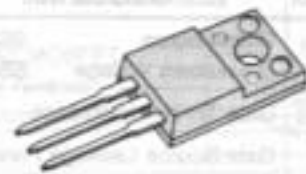


FEATURES

- 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

TO-220F



SSS6N55/6N60

PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	I_D
SSS6N55	550V	1.8 Ω	3.4A
SSS6N60	600V	1.8 Ω	3.4A

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSS6N55	SSS6N60	Unit
Drain-Source Voltage (1)	V_{DSS}	550	600	Vdc
Drain-Gate Voltage ($R_{GS} = 1.0M\Omega$)(1)	V_{DGN}	550	600	Vdc
Gate-Source Voltage	V_{GS}	± 20		Vdc
Continuous Drain Current $T_C = 25^\circ C$	I_D	3.4	3.4	Adc
Continuous Drain Current $T_C = 100^\circ C$	I_D	2.3	2.3	Adc
Drain Current—Pulsed (3)	I_{DM}	24	24	Adc
Gate Current—Pulsed	I_{GM}	± 1.5		Adc
Single Pulsed Avalanche Energy (4)	E_{AS}	183		mJ
Avalanche Current	I_{AS}	3.4		A
Total Power Dissipation at $T_C = 25^\circ C$	P_D	40		Watts
Derate above $25^\circ C$		0.32		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) $L = 27mH, V_{DS} = 50V, R_D = 25\Omega$, Starting $T_J = 25^\circ C$

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage SSS6N60	600	—	—	V	V _{GS} =0V, I _D =250μA
	SSS6N55	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 _{DS} =20V
I _{GSS}	Gate-Source Leakage Reverse	—	—	-100	nA	V _{DS} =-20V
I _{DSS}	Zero Gate Voltage Drain Current	—	—	250	μA	V _{DS} =Max. Rating, V _{GS} =0V
		—	—	1000		V _{DS} =0.8Max. Rating, T _C =125°C, V _{GS} =0V
I _{D(on)}	On-State Drain-Source Current (2)	8	—	—	A	V _{DS} ≥11 V _{GS} =10V
R _{DS(on)}	Static Drain-Source On-State Resistance (2)	—	—	1.8	Ω	V _{GS} =10V, I _D =3A
g _{fs}	Forward Transconductance (2)	3.0	4.8	—	Ω	V _{DS} ≥50V, I _D =3A
C _{iss}	Input Capacitance	—	—	1800	pF	V _{GS} =0V
C _{oss}	Output Capacitance	—	—	350	pF	V _{DS} =25V
C _{rss}	Reverse Transfer Capacitance	—	—	150	pF	f=1.0MHz
t _{d(on)}	Turn-On Delay Time	—	—	60	ns	V _{DD} =0.5 BV _{DSS} , I _D =3A Z _O =4.7Ω (MOSFET switching times are essentially independent of operating temperature)
t _r	Rise Time	—	—	150	ns	
t _{d(off)}	Turn-Off Delay Time	—	—	200	ns	
t _f	Fall Time	—	—	120	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	—	—	40	nC	V _{GS} =10V, I _D =7.5A, 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	—	—	25	nC	

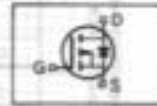
THERMAL RESISTANCE

R _{θJC}	Junction-to-Case	MAX	3.12	K/W	
R _{θCS}	Case-to-Sink	TYP	0.5	K/W	Mounting surface flat smooth, and greased
R _{θJA}	Junction-to-Ambient	MAX	80	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

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	6	A	Modified MOSFET integral reverse P-N junction rectifier
I_{SM}	Pulse-Source Current (3)	—	—	24	A	
V_{SD}	Diode Forward Voltage (2)	—	—	1.5	V	$T_C=25^\circ\text{C}$, $I_S=10\text{A}$, $V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	450	940	ns	$T_J=25^\circ\text{C}$, $I_F=10\text{A}$, $dI_F/dt=100\text{A}/\mu\text{S}$



- 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

