

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

## Designer's Data Sheet

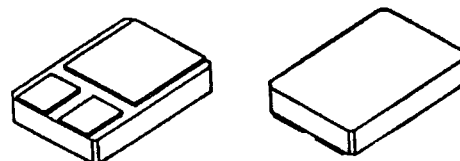
### FEATURES:

- Rugged construction with poly silicon gate
- Low RDS(on) and high transconductance
- Excellent high temperature stability
- Very fast switching speed
- Fast recovery and superior dv/dt performance
- Increased reverse energy capability
- Low input and transfer capacitance for easy paralleling
- Hermetically sealed power surface mount package
- TX, TXV and Space Level screening available
- Replaces: IRF140 Types

**SFF140**

**28 AMP  
100 VOLT  
0.077  $\Omega$   
N-CHANNEL  
POWER MOSFET**

### MILPACK



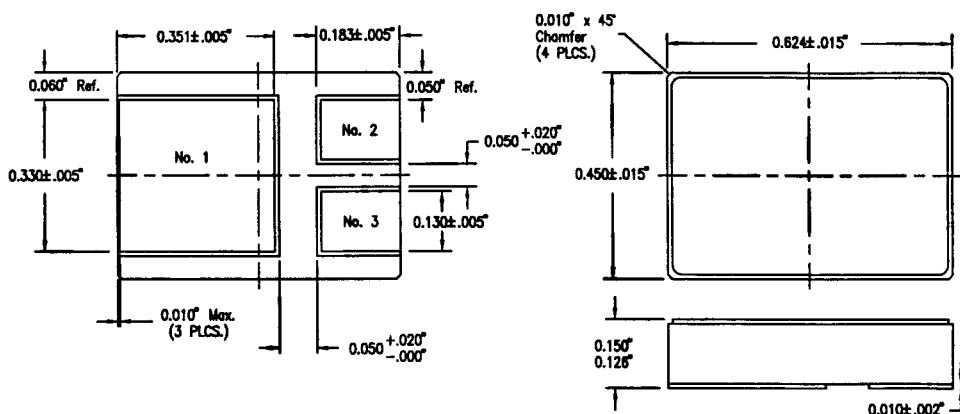
### MAXIMUM RATINGS:

| CHARACTERISTIC                                                                                             | SYMBOL          | VALUE       | UNIT                 |
|------------------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| Drain to Source Voltage                                                                                    | $V_{DS}$        | 100         | Volts                |
| Gate to Source Voltage                                                                                     | $V_{GS}$        | $\pm 20$    | Volts                |
| Continuous Drain Current                                                                                   | $I_D$           | 28          | Amps                 |
| Operating and Storage Temperature                                                                          | Top & Tstg      | -55 to +175 | $^{\circ}\text{C}$   |
| Thermal Resistance, Junction to Case                                                                       | $R_{\theta JC}$ | 1.7         | $^{\circ}\text{C/W}$ |
| Total Device Dissipation @ $T_C=25^{\circ}\text{C}$<br>Total Device Dissipation @ $T_C=55^{\circ}\text{C}$ | $P_D$           | 74<br>56    | Watts                |

### PACKAGE OUTLINE: MILPACK

#### 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 #: F00037 C**

**MED**

**ELECTRICAL CHARACTERISTICS @  $T_J=25^\circ\text{C}$  (Unless Otherwise Specified)**

| RATING                                                                                                                                                                       |                                                                                  | SYMBOL                                    | MIN        | TYP                  | MAX                   | UNIT                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|------------|----------------------|-----------------------|-----------------------|
| Drain to Source Breakdown Voltage<br>( $V_{GS}=0\text{ V}$ , $I_D=250\mu\text{A}$ )                                                                                          |                                                                                  | $BV_{DSS}$                                | 100        | ---                  | ---                   | V                     |
| Drain to Source on State Resistance<br>( $V_{GS}=10\text{ V}$ , $I_D=60\%$ Rated ID)                                                                                         |                                                                                  | $R_{DS(on)}$                              | ---        | 0.06                 | 0.077                 | $\Omega$              |
| On State Drain Current<br>( $V_{DS} > I_D(on) \times R_{DS(on)}$ Max, $V_{GS}=10\text{ V}$ )                                                                                 |                                                                                  | $I_D(on)$                                 | 28         | ---                  | ---                   | A                     |
| Gate Threshold Voltage<br>( $V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$ )                                                                                                         |                                                                                  | $V_{GS(th)}$                              | 2.0        | 2.4                  | 4.0                   | V                     |
| Forward Transconductance<br>( $V_{DS} > I_D(on) \times R_{DS(on)}$ Max,<br>$I_{DS}=60\%$ rated ID)                                                                           |                                                                                  | $g_{fs}$                                  | 8.7        | 13                   | ---                   | S( $\Omega$ )         |
| Zero Gate Voltage Drain Current<br>( $V_{DS}=\text{max rated voltage}$ , $V_{GS}=0\text{ V}$ )<br>( $V_{DS}=80\%$ rated VDS, $V_{GS}=0\text{ V}$ , $T_A=150^\circ\text{C}$ ) |                                                                                  | $I_{DSS}$                                 | ---        | ---                  | 250<br>1000           | $\mu\text{A}$         |
| Gate to Source Leakage Forward<br>Gate to Source Leakage Reverse                                                                                                             | At rated VGS                                                                     | $I_{GSS}$                                 | ---        | ---                  | 100<br>-100           | nA                    |
| Total Gate Charge<br>Gate to Source Charge<br>Gate to Drain Charge                                                                                                           | $V_{GS}=10\text{ Volts}$<br>50% rated VDS<br>Rated ID                            | $Q_g$<br>$Q_{gs}$<br>$Q_{gd}$             | ---        | 40<br>8<br>19        | 60<br>12<br>28        | nC                    |
| Turn on Delay Time<br>Rise Time<br>Turn Off Delay Time<br>Fall Time                                                                                                          | $V_{DD}=50\%$<br>rated VDS<br>rated ID<br>$R_G=9.1\Omega$                        | $t_d(on)$<br>$t_r$<br>$t_d(off)$<br>$t_f$ | ---        | 15<br>72<br>40<br>50 | 23<br>110<br>60<br>75 | nsec                  |
| Diode Forward Voltage<br>( $I_S=\text{rated ID}$ , $V_{GS}=0\text{ V}$ , $T_J=25^\circ\text{C}$ )                                                                            |                                                                                  | $V_{SD}$                                  | ---        | 1.3                  | 2.5                   | V                     |
| Diode Reverse Recovery Time<br>Reverse Recovery Charge                                                                                                                       | $T_J=25^\circ\text{C}$<br>$I_F=10\text{A}$<br>$di/dt=100\text{ A}/\mu\text{sec}$ | $t_{rr}$<br>$Q_{RR}$                      | 70<br>0.44 | 150<br>0.91          | 300<br>1.9            | nsec<br>$\mu\text{C}$ |
| Input Capacitance<br>Output Capacitance<br>Reverse Transfer Capacitance                                                                                                      | $V_{GS}=0\text{ Volts}$<br>$V_{DS}=25\text{ Volts}$<br>$f=1\text{ MHz}$          | $C_{iss}$<br>$C_{oss}$<br>$C_{rss}$       | ---        | 1500<br>500<br>90    | ---                   | pF                    |

SAFE OPERATING AREA (S.O.A.)  
 $T_C = 25^\circ\text{C}$ , D.C. CONDITION