

## -30V P-Channel Enhancement Mode MOSFET

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### DESCRIPTION

The STP9435D is the P-Channel logic enhancement mode power field effect transistors are 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, notebook computer power management and other battery powered circuits where high-side switching.

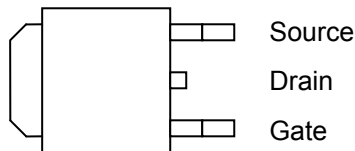
### FEATURE

- ◆ **-30V/-5.8A,  $R_{DS(ON)} = 35m\Omega(yp.)@V_{GS} = -10V$**
- ◆ **-30V/-4.0A,  $R_{DS(ON)} = 60m\Omega(yp.)@V_{GS} = -4.5V$**
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ Full RoHS compliance
- ◆ TO-252-3L package design

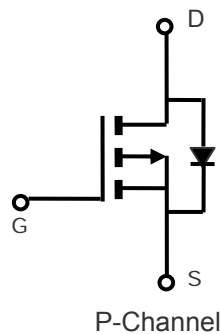
### APPLICATIONS

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

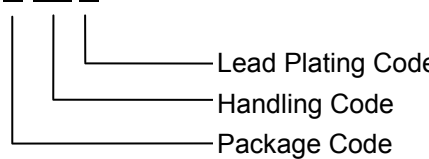
### PIN CONFIGURATION



TOP VIEW  
TO-252-3L



### PART NUMBER INFORMATION

<p>STP9435D<u>X</u>-<u>XX</u> <u>X</u></p>  <p>Lead Plating Code Handling Code Package Code</p>	<p><b>Lead Plating Code</b> G : Lead-free product. This product is RoHS compliant</p> <p><b>Handling Code</b> TR : Tape&amp;Reel</p> <p><b>Package Code</b> D3 : TO-252-3L</p>
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**ORDERING INFORMATION**

Part Number	Package Code	Package	Shipping
STP9435D3-TRG	D3	TO-252-3L	2500 /Tape&Reel

※ Year Code : 00 ~ 99

※ Week Code : 01~52

※ TO-252-3L : Only available in tape and reel packaging. (A reel contains 2500 devices)

※ G : This product is RoHS compliant

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

Symbol	Parameter	Typical	Unit
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current ( $T_J=150^\circ\text{C}$ )	$V_{GS} = -10\text{V}$ -10	A
$I_{DM}$	Pulsed Drain Current	-20	A
$I_S$	Continuous Source Current (Diode Conduction)	-2.4	A
$T_J$	Operation Junction Temperature	-55~150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55~150	W
$P_D$	Power Dissipation	$T_A=25^\circ\text{C}$ $T_A=70^\circ\text{C}$ 2.8 1.8	W

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	$^\circ\text{C/W}$

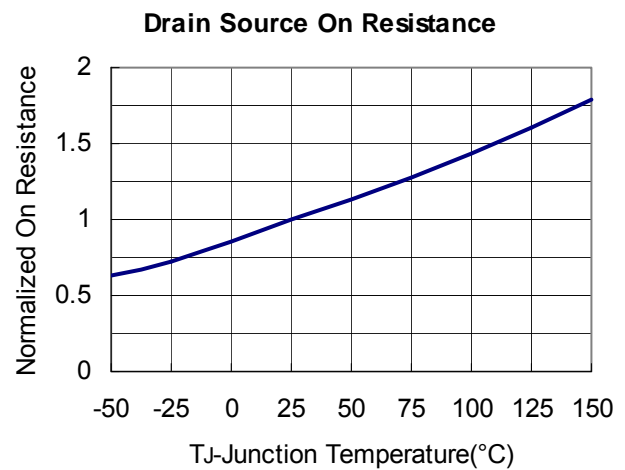
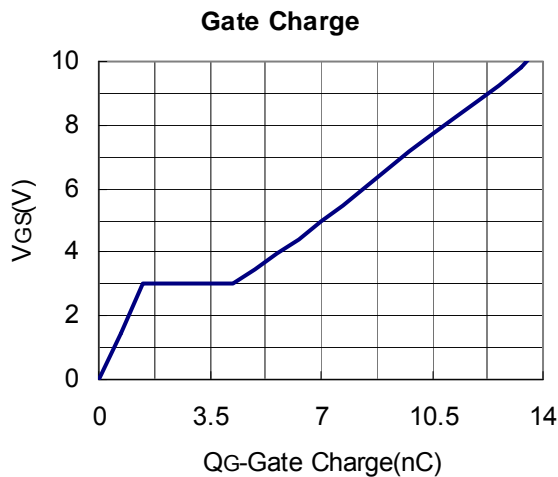
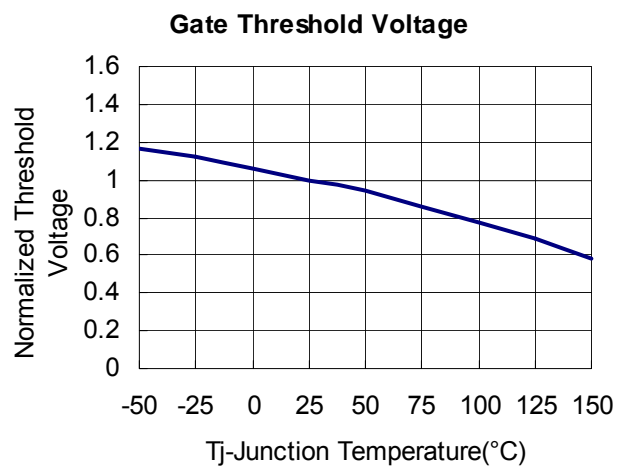
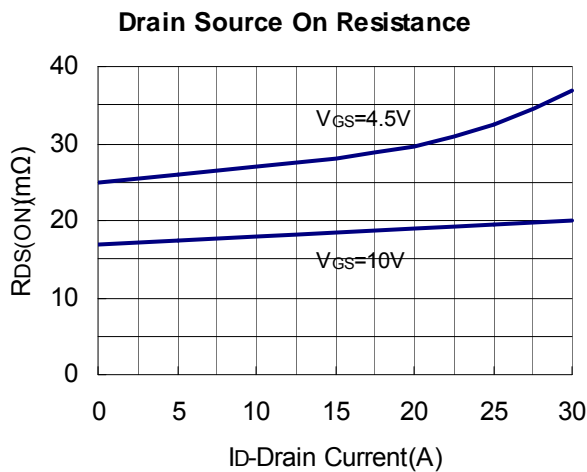
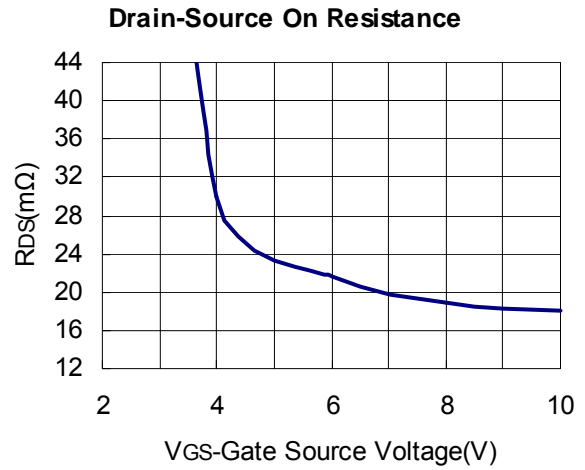
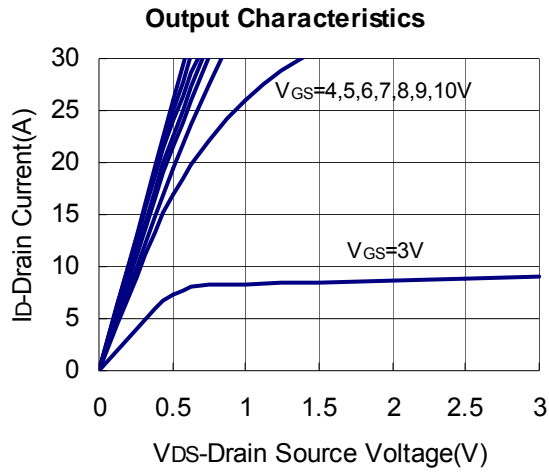
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Parameters</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0		-2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 25V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -24V, V_{GS} = 0V$			-1	$\mu A$
		$V_{DS} = -24V, V_{GS} = 0V$ $T_J = 55^\circ\text{C}$			-30	
$R_{DS(ON)}$	Drain-source On-Resistance	$V_{GS} = -10V, I_D = -9.8A$ $V_{GS} = -4.5V, I_D = -4.6A$		35 60	45 85	$m\Omega$
$G_{fs}$	Forward Transconductance	$V_{DS} = -10V, I_D = -5.2A$		10		S
<b>Source-Drain Diode</b>						
$V_{SD}$	Diode Forward Voltage	$I_S = -2.0A, V_{GS} = 0V$		-0.8	-1.2	V
<b>Dynamic Parameters</b>						
$Q_g$	Total Gate Charge	$V_{DS} = -15V, V_{GS} = -10V$ $I_D = -5.0A$		10.5		nC
$Q_{gs}$	Gate-Source Charge			1.5		
$Q_{gd}$	Gate-Drain Charge			2.4		
$C_{iss}$	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1\text{MHz}$		550		$\mu F$
$C_{oss}$	Output Capacitance			90		
$C_{riss}$	Reverse Transfer Capacitance			60		
$t_{d(on)}$	Turn-On Time	$V_{DD} = -15V, R_L = 15\Omega$ $I_D = -1.0A, V_{GEN} = -10V$ $R_G = 6\Omega$		6		nS
$t_r$				8		
$t_{d(off)}$	Turn-Off Time			23		
$t_f$				4		

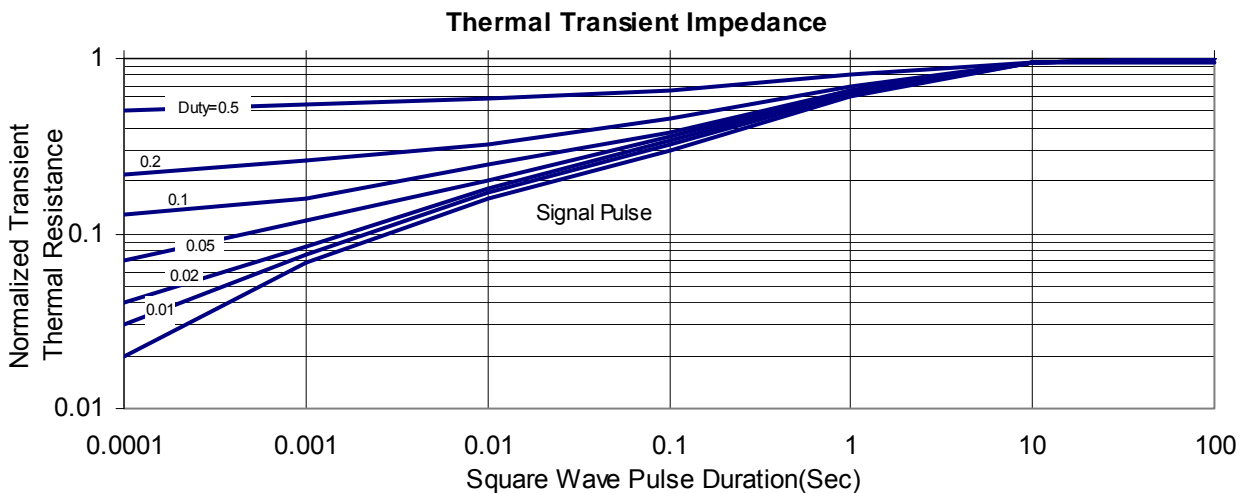
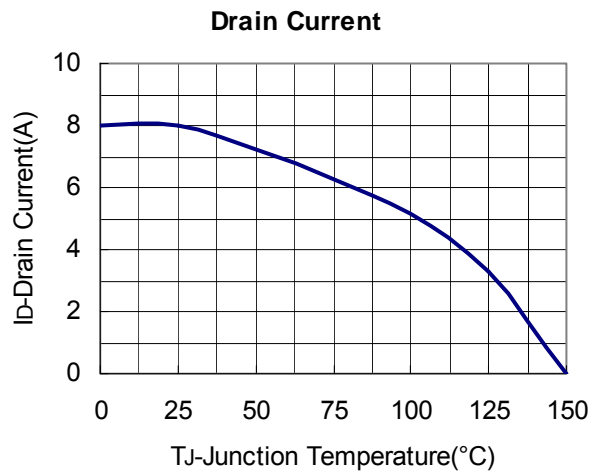
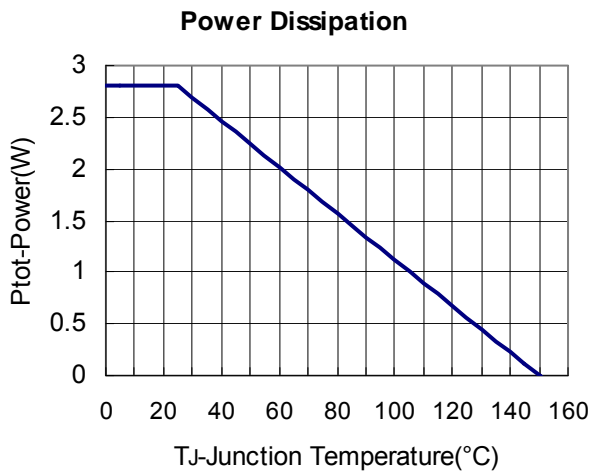
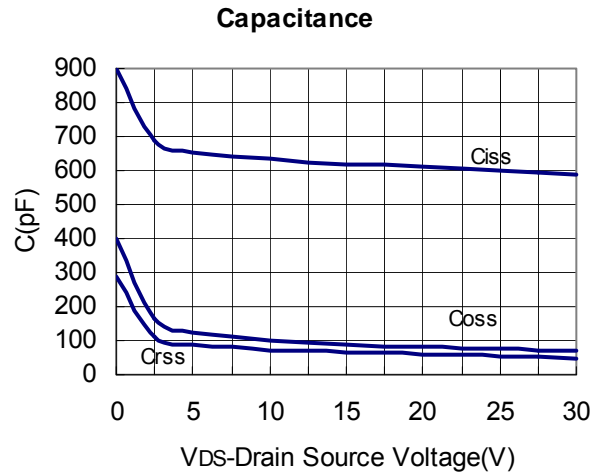
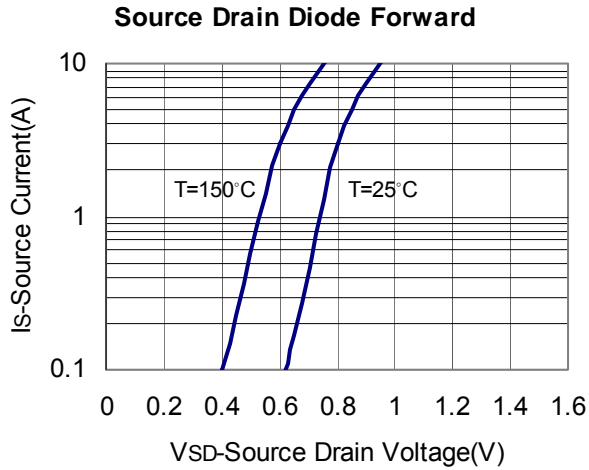
 Note : 1. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ 

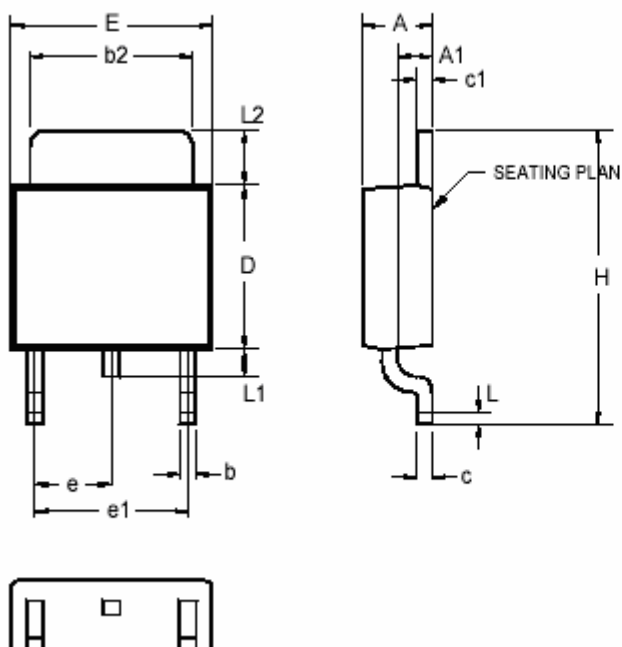
2. Static parameters are based on package level with recommended wire-bonding

■ TYPICAL CHARACTERISTICS (25°C Unless Note)



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**TO-252-3L PACKAGE DIMENSIONS**


Symbol	MILLIMETERS		
	MIN	TYP	MAX
A	2.18	-	2.39
A1	1.02	-	1.27
b	-	0.61	-
b2	5.21	-	5.46
c	0.46	-	0.58
c1	0.46	-	0.58
D	5.33	-	5.59
E	6.35	-	6.73
e	2.29 BSC		
e1	4.58 BSC		
H	9.40	-	10.41
L	0.51	-	-
L1	0.64	-	1.02
L2	1.52	-	2.03