

**SSR1N50/45
SSU1N50/45**

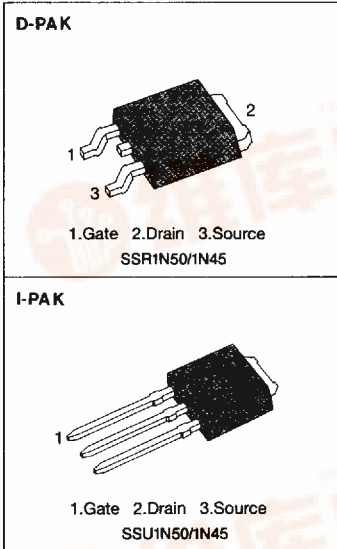
**N-CHANNEL
POWER MOSFET**

FEATURE

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

PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	$I_{D(on)}$
SSR1N50/U1N50	500V	8.5Ω	1.2A
SSR1N45/U1N45	450V	8.5Ω	1.2A



ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSR1N50/U1N50	SSR1N45/U1N45	Units
Drain-Source Voltage (1)	V_{DSS}	500	450	Vdc
Drain-Gate Voltage ($R_{GS}=1.0M\Omega$) (1)	V_{DGR}	500	450	Vdc
Gate-Source Voltage	V_{GS}		±20	Vdc
Continuous Drain Current $T_C=25^\circ C$	I_D	1.2		Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	0.8		Adc
Drain Current-Pulsed (3)	I_{DM}		4.0	Adc
Gate Current-Pulsed	I_{GM}		±1.5	Adc
Total Power Dissipation at $T_C=25^\circ C$ Derate above 25°C	P_D		42 0.33	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) $T_J = 25^\circ C$ to $150^\circ C$
 (2) Pulse test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
 (3) Repetitive rating: Pulse width limited by max. junction temperature

SSR1N50/45 SSU1N50/45

N-CHANNEL POWER MOSFETS

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

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage					
	SSR1N50/U1N50	500	-	-	V	V _{GS} =0V, I _D =250μA
	SSR1N45/U1N45	450	-	-	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, T _C =125°C
R _{DS(on)}	Static Drain-Source On Resistance (2)	-	-	8.5	Ω	V _{GS} =10V, I _D =0.6A
g _{fs}	Forward Transconductance (2)	0.65	-	-	Ω	V _{DS} ≥50V, I _D =0.6A
C _{iss}	Input Capacitance	-	-	300	pF	V _{GS} =0V
C _{oss}	Output Capacitance	-	-	80	pF	V _{DS} =25V
C _{rss}	Reverse Transfer Capacitance	-	-	40	pF	f=1.0MHz
t _{d(on)}	Turn-On Delay Time	-	-	20	ns	V _{DD} =0.5 BV _{DSS} , I _D =1.2A, Z _O =24 Ω
t _r	Rise Time	-	-	30	ns	(MOSFET switching times are essentially independent of operating temperature)
t _{d(off)}	Turn-Off Delay Time	-	-	60	ns	
t _f	Fall Time	-	-	45	ns	
Q _g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	21	nC	
Q _{gs}	Gate-Source Charge	-	4.5	-	nC	(Gate charge is essentially independent of operating temperature)
Q _{gd}	Gate-Drain ("Miller") Charge	-	9.5	-	nC	

THERMAL RESISTANCE

Symbol	Characteristics		All	Units	Remark
R _{thJC}	Junction-to-Case	MAX	3.0	K/W	
R _{thCS}	Case-to-Sink	TYP	1.7	K/W	Mounting surface flat, smooth and greased
R _{thJA}	Junction-to-Ambient	MAX	110	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