



PRELIMINARY

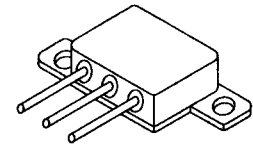
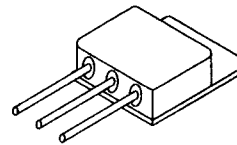
SOLID STATE DEVICES, INC14849 Firestone Boulevard · La Mirada, CA 90638
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424**Designer's Data Sheet****FEATURES:**

- Hermetically Sealed, Isolated Package
- Ceramic Seals
- Available with formed leads
- TX, TXV and S Level
- Replaces: FRK9160, 2N7328
- 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

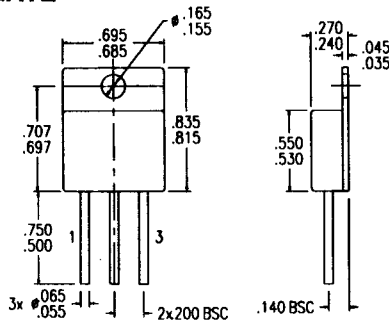
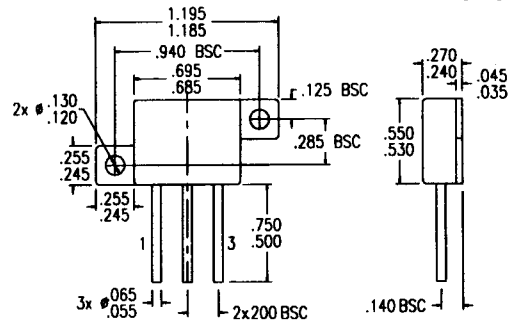
SFFR9160N
SFFD9160P**-40 AMP**
-100 VOLTS
0.085 Ω**RADIATION HARDENED**
P-CHANNEL MOSFET
SFFR9160N: 100KRad(Si) Gamma
SFFD9160N: 10KRad (Si) Gamma

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	40	Amps
Operating and Storage Temperature	Top & Tstg	-55 to +150	°C
Thermal Resistance, Junction to Case	R _{θJC}	0.42	°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 #: FR0013 A****MED**

SFFR9160N SFFD9160P

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 =60% Rated ID)		R _{DS(on)}	---	---	0.085	Ω
On State Drain Current (V _{DS} > I _{D(on)} X R _{DS(on)} Max, V _{GS} =10 V)		I _{D(on)}	40	---	---	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 ID)		g _{fs}	T.B.D	T.B.D.	---	S(τ)
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 ID	Q _g Q _{gs} Q _{gd}	86 19 34	170 25 80	346 78 138	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	---	65 80 180 100	150 900 700 500	nsec
Diode Forward Voltage (I _S =rated ID, V _{GS} =0 V, T _J =25°C)		V _{SD}	0.6	---	2	V
Diode Reverse Recovery Time Reverse Recovery Charge	T _J =25°C I _F =10 A	t _{rr} Q _{RR}	---	200 ---	500 ---	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.