



PRELIMINARY

SOLID STATE DEVICES, INC

SFF450

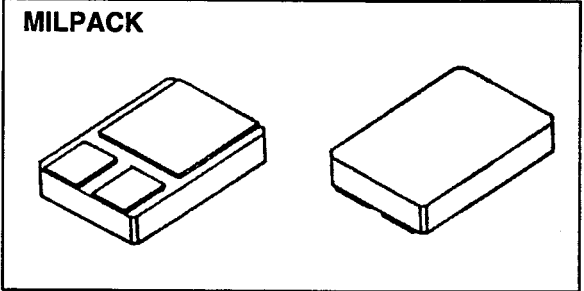
14849 Firestone Boulevard · La Mirada, CA 90638  
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424

### 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 surface mount power package
- TX, TXV and Space Level screening available
- Replaces: IRF450 Types

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



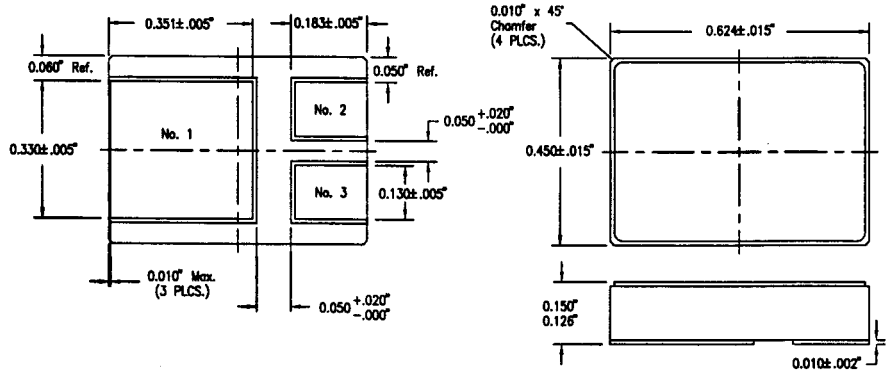
### MAXIMUM RATINGS:

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 @ 25°C @ 100°C	I <sub>d</sub>	12 7.75	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>	1.0	°C/W
Total Device Dissipation @ TC=25°C Total Device Dissipation @ TC=55°C	P <sub>D</sub>	125 95	Watts
Single Pulse Avalanche Energy	E <sub>AS</sub>	8	mJ
Repetitive Avalanche Energy	E <sub>AR</sub>	---	mJ

### PACKAGE OUTLINE: MILPACK

#### PIN OUT:

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



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

DATA SHEET #: F00095 C

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**SFF450**

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

RATING		SYMBOL	MIN	TYP	MAX	UNIT
Drain to Source Breakdown Voltage (VGS=0 V, ID=1mA)		BV <sub>DSS</sub>	500	---	---	V
Temperature Coefficient of Breakdown Voltage		$\frac{\Delta BV_{DSS}}{\Delta T_J}$	---	0.78	---	V/°C
Drain to Source on State Resistance (VGS=10 V)	@ 7.75A @ 12 A	R <sub>DS(on)</sub>	---	0.35 ---	0.40 0.50	Ω
Gate Threshold Voltage (VDS=VGS, ID=250μA)		VGS(th)	2.0	---	4.0	V
Forward Transconductance (VDS ≥ 10 V, IDS=7.75 A)		g <sub>fs</sub>	5.5	13	---	S(Ω)
Zero Gate Voltage Drain Current (VDS=80% rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125° C)		I <sub>DSS</sub>	---	---	25 250	μA
Gate to Source Leakage Forward Gate to Source Leakage Reverse	At rated VGS	I <sub>GSS</sub>	---	---	100 -100	nA
Total Gate Charge Gate to Source Charge Gate to Drain Charge	VGS=10 Volts 50% rated VDS Rated ID	Q <sub>g</sub> Q <sub>gs</sub> Q <sub>gd</sub>	55 5 27	83 11 42	120 19 70	nC
Turn on Delay Time Rise Time Turn Off Delay Time Fall Time	VDD=50% rated VDS 50% rated ID RG= 6.2 Ω	t <sub>d(on)</sub> t <sub>r</sub> t <sub>d(off)</sub> t <sub>f</sub>	---	26 16 55 15	35 190 170 130	nsec
Diode Forward Voltage (IS=rated ID, VGS=0 V, T <sub>J</sub> =25° C)		VSD	---	0.9	1.7	V
Diode Reverse Recovery Time Reverse Recovery Charge	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>	---	500 6.7	1600 14	nsec μC
Input Capacitance Output Capacitance Reverse Transfer Capacitance	VGS=0 Volts VDS=25 Volts f= 1 MHz	C <sub>iss</sub> C <sub>oss</sub> C <sub>rss</sub>	---	2700 600 240	---	pF

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