ST3414A

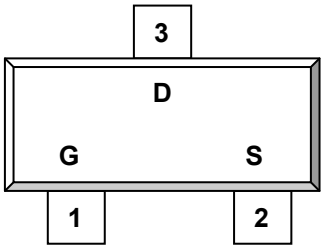
N Channel Enhancement Mode MOSFET

3.0A

DESCRIPTION

ST3414A is the N-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

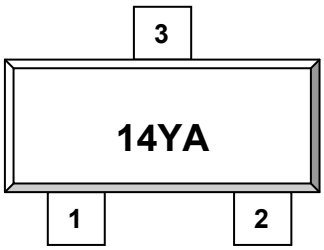


1.Gate 2.Source 3.Drain

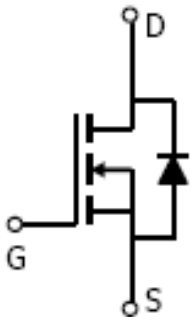
FEATURE

- 20V/4.2A, $R_{DS(ON)}$ = 45mΩ (Typ.) @VGS = 4.5V
- 20V/3.4A, $R_{DS(ON)}$ = 60 mΩ @VGS = 2.5V
- 20V/2.8A, $R_{DS(ON)}$ = 80 mΩ @VGS = 1.8V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23package design

PART MARKING
SOT-23



Y: Year Code A: Week Code



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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 CurrentTJ=150℃)	T_A=25℃ T_A=70℃	I_D	3.0 2.2	A
Pulsed Drain Current		I_{DM}	30	A
Continuous Source Current (Diode Conduction)		I_S	1.2	A
Power Dissipation	T_A=25℃ T_A=70℃	P_D	1.25 0.8	W
Operation Junction Temperature		T_J	-55/150	℃
Storgae Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	125	℃/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}=VGS,I_D=250uA	0.40		1.0	V
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	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=3.2A V_{GS}=2.5V,I_D=2.4A V_{GS}=1.8V,I_D=1.8A		0.045 0.060 0.080		Ω
Forward Transconductance	g_{fs}	V_{DS}=4V,I_D=3.6V		10		S
Diode Forward Voltage	V_{SD}	I_S=1.6A,V_{GS}=0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=10V V_{GS}=4.5V I_D=2.8A		4.8	8	nC
Gate-Source Charge	Q_{gs}			1.0		
Gate-Drain Charge	Q_{gd}			1.0		
Input Capacitance	C_{iss}	V_{DS}=6V V_{GS}=0V f=1MHz		485		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			40		
Turn-On Time	$t_{d(on)}$ tr	V_{DD}=6V R_L=6Ω I_D=1.0A V_{GEN}=4.5V R_G=6Ω		8	14	nS
				12	18	
Turn-Off Time	$t_{d(off)}$ tf			30	35	
				12	16	

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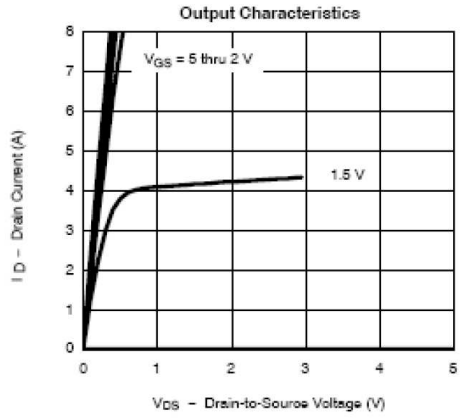
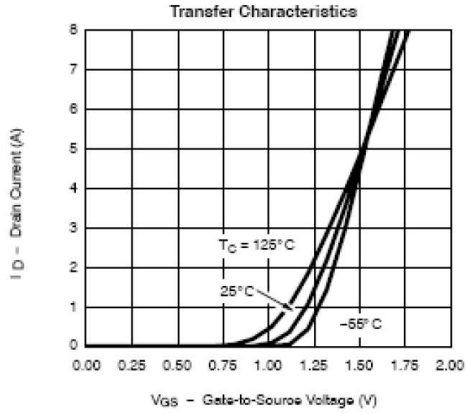
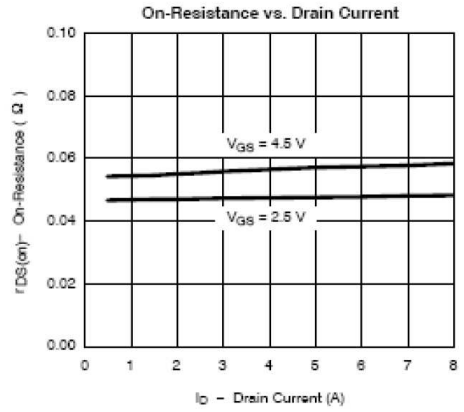
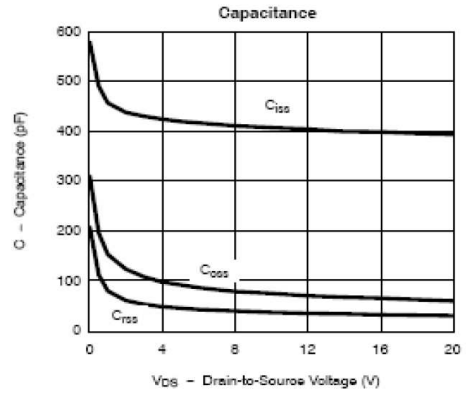
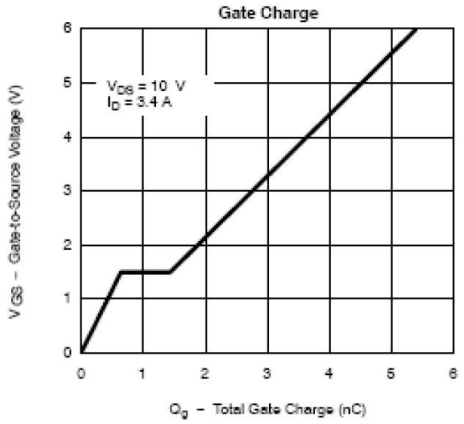
TYPICAL CHARACTERICTICS (25℃ Unless noted)

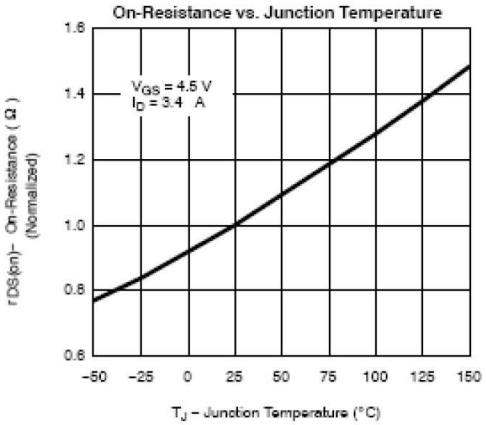












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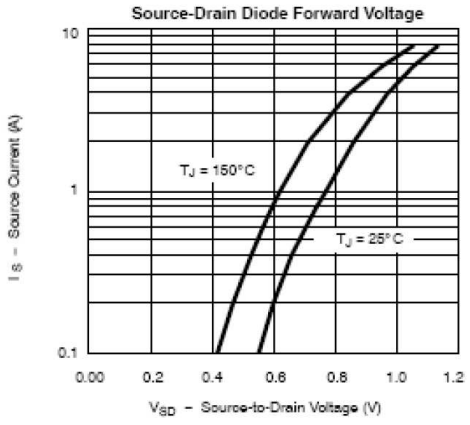

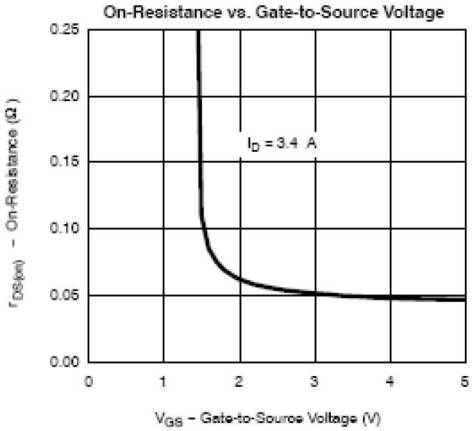

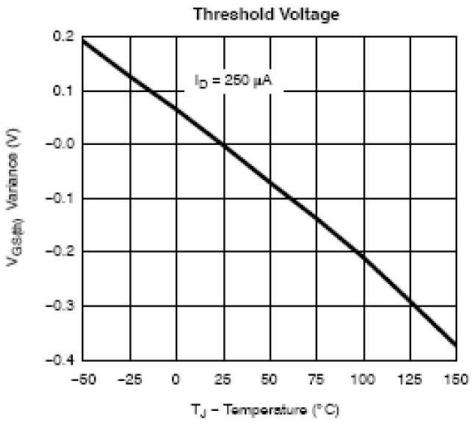

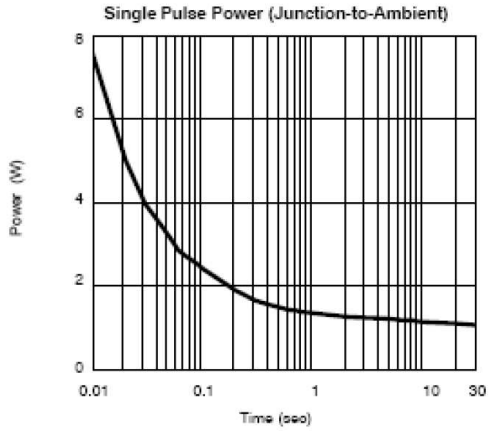

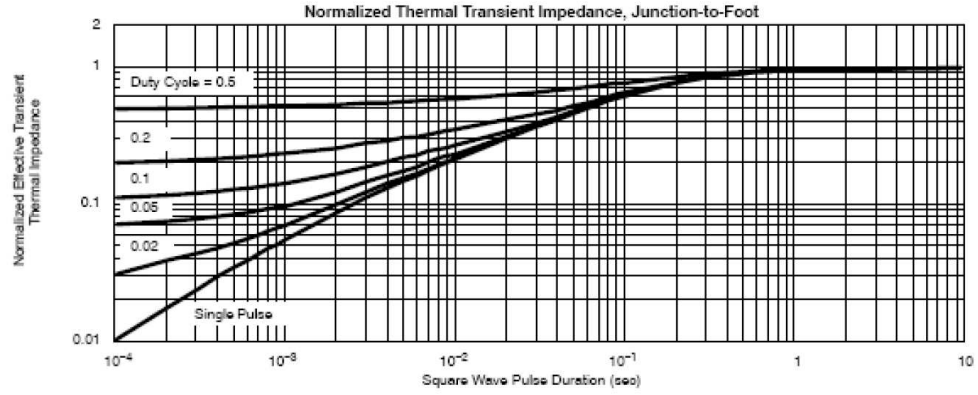

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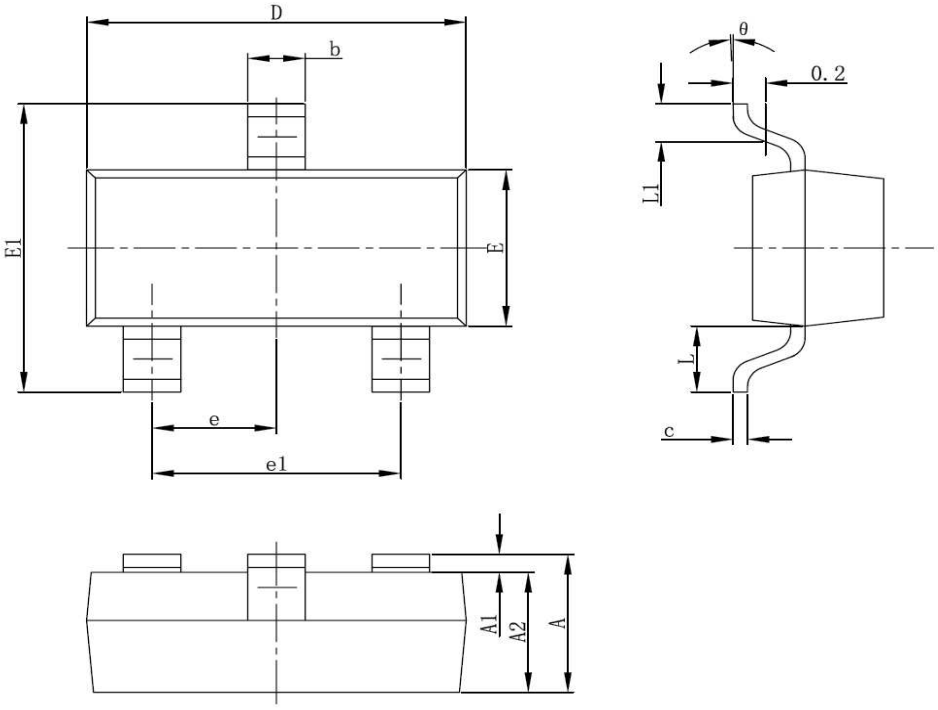
SOT-23- PACKAGE OUTLINE



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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