

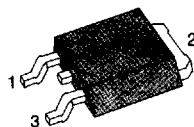
FEATURES

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

PRODUCT SUMMARY

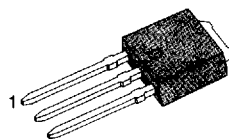
Part Number	V_{DS}	$R_{DS(on)}$	$I_{D(on)}$
SSR3055L/ U3055L	60V	0.18 Ω	12A

D-PAK



1.Gate 2.Drain 3.Source
SSR3055L

I-PAK



1.Gate 2.Drain 3.Source
SSU3055L

MAXIMUM RATINGS

Characteristic	Symbol	SSR3055L/U3055L	Units
Drain-Source Voltage (1)	V_{DSS}	60	Vdc
Drain Gate Voltage ($R_{GS}=1.0M\Omega$) (1)	V_{DGR}	60	Vdc
Gate-Source Voltage	V_{GS}	± 15	Vdc
Continuous Drain Current $T_C=25^\circ C$	I_D	12	Adc
Continuous Drain Current $T_C=100^\circ C$	I_D	8.4	Adc
Drain Current—Pulsed (3)	I_{DM}	36	Adc
Total Power Dissipation @ $T_C=25^\circ C$ Derate above $25^\circ C$	P_D	42 0.33	Watts 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 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_{DS}	Drain-Source Breakdown Voltage	60	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	1.0	-	2.0	V	$V_{DS}=V_{GS}, I_D=1mA$
I_{GSS}	Gate-Source Leakage Forward	-	-	100	nA	$V_{GS}=15V$
I_{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	$V_{GS}=-15V$
I_{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	$V_{DS}=\text{Max. Rating}, V_{GS}=0V$
		-	-	1000	μA	$V_{DS}=0.8 \text{ Max. Rating}, V_{GS}=0V, T_c=125^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On Resistance(2)	-	0.13	0.18	Ω	$V_{GS}=5.0V, I_D=6.0A$
g_{fs}	Forward Transconductance (2)	5.0	-	-	S	$V_{DS} \geq 15V, I_D=6.0A$
C_{iss}	Input Capacitance	-	400	-	pF	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$
C_{oss}	Output Capacitance	-	175	-	pF	
C_{rss}	Reverse Transfer Capacitance	-	50	-	pF	
$t_{d(on)}$	Turn-On Delay Time	-	15	-	ns	$V_{DD}=0.5 BV_{DS}, I_D=12A, Z_{\theta}=24\Omega$ (MOSFET switching times are essentially independent of operating temperature)
t_r	Rise Time	-	25	-	ns	
$t_{d(off)}$	Turn-Off Delay Time	-	40	-	ns	
t_f	Fall Time	-	25	-	ns	$V_{GS}=5V, I_D=12A, V_{DS}=0.8 \text{ Max. Rating}$ (Gate charge is essentially independent of operating temperature)
Q_g	Total Gate Charge (Gate-Source Plus Gate-Grain)	-	-	17	nC	
Q_{gs}	Gate-Source Charge	-	2	-	nC	
Q_{gd}	Gate-Drain Charge	-	4	-	nC	

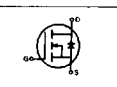
THERMAL RESISTANCE

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

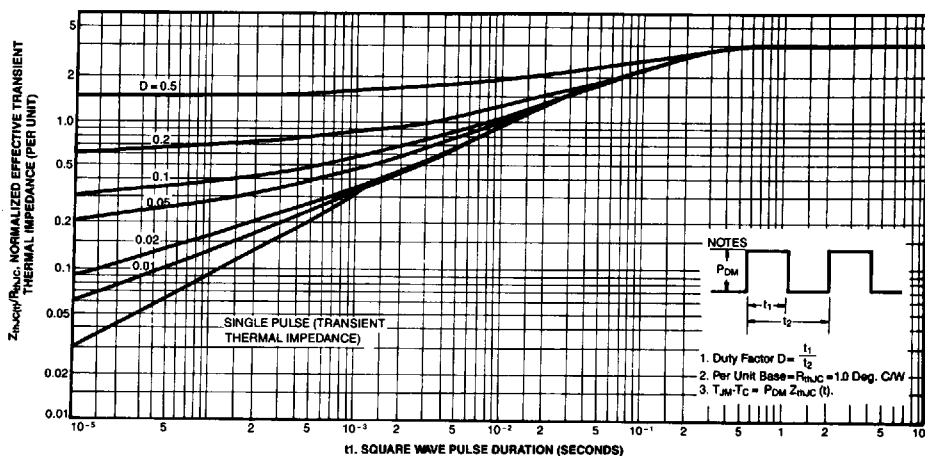
(3) Repetitive rating : Pulse width limited by max. junction temperature

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

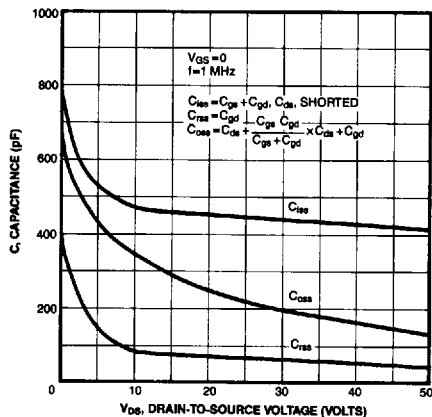
Symbol	Characteristic	Min	Typ	Max	Units	Test Condition
I_S	Continuous Source Current (Body Diode) (3)	—	—	12	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse-Source Current (Body Diode)	—	—	36	A	
V_{SD}	Diode Forward Voltage (2)	—	—	2.0	V	$T_J = 25^\circ\text{C}$, $I_S = 12\text{A}$, $V_{GS} = 0\text{V}$
t_{rr}	Reverse Recovery Time	—	55	—	ns	$T_J = 25^\circ\text{C}$, $I_F = 12\text{A}$, $dI_F/dt = 100\text{A}/\mu\text{S}$

Notes: (1) $T_J = 25^\circ\text{C}$ to 150°C (2) Pulse test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

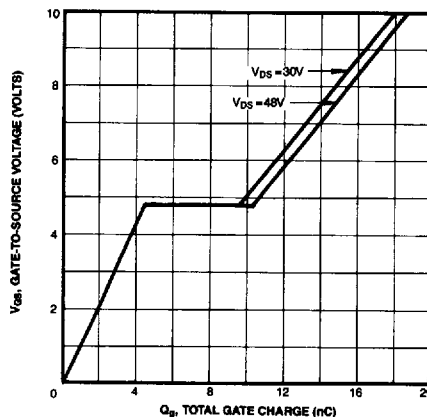
(3) Repetitive rating: Pulse width limited by max. junction temperature



MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE JUNCTION-TO-CASE VS. PULSE DURATION



TYPICAL CAPACITANCE VS. DRAIN TO SOURCE VOLTAGE



TYPICAL GATE CHARGE VS. GATE-TO-SOURCE VOLTAGE

