30V N-Channel Enhancement Mode MOSFET

DESCRIPTION

The STN2306 is the N-Channel logic enhancement mode power field effect transistor 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.

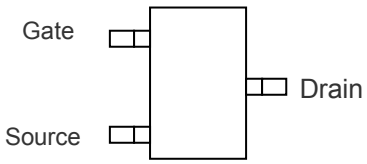
FEATURE

- ***30V/3.6A, $R_{DS(ON)}$= 45mΩ(typ.)@V_{GS}= 10V***
- ***30V/2.8A, $R_{DS(ON)}$= 55mΩ(typ.)@V_{GS}= 4.5V***
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- This is a Green compliance
- SOT-23L package design

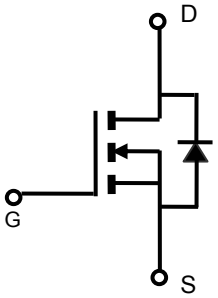
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- DSC
- LCD Display inverter
- Battery Powered System
- DC/DC Converter

PIN CONFIGURATION



TOP VIEW
SOT-23L



N-Channel

PART NUMBER INFORMATION

STN2306X- XX X

- Lead Plating Code
- Handling Code
- Package Code

Lead Plating Code

G : Lead-free product.
This product is Green compliant

Handling Code

TR : Tape&Reel

Package Code

S : SOT-23L

■ ORDERING INFORMATION

Part Number	Package Code	Package	Shipping
STN2306S-TRG	S	SOT-23L	3000 / Tape&Reel

※ SOT-23L : Only available in tape and reel packaging. (A reel contains 3000 devices)
※ G : Lead-free product. This product is Green compliant.

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

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current (T_J=150°C)	V_{GS}=10V	4.0	A
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current (Diode Conduction)		1.0	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.25 0.8	W
T_J	Operation Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55/150	°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			120	°C/W

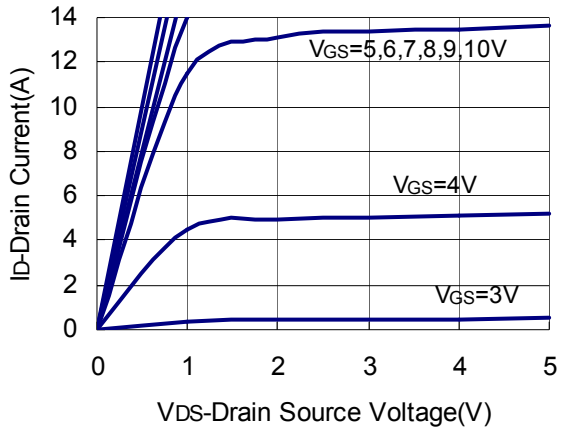
■ELECTRICAL CHARACTERISTICS(T_A = 25°C Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0		2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V			1	μA
		V_{DS}=30V,V_{GS}=0V T_J=55°C			10	
$I_{D(ON)}$	On-State Drain Current	V_{DS}≧5V,V_{GS}=10V	6			A
$R_{DS(ON)}$	Drain-source On-Resistance	V_{GS}=10V,I_D=3.6A V_{GS}=4.5V,I_D=2.8A		45 55	55 60	mΩ
G_{fs}	Forward Transconductance	V_{DS}=15V,I_D=5.0A		4.5		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=1.25A,V_{GS}=0V		0.8	1.2	V
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=15V V_{GS}=10V I_D=2.5A		4.5	10	nC
Q_{gs}	Gate-Source Charge			0.8		
Q_{gd}	Gate-Drain Charge			1.0		
C_{iss}	Input Capacitance	V_{DS}=15V V_{GS}=0V f=1MHz		380		pF
C_{oss}	Output Capacitance			70		
C_{rss}	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V R_L=15Ω I_D=1.0A V_{GEN}=10V R_G=6Ω		8	20	nS
t_r				6	16	
$t_{d(off)}$	Turn-Off Time			20	35	
t_f				5	15	

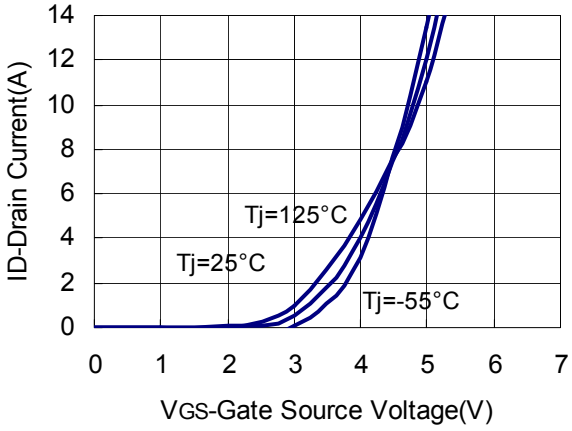
Note : 1. Pulse test: pulse width <= 300us, duty cycle<= 2%
2. Static parameters are based on package level with recommended wire-bonding

TYPICAL CHARACTERISTICS (25°C Unless Note)

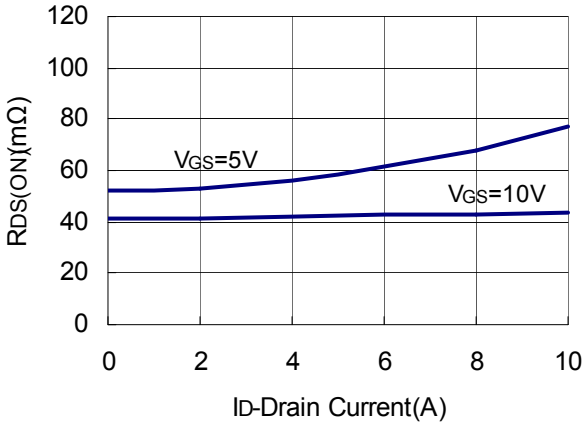
Output Characteristics



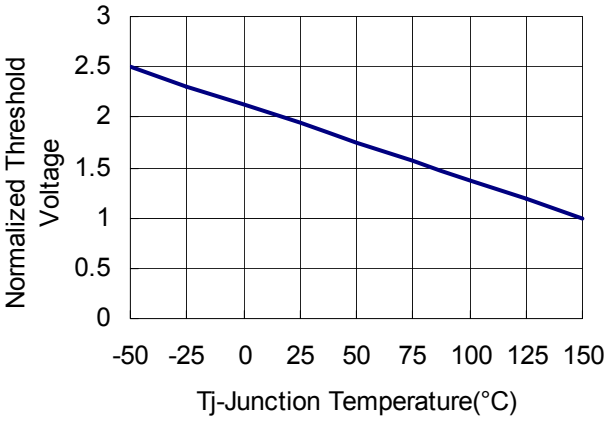
Transfer Characteristics



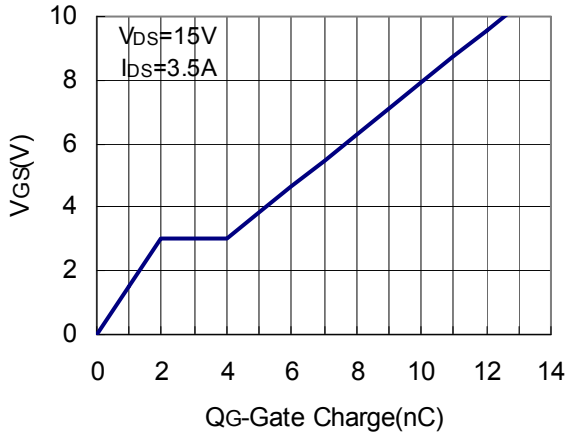
Drain Source On Resistance



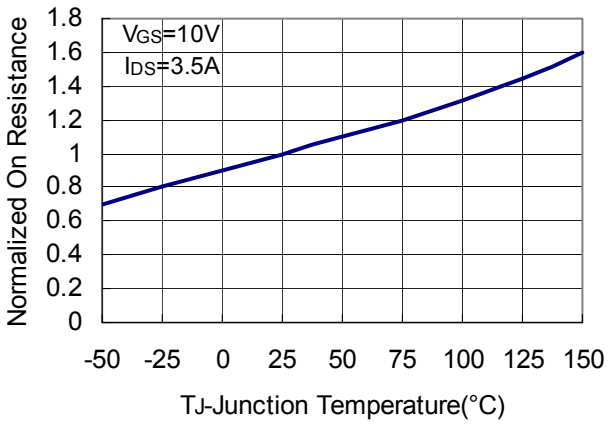
Gate Threshold Voltage



Gate Charge

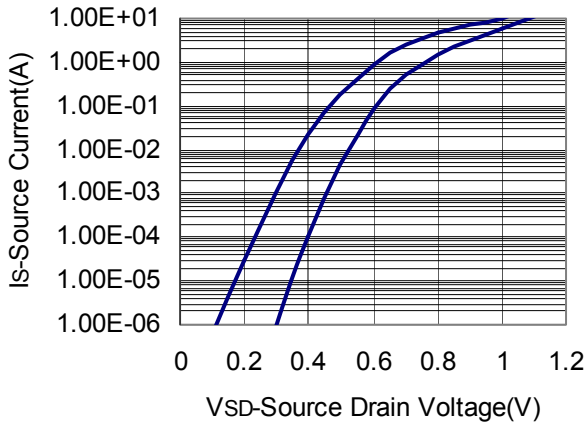


Drain Source On Resistance

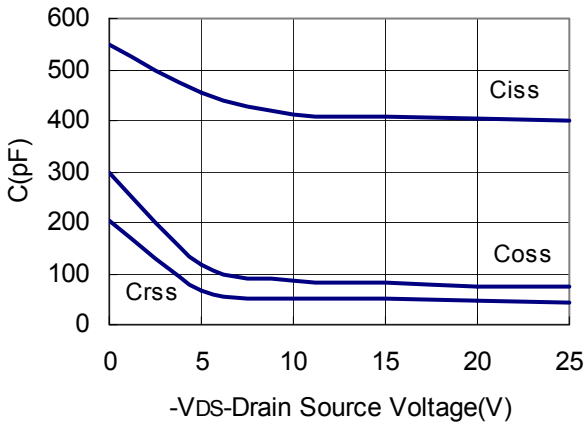


TYPICAL CHARACTERISTICS (25°C Unless Note)

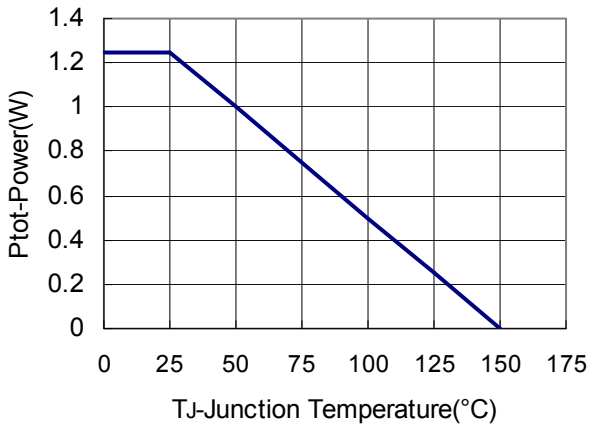
Source Drain Diode Forward



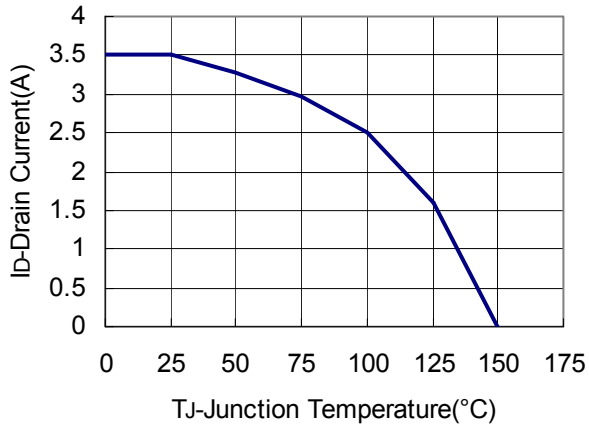
Capacitance



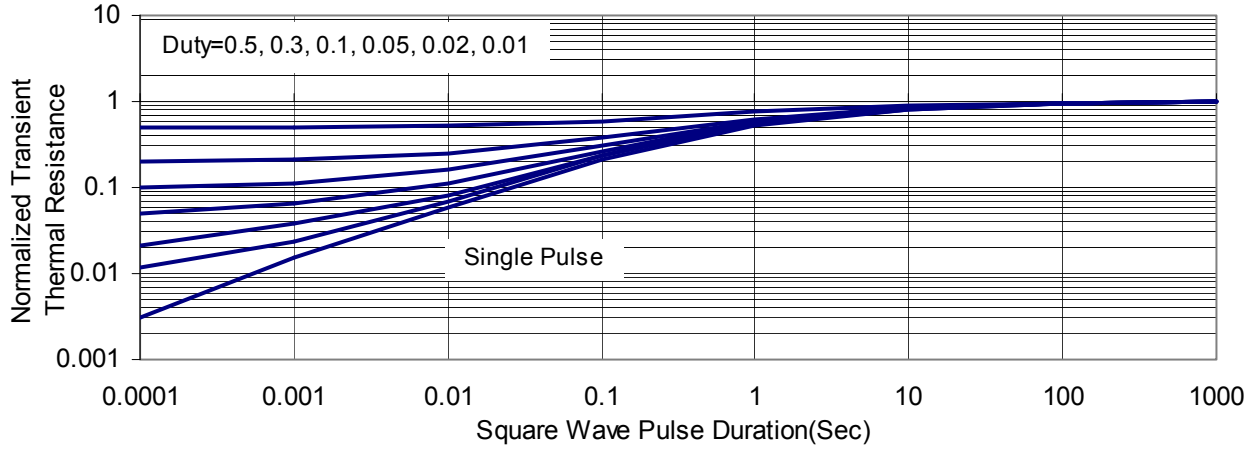
Power Dissipation



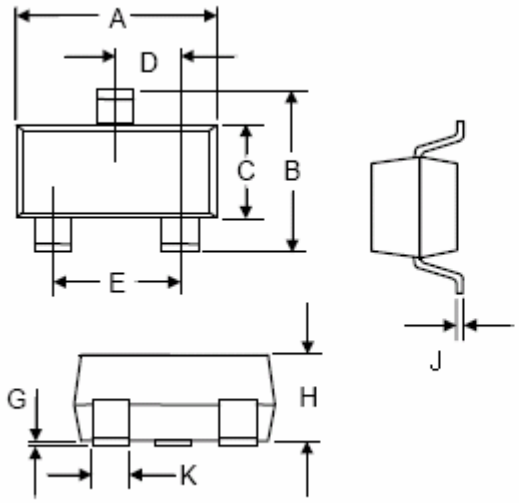
Drain Current



Thermal Transient Impedance



SOT-23L PACKAGE DIMENSIONS



Dimensions				
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	0.110	0.120	2.80	3.04
B	0.104	0.116	2.65	2.95
C	0.059	0.067	1.50	1.70
D	0.037 TYP		0.95 TYP	
E	0.70	0.081	1.78	2.05
G	---	0.004	---	0.10
H	0.041	0.045	1.05	1.15
J	0.004	0.008	0.10	0.20
K	0.012	0.16	0.30	0.40