

20V Dual N-Channel Enhancement Mode MOSFET

DESCRIPTION

The STN8205 is the Dual N-Channel logic enhancement mode power field effect transistor which is produced using high cell density, advanced trench technology to provide excellent $R_{DS(ON)}$.

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.

FEATURE

- ◆ **20V / 6.0A, $R_{DS(ON)} = 21m\Omega(typ.)@V_{GS} = 4.5V$**
- ◆ **20V / 5.2A, $R_{DS(ON)} = 25m\Omega(typ.)@V_{GS} = 2.5V$**
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ This is a Full RoHS compliance
- ◆ TSSOP-8 package design

APPLICATIONS

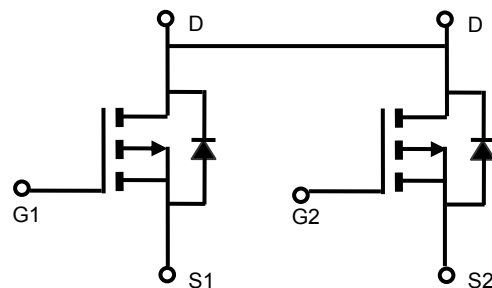
- ◆ Power Management in Note book
- ◆ Portable Equipment
- ◆ Battery Powered System

Dual N-Channel Enhancement Mode

PIN CONFIGURATION



TOP VIEW
TSSOP-8



Dual N-Channle

PART NUMBER INFORMATION

STN8205X-XX X

Lead Plating Code
Handling Code
Package Code

Lead Plating Code

G : Halogen & Lead-free product.
This product is RoHS compliant

Handling Code

TR : Tape&Reel

Package Code

W : TSSOP-8

ORDERING INFORMATION

Part Number	Package Code	Package	Shipping
STN8205W-TRG	W	TSSOP-8	3000 / Tape&Reel

※ Year Code : 0 ~ 9

※ Week Code : A ~ Z(1~26) ; a ~ z(27~52)

※ G : Lead-free product. This product is RoHS compliant.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}\text{C}$ Unless otherwise noted)

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ($T_J=150^{\circ}\text{C}$)	6	A
	$V_{GS}=4.5\text{V}$		
I_{DM}	Pulsed Drain Current	20	A
I_S	Continuous Source Current (Diode Conduction)	1	A
P_D	Power Dissipation	1.5 0.9	W
	$T_A=25^{\circ}\text{C}$ $T_A=70^{\circ}\text{C}$		
T_J	Operation Junction Temperature	150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55/150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL DATA

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5		$^{\circ}\text{C/W}$

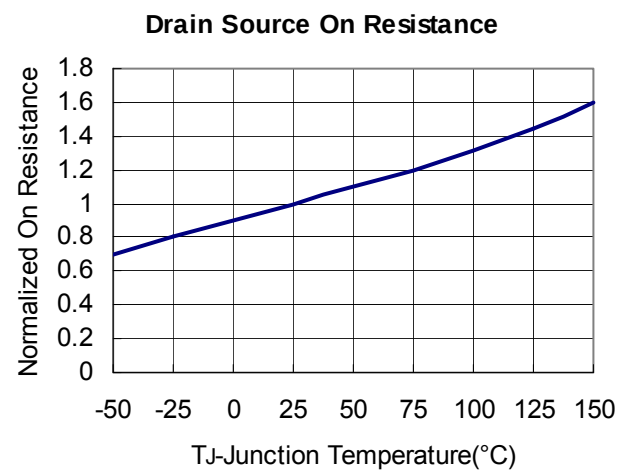
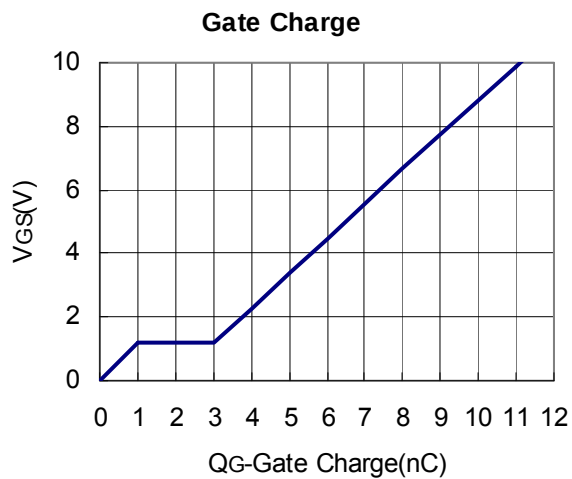
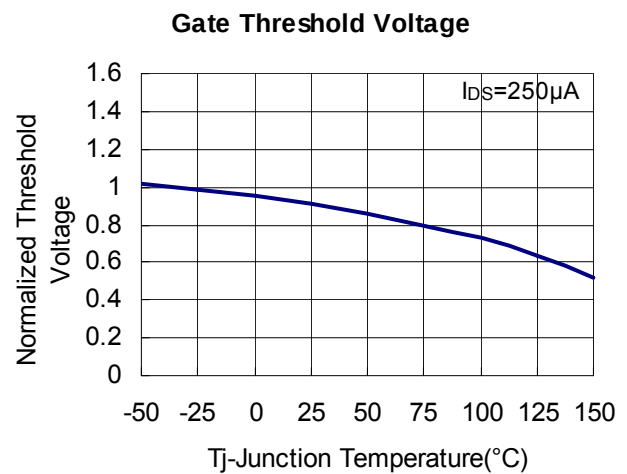
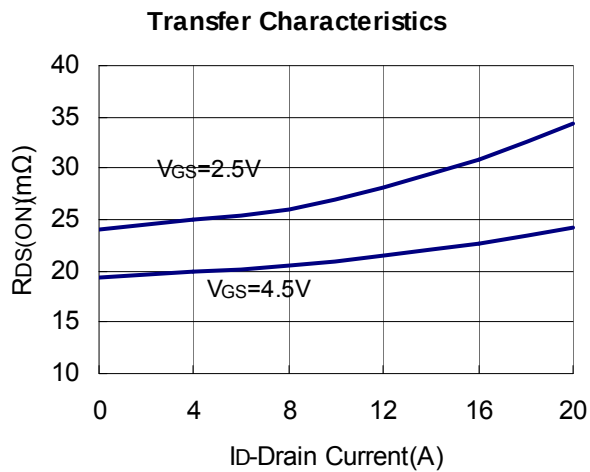
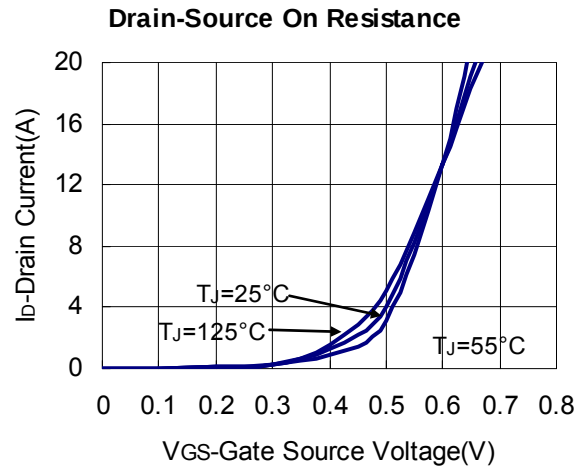
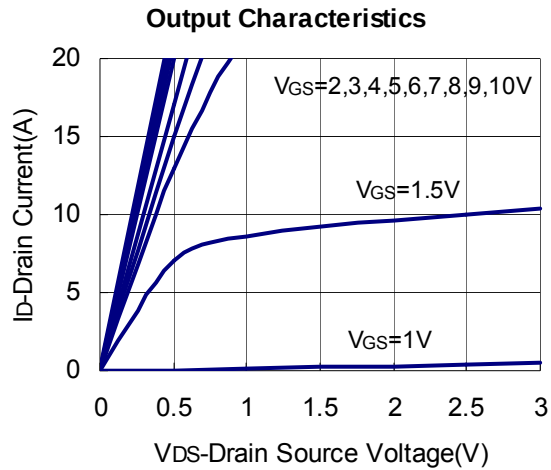
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

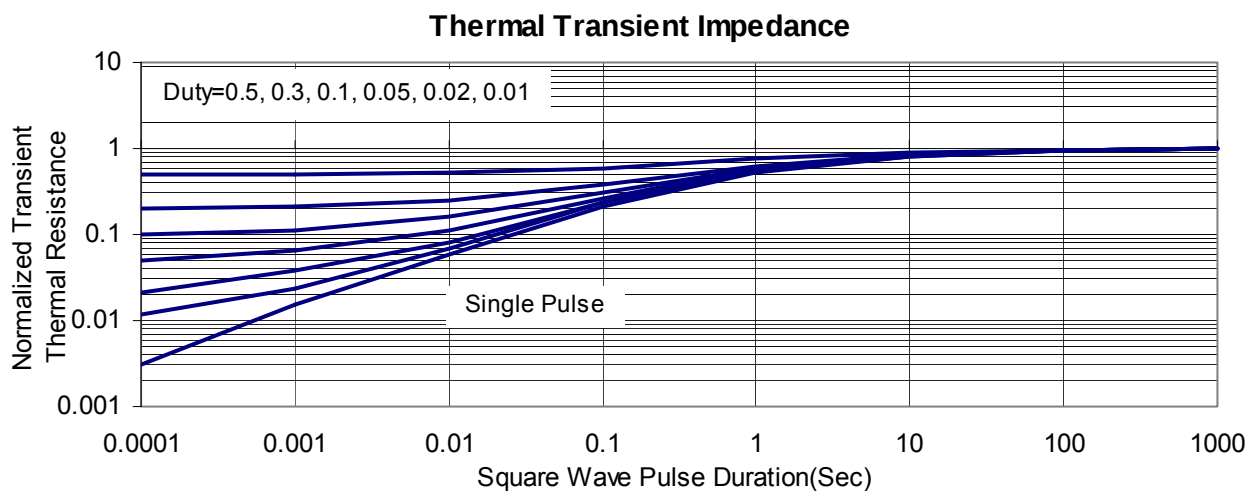
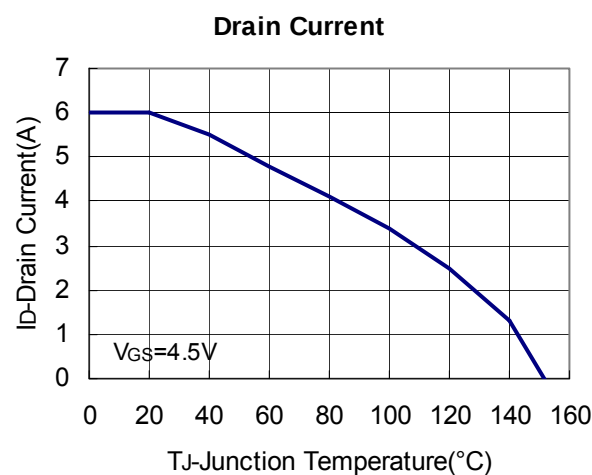
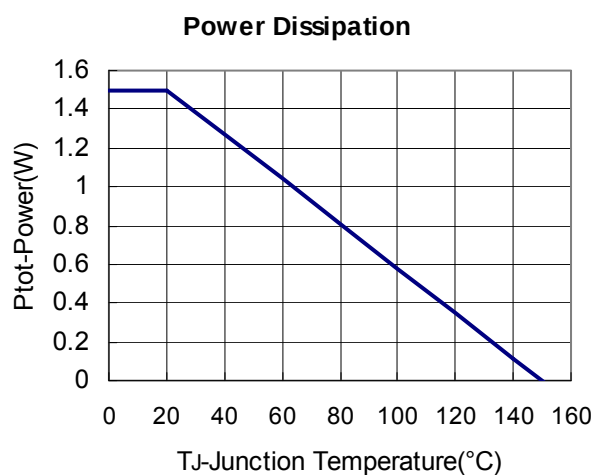
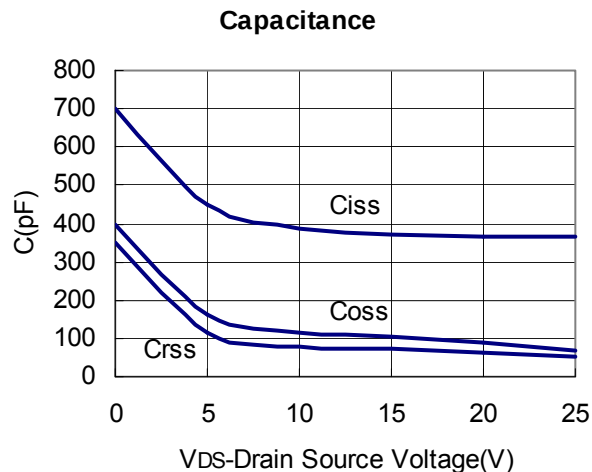
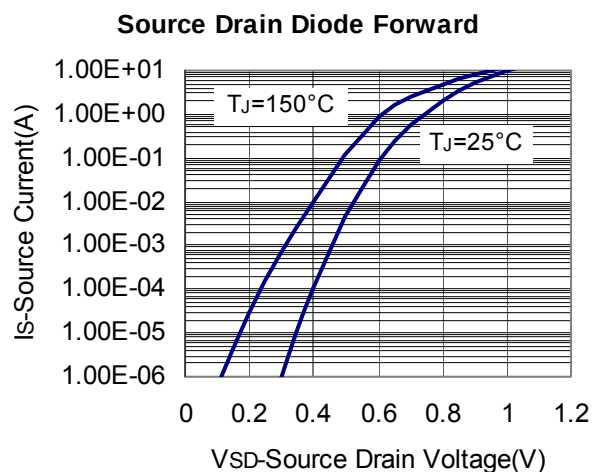
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250μA	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250μA	0.5		1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V,V _{GS} =0V			1	μA
		V _{DS} =16V,V _{GS} =0V T _J =85℃			30	
I _{D(ON)}	On-State Drain Current	V _{DS} ≥5V,V _{GS} =4.5V	6			A
R _{DS(ON)}	Drain-source On-Resistance	V _{GS} =4.5V,I _D =6.0A V _{GS} =2.5V,I _D =5.2A		21 25	26 32	mΩ
G _{fs}	Forward Transconductance	V _{DS} =5V,I _D =3.6A		10		S
Source-Drain Doide						
V _{SD}	Diode Forward Voltage	I _S =1.7A,V _{GS} =0V		0.8	1.3	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =10V V _{GS} =4.5V I _D =6A		21	29	nC
Q _{gs}	Gate-Source Charge			1.3		
Q _{gd}	Gate-Drain Charge			3.3		
C _{iss}	Input Capacitance	V _{DS} =10V V _{GS} =0V f=1MHz		595		pF
C _{oss}	Output Capacitance			140		
C _{rss}	Reverse Transfer Capacitance			125		
t _{d(on)}	Turn-On Time	V _{DD} =10V R _L =10Ω I _D =1.0A V _{GEN} =4.5V R _G =6Ω		3.5	7	nS
t _r				13.5	25	
t _{d(off)}	Turn-Off Time			32	58	
T _f				6.6	13	

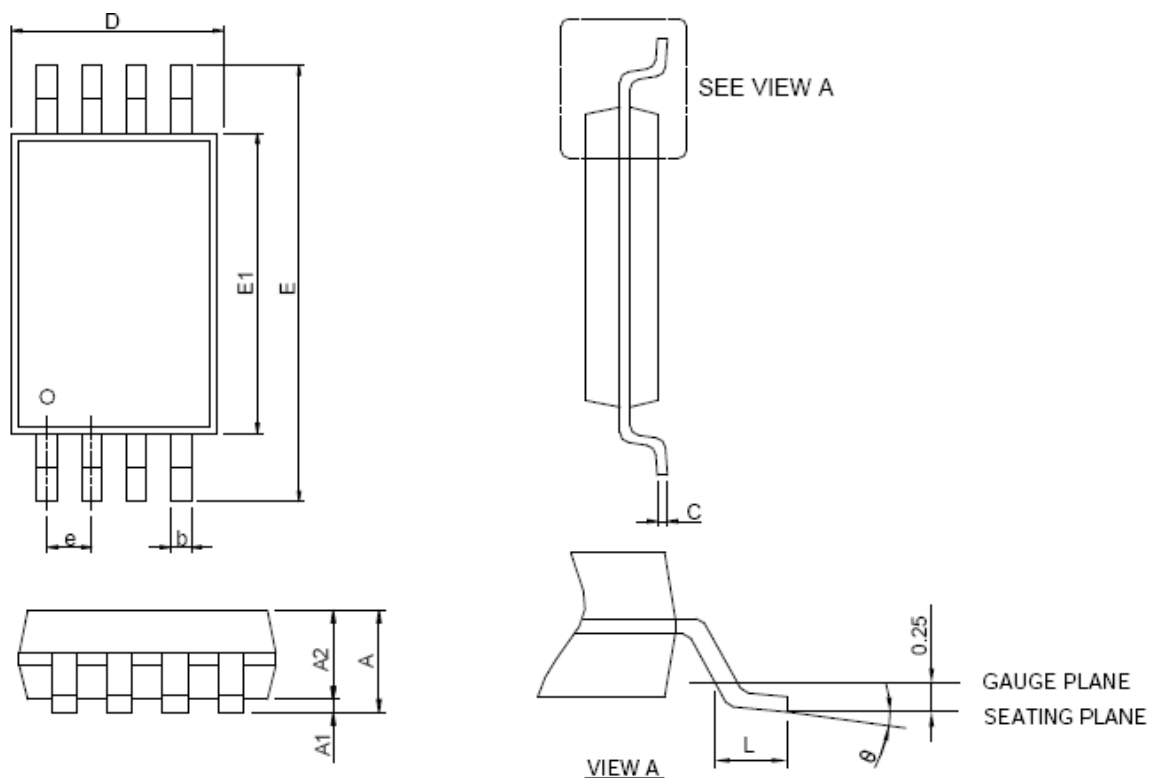
Note : 1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

2. Static parameters are based on package level with recommended wire-bonding

■ **TYPICAL CHARACTERISTICS (25°C Unless Note)**



TYPICAL CHARACTERISTICS (25°C Unless Note)


TSSOP-8 PACKAGE DIMENSIONS


SYMBOL	TSSOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.20		0.047
A1	0.05	0.15	0.002	0.006
A2	0.80	1.05	0.031	0.041
b	0.19	0.30	0.007	0.012
c	0.09	0.20	0.004	0.008
D	2.90	3.10	0.114	0.122
E	6.20	6.60	0.244	0.260
E1	4.30	4.50	0.169	0.177
e	0.65 BSC		0.026 BSC	
L	0.45	0.75	0.018	0.030
θ	0°	8°	0°	8°