



PRELIMINARY

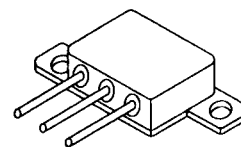
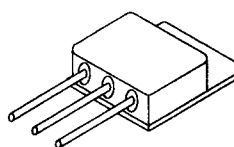
SOLID STATE DEVICES, INC14849 Firestone Boulevard · La Mirada, CA 90638
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424**Designer's Data Sheet****FEATURES:**

- Hermetically Sealed, Isolated Package
- Ceramic Seals
- Available with formed leads
- TX, TXV and S Level
- Replaces: FRK160, 2N7299
- 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

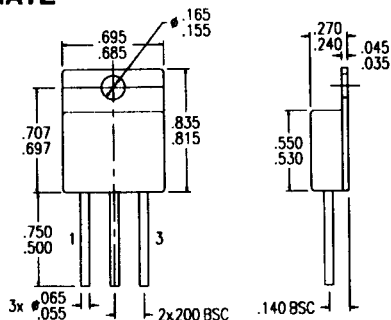
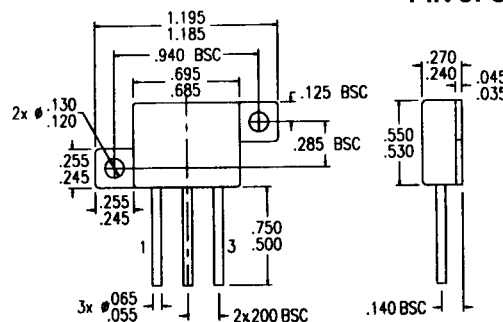
SFFR160N
SFFD160P**50 AMP**
100 VOLTS
0.04 Ω**RADIATION HARDENED**
N-CHANNEL MOSFET
SFFR9160N: 100KRad(Si) Gamma
SFFD9160N: 10KRad (Si) Gamma

TO-258

TO-259

**MAXIMUM RATINGS**

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Drain to Source Voltage	V _{DS}	100	Volts
Gate to Source Voltage	V _{GS}	±20	Volts
Continuous Drain Current @ TC=25°C	I _D	50	Amps
Operating and Storage Temperature	T _{OP} & T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	R _{θJC}	0.4	°C/W
Total Device Dissipation @ TA=25°C Derate above 25°C @ 2.5 W/°C	P _D	300	Watts

PACKAGE OUTLINE: TO-258(N)PIN OUT:
PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE**PACKAGE OUTLINE: TO-259(P)**PIN OUT:
PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE

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

DATA SHEET #: FR0011 A

MED

SFFR160N SFFD160P

PRELIMINARY



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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 =250μA)		BV_{DSS}	100	---	---	V
Drain to Source on State Resistance (V _{GS} =10 V, I _D =42 A)		R_{DS(on)}	---	---	0.040	Ω
On State Drain Current (V _{DS} > I _{D(on)} X R _{DS(on)} Max, V _{GS} =10 V)		I_{D(on)}	50	---	---	A
Gate Threshold Voltage (V _{DS} =V _{GS} , I _D =250μA)		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}	---	---	---	S(Ω)
Zero Gate Voltage Drain Current (V _{DS} =80% rated voltage, V _{GS} =0 V) (V _{DS} =80% rated V _{DS} , V _{GS} =0 V, T _A =125 °C)		I_{DSS}	---	---	25 250	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 80% rated V _{DS} Rated I _D	Q_g Q_{gs} Q_{gd}	82 20 24	240 30 130	330 108 176	nC
Turn on Delay Time Rise Time Turn Off Delay Time Fall Time	V _{DD} =50% rated V _{DS} I _D =50A R _G =10Ω 0 ≤ V _{GS} < 10	t_{d(on)} t_r t_{d(off)} t_f	---	40 50 125 65	150 900 700 500	nsec
Diode Forward Voltage (I _S =rated I _D , V _{GS} =0 V, T _J =25 °C)		V_{SD}	0.6	---	1.8	V
Diode Reverse Recovery Time Reverse Recovery Charge	T _J =25 °C I _F =10 A di/dt=100 A/μsec	t_{rr} Q_{RR}	---	300 ---	600 ---	nsec μC
Input Capacitance Output Capacitance Reverse Transfer Capacitance	V _{GS} =0 Volts V _{DS} =25 Volts f= 1 MHz	C_{iss} C_{oss} C_{rss}	---	---	---	pF

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