



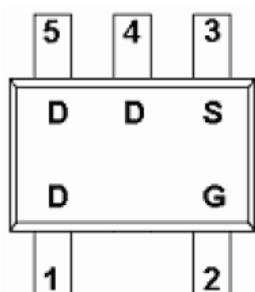
ST1413A 
P Channel Enhancement Mode MOSFET

-3.4A

DESCRIPTION

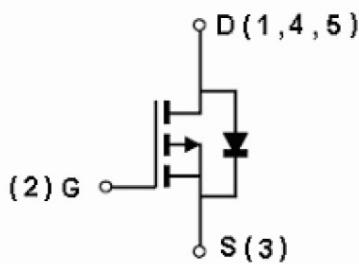
ST1413A is the P-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as 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-353 (SC-70-5L)



FEATURE

- -20V/-3.4A, $R_{DS(ON)} = 130\text{m}\Omega$ @ $V_{GS} = -4.5\text{V}$
- -20V/-2.0A, $R_{DS(ON)} = 150\text{m}\Omega$ @ $V_{GS} = -2.5\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-353 package design



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120 Bentley Square, Mountain View, Ca 94040 USA
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ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-20	V
Gate-Source Voltage	V _{GSS}	±12	V
Continuous Drain Current (T _J =150°C)	I _D	-3.4 -2.0	A
Pulsed Drain Current	I _{DM}	-7	A
Continuous Source Current (Diode Conduction)	I _S	-1.6	A
Power Dissipation	P _D	1.25 0.8	W
Operation Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	105	°C/W



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ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

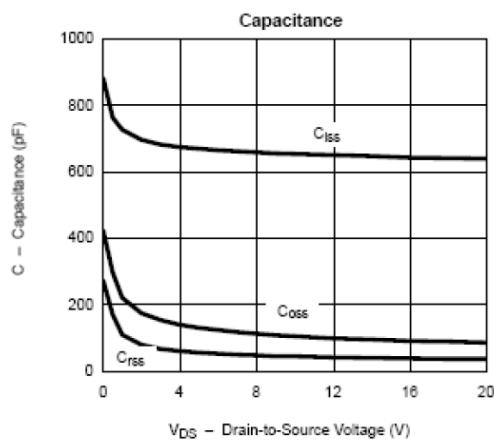
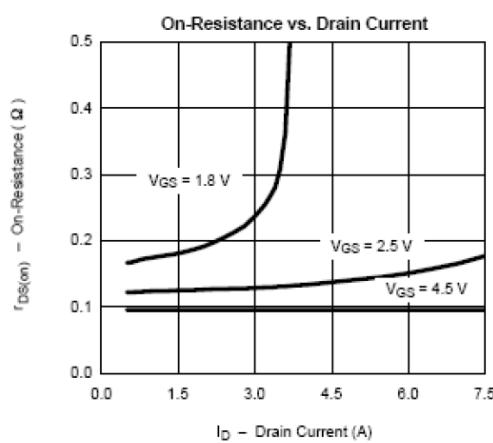
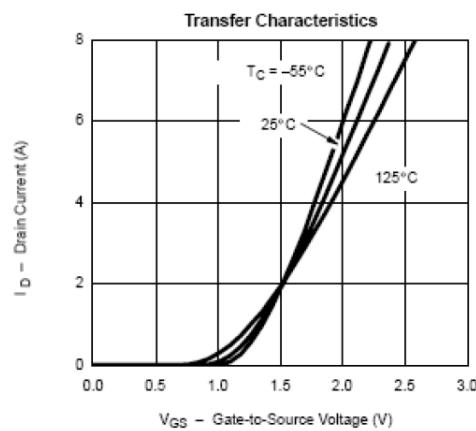
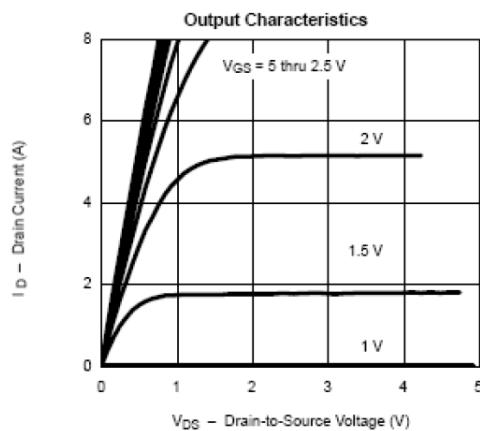
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4		-1.0	V
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	uA
		V _{DS} =-20V, V _{GS} =0V T _J =55°C			-5	
On-State Drain Current	I _{D(on)}	V _{DS} ≤-5V, V _{GS} =-4.5V V _{DS} ≤-5V, V _{GS} =-2.5V	-6 -3			A
Drain-source On-Resistance	R _{D(S)on}	V _{GS} =-4.5V, I _D =-3.4A V _{GS} =-2.5V, I _D =-2.4A		0.100 0.130	0.130 0.150	Ω
Forward Transconductance	g _{fs}	V _{DS} =-1.8V, I _D =-2.8V		6.5		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} =-6V 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}			87		
Turn-On Time	t _{d(on)} tr	V _{DD} =-6V R _L =6Ω I _D =-1A V _{GEN} =-4.5V R _G =6Ω		11	17	nS
Turn-Off Time	t _{d(off)} tf			13	20	
				18	25	
				15	20	

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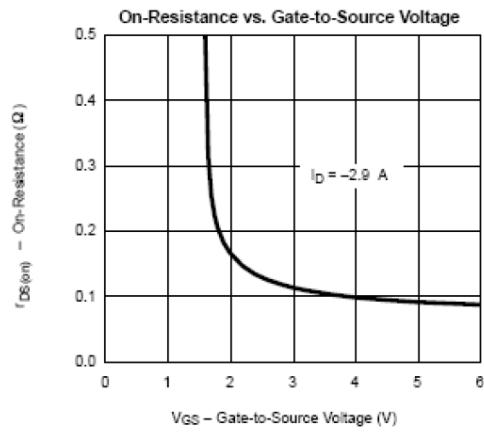
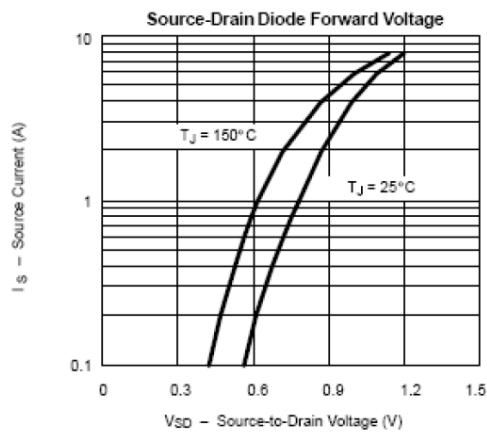
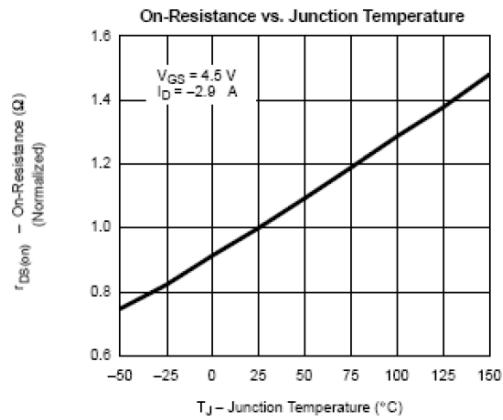
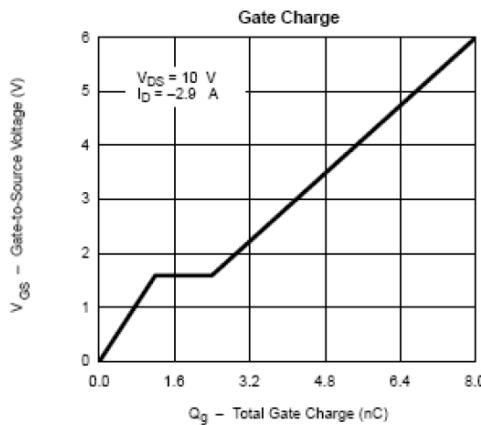




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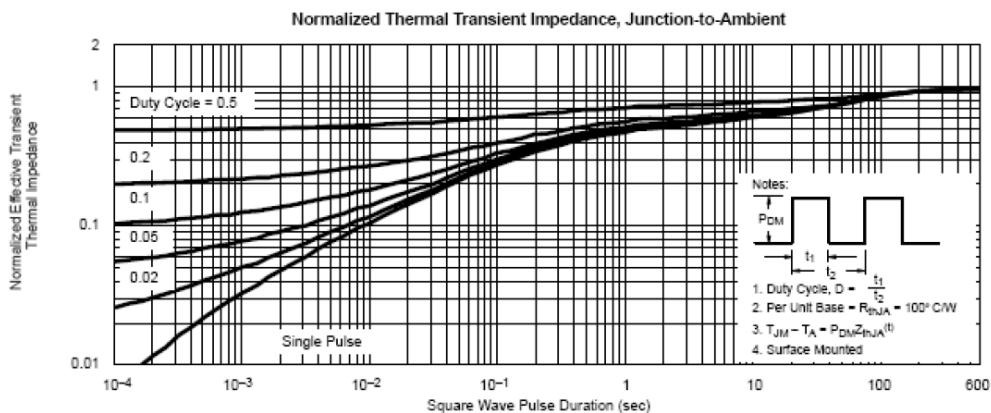
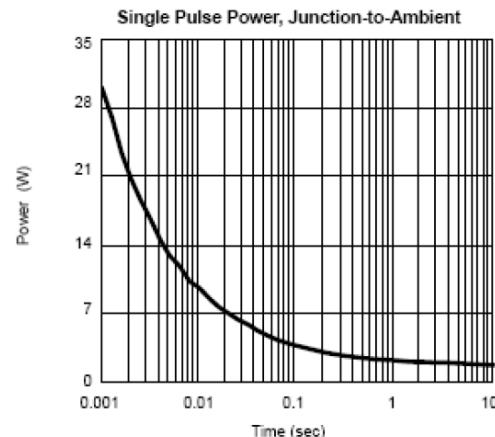
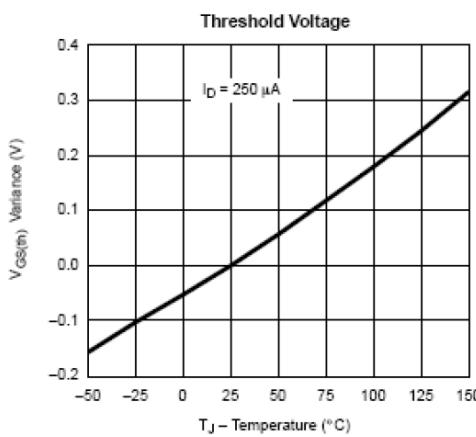




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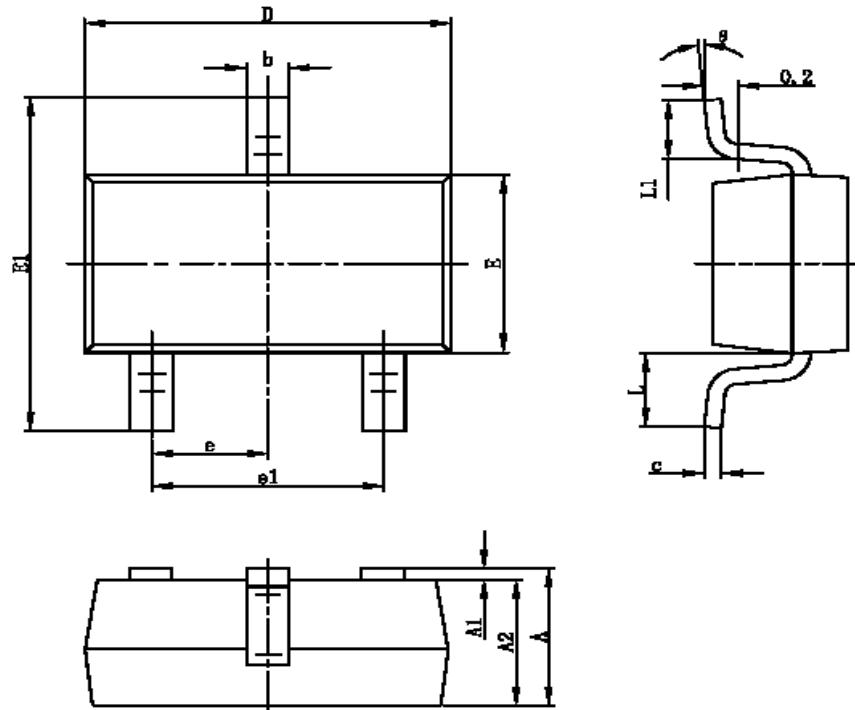
TYPICAL CHARACTERISTICS



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SOT-23-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°