



PRELIMINARY

SOLID STATE DEVICES, INC14849 Firestone Boulevard · La Mirada, CA 90638
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424**SFFR250M
SFFD250M****Designer's Data Sheet****FEATURES:**

- Hermetically Sealed, Isolated Package
- Ceramic Seals
- Available with formed leads
- TX, TXV and S Level
- Replaces: IRFM7250/8450, FRF250 R/H
- 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 500 BVDSS typically and survives 2E12 typically if current limited to IDM.
- Photo Current is typically 30nA per Rad(Si)/sec.
- Neutron: A) Pre-rad specifications for 3E12 neutrons/cm²
B) Usable to 3E13 neutrons
- Single Event: typically survives 1E3 ions/cm² having an LET < 35 MeV/mg/cm² and a range ≥ 30μm at 200 BVDSS

**27 AMP
200 VOLTS
0.100 Ω**

**RADIATION HARDENED
N-CHANNEL MOSFET**

**SFFR250M: 100KRad(Si) Gamma
SFFD250M: 10KRad (Si) Gamma**

This MOSFET is well suited for applications exposed to radiation environments such as switching regulation, switching converters, synchronous rectification, motor drives, relay drivers and drivers for high-power bipolar switching transistors requiring high speed and low gate drive power. This type can be operated directly from integrated circuits.

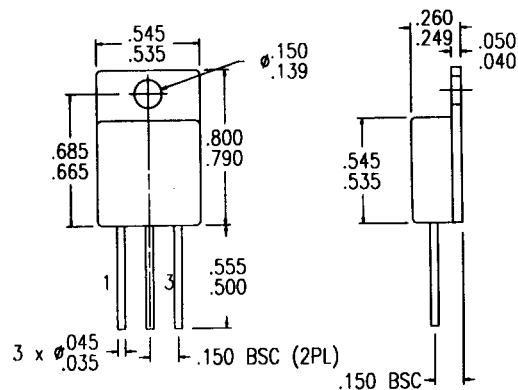
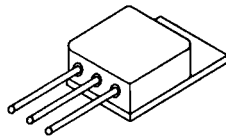
This part may be supplied as a die or in other packages. Reliability screening is performed in SSDI's JANS and Space Station Freedom approved facility.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V _{DS}	200	Volts
Gate to Source Voltage	V _{GS}	± 20	Volts
Continuous Drain Current	I _D	27	Amps
Operating and Storage Temperature	Top & Tstg	-55 to +150	°C
Thermal Resistance, Junction to Case	RθJC	1.0	°C/W
Total Device Dissipation @ TA=25°C Derate above 25°C @ 1 W/°C	P _D	125	Watts

PACKAGE OUTLINE: TO-254**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 #: FR0001 B**MED**

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ELECTRICAL CHARACTERISTICS @ T _J =25 °C (Unless Otherwise Specified)						
RATING	SYMBOL	MIN	TYP	MAX	UNIT	
Drain to Source Breakdown Voltage (V _{GS} =0 V, I _D =1mA)	BV _{DSS}	200		---	V	
Drain to Source on State Resistance (V _{GS} =10 V, I _D =17A)	R _{DS(on)}	---		0.100	Ω	
On State Drain Current (V _{DS} >I _{D(on)} X R _{DS(on)} Max., V _{GS} =10V)	I _{D(on)}	27		---	A	
Gate Threshold Voltage (V _{DS} =V _{GS} , I _D =1mA)	V _{GS(th)}	2.0		4.0	V	
Forward Transconductance (V _{DS} >I _{D(on)} X R _{DS(on)} Max, I _{DS} =60% rated I _D)	g _{fs}	13		---	S(Ω)	
Zero Gate Voltage Drain Current (V _{DS} =max rated voltage, V _{GS} =0 V) (V _{DS} =80% rated V _{DS} , V _{GS} =0 V, T _A =125°C)	I _{DSS}	---		500 250	μA	
Gate to Source Leakage Forward Gate to Source Leakage Reverse	At rated V _{GS} I _{GSS}	---		100 100	nA	
Total Gate Charge Gate to Source Charge Gate to Drain Charge	V _{GS} =10 Volts 50% rated V _{DS} Rated I _D Q _g Q _{gs} Q _{gd}	60 10 30		250 50 100	nC	
Turn on Delay Time Rise Time Turn Off Delay Time Fall Time	V _{DD} =50% rated V _{DS} rated I _D R _G =25Ω 0 ≤ V _{GS} ≤ 10 t _{d(on)} t _r t _{d(off)} t _f	---		170 600 580 500	nsec	
Diode Forward Voltage (I _S =rated I _D , V _{GS} =0 V, T _J =25°C)	V _{SD}	---		2.0	V	
Diode Reverse Recovery Time Reverse Recovery Charge	T _J =25°C I _F =rated I _D di/dt=100 A/μsec t _{rr} Q _{RR}	---		1700 ---	nsec μC	

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