

# SSR1N60/55 SSU1N60/55

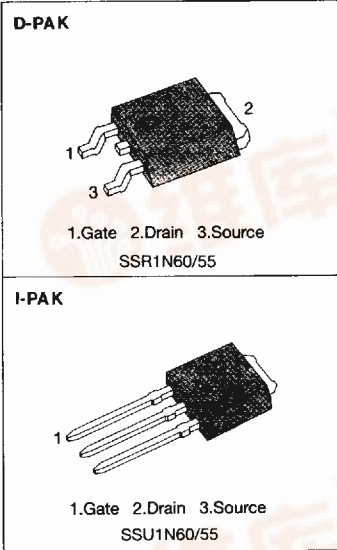
# N-CHANNEL POWER MOSFETS

## FEATURES

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

## PRODUCT SUMMARY

Part Number	V <sub>DS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub>
SSR1N60/U1N60	600V	12 Ω	1.0A
SSR1N55/U1N55	550V	12 Ω	1.0A



## ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSR1N60/U1N60	SSR1N55/U1N55	Unit
Drain-Source Voltage (1)	V <sub>DS</sub>	600	550	Vdc
Drain-Gate Voltage (R <sub>GS</sub> =1.0MΩ)(1)	V <sub>DGR</sub>	600	550	Vdc
Gate-Source Voltage	V <sub>GS</sub>		±20	Vdc
Continuous Drain Current T <sub>C</sub> =25 °C	I <sub>D</sub>	1.0		Adc
Continuous Drain Current T <sub>C</sub> =100 °C	I <sub>D</sub>	0.7		Adc
Drain Current - Pulsed (3)	I <sub>DM</sub>	3.0		Adc
Gate Current - Pulsed	I <sub>GM</sub>		±1.5	Adc
Total Power Dissipation at T <sub>C</sub> =25 °C	P <sub>D</sub>	40		Watts
Derate above 25 °C		0.32		W/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150		°C
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T <sub>L</sub>	300		°C

Notes : (1) T<sub>J</sub>=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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## ELECTRICAL CHARACTERISTICS (T<sub>c</sub>=25°C unless otherwise specified)

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage					
	SSR1N60/U1N60	600	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA
	SSR1N55/U1N55	550	-	-	V	
V <sub>GS(th)</sub>	Gate Threshold Voltage	2.0	-	4.0	V	V <sub>D</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
I <sub>GSS</sub>	Gate-Source Leakage Forward	-	-	100	nA	V <sub>GS</sub> =20V
I <sub>GSS</sub>	Gate-Source Leakage Reverse	-	-	-100	nA	V <sub>GS</sub> =-20V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	-	-	250	μA	V <sub>D</sub> =Max. Rating, V <sub>GS</sub> =0V
		-	-	1000	μA	V <sub>D</sub> =0.8 Max. Rating, V <sub>GS</sub> =0V, T <sub>c</sub> =125°C
R <sub>DS(on)</sub>	Static Drain-Source On Resistance (2)	-	-	12	Ω	V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A
g <sub>fs</sub>	Forward Transconductance (2)	0.5	-	-	Ω	V <sub>D</sub> ≥50V, I <sub>D</sub> =0.5A
C <sub>iss</sub>	Input Capacitance	-	250	300	pF	V <sub>GS</sub> =0V, V <sub>D</sub> =25V, f=1.0MHz
C <sub>oss</sub>	Output Capacitance	-	25	50	pF	
C <sub>rss</sub>	Reverse Transfer Capacitance	-	10	20	pF	
t <sub>d(on)</sub>	Turn-On Delay Time	-	12	20	ns	V <sub>D</sub> =0.5 BV <sub>DSS</sub> , I <sub>D</sub> =1.0A, Z <sub>o</sub> =24 Ω (MOSFET switching times are essentially independent of operating temperature)
t <sub>r</sub>	Rise Time	-	4	15	ns	
t <sub>d(off)</sub>	Turn-Off Delay Time	-	30	60	ns	
t <sub>f</sub>	Fall Time	-	10	30	ns	
Q <sub>g</sub>	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	21	nC	V <sub>GS</sub> =10V, I <sub>D</sub> =1.0A, V <sub>D</sub> =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q <sub>gs</sub>	Gate-Source Charge	-	3	-	nC	
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	-	9	-	nC	

## THERMAL RESISTANCE

Symbol	Characteristics		All	Units	Remark
R <sub>thJC</sub>	Junction-to-Case	MAX	3.125	K/W	
R <sub>thCS</sub>	Case-to-Sink	TYP	1.7	K/W	Mounting surface flat, smooth and greased
R <sub>thJA</sub>	Junction-to-Ambient	MAX	110	K/W	Free Air Operation

Notes : (1) T<sub>J</sub>=25°C to 150°C

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

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