



PRELIMINARY

SOLID STATE DEVICES, INC

14849 Firestone Boulevard · La Mirada, CA 90638  
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424

**SFF450/61**

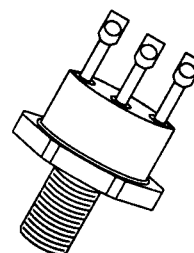
**Designer's Data Sheet**

**FEATURES:**

- Rugged construction with poly silicon gate
- Low RDS(on) and high transconductance
- Excellent high temperature stability
- Very fast switching speed
- Fast recovery and superior dv/dt performance
- Increased reverse energy capability
- Low input and transfer capacitance for easy paralleling
- Hermetically sealed power package
- TX, TXV and Space Level screening available
- Replaces: IRF450 Types

**13 AMP  
500 VOLTS  
0.40Ω  
N-CHANNEL  
POWER MOSFET**

TO-61



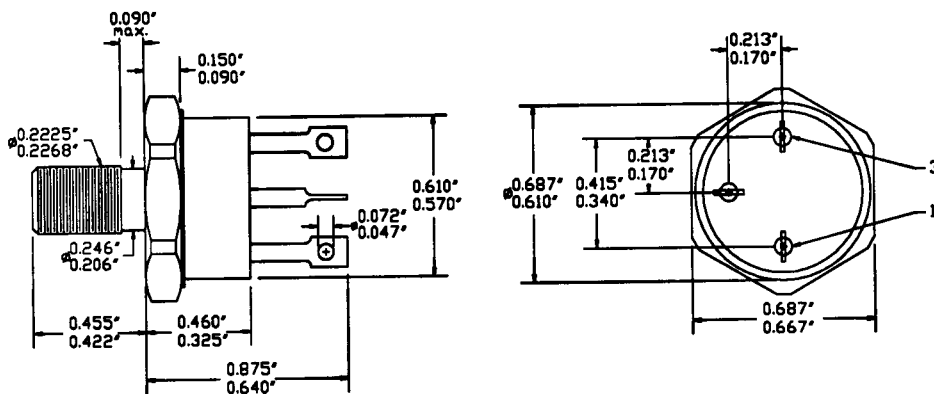
**MAXIMUM RATINGS**

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V <sub>DS</sub>	500	Volts
Gate to Source Voltage	V <sub>GS</sub>	±20	Volts
Continuous Drain Current	I <sub>D</sub>	13	Amps
Operating and Storage Temperature	T <sub>OP</sub> & T <sub>STG</sub>	-55 to +150	°C
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1	°C/W
Total Device Dissipation @ TC=25°C Total Device Dissipation @ TC=55°C	P <sub>D</sub>	125 95	Watts

**PACKAGE OUTLINE: TO-61**

**PIN OUT:**

- PIN 1: SOURCE**
- PIN 2: GATE**
- PIN 3: DRAIN**



NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: F00103 A

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**SFF450/61**

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**ELECTRICAL CHARACTERISTICS @ T<sub>J</sub>=25° C (Unless Otherwise Specified)**

RATING		SYMBOL	MIN	TYP	MAX	UNIT
<b>Drain to Source Breakdown Voltage</b> (VGS=0 V, ID=250μA)		BV <sub>DSS</sub>	500	---	---	V
<b>Drain to Source on State Resistance</b> (VGS=10 V, ID=7.2 A)		R <sub>DS(on)</sub>	---	0.35	0.40	Ω
<b>On State Drain Current</b> (V <sub>DS</sub> > I <sub>D(on)</sub> X R <sub>DS(on)</sub> Max, VGS=10 V)		I <sub>D(on)</sub>	13	---	---	A
<b>Gate Threshold Voltage</b> (V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA)		V <sub>GS(th)</sub>	2.0	---	4.0	V
<b>Forward Transconductance</b> (V <sub>DS</sub> ≥ 50 V, I <sub>DS</sub> =7.2 A)		g <sub>fs</sub>	8.7	13	---	S(Ω)
<b>Zero Gate Voltage Drain Current</b> (V <sub>DS</sub> =max rated voltage, VGS=0 V) (V <sub>DS</sub> =80% rated V <sub>DS</sub> , VGS=0 V, T <sub>A</sub> =125° C)		I <sub>DSS</sub>	---	---	250 1000	μA
<b>Gate to Source Leakage Forward</b> <b>Gate to Source Leakage Reverse</b>	At rated VGS	I <sub>GSS</sub>	---	---	100 -100	nA
<b>Total Gate Charge</b> <b>Gate to Source Charge</b> <b>Gate to Drain Charge</b>	VGS=10 Volts 80% rated VDS Rated ID	Q <sub>g</sub> Q <sub>gs</sub> Q <sub>gd</sub>	---	83 11 42	120 17 64	nC
<b>Turn on Delay Time</b> <b>Rise Time</b> <b>Turn Off Delay Time</b> <b>Fall Time</b>	VDD=50% rated VDS 50% rated ID R <sub>G</sub> = 6.2 Ω R <sub>D</sub> =20W	t <sub>d(on)</sub> t <sub>r</sub> t <sub>d(off)</sub> t <sub>f</sub>	---	18 44 70 40	27 66 100 60	nsec
<b>Diode Forward Voltage</b> (I <sub>S</sub> =rated ID, VGS=0 V, T <sub>J</sub> =25° C)		V <sub>SD</sub>	---	---	1.4	V
<b>Diode Reverse Recovery Time</b> <b>Reverse Recovery Charge</b>	T <sub>J</sub> =25° C I <sub>F</sub> =rated ID di/dt=100 A/μsec	t <sub>rr</sub> Q <sub>RR</sub>	280 3.2 ---	580 6.7	1200 14	nsec μC
<b>Input Capacitance</b> <b>Output Capacitance</b> <b>Reverse Transfer Capacitance</b>	VGS=0 Volts VDS=25 Volts f= 1 MHz	C <sub>iss</sub> C <sub>oss</sub> C <sub>rss</sub>	---	2700 350 75	---	pF

**For thermal derating curves and other characteristic curves please contact SSDI Marketing Department.**