

SSW60N06/05 SSI60N06/05

N-CHANNEL POWER MOSFETS

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

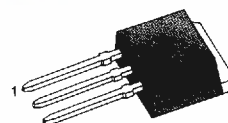
Part Number	V_{DS}	$R_{DS(on)}$	I_D
SSW60N06/60N06	60	0.018 Ω	60A
SSW60N05/60N05	50	0.018 Ω	60A

D²-PAK



1. Gate 2. Drain 3. Source
SSW60N06/05

P-PAK



1. Gate 2. Drain 3. Source
SSI60N06/05

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSW60N06 SSI60N06	SSW60N05 SSI60N05	Unit
Drain-Source Voltage (1)	V_{DS}	60	50	Vdc
Drain-Gate Voltage ($R_{GS}=1M\Omega$) (1)	V_{DGR}	60	50	Vdc
Gate-Source Voltage	V_{GS}	± 20		Adc
Continuous Drain Current $T_c=25^\circ C$	I_D	60		Adc
Continuous Drain Current $T_c=100^\circ C$	I_D	42		Adc
Drain Current - Pulsed (3)	I_{DM}	240		Adc
Single Pulsed Avalanche Energy (4)	E_{AS}	100		mJ
Avalanche Current	I_{AS}	60		A
Total Power Dissipation $T_c=25^\circ C$	P_D	190		Watts
Derate Above $25^\circ C$		1.25		W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{SRG}	-55 to +175		$^\circ C$
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 $175^\circ C$

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

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

(4) $L=22\mu H$, $V_{GS}=25V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$



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ELECTRICAL CHARACTERISTICS (Tc=25°C unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	SSW60N06/160N06	60	-	-	V	V _{GS} =0V, I _D =250μA
	SSW60N05/160N05	50	-	-	V	
V _{GS(th)}	Gate Threshold Voltage	2.0	-	4.0	V	V _{DS} =V _{GS} , I _D =250μA
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} =0.8 Max. Rating, V _{GS} =0V, Tc=150°C
R _{DS(on)}	Static Drain-Source On Resistance(2)	-	-	0.018	Ω	V _{GS} =10V, I _D =30A
g _{fs}	Forward Transconductance (2)	27	-	-	U	V _{GS} =50V, I _D =30A
C _{iss}	Input Capacitance	-	2400	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	Output Capacitance	-	1300	-	pF	
C _{rss}	Reverse Transfer Capacitance	-	190	-	pF	
t _{d(on)}	Turn-On Delay Time	-	8.1	-	ns	V _{DD} =0.5 BV _{DSS} , I _D =60A, Z _o =9.1Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	-	250	-	ns	
t _{d(off)}	Turn-Off Delay Time	-	210	-	ns	
t _f	Fall Time	-	250	-	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	110	nC	V _{GS} =10V, V _{DS} =60A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	29	-	nC	
Q _{gd}	Gate-Drain ("Miller") Charge	-	36	-	nC	

THERMAL RESISTANCE

Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	0.8	K/W	
R _{thJA}	Junction-to-Ambient	MAX	62.5	K/W	Free Air Operation

Notes : (1) T_J=25°C to 150°C

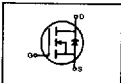
(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%

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

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SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	-	-	60	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current (Body Diode) (3)	-	-	240	A	
V_{SD}	Diode Forward Voltage (2)	-	-	2.0	V	$T_J=25^\circ\text{C}$, $I_S=60\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	-	-	180	ns	$T_J=25^\circ\text{C}$, $I_F=60\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$

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