# STS5PF30L

Description：

This P-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features：

1) V_{DS}=-30V,I_D=-5.1A,$R_{DS(ON)}$<55mΩ @V_{GS}=-10V

2) Low gate charge.

3) Green device available.

4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.

5) Excellent package for good heat dissipation.
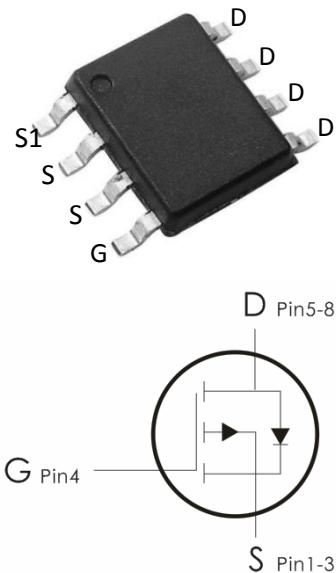
Absolute Maximum Ratings： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-TC=25℃	-5.1	A
	Continuous Drain Current-TC=100℃	---	
	Pulsed Drain Current[1]	-20	
P_D	Power Dissipation[4]	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient[2]	50	

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Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250 μ A	-30	-33	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-24V	---	---	-1	μ A
I_{GSS}	Gate-Source Leakage Current	V_{GS}=± 20V, V_{DS}=0A	---	---	±100	nA
On Characteristics[3]						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250 μ A	-1	-1.6	-3	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{GS}=-10V,I_D=-5.1A	---	43	55	m Ω
		V_{GS}=-4.5V,I_D=-4.2A	---	62	90	
G_{FS}	Forward Transconductance	V_{DS} =-15V, I_D=-5.1A	4	7	---	S
Dynamic Characteristics[4]						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	980	---	pF
C_{oss}	Output Capacitance		---	390	---	
C_{rss}	Reverse Transfer Capacitance		---	135	---	
Switching Characteristics[4]						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, I_D=-1A, R_{GEN}=6 Ω	---	14	---	ns
t_r	Rise Time		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	56	---	ns
t_f	Fall Time		---	20	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-15V, I_D=-5.1A	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	2.8	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage[3]	V_{GS}=0V,I_S=-5.1A	---	---	-1.2	V

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Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production.

## Typical Characteristics： (T$_C$=25℃ unless otherwise noted)
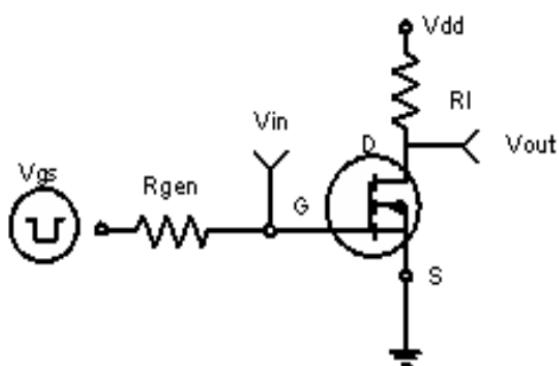
**Figure 1:Switching Test Circuit**
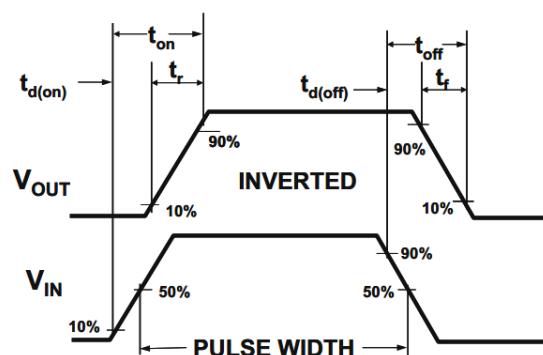
Figure 2:Switching Waveforms
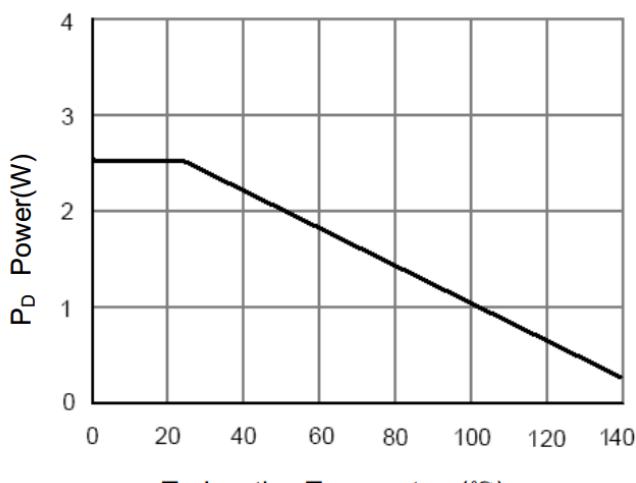
Figure 3 Power Dissipation
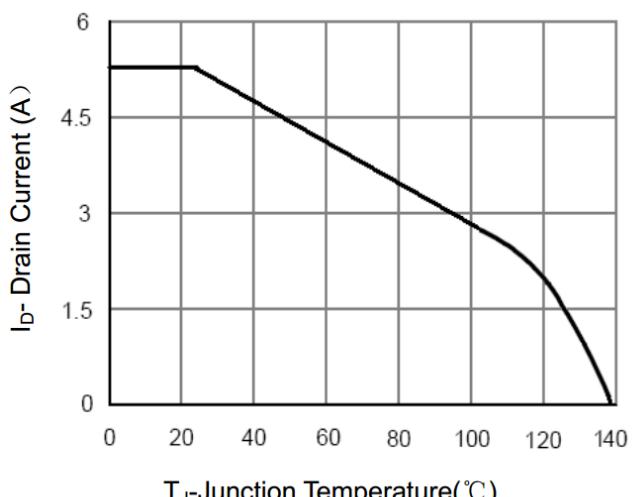
Figure 4 Drain Current
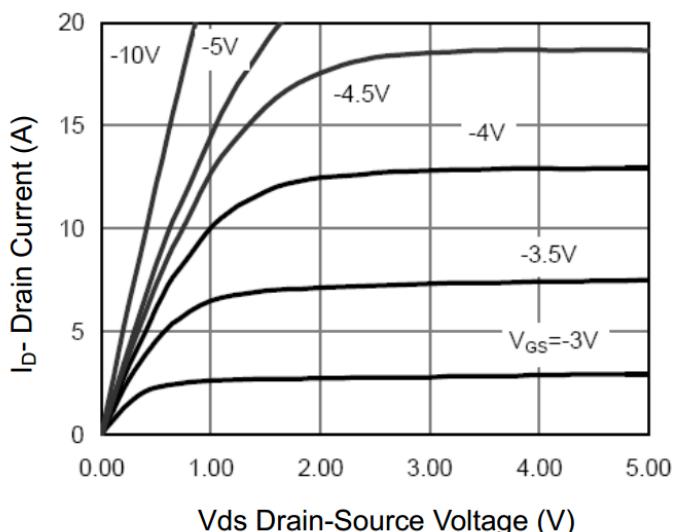
Figure 5 Output Characteristics
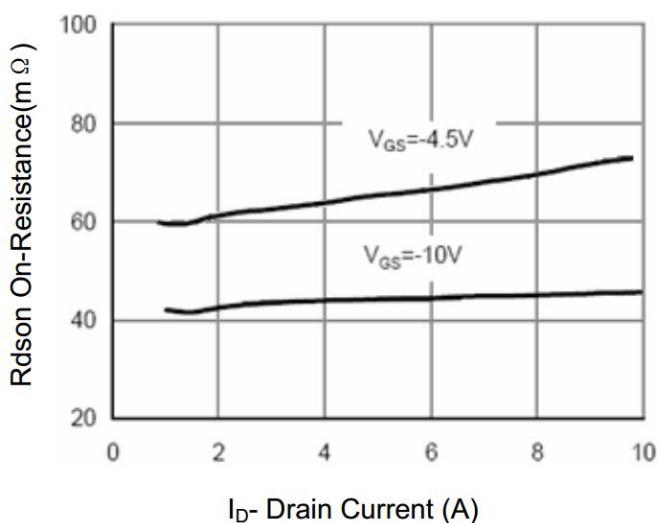

Figure 6 Drain-Source On-Resistance
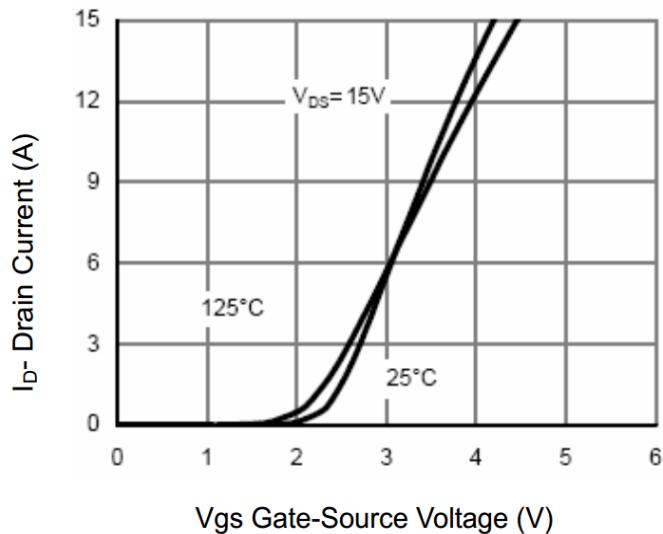

Figure 7 Transfer Characteristics
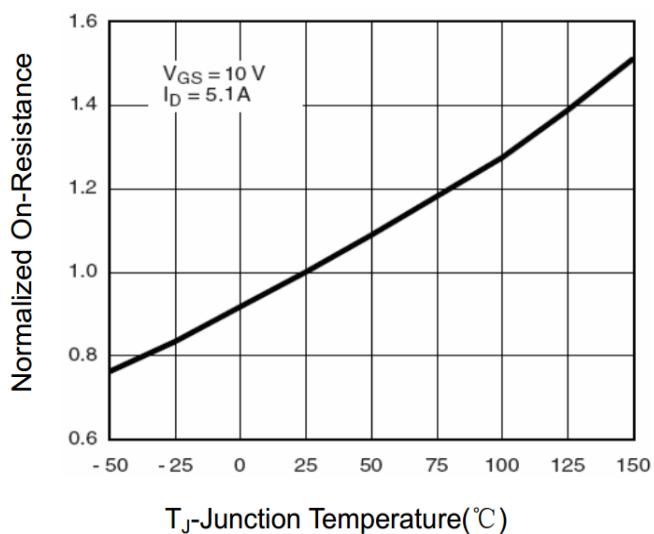
Figure 8 Drain-Source On-Resistance
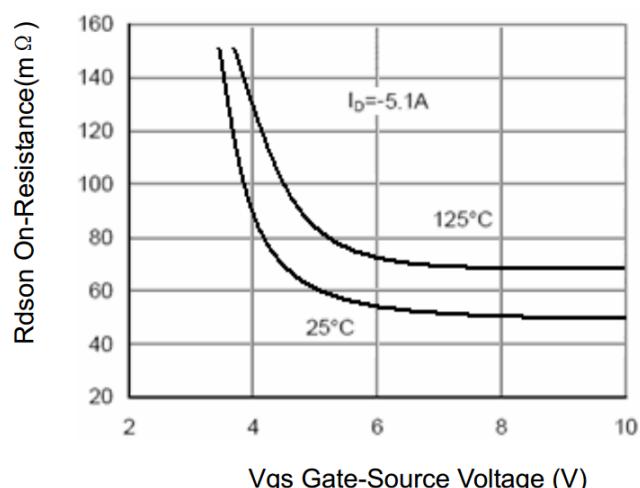
Figure 9 Rdson vs Vgs
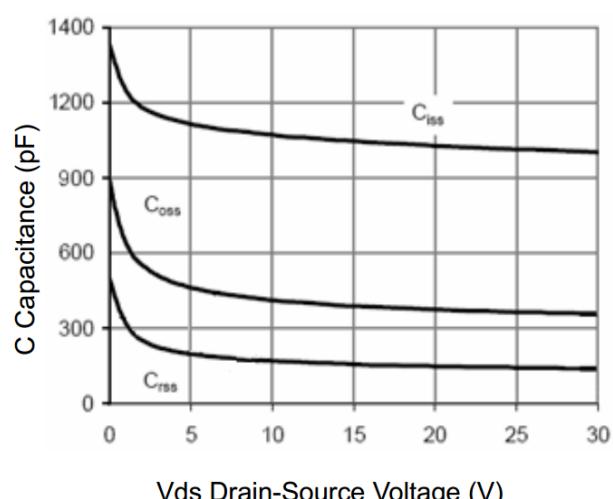

Figure 10 Capacitance vs Vds
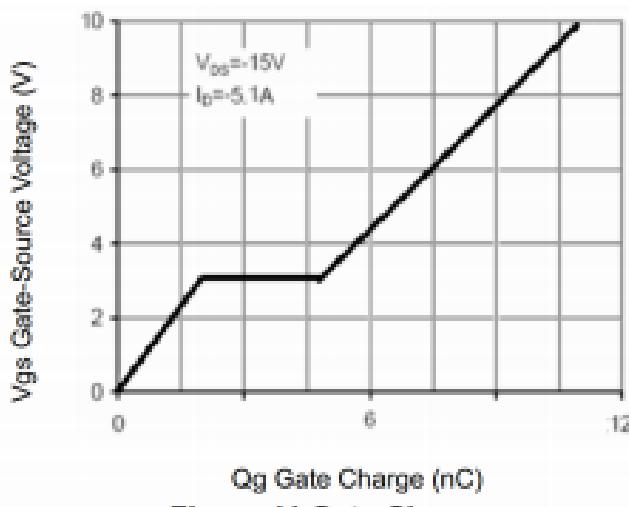
Figure 11 Gate Charge
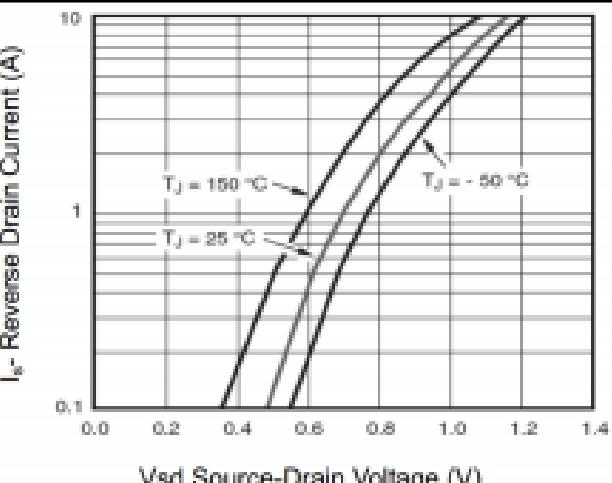
Figure 12 Source- Drain Diode Forward
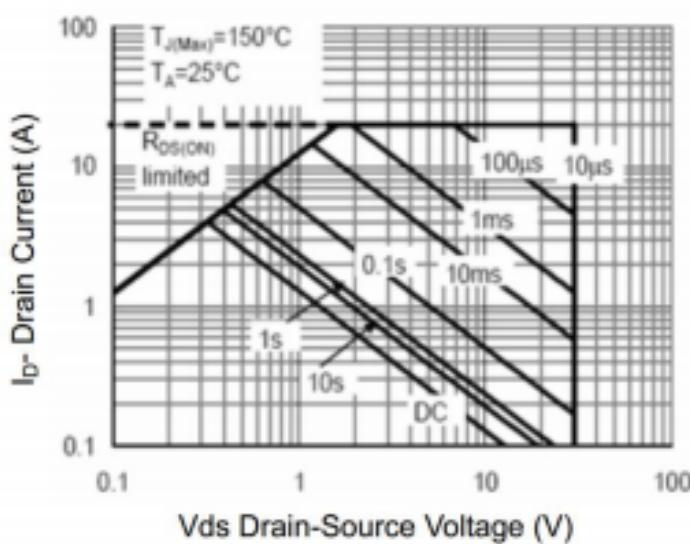
Figure 13 Safe Operation Area
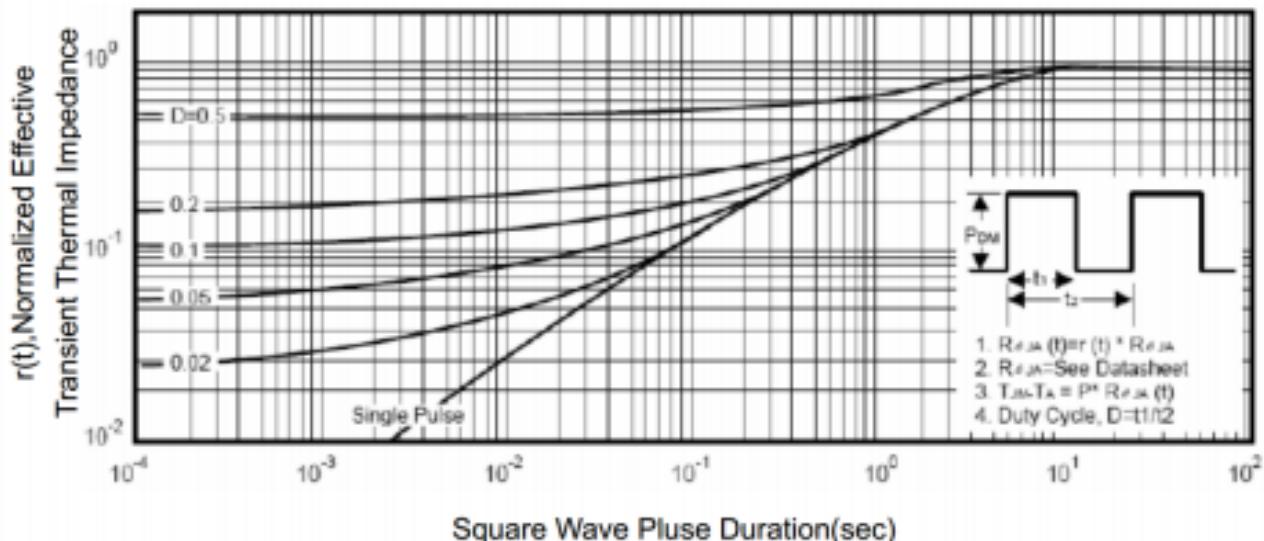
Figure 14 Normalized Maximum Transient Thermal Impedance

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