



PRELIMINARY

# SOLID STATE DEVICES, INC

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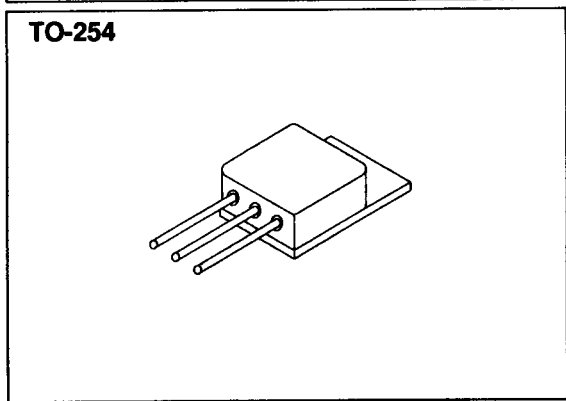
## SFFR150M SFFD150M

**34 AMP  
100 VOLTS  
0.07 Ω**  
**RADIATION HARDENED  
N-CHANNEL MOSFET**  
SFFR150M: 100KRad(Si) Gamma  
SFFD150M: 10KRad (Si) Gamma

### Designer's Data Sheet

#### FEATURES:

- Hermetically Sealed, Isolated Package
- Ceramic Seals
- Available with formed leads
- TX, TXV and S Level
- Replaces: IRH7150/8150, FRF150 R/H, 2N7268, Mil-S-19500/603
- Also available in TO-254Z, TO-258, TO-259, TO-61 and MILPACK
  
- Second Generation Radiation Hardened Mosfet results from new design concepts.
- Gamma:
  - A) Meets pre-rad specifications to 100 KRad(Si)
  - B) Defined end-point specs at 300 and 1000 KRad(Si)
  - C) Performance permits limited use to 3000 KRad(Si)
- Gamma Dot survives 3E9 Rad(Si)/sec at 80% BVDSS typically and survives 2E12 typically if current limited to IDM.
- Photo Current is typically 7.0nA per Rad(Si)/sec.
- Neutron:
  - A) Pre-rad specifications for 3E13 neutrons/cm<sup>2</sup>
  - B) Usable to 3E14 neutrons/cm<sup>2</sup>
- Single Event: typically survives 1E5 ions/cm<sup>2</sup> having an LET < 35 MeV/mg/cm<sup>2</sup> and a range ≥ 30μm at 80% BVDSS



### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V <sub>DS</sub>	100	Volts
Gate to Source Voltage	V <sub>GS</sub>	± 20	Volts
Continuous Drain Current	I <sub>D</sub>	34	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>	0.83	°C/W
Total Device Dissipation @ TA=25°C Derate above 25°C @ 1.2 W/°C	P <sub>D</sub>	150	Watts

**PACKAGE OUTLINE: TO-254**

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

<b>NOTE:</b> All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.	<b>DATA SHEET #: FR0015B</b>	<b>MED</b>
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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=1mA)		<b>BVDSS</b>	100		---	<b>V</b>
<b>Drain to Source on State Resistance</b> (VGS=10 V, ID=21 A)		<b>RDS(on)</b>	---	---	0.07	<b>Ω</b>
<b>On State Drain Current</b> (VDS>ID(on) X RDS(on) Max., VGS=10V)		<b>ID(on)</b>	34		---	<b>A</b>
<b>Gate Threshold Voltage</b> (VDS=VGS, ID=1mA)		<b>VGS(th)</b>	2.0		4.0	<b>V</b>
<b>Forward Transconductance</b> (VDS > ID(on) X RDS(on) Max, IDS=21 A)		<b>gfs</b>	8		---	<b>S(Ω)</b>
<b>Zero Gate Voltage Drain Current</b> (VDS=80% rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125°C)		<b>IDSS</b>	---		50 250	<b>μA</b>
<b>Gate to Source Leakage Forward</b> <b>Gate to Source Leakage Reverse</b>	At rated VGS	<b>IGSSF</b> <b>IGSSR</b>	---		100 100	<b>nA</b>
<b>Total Gate Charge</b> <b>Gate to Source Charge</b> <b>Gate to Drain Charge</b>	0 ≤ VGS ≤ 20 Volts 50% rated VDS Rated ID	<b>Qg</b> <b>Qgs</b> <b>Qgd</b>	---		160 35 65	<b>nC</b>
<b>Turn on Delay Time</b> <b>Rise Time</b> <b>Turn Off Delay Time</b> <b>Fall Time</b>	VDD=50% rated VDS ID=21 A RG=2.5Ω	<b>td(on)</b> <b>tr</b> <b>td(off)</b> <b>tf</b>	---		45 190 170 130	<b>nsec</b>
<b>Diode Forward Voltage</b> (IS=rated ID, VGS=0 V, T <sub>J</sub> =25°C)		<b>VSD</b>	---		1.9	<b>V</b>
<b>Diode Reverse Recovery Time</b> <b>Reverse Recovery Charge</b>	T <sub>J</sub> =25°C IF=rated ID di/dt=100 A/μsec	<b>trr</b> <b>QRR</b>	---		570 ---	<b>nsec</b> <b>μC</b>

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