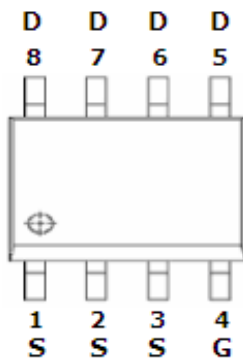


DESCRIPTION

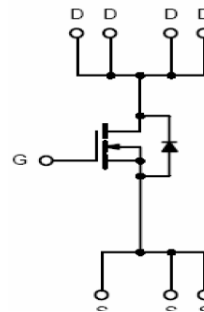
STN4416 is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as power management and other battery powered circuits where high-side switching.

**PIN CONFIGURATION
SOP-8**

FEATURE

- 20V/10A, $R_{DS(ON)} = 11m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
- 20V/5.6A, $R_{DS(ON)} = 23m\Omega$ @ $V_{GS} = 2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package design

**PART MARKING
SOP-8**


Y: Year Code
A: Process Code





STN4416 

N Channel Enhancement Mode MOSFET

10A

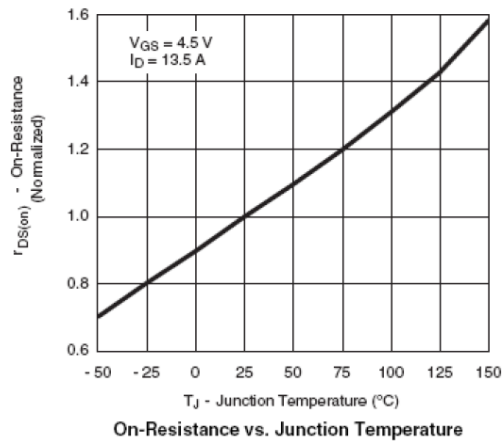
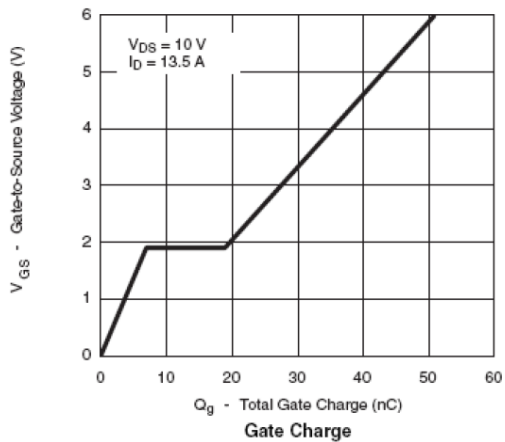
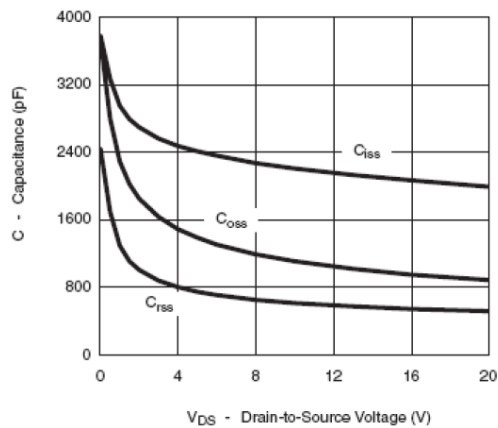
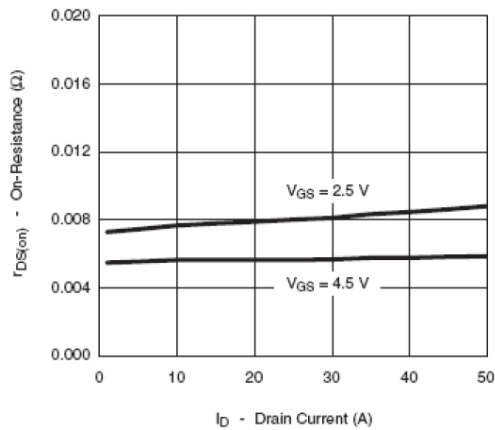
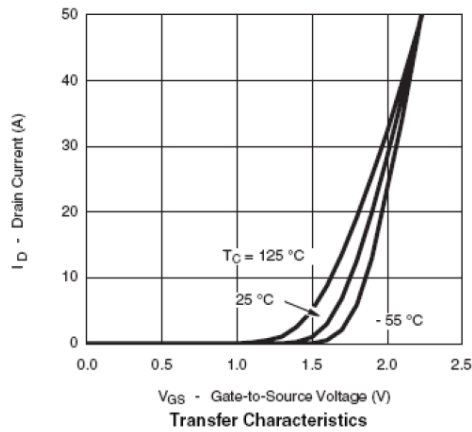
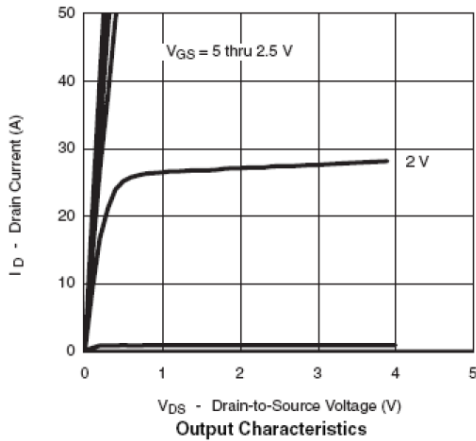
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	VDSS	20	V
Gate-Source Voltage	VGSS	±12	V
Continuous Drain Current (TJ=150°C)	ID	1.0	A
		7.2	
Pulsed Drain Current	IDM	35	A
Continuous Source Current (Diode Conduction)	IS	2.3	A
Power Dissipation	PD	2.5	W
		1.6	
Operation Junction Temperature	TJ	150	°C
Storage Temperature Range	TSTG	-55/150	°C
Thermal Resistance-Junction to Ambient	RθJA	80	°C/W

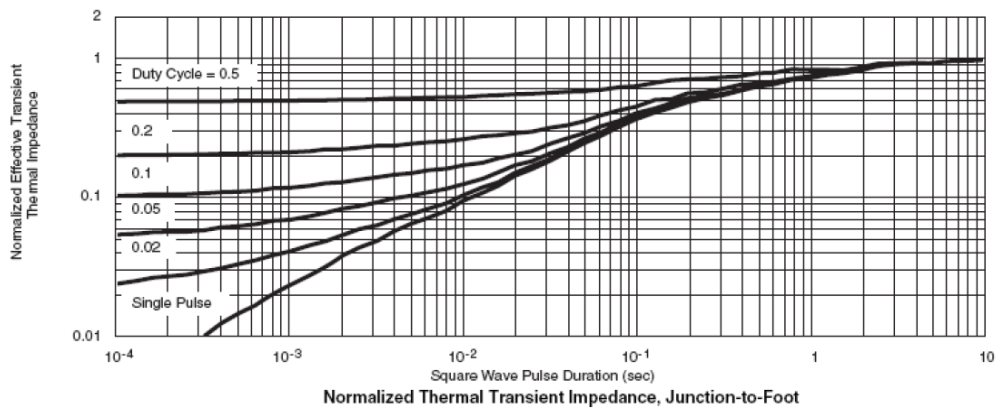
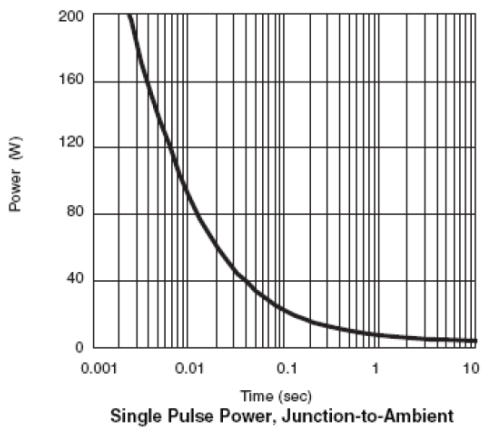
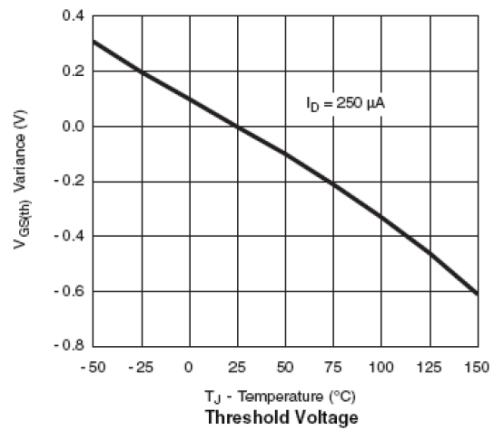
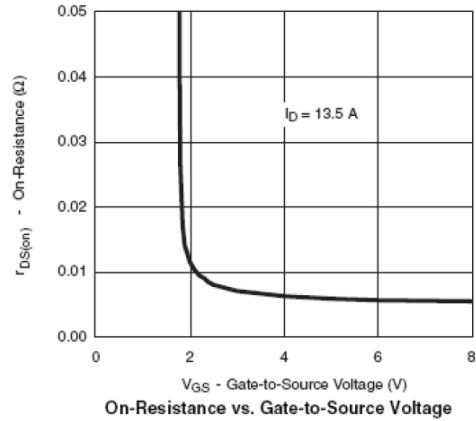
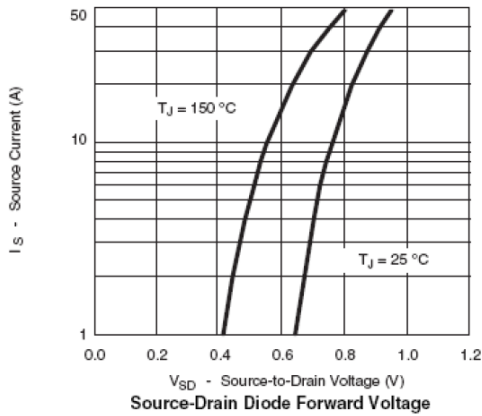
ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

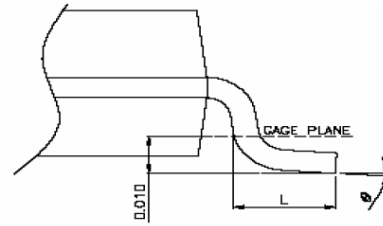
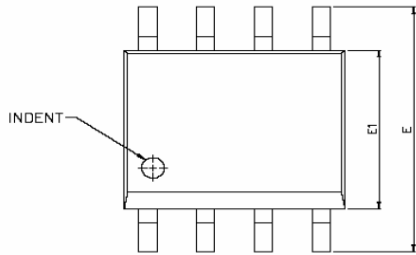
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.6		1.4	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	uA
		$V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	6			A
Drain-source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6.8A$ $V_{GS}=2.5V, I_D=5.6A$		11 23		mΩ
Forward Transconductance	g_{fs}	$V_{DS}=15V, I_D=6.2A$		30		S
Diode Forward Voltage	V_{SD}	$I_S=1.0A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=5.0A$		25	35	nC
Gate-Source Charge	Q_{gs}			5.6		
Gate-Drain Charge	Q_{gd}			9.6		
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS}=0V$ $f=1MHz$		1250		pF
Output Capacitance	C_{oss}			235		
Reverse Transfer Capacitance	C_{rss}			195		
Turn-On Time	$t_{d(on)}$ t_r	$V_{DD}=10V, R_L=10\Omega$ $I_D=1A, V_{GEN}=4.5V$ $R_G=6\Omega$		20	30	nS
Turn-Off Time	$t_{d(off)}$ t_f			18	28	
				75	90	
				65	85	

TYPICAL CHARACTERISTICS

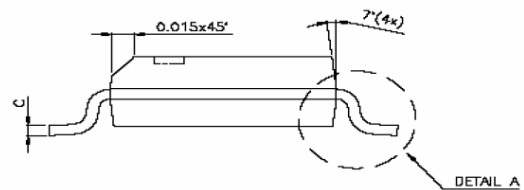
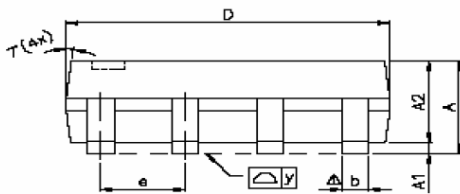


TYPICAL CHARACTERISTICS



PACKAGE OUTLINE SOP-8P


DETAIL A



DETAIL A

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
Δ y	—	—	0.076	—	—	0.003
\varnothing	0°	—	8°	0°	—	8°