PRELIMINARY

SFFR160N
SFFD160P

SOLID STATE DEVICES, INC

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

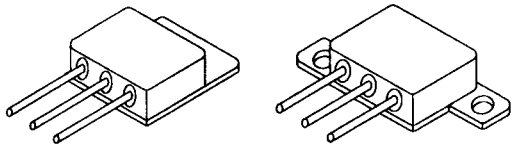
Designer's Data Sheet

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

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/cm^2
  B)Usable to 3E13 neutrons
- Single Event: typically survives 1E3 ions/cm^2 having an LET<35 MeV/mg/cm^2 and a range ≥ 30μm at 200 BVDSS

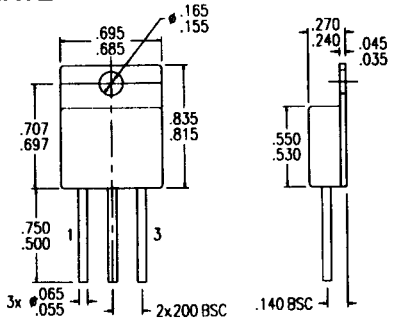
TO-258 TO-259



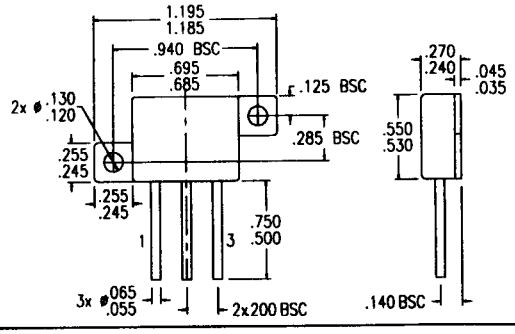
MAXIMUM RATINGS

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	$R_{\theta JC}$	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. SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: FR0011 A

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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)		BV_{DSS}	100	---	---	V
Drain to Source on State Resistance (VGS=10 V, ID=42 A		$R_{DS(on)}$	---	---	0.040	Ω
On State Drain Current (VDS >ID(on) X RDS(on) Max, VGS=10 V		$I_{D(on)}$	50	---	---	A
Gate Threshold Voltage (VDS=VGS, ID=250μA)		$V_{GS(th)}$	2.0	---	4.0	V
Forward Transconductance (VDS >ID(on) X RDS(on) Max, IDS=60% rated ID)		g_{fs}	---	---	---	S(℧)
Zero Gate Voltage Drain Current (VDS=80% rated voltage, VGS=0 V) (VDS=80% rated VDS, VGS=0 V, TA=125°C)		I_{DSS}	--- ---	--- ---	25 250	μA
Gate to Source Leakage Forward **Gate to Source Leakage Reverse**	At rated VGS	I_{GSS}	--- ---	--- ---	+100 -100	nA
Total Gate Charge **Gate to Source Charge** **Gate to Drain Charge**	VGS=10 Volts 80% rated VDS Rated ID	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**	VDD=50% rated VDS ID=50A RG=10Ω 0≤VGS<10	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	--- --- --- ---	40 50 125 65	150 900 700 500	nsec
Diode Forward Voltage (IS=rated ID, VGS=0 V, TJ=25°C)		V_{SD}	0.6	---	1.8	V
Diode Reverse Recovery Time **Reverse Recovery Charge**	TJ=25°C IF=10 A di/dt=100 A/μsec	t_{rr} Q_{RR}	--- ---	300 ---	600 ---	nsec μC
Input Capacitance **Output Capacitance** **Reverse Transfer Capacitance**	VGS=0 Volts VDS=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.