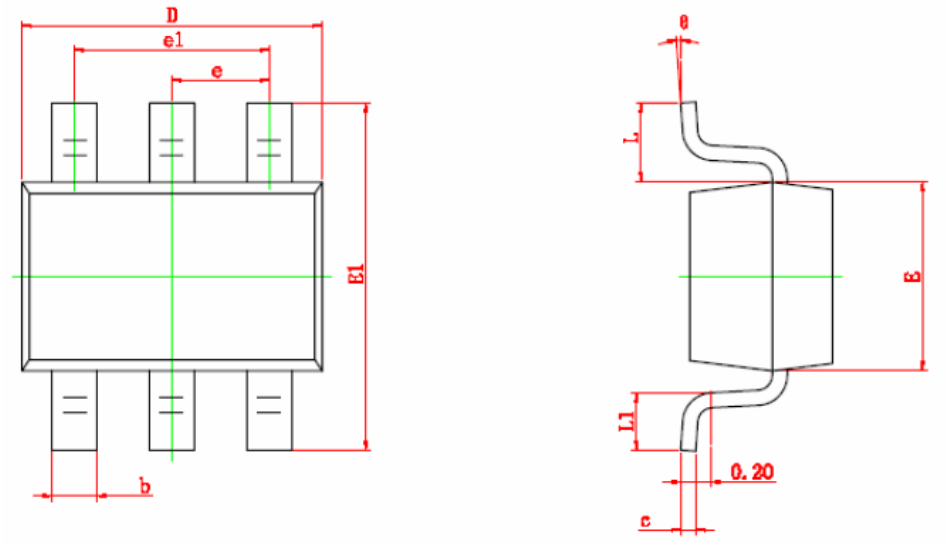






Packing Information

SC-70-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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.

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