ST2309ES

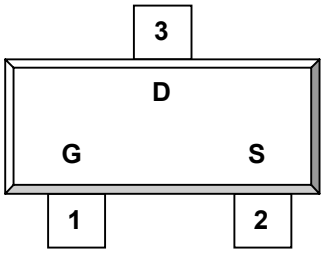
P Channel Enhancement Mode MOSFET

-3.0A

DESCRIPTION

ST2309ES is the P-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management, other battery powered circuits, and low in-line power loss are required. The product is in a very small outline surface mount package.

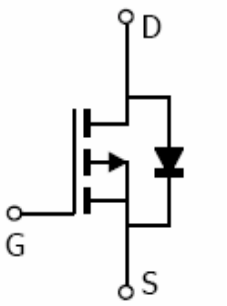
PIN CONFIGURATION
SOT-23



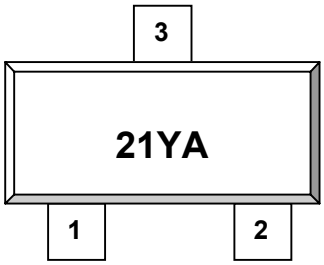
1.Gate 2.Source 3.Drain

FEATURE

- -60V/-3.0A, $R_{DS(ON)}$ = 160m-ohm @VGS = -10V
- -60V/-1.5A, $R_{DS(ON)}$ = 200m-ohm @VGS = -4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design



PART MARKING
SOT-23



Y: Year Code A: Process Code

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

STANSON

ST2309ES

Lead-free

P Channel Enhancement Mode MOSFET

-3.0A

ABSOULTE MAXIMUM RATINGS (Ta = 25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain CurrentTJ=150℃)	TA=25℃ TA=70℃	I_D	-3.0 -1.3	A
Pulsed Drain Current		I_{DM}	-9	A
Continuous Source Current (Diode Conduction)		I_S	-2.2	A
Power Dissipation	TA=25℃ TA=70℃	P_D	1.5 0.8	W
Operation Junction Temperature		T_J	150	℃
Storgae Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	100	℃/W

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

STANSON

ST2309ES

Lead-free

P Channel Enhancement Mode MOSFET

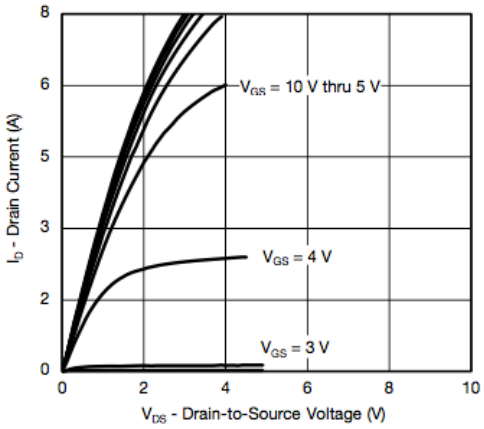
-3.0A

ELECTRICAL CHARACTERISTICS (Ta = 25℃ Unless otherwise noted)

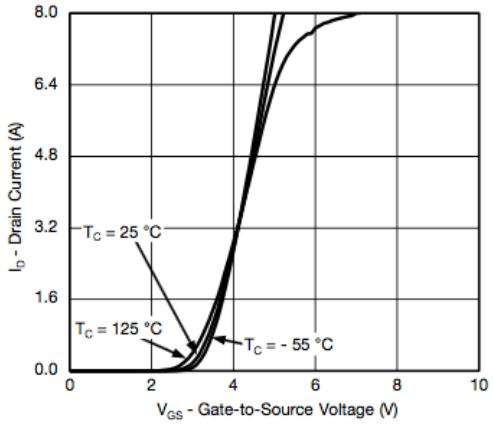
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-10uA	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=-250uA	-1.0		-2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-48V,V_{GS}=0V			-1	uA
		V_{DS}=-48V,V_{GS}=0V T_J=55℃			-10	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-3.0A V_{GS}=-4.5V,I_D=-1.5A		0.150 0.185	0.160 0.200	Ω
Forward Transconductance	g_{fs}	V_{DS}=-10V,I_D=-1.7V		2.4		S
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V		-0.8	-1.0	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-30V V_{GS}=-10V I_D≡-1A		1.8		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	V_{DS}=-25V V_{GS}=0V F=1MHz			280	pF
Output Capacitance	C_{oss}				50	
Reverse Transfer Capacitance	C_{rss}				45	
Turn-On Time	$t_{d(on)}$ tr	V_{DD}=-30V R_L=30Ω I_D=-3.0A V_{GEN}=-10V R_G=1Ω		6	10	nS
				10	15	
Turn-Off Time	$t_{d(off)}$ tf			15	20	
				11	14	

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

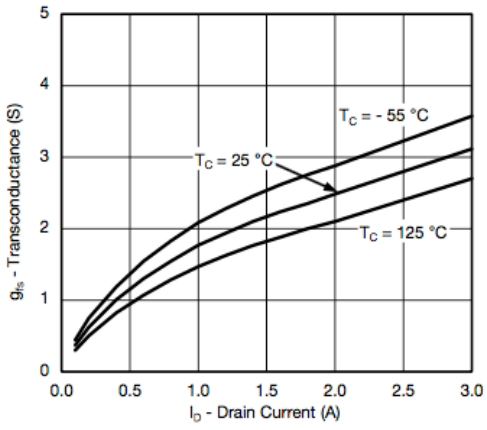
TYPICAL CHARACTERICTICS (25℃ Unless noted)



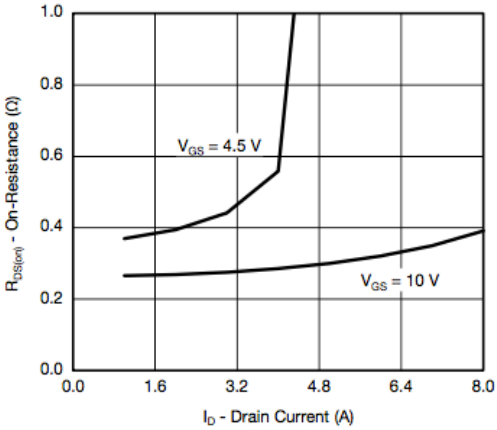
Output Characteristics



Transfer Characteristics



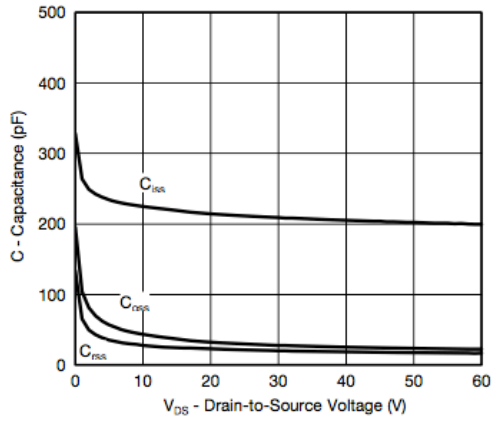
Transconductance



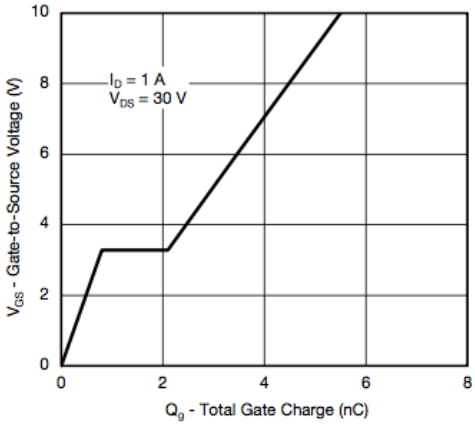
On-Resistance vs. Drain Current

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

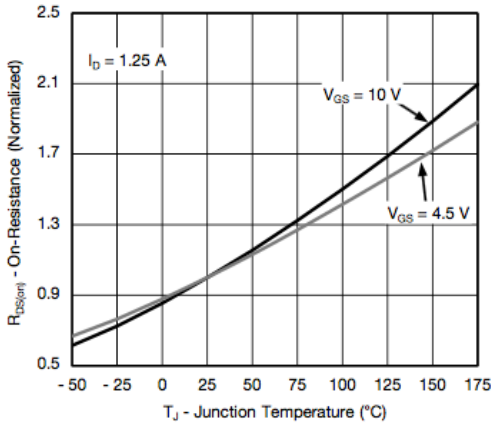
TYPICAL CHARACTERICTICS (25℃ Unless noted)



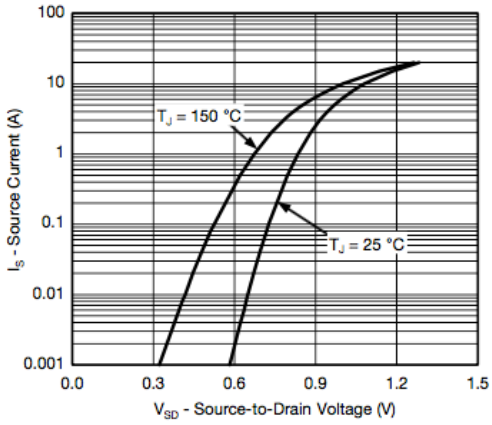
Capacitance



Gate Charge



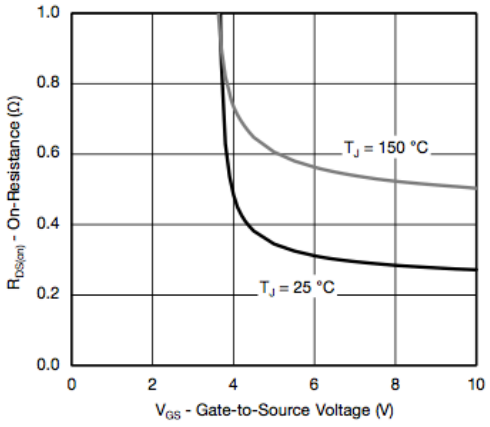
On-Resistance vs. Junction Temperature



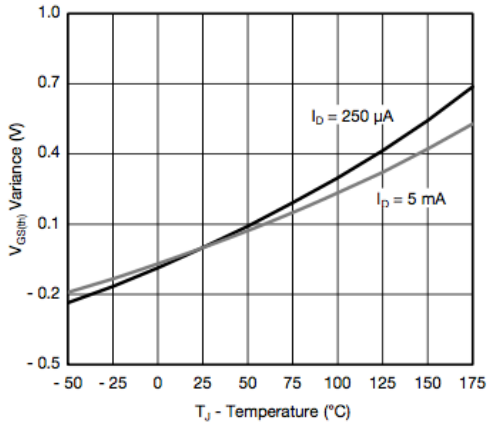
Source Drain Diode Forward Voltage

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

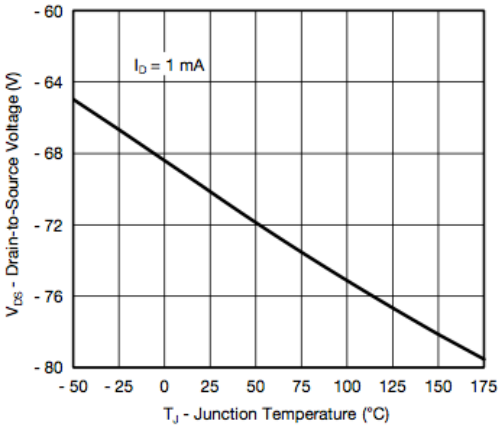
TYPICAL CHARACTERICTICS (25℃ Unless noted)



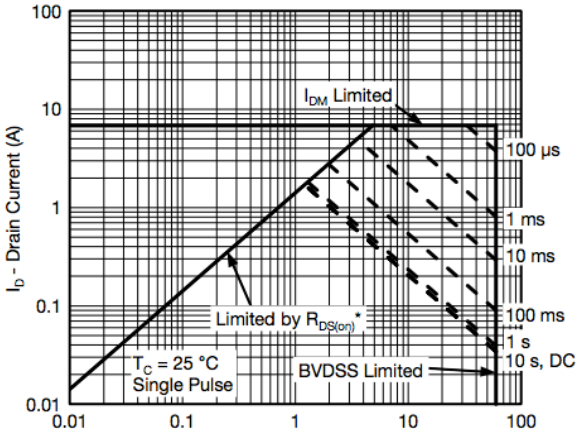
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

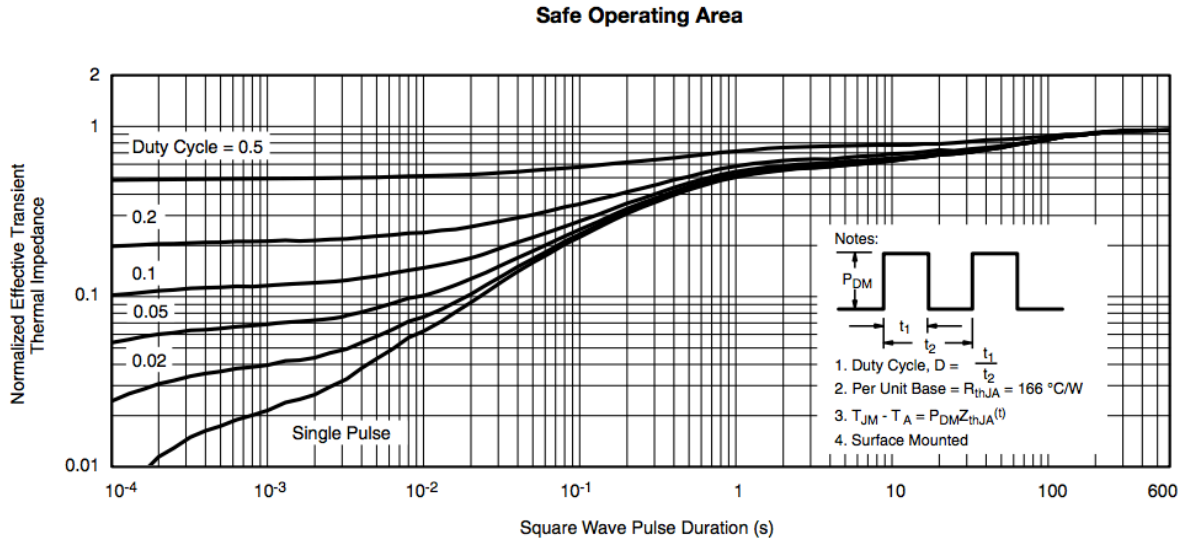


Drain Source Breakdown vs. Junction Temperature



STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

TYPICAL CHARACTERICTICS (25℃ Unless noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com

STANSON

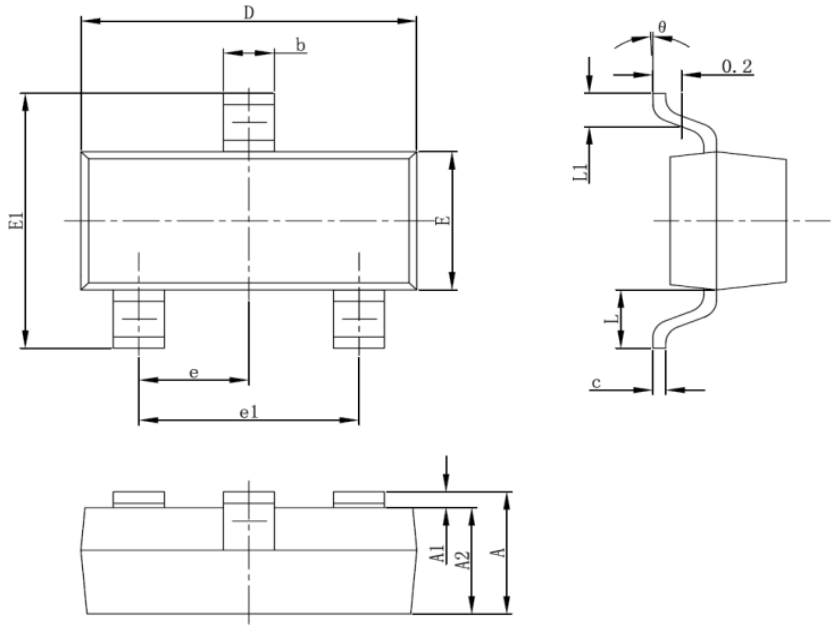
ST2309ES

Lead-free

P Channel Enhancement Mode MOSFET

-3.0A

SOT-23 PACKAGE OUTLINE



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	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

STANSON TECHNOLOGY
120 Bentley Square, Mountain View, Ca 94040 USA
www.stansontech.com