



PRELIMINARY

SOLID STATE DEVICES, INC

SFF054

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

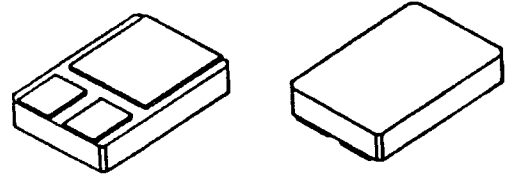
### Designer's Data Sheet

#### 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 power surface mount package
- TX, TXV and Space Level screening available
- Replaces: IRF054 Types

**45 AMP  
60 VOLTS  
0.020Ω  
N CHANNEL  
POWER MOSFET**

#### MILPACK



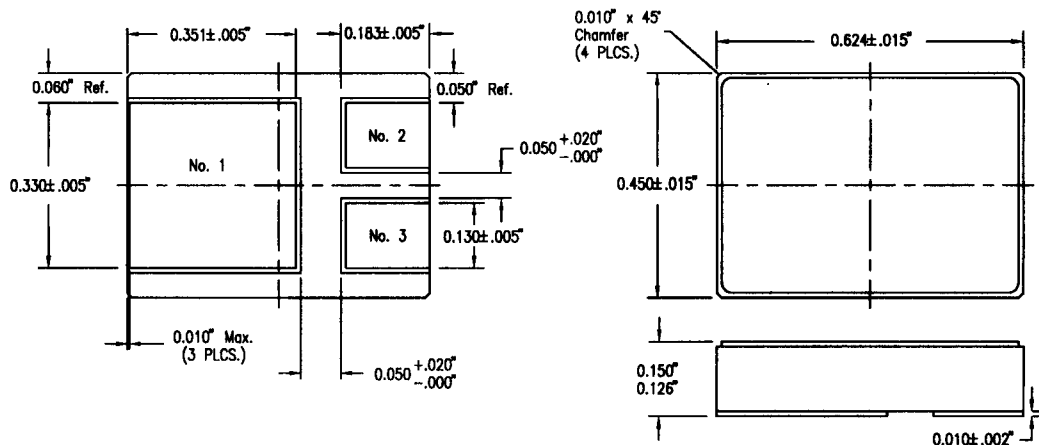
#### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V <sub>DS</sub>	60	Volts
Gate to Source Voltage	V <sub>GS</sub>	±20	Volts
Continuous Drain Current	I <sub>D</sub>	45	Amps
Operating and Storage Temperature	Top & Tstg	-55 to +150	°C
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	0.83	°C/W
Total Device Dissipation @ TC=25°C Total Device Dissipation @ TC=55°C	P <sub>D</sub>	150 114	Watts

#### 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 #: F00057 C

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**SFF054**

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**SOLID STATE DEVICES, INC**14849 Firestone Boulevard · La Mirada, CA 90638  
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424**ELECTRICAL CHARACTERISTICS @ T<sub>J</sub>=25 °C (Unless Otherwise Specified)**

RATING		SYMBOL	MIN	TYP	MAX	UNIT
<b>Drain to Source Breakdown Voltage</b> (V <sub>GS</sub> =0 V, I <sub>D</sub> =1mA)		<b>BV<sub>DSS</sub></b>	60	---	---	<b>V</b>
<b>Drain to Source on State Resistance</b> (V <sub>GS</sub> =10 V,	@31A @45A	<b>R<sub>DS(on)</sub></b>	---	0.014	0.020 0.022	<b>Ω</b>
<b>On State Drain Current</b> (V <sub>DS</sub> > I <sub>D(on)</sub> X R <sub>DS(on)</sub> Max, V <sub>GS</sub> =10 V		<b>I<sub>D(on)</sub></b>	45	---	---	<b>A</b>
<b>Gate Threshold Voltage</b> (V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA)		<b>V<sub>GS(th)</sub></b>	2.0	2.6	4.0	<b>V</b>
<b>Forward Transconductance</b> (V <sub>DS</sub> > I <sub>D(on)</sub> X R <sub>DS(on)</sub> Max, I <sub>DS</sub> =35A)		<b>g<sub>fs</sub></b>	20	45	---	<b>S(Ω)</b>
<b>Zero Gate Voltage Drain Current</b> (V <sub>DS</sub> = 80%max rated voltage, V <sub>GS</sub> =0 V) (V <sub>DS</sub> =80% rated V <sub>DS</sub> , V <sub>GS</sub> =0 V, T <sub>A</sub> =125° C)		<b>I<sub>DSS</sub></b>	---	---	25 250	<b>μA</b>
<b>Gate to Source Leakage Forward</b> <b>Gate to Source Leakage Reverse</b>	At rated V <sub>GS</sub>	<b>I<sub>GSS</sub></b>	---	---	100 -100	<b>nA</b>
<b>Total Gate Charge</b> <b>Gate to Source Charge</b> <b>Gate to Drain Charge</b>	V <sub>GS</sub> =10 Volts 80% rated V <sub>DS</sub> Rated I <sub>D</sub>	<b>Q<sub>g</sub></b> <b>Q<sub>gs</sub></b> <b>Q<sub>gd</sub></b>	80 10 34	---	180 45 105	<b>nC</b>
<b>Turn on Delay Time</b> <b>Rise Time</b> <b>Turn Off Delay Time</b> <b>Fall Time</b>	V <sub>DD</sub> =50% rated V <sub>DS</sub> I <sub>D</sub> =45A R <sub>G</sub> ≤6.2Ω	<b>t<sub>d(on)</sub></b> <b>t<sub>r</sub></b> <b>t<sub>d(off)</sub></b> <b>t<sub>f</sub></b>	---	30 20 60 30	33 180 100 100	<b>nsec</b>
<b>Diode Forward Voltage</b> (I <sub>S</sub> =rated I <sub>D</sub> , V <sub>GS</sub> =0 V, T <sub>J</sub> =25° C)		<b>V<sub>SD</sub></b>	---	1.1	2.5	<b>V</b>
<b>Diode Reverse Recovery Time</b> <b>Reverse Recovery Charge</b>	T <sub>J</sub> =25° C I <sub>F</sub> =10A di/dt=100 A/ sec	<b>t<sub>rr</sub></b> <b>Q<sub>RR</sub></b>	---	---	280 2.2	<b>nsec</b> <b>μC</b>
<b>Input Capacitance</b> <b>Output Capacitance</b> <b>Reverse Transfer Capacitance</b>	V <sub>GS</sub> =0 Volts V <sub>DS</sub> =25 Volts f= 1 MHz	<b>C<sub>iss</sub></b> <b>C<sub>oss</sub></b> <b>C<sub>rss</sub></b>	---	4600 2000 340	---	<b>pF</b>

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