-20V P-Channel Enhancement Mode MOSFET

Green

P-Channel Enhancement Mode MOSFET

DESCRIPTION

The STP2305A is the P-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.

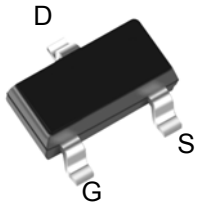
FEATURE

- ***-16V/-3.5A, $R_{DS(ON)}$= 63mΩ@V_{GS} = -10V***
- ***-16V/-3.0A, $R_{DS(ON)}$= 80mΩ@V_{GS} = -4.5V***
- ***-16V/-2.2A, $R_{DS(ON)}$= 90mΩ@V_{GS} = -2.5V***
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability

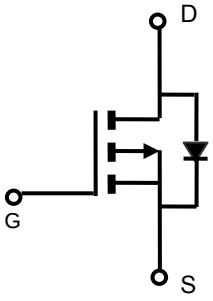
APPLICATIONS

- High Frequency Point-of-Load Synchronous
- Newworking DC-DC Power System
- Load Switch

PIN CONFIGURATION



TOP VIEW
SOT-23



P-Channel

PART NUMBER INFORMATION

STP2305AX- XX X

- Lead Plating Code
- Handling Code
- Package Code

Lead Plating Code

G : Green product.
This product is Halogen free

Handling Code

TR : Tape&Reel

Package Code

S : SOT-23

■ ORDERING INFORMATION

Part Number	Package Code	Package	Shipping
STP2305AS-TRG	S	SOT-23	3000 / Tape&Reel

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

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-16	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current, VGS=10V[A]	T_A=25°C	-3.5	A
I_{DM}	Pulsed Drain Current[B]		-10	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.25 0.8	W
T_J	Operation Junction Temperature		-55/150	°C
T_{STG}	Storage Temperature Range		-55/150	°C

Note:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

B. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

■ THERMAL DATA

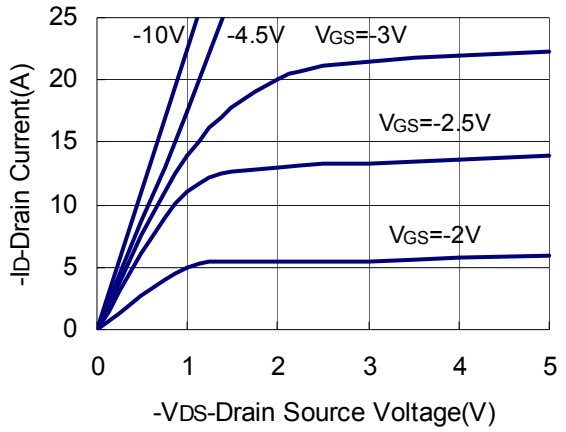
Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient			120	°C/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case			65	°C/W

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

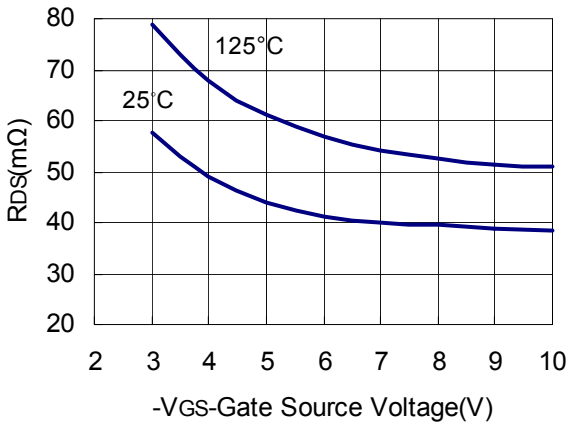
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-16			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-0.3		-1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V,V_{GS}=0V			-1	μA
		V_{DS}=-16V,V_{GS}=0V T_J=55°C			-10	
$R_{DS(ON)}$	Drain-source On-Resistance	V_{GS}=-10V,I_D=-3.5A V_{GS}=-4.5V,I_D=-3.0A V_{GS}=-2.5V,I_D=-2.2A		63 80 90	85 105 135	mΩ
G_{fs}	Forward Transconductance	V_{DS}=-5V,I_D=-3.5A		10		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=-1.6A,V_{GS}=0V		-0.8	-1.2	V
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=-15V V_{GS}=-10V I_D≡-4.0A		8		nC
Q_{gs}	Gate-Source Charge			15		
Q_{gd}	Gate-Drain Charge			2.2		
C_{iss}	Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz		720		pF
C_{oss}	Output Capacitance			420		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(on)}$	Turn-On Time	V_{DD}=-15V R_L=15Ω I_D=-1A V_{GEN}=-10V R_G=6Ω		14	20	nS
t_r				6	10	
$t_{d(off)}$	Turn-Off Time			40	48	
t_f				7	15	

TYPICAL CHARACTERISTICS

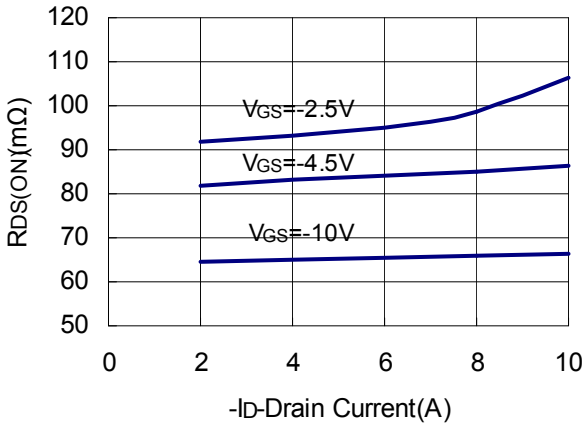
Output Characteristics



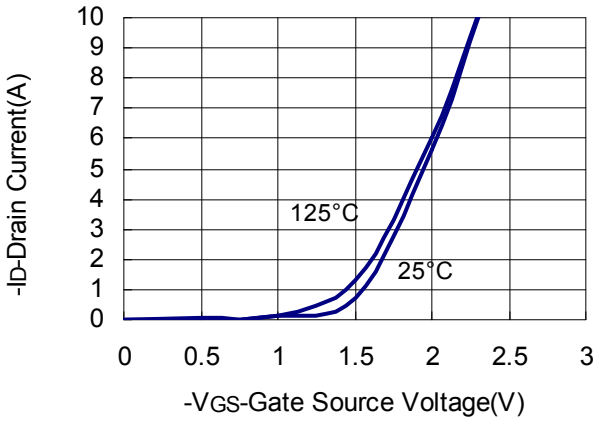
Drain-Source On Resistance



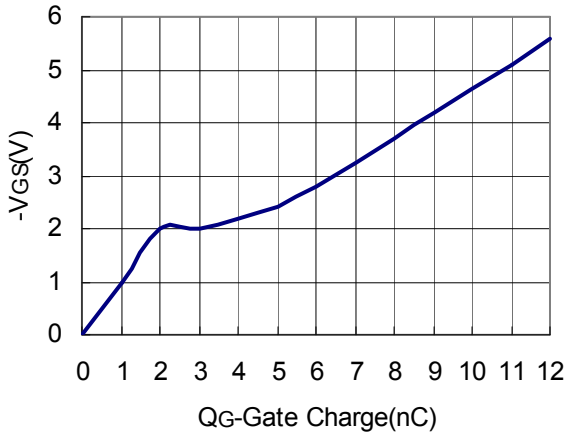
Drain Source On Resistance



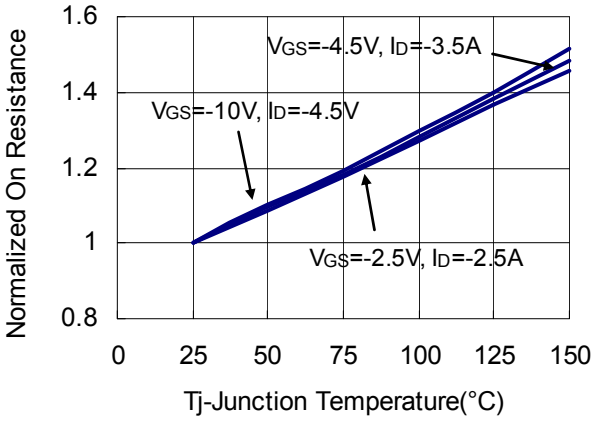
Transfer Characteristics



Gate Charge

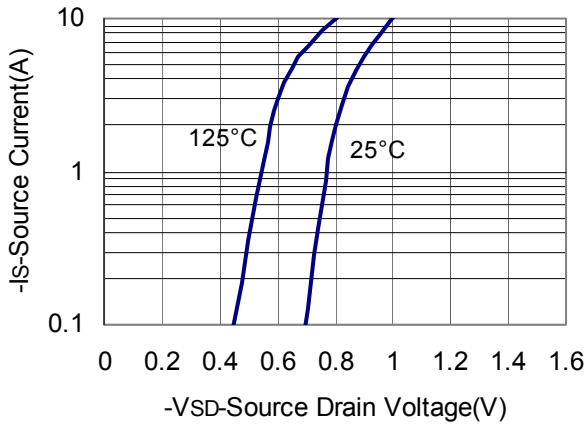


Drain Source Resistance

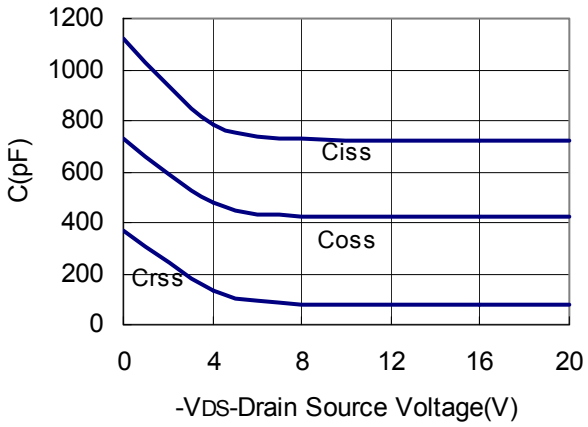


TYPICAL CHARACTERISTICS

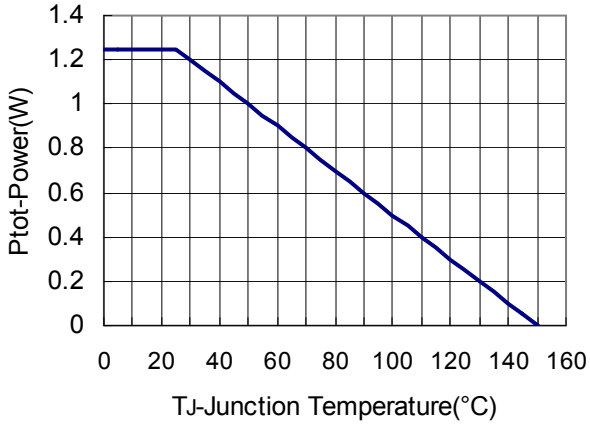
Source Drain Diode Forward



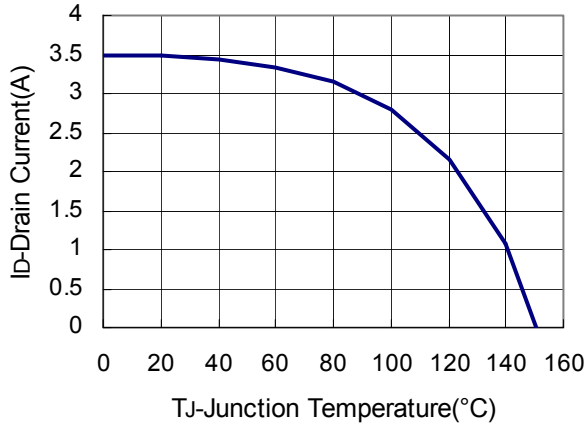
Capacitance



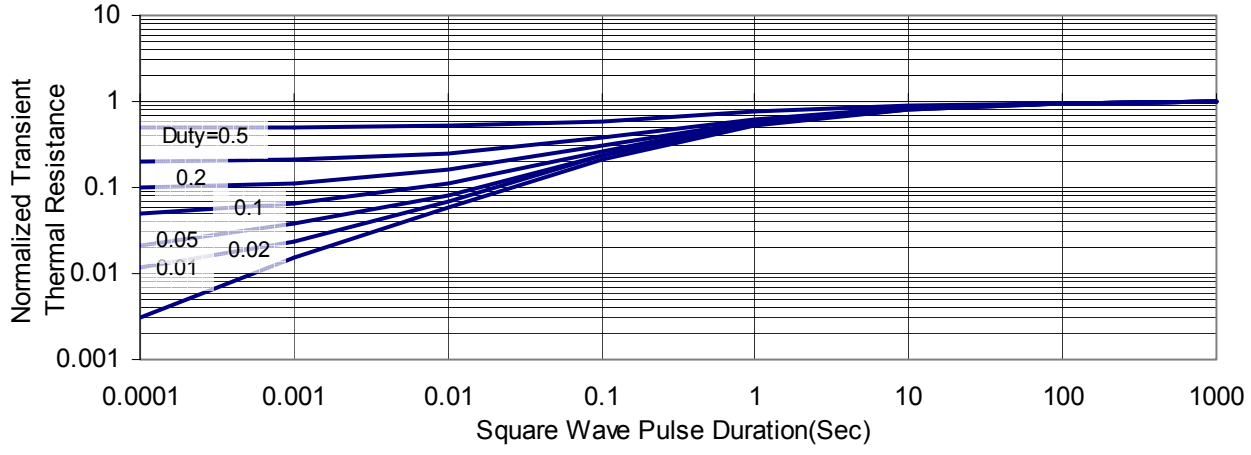
Power Dissipation



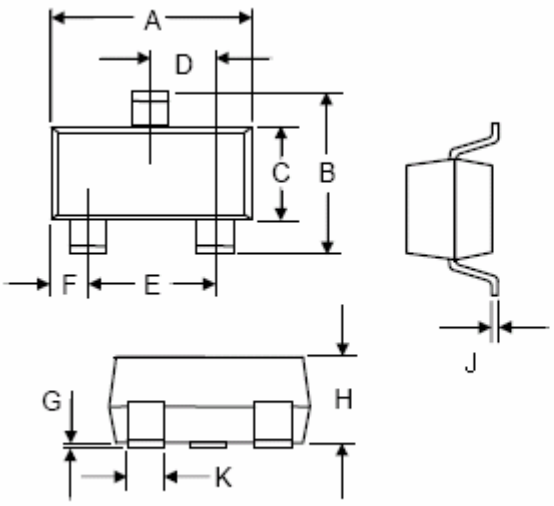
Drain Current



Thermal Transient Impedance



SOT-23 PACKAGE DIMENSIONS



Dimensions				
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	0.110	0.120	2.80	3.04
B	0.83	0.098	2.10	2.64
C	0.47	0.055	1.20	1.40
D	0.35	0.041	0.89	1.03
E	0.70	0.081	1.78	2.05
F	0.18	0.024	0.45	0.60
G	0.001	0.0039	0.013	0.100
H	0.035	0.044	0.89	1.12
J	0.003	0.007	0.085	0.18
K	0.015	0.02	0.37	0.51