

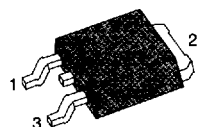
FEATURE

- 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

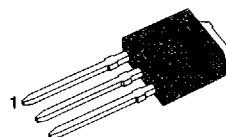
Part Number	V_{DS}	$R_{DS(on)}$	$I_{D(on)}$
SSR1N50/U1N50	500V	8.5Ω	1.2A
SSR1N45/U1N45	450V	8.5Ω	1.2A

D-PAK



1.Gate 2.Drain 3.Source
SSR1N50/U1N45

I-PAK



1.Gate 2.Drain 3.Source
SSU1N50/U1N45

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	SSR1N50/U1N50	SSR1N45/U1N45	Units
Drain-Source Voltage (1)	V _{DSS}	500	450	V _{dc}
Drain-Gate Voltage (R _{GS} = 1.0MΩ) (1)	V _{DGR}	500	450	V _{dc}
Gate-Source Voltage	V _{GS}	± 20		V _{dc}
Continuous Drain Current T _C = 25°C	I _D	1.2		A _{dc}
Continuous Drain Current T _C = 100°C	I _D	0.8		A _{dc}
Drain Current-Pulsed (3)	I _{DM}	4.0		A _{dc}
Gate Current-Pulsed	I _{GM}	± 1.5		A _{dc}
Total Power Dissipation at T _C = 25°C	P _D	42		Watts W/°C
Derate above 25°C		0.33		
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

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					
	SSR1N50/U1N50	500	-	-	V	V _{GS} =0V, I _D =250 μ A
	SSR1N45/U1N45	450	-	-	V	
V _{GS(th)}	Gate Threshold Voltage	2.0	-	4.0	V	V _{DS} =V _{GS} , I _D =250 μ A
I _{SSS}	Gate-Source Leakage Forward	-	-	100	nA	V _{GS} =20V
I _{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	V _{GS} =-20V
I _{SSS}	Zero Gate Voltage Drain Current	-	-	250	μ A	V _{DS} =Max. Rating, V _{GS} =0V
		-	-	1000	μ A	V _{DS} =0.8 Max. Rating, V _{GS} =0V, T _C =125 $^\circ\text{C}$
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	-	-	S	V _{DS} $\geq$ 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	V _{GS} =10V, I _D =1.2A, V _{DS} =0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q _{gs}	Gate-Source Charge	-	4.5	-	nC	
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 $^\circ\text{C}$ to 150 $^\circ\text{C}$

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

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