



PRELIMINARY

SOLID STATE DEVICES, INC

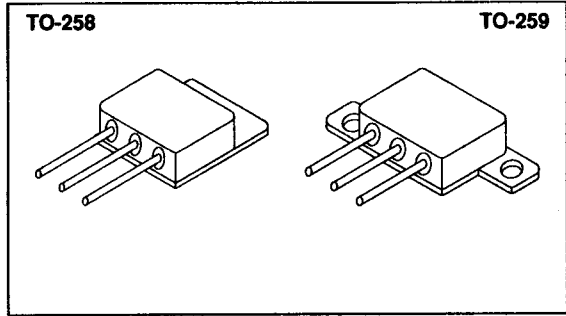
14849 Firestone Boulevard · La Mirada, CA 90638
Phone: (714) 670-SSDI (7734) · Fax: (714) 522-7424

SFFR9160N SFFD9160P

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

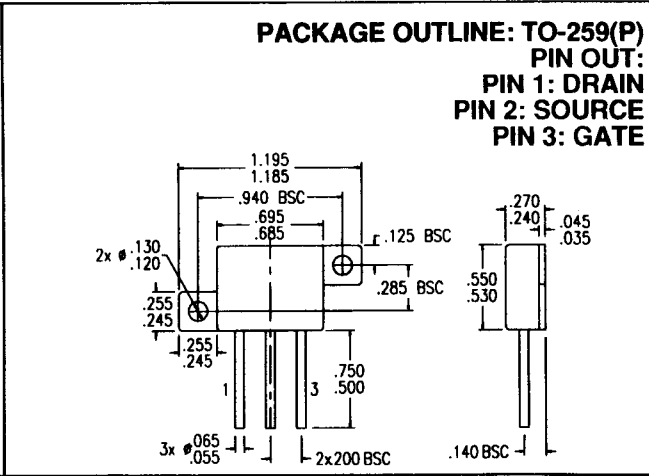
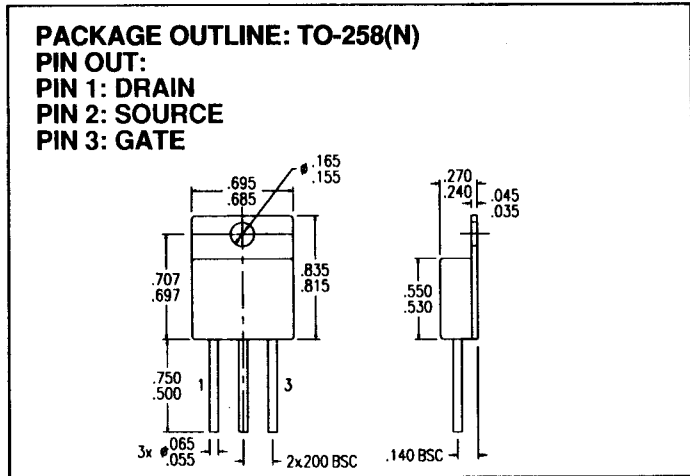
Designer's Data Sheet

- 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



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



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

DATA SHEET #: FR0013 A

MED

SFFR9160N SFFD9160P

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ELECTRICAL CHARACTERISTICS @ T_J=25 °C (Unless Otherwise Specified)

RATING		SYMBOL	MIN	TYP	MAX	UNIT
Drain to Source Breakdown Voltage (VGS=0 V, ID=250µA)		BVDSS	100	---	---	V
Drain to Source on State Resistance (VGS=10 V, ID=60% Rated ID)		RDS(on)	---	---	0.085	Ω
On State Drain Current (VDS > ID(on) X RDS(on) Max, VGS=10 V)		ID(on)	40	---	---	A
Gate Threshold Voltage (VDS=VGS, ID=250µA)		VGS(th)	2.0	---	4.0	V
Forward Transconductance (VDS > ID(on) X RDS(on) Max, IDS=60% rated ID)		gfs	T.B.D	T.B.D.	---	S(τ)
Zero Gate Voltage Drain Current (VDS=80% rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125° C)		IDSS	---	---	25 250.	µA
Gate to Source Leakage Forward Gate to Source Leakage Reverse	At rated VGS	IGSS	---	---	-100 +100	nA
Total Gate Charge Gate to Source Charge Gate to Drain Charge	VGS=10 Volts 80% rated VDS Rated ID	Qg Qgs Qgd	86 19 34	170 25 80	346 78 138	nC
Turn on Delay Time Rise Time Turn Off Delay Time Fall Time	VDD=50% rated VDS ID=50A RG=10Ω 0 < VGS < 10	td(on) tr td(off) tf	---	65 80 180 100	150 900 700 500	nsec
Diode Forward Voltage (IS=rated ID, VGS=0 V, T _J =25° C)		VSD	0.6	---	2	V
Diode Reverse Recovery Time Reverse Recovery Charge	T _J =25° C IF=10 A	trr QRR	---	200 ---	500 ---	nsec µC
Input Capacitance Output Capacitance Reverse Transfer Capacitance	VGS=0 Volts VDS=25 Volts f= 1 MHz	Ciss Coss Crss	---	---	---	pF

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