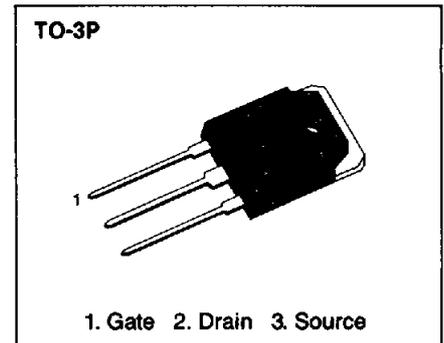


FEATURES

- Lower $R_{DS(on)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability



PRODUCT SUMMARY

Part Number	V _{DS}	R _{DS(on)}	I _D
SSH11N90	900V	1.1Ω	11A

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSH11N90	Unit
Drain-Source Voltage (1)	V _{DSS}	900	V _{dc}
Drain-Gate Voltage (R _{GS} =1.0MΩ)(1)	V _{DGR}	900	V _{dc}
Gate-Source Voltage	V _{GS}	±30	V _{dc}
Continuous Drain Current T _C =25 °C	I _D	11.0	A _{dc}
Continuous Drain Current T _C =100 °C	I _D	8.0	A _{dc}
Drain Current - Pulsed (3)	I _{DM}	44.0	A _{dc}
Single Pulsed Avalanche Energy (4)	E _{AS}	3100	mJ
Avalanche Current	I _{AS}	11.0	A
Total Power Dissipation at T _C =25 °C Derate Above 25 °C	P _D	280 2.22	Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{STG}	-55 to +150	°C
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T _L	300	°C

Notes : (1) T_J=25°C to 150°C

(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

(3) Repetitive rating : Pulse width limited by junction temperature

(4) L=51mH, V_{dd}=50V, R_G=25Ω, Starting T_J=25°C



ELECTRONICS



ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	900	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
I_{GSS}	Gate-Source Leakage Forward	-	-	100	nA	$V_{GS}=20V$
I_{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	$V_{GS}=-20V$
I_{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	$V_{DS}=\text{Max. Rating}, V_{GS}=0V$
		-	-	1000	μA	$V_{DS}=0.8 \text{ Max. Rating}, V_{GS}=0V, T_c=150^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance(2)	-	0.8	1.1	Ω	$V_{GS}=10V, I_D=5.5A$
g_{fs}	Forward Transconductance (2)	8.0	-	-	S	$V_{DS}=15V, I_D=5.5A$
C_{iss}	Input Capacitance	-	4300	-	pF	$V_{GS}=0V, V_{DS}=25V, f=1\text{MHz}$
C_{oss}	Output Capacitance	-	320	-	pF	
C_{rss}	Reverse Transfer Capacitance	-	110	-	pF	
$t_{d(on)}$	Turn-On Delay Time	-	60	-	ns	$V_{DD}=0.5 BV_{DSS}, I_D=11A, Z_o=9.1\Omega$ (MOSFET switching times are essentially independent of operating temperature)
t_r	Rise Time	-	150	-	ns	
$t_{d(off)}$	Turn-Off Delay Time	-	450	-	ns	
t_f	Fall Time	-	150	-	ns	
Q_g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	170	nC	$V_{GS}=10V, I_D=11A, V_{DS}=0.8 \text{ Max. Rating}$ (Gate charge is essentially independent of operating temperature)
Q_{gs}	Gate-Source Charge	-	20	-	nC	
Q_{gd}	Gate-Drain ("Miller") Charge	-	60	-	nC	

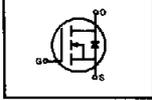
THERMAL RESISTANCE

Symbol	Characteristics		SSH11N90	Units	Remark
R_{thJC}	Junction-to-Case	MAX	0.45	K/W	
R_{thCS}	Case-to-Sink	TYP	0.24	K/W	Mounting surface flat
R_{thJA}	Junction-to-Ambient	MAX	40	K/W	Free Air Operation

Notes : (1) $T_J=25^\circ\text{C}$ to 150°C (2) Pulse test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

(3) Repetitive rating : Pulse width limited by max. junction temperature

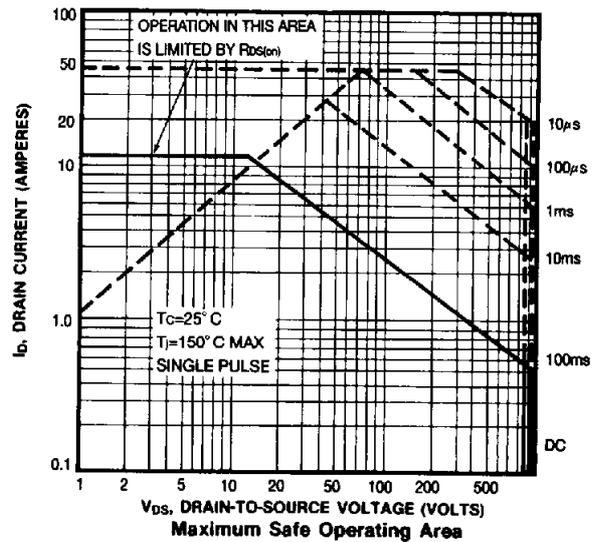
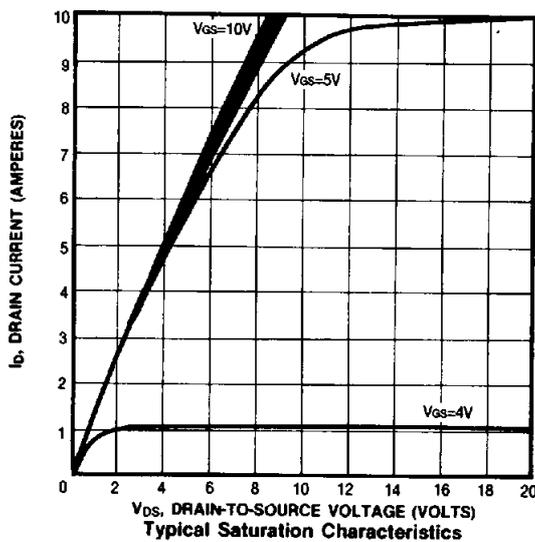
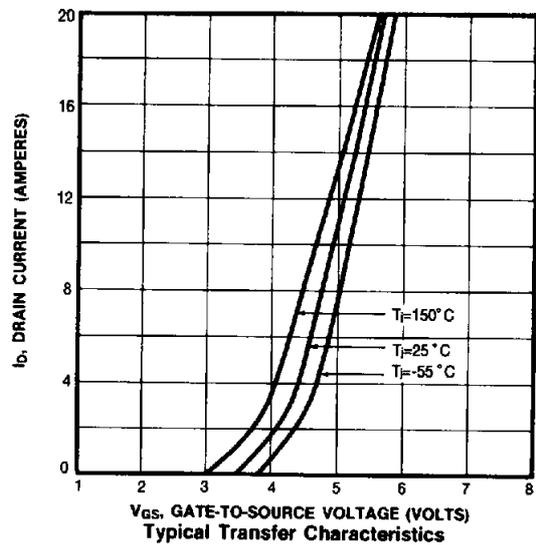
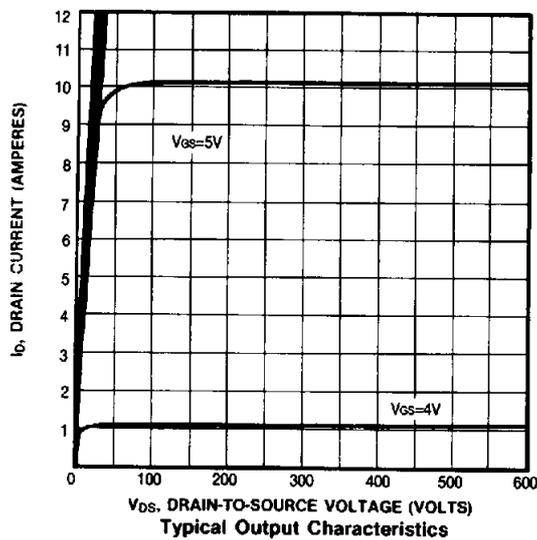
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

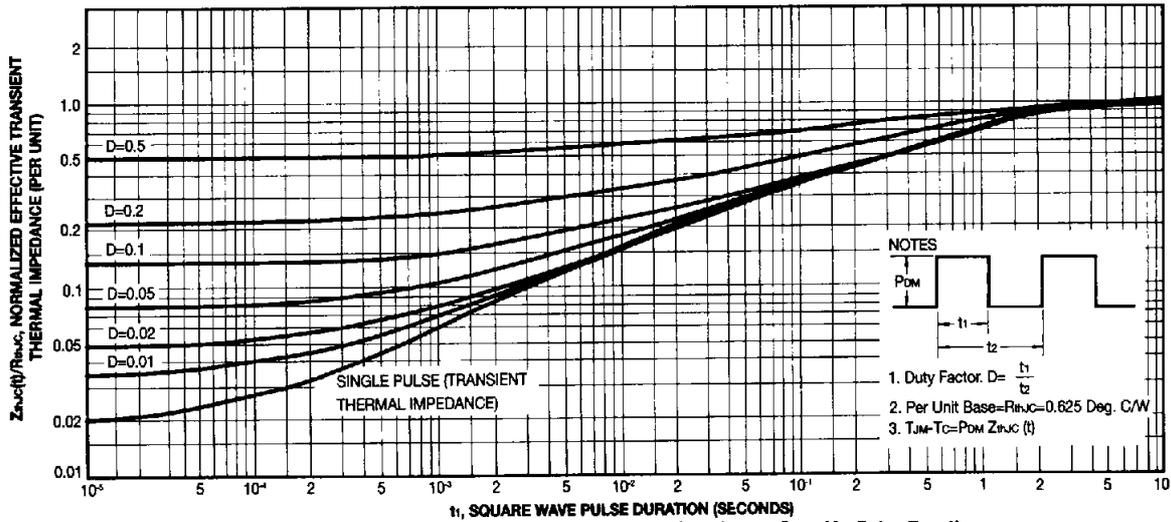
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	-	-	11.0	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current (Body Diode) (3)	-	-	44.0	A	
V_{SD}	Diode Forward Voltage (2)	-	-	1.5	V	$T_J=25^\circ\text{C}$, $I_S=11\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	-	800	-	ns	$T_J=25^\circ\text{C}$, $I_F=11\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$

Notes : (1) $T_J=25^\circ\text{C}$ to 150°C

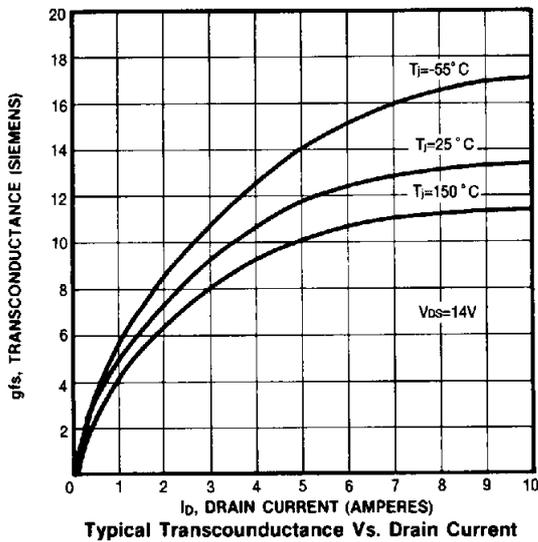
(2) Pulse test : Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

(3) Repetitive rating : Pulse width limited by max. junction temperature

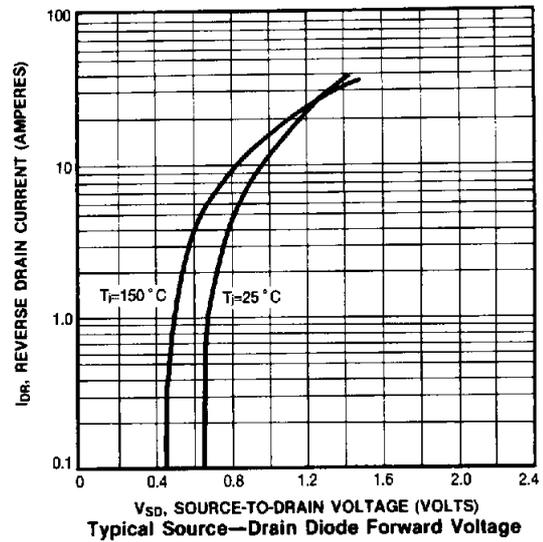




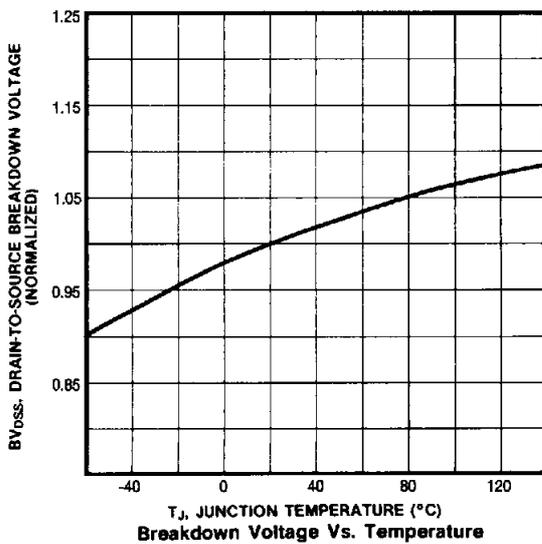
Maximum Effective Transient Thermal Impedance Junction-to-Case Vs. Pulse Duration



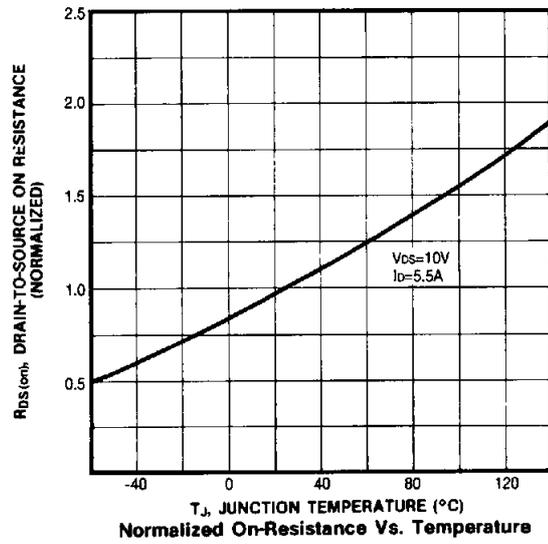
Typical Transconductance Vs. Drain Current



Typical Source-Drain Diode Forward Voltage



Breakdown Voltage Vs. Temperature



Normalized On-Resistance Vs. Temperature

