HARRIS SEMICONDUCTOR

2N7282D, 2N7282R 2N7282H

REGISTRATION PENDING
Currently Available as FRS430 (D, R, H)
December 1992

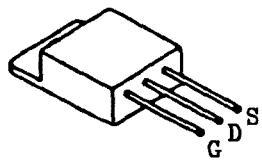
Radiation Hardened N-Channel Power MOSFETs

Features

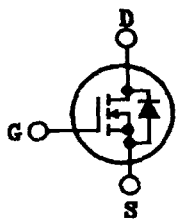
- 3A, 500V, RDS(on) = 2.52Ω
- Second Generation Rad Hard MOSFET Results From New Design Concepts
- Gamma
  - Meets Pre-Rad Specifications to 100KRAD(Si)
  - Defined End Point Specs at 300KRAD(Si) and 1000KRAD(Si)
  - Performance Permits Limited Use to 3000KRAD(Si)
- Gamma Dot
  - Survives 3E9RAD(Si)/sec at 80% BVDSS Typically
  - Survives 2E12 Typically If Current Limited to IDM
- Photo Current - 8.0nA Per-RAD(Si)/sec Typically
- Neutron
  - Pre-RAD Specifications for 3E12 Neutrons/cm^2
  - Usable to 3E13 Neutrons/cm^2
- Single Event - Typically Survives 1E5ions/cm^2 Having an LET ≤ 35MeV/mg/cm^2 and a Range ≥ 30μm at 80% BVDSS

Package

TO-257AA



Symbol



Description

The Harris Semiconductor Sector has designed a series of SECOND GENERATION hardened power MOSFETs of both N and P channel enhancement types with ratings from 100V to 500V, 1A to 60A, and on resistance as low as 25mΩ. Total dose hardness is offered at 100K RAD(Si) and 1000KRAD(Si) with neutron hardness ranging from 1E13n/cm^2 for 500V product to 1E14n/cm^2 for 100V product. Dose rate hardness (GAMMA DOT) exists for rates to 1E9 without current limiting and 2E12 with current limiting. Heavy ion survival from signal event drain burn-out exists for linear energy transfer (LET) of 35 at 80% of rated voltage.

This MOSFET is an enhancement-mode silicon-gate power field effect transistor of the vertical DMOS (VDMOS) structure. It is specially designed and processed to exhibit minimal characteristic changes to total dose (GAMMA) and neutron (n°) exposures. Design and processing efforts are also directed to enhance survival to heavy ion (SEE) and/or dose rate (GAMMA DOT) exposure.

This part may be supplied as a die or in various packages other than shown above. Reliability screening is available as either non TX (commercial), TX equivalent of MIL-S-19500, TXV equivalent of MIL-S-19500, or space equivalent of MIL-S-19500. Contact the Harris Semiconductor High-Reliability Marketing group for any desired deviations from the data sheet.

Absolute Maximum Ratings (TC = +25°C) Unless Otherwise Specified

		2N7282D, R, H	UNITS
Drain-Source Voltage	VDS	500	V
Drain-Gate Voltage (RGS = 20kΩ)	VDGR	500	V
Continuous Drain Current			
TC = +25°C	ID	3	A
TC = +100°C	ID	2	A
Pulsed Drain Current	IDM	9	A
Gate-Source Voltage	VGS	±20	V
Maximum Power Dissipation			
TC = +25°C	PT	50	W
TC = +100°C	PT	20	W
Derated Above +25°C		0.40	W/°C
Inductive Current, Clamped, L = 100μH, (See Test Figure)	ILM	9	A
Continuous Source Current (Body Diode)	IS	3	A
Pulsed Source Current (Body Diode)	ISM	9	A
Operating And Storage Temperature	TJC, TSTG	-55 to +150	°C
Lead Temperature (During Soldering)			
Distance > 0.063 in. (1.6mm) From Case, 10s Max	TL	300	°C

12 TRANSISTORS

CAUTION: These devices are sensitive to electrostatic discharge. Users should follow proper I.C. Handling Procedures.

File Number 3253