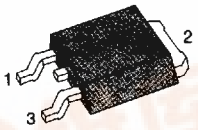
SSR3055L/U3055L

N-CHANNEL LOGIC LEVEL MOSFET

FEATURES

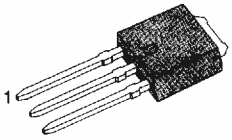
- Lower $R_{DS\ (ON)}$
- Excellent voltage stability
- Fast switching speeds
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability

D-PAK



1.Gate 2.Drain 3.Source
SSR3055L

I-PAK



1.Gate 2.Drain 3.Source
SSU3055L

PRODUCT SUMMARY

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

MAXIMUM RATINGS

Characteristic	Symbol	SSR3055L/U3055L	Units
Drain-Source Voltage (1)	V_{DSS}	60	Vdc
Drain Gate Voltage (R_{GS} =1.0MΩ) (1)	V_{DGR}	60	Vdc
Gate-Source Voltage	V_{GS}	±15	Vdc
Continuous Drain Current T_C =25°C	I_D	12	Adc
Continuous Drain Current T_C =100°C	I_D	8.4	Adc
Drain Current—Pulsed (3)	I_{DM}	36	Adc
Total Power Dissipation @ T_C =25°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°C to 150°C
(2) Pulse test: Pulse width ≤300μs, Duty Cycle ≤2%
(3) Repetitive rating: Pulse width limited by max. junction temperature

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

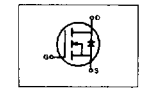
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	60	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	Gate Threshold Voltage	1.0	-	2.0	V	V_{DS}=V_{GS}, I_D=1mA
I_{GSS}	Gate-Source Leakage Forward	-	-	100	nA	V_{GS}=15V
I_{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	V_{GS}=-15V
I_{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	V_{DS}=Max. Rating, V_{GS}=0V
		-	-	1000	μA	V_{DS}=0.8 Max. Rating, V_{GS}=0V, Tc=125°C
$R_{DS(on)}$	Static Drain-Source On Resistance(2)	-	0.13	0.18	Ω	V_{GS}=5.0V, I_D=6.0A
gfs	Forward Transconductance (2)	5.0	-	-	℧	V_{DS}≥15V, I_D=6.0A
Ciss	Input Capacitance	-	400	-	pF	V_{GS}=0V, V_{DS}=25V, f=1.0MHz
Coss	Output Capacitance	-	175	-	pF	
Crss	Reverse Transfer Capacitance	-	50	-	pF	
$t_{d(on)}$	Turn-On Delay Time	-	15	-	ns	V_{DD}=0.5 BV_{DSS}, I_D=12A, Z_O=24Ω (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	
Q_g	Total Gate Charge (Gate-Source Plus Gate-Grain)	-	-	17	nC	V_{GS}=5V, I_D=12A, V_{DS}=0.8 Max. Rating (Gate charge is essentially independent of operating temperature)
Q_{gs}	Gate-Source Charge	-	2	-	nC	
Q_{gd}	Gate-DrainCharge	-	4	-	nC	

THERMAL RESISTANCE

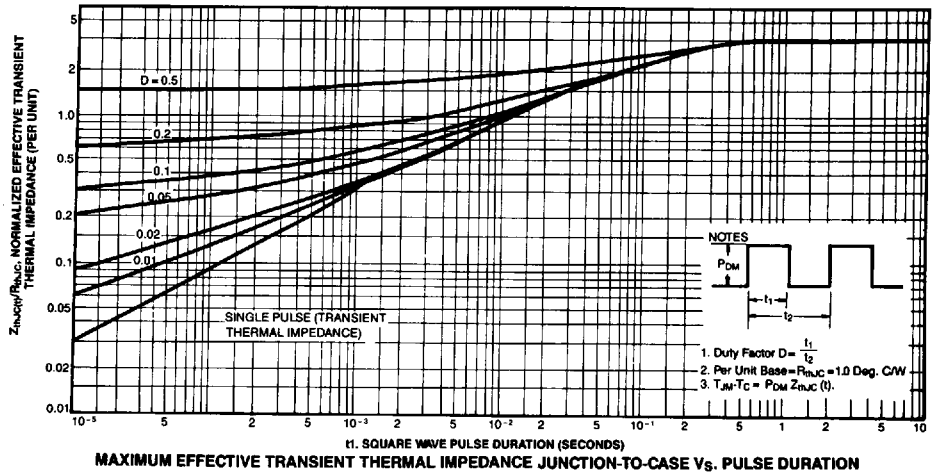
Symbol	Characteristics		All	Units	Remark
R_{thJC}	Junction-to-Case	MAX	3.0	K/W	
R_{thCS}	Case-to-Sink	TYP	1.7	K/W	Mounting surface flat, smooth, and greased
R_{thJA}	Junction-to-Ambient	MAX	110	K/W	Free Air Operation

Notes : (1) T_J=25°C to 150°C
(2) Pulse test : Pulse width≤300μs, Duty Cycle≤2%
(3) Repetitive rating : Pulse width limited by max. junction temperature

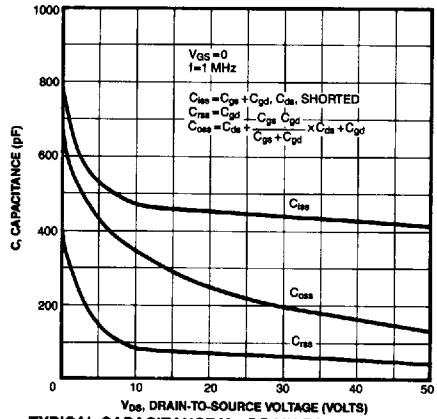
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test 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°C, I_S=12A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	55	—	ns	T_J=25°C, I_F=12A, dI_F/dt=100A/μS

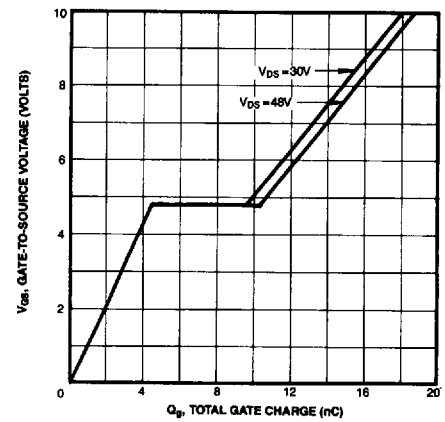
Notes: (1) T_J =25°C to 150°C
(2) Pulse test: Pulse width ≤300μs, Duty Cycle ≤2%
(3) Repetitive rating: Pulse width limited by max. junction temperature



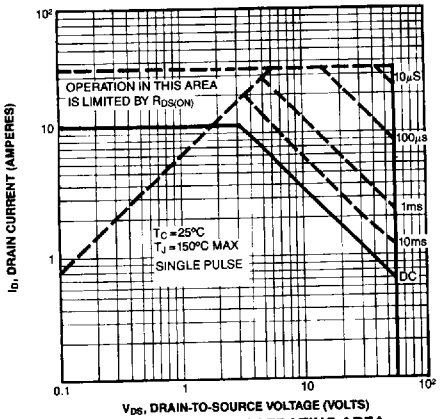
MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE JUNCTION-TO-CASE Vs. PULSE DURATION



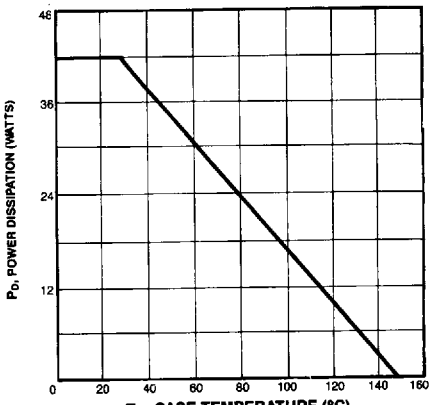
TYPICAL CAPACITANCE Vs. DRAIN TO SOURCE VOLTAGE



TYPICAL GATE CHARGE Vs. GATE-TO-SOURCE VOLTAGE



MAXIMUM SAFE OPERATING AREA



POWER Vs. TEMPERATURE DERATING CURVE

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