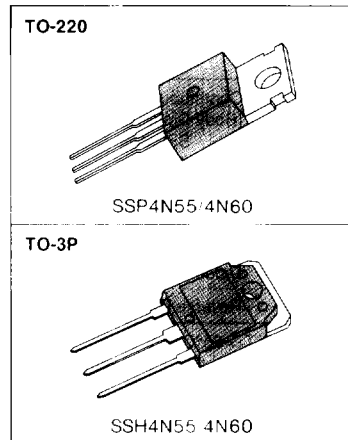


FEATURES

- 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
		A	STD	
SSP4N55 SSH4N55	550V	2.5 Ω	3.0 Ω	4A
SSP4N60 SSH4N60	600V	2.5 Ω	3.0 Ω	4A



MAXIMUM RATINGS

Characteristic	Symbol	SSP4N55 SSH4N55	SSP4N60 SSH4N60	Unit
Drain-Source Voltage (1)	V_{DSS}	550	600	Vdc
Drain-Gate Voltage ($R_{GS}=1.0M\Omega$)(1)	V_{DGR}	550	600	Vdc
Gate-Source Voltage	V_{GS}		± 20	Vdc
Continuous Drain Current $T_C=25^\circ C$	I_D	4	4	Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	2.5	2.5	Adc
Drain Current—Pulsed (3)	I_{DM}	16	16	Adc
Gate Current—Pulsed	I_{GM}		± 1.5	Adc
Single Pulsed Avalanche Energy (4)	E_{AS}		358	mJ
Avalanche Current	I_{AS}		4	A
Total Power Dissipation @ $T_C=25^\circ C$	P_D		75	Watts
Derate above 25 $^\circ C$			0.6	W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}		-55 to 150	$^\circ C$
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L		300	$^\circ C$

- Notes: (1) $T_J=25^\circ C$ to $150^\circ C$
(2) Pulse test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
(3) Repetitive rating. Pulse with limited by max. junction temperature
(4) $L=42 mH, V_{dd}=50V, R_G=25\Omega$, Starting $T_J=25^\circ C$

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 SSP4N60/SSH4N60	600	—	—	V	V _{GS} =0V I _D =250μA
	SSP4N55/SSH4N55	550	—	—	V	
V _{GS(th)}	Gate Threshold Voltage	2.0	—	4.5	V	V _{DS} =V _{GS} , I _D =1mA
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} =Max. Rating, V _{GS} =0V
		—	—	1000	μA	V _{DS} =Max. Rating × 0.8, V _{GS} =0V, T _C =125°C
I _{D(on)}	On-State Drain-Source Current (2)	4	—	—	A	V _{DS} ≥12V, V _{GS} =10V
R _{DS(on)}	Static Drain-Source On-State A (4) Resistance (2)	—	—	2.5	Ω	V _{GS} =10V, I _D =2.0A
	STD	—	—	3.0	Ω	
g _{fs}	Forward Transconductance (2)	2.0	3.1	—	Ω	V _{DS} ≥50V, I _D =2.0A
C _{iss}	Input Capacitance	—	720	—	pF	
C _{oss}	Output Capacitance	—	40	—	pF	V _{GS} =0V, V _{DS} =25V, f=1.0MHz
C _{rss}	Reverse Transfer Capacitance	—	—	40	pF	
t _{d(on)}	Turn-On Delay Time	—	—	40	ns	V _{DD} =0.5BV _{DSS} , I _D =2.0A, Z _O =15Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	—	—	150	ns	
t _{d(off)}	Turn-Off Delay Time	—	—	100	ns	
t _f	Fall Time	—	—	60	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	—	25	—	nC	V _{IO} =10V, I _D =8.0A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature.)
Q _{gs}	Gate-Source Charge	—	—	15	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	—	6.0	—	nC	

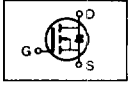
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THERMAL RESISTANCE

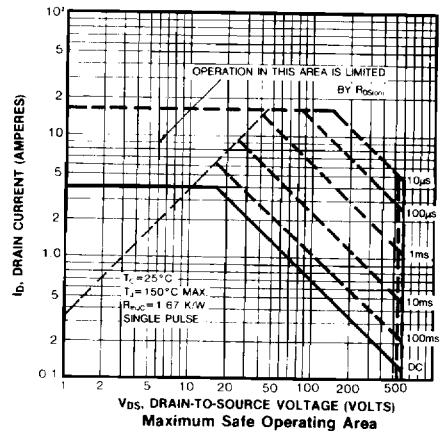
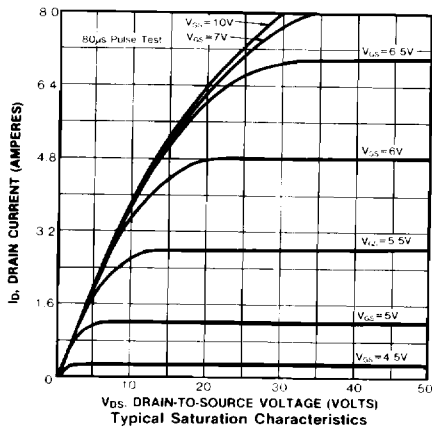
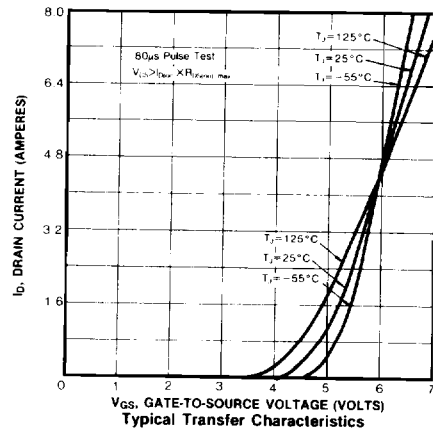
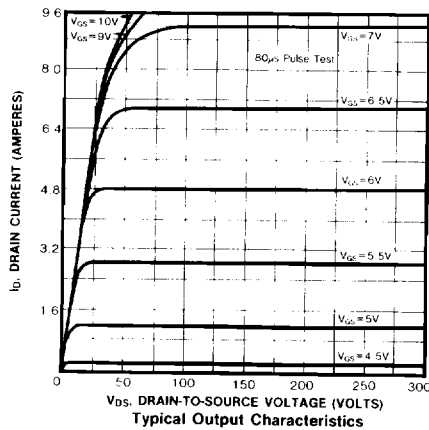
Symbol	Characteristic		SSP4N50/60	SSH4N55/60		
R _{thJC}	Junction-to-Case	MAX	1.67	1.67	K/W	
R _{thCS}	Case-to-Sink	TYP	0.5	0.24	K/W	Mounting surface flat, smooth, and greased
R _{thJA}	Junction-to-Ambient	MAX	80	40	K/W	Free Air Operation

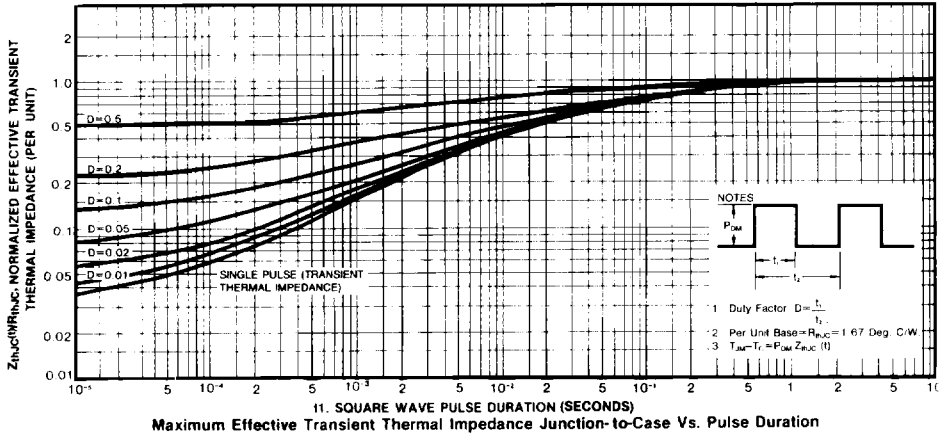
- Notes:** (1) T_J=25°C to 150°C
(2) Pulse test: Pulse width≤300μs, Duty Cycle≤2%
(3) Repetitive rating: Pulse width limited by max. junction temperature
(4) For Ultra low "A" R_{DS(on)}, device add "A" suffix to part number

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	4.0	A	Modified MOSFET showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current(Body Diode)(3)	—	—	16.0	A	
V_{SD}	Diode Forward Voltage (2)	—	—	1.5	V	$T_C=25^\circ\text{C}$, $I_S=4.0\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	600	—	μs	$T_J=150^\circ\text{C}$, $I_F=8.0\text{A}$, $dI_F/dt=100\text{A}/\mu\text{s}$

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 with limited by max. junction temperature





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