ST2300SRG

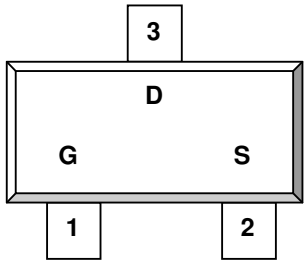
N Channel Enhancement Mode MOSFET

6.0A

DESCRIPTION

The ST2300SRG is the N-Channel logic enhancement mode power field effect transistor 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 and other batter powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION
SOT-23

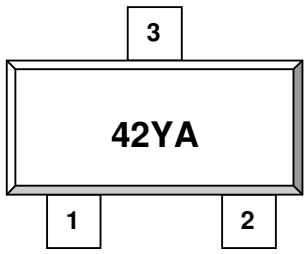


1.Gate 2.Source 3.Drain

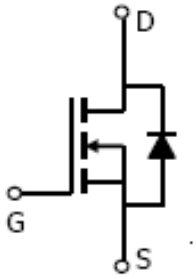
FEATURE

- 20V/6.0A, $R_{DS(ON)}$ = 35mΩ (Typ.) @V_{GS} = 10V
- 20V/5.0A, $R_{DS(ON)}$ = 48mΩ @V_{GS} = 4.5V
- 20V/4.5A, $R_{DS(ON)}$ = 90mΩ @V_{GS} = 2.5V
- 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



ORDERING INFORMATION

Part Number	Package	Part Marking
ST2300SRG	SOT-23	42YA

※ Process Code : A ~ Z ; a ~ z
※ ST2300SRG ; S : SOT23 R : Tape Reel ; G : Pb – Free

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

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current (TJ=150℃)	T_A=25℃ T_A=70℃	I_D	6.0 3.0	A
Pulsed Drain Current		I_{DM}	10	A
Continuous Source Current (Diode Conduction)		I_S	1.0	A
Power Dissipation	T_A=25℃ T_A=70℃	P_D	1.25 0.8	W
Operation Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	140	℃/W

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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=250uA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.4		1.2	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±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=85℃			10	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=6.0A V_{GS}=4.5V,I_D=5.0A V_{GS}=2.5V,I_D=4.5A		0.035 0.048 0.090		Ω
Forward Tranconductance	g_{fs}	V_{DS}=15V,I_D=5.0A		30		S
Diode Forward Voltage	V_{SD}	I_S=1.7A,V_{GS}=0V		0.9	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=10V V_{GS}=4.5V I_D≡5A		10	13	nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			2.1		
Input Capacitance	C_{iss}	V_{DS}=10V V_{GS}=0V F=1MHz		600		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			100		
Turn-On Time	$t_{d(on)}$	V_{DD}=10V R_L=10Ω I_D=1A V_{GEN}=4.5V R_G=6Ω		15	25	nS
	t_r			40	60	
Turn-Off Time	$t_{d(off)}$			45	65	
	t_f			30	40	

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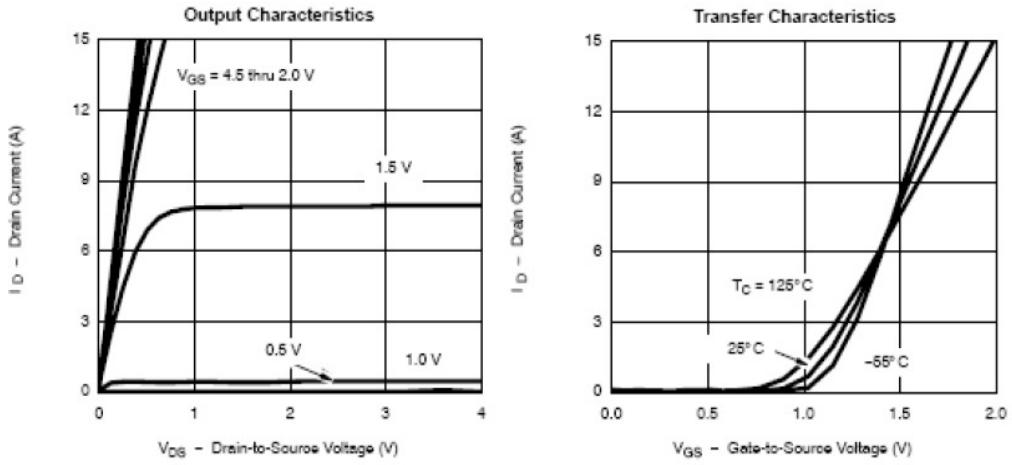
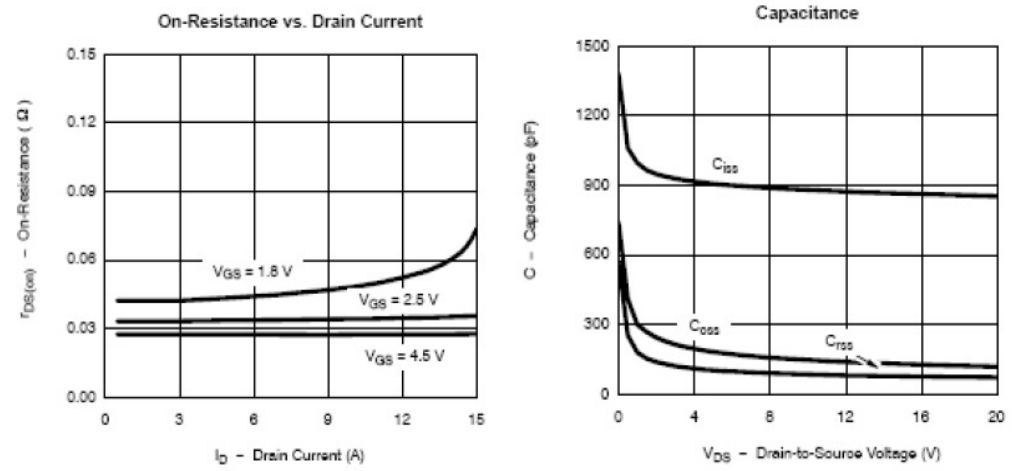
TYPICAL CHARACTERICTICS (25℃ Unless noted)





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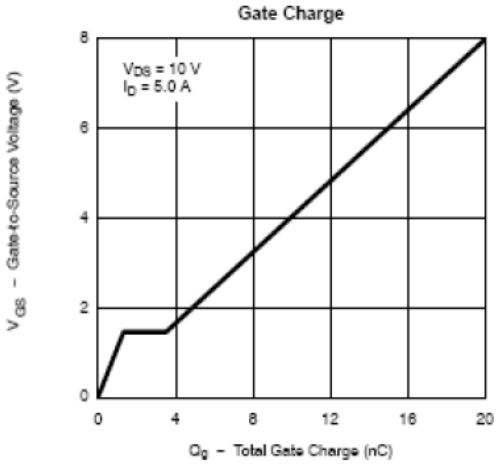

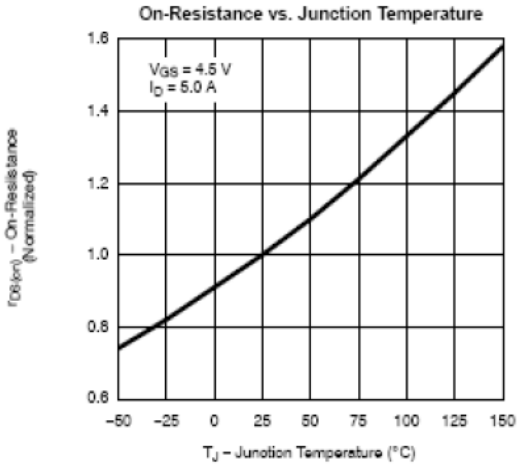

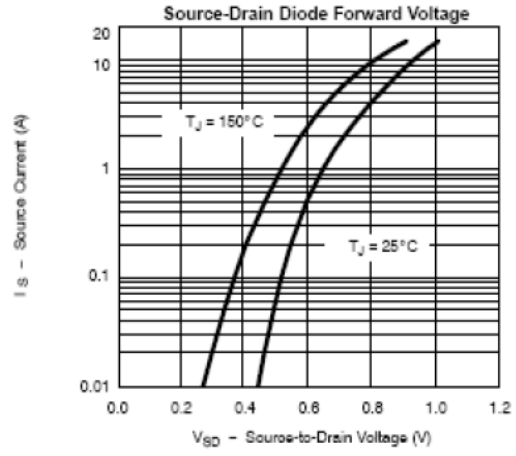

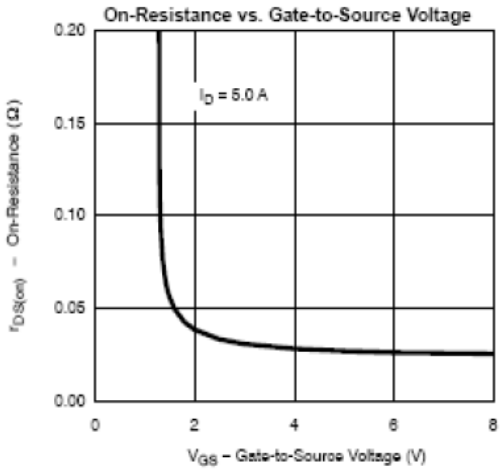

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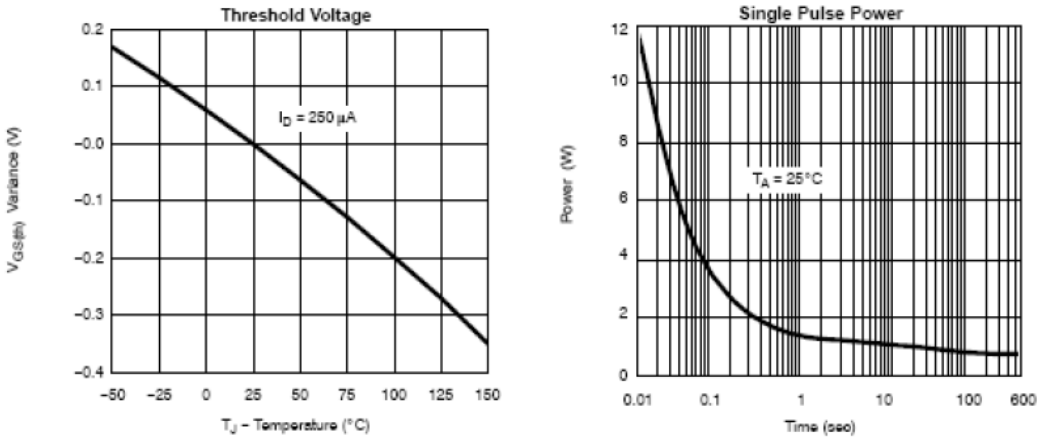
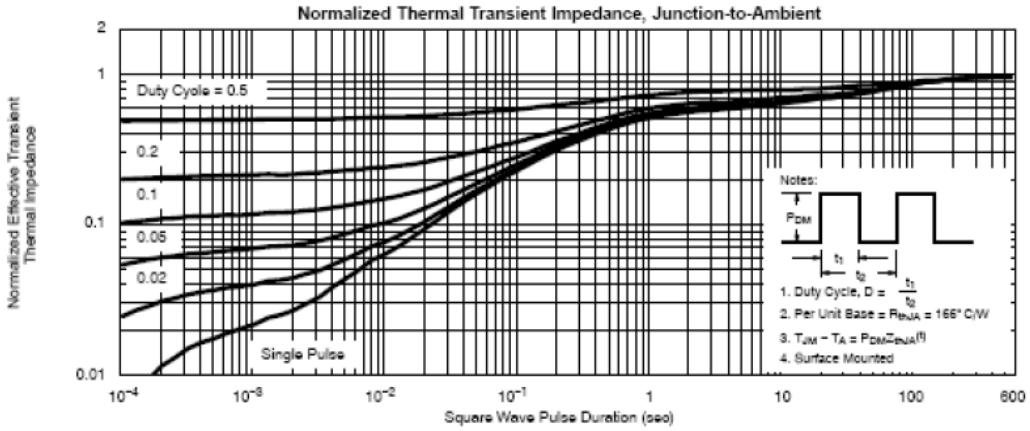
TYPICAL CHARACTERICTIC





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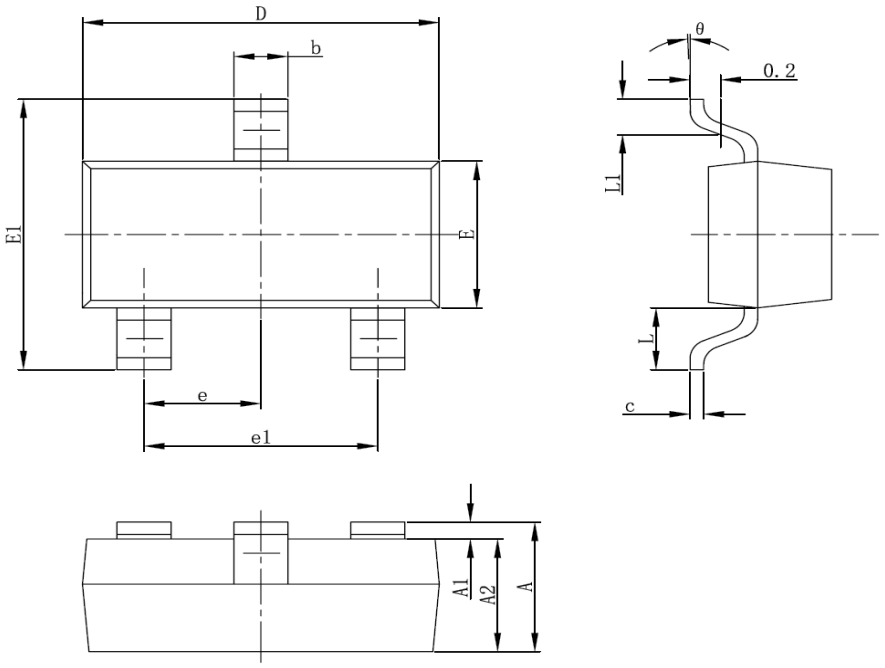
SOT-23 PACKAGE OUTLINE



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°

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