

## Features

- Load Switch for Portable Devices
- DC/DC Converter
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

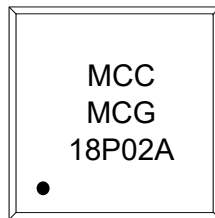
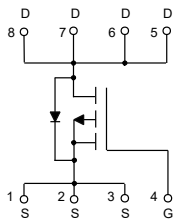
## Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 2.4°C/W Junction to Case

| Parameter                             | Symbol   | Rating | Unit |
|---------------------------------------|----------|--------|------|
| Drain -source Voltage                 | $V_{DS}$ | -20    | V    |
| Gate -Source Voltage                  | $V_{GS}$ | ±8     | V    |
| Continuous Drain Current              | $I_D$    | -18    | A    |
| Continuous Source-Drain Diode Current | $I_S$    | -18    | A    |
| Total Power Dissipation               | $P_D$    | 52     | W    |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

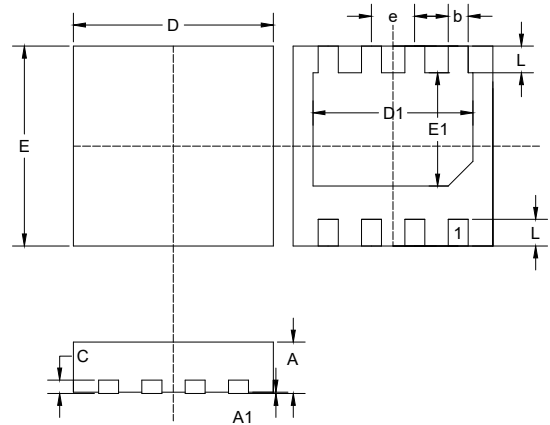
## Internal Structure and Marking Code



Pin1

# P-Channel MOSFET

## DFN3030-8



| DIM | DIMENSIONS |       |      |      | NOTE |
|-----|------------|-------|------|------|------|
|     | INCHES     |       | MM   |      |      |
|     | MIN        | MAX   | MIN  | MAX  |      |
| A   | 0.028      | 0.031 | 0.70 | 0.80 |      |
| A1  | 0.0008     |       | 0.02 |      | TYP. |
| b   | 0.010      | 0.014 | 0.25 | 0.35 |      |
| c   | 0.007      | 0.012 | 0.18 | 0.30 |      |
| D   | 0.116      | 0.121 | 2.95 | 3.07 |      |
| E   | 0.116      | 0.121 | 2.95 | 3.07 |      |
| D1  | 0.091      | 0.098 | 2.30 | 2.50 |      |
| E1  | 0.063      | 0.071 | 1.60 | 1.80 |      |
| L   | 0.012      | 0.020 | 0.30 | 0.50 |      |
| e   | 0.026      |       | 0.65 |      | TYP. |

**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

| Parameter   | Symbol        | Test Conditions  | Min   | Typ  | Max       | Unit       |
|---|---------------|--|-------|------|-----------|------------|
| <b>Static Characteristics</b>                     |               |  |       |      |           |            |
| Drain-Source Breakdown Voltage                    | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=-250\mu A$   | -20   |      |           | V          |
| Gate-Threshold Voltage                            | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=-250\mu A$                                     | -0.55 |      | -0.9      | V          |
| Gate-Body Leakage Current                         | $I_{GSS}$     | $V_{GS}=\pm 8V, V_{DS}=0V$   |       |      | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                   | $I_{DSS}$     | $V_{DS}=-20V, V_{GS}=0V$   |       |      | -1        | $\mu A$    |
| Drain-Source On-Resistance <sup>(Note 2)</sup>    | $R_{DS(on)}$  | $V_{GS}=-4.5V, I_D=-4.2A$  |       | 7.0  | 8.5       | m $\Omega$ |
|   |               | $V_{GS}=-2.5V, I_D=-3.2A$  |       | 8.0  | 11        |            |
|   |               | $V_{GS}=-1.8V, I_D=-2.2A$  |       | 10   | 14        |            |
| Forward Transconductance <sup>(Note 2)</sup>      | $g_{FS}$      | $V_{DS}=-5V, I_D=-4.1A$  | 6     |      |           | S          |
| <b>Dynamic Characteristics<sup>(Note 3)</sup></b> |               |  |       |      |           |            |
| Input Capacitance                                 | $C_{iss}$     | $V_{DS}=-10V, V_{GS}=0V, f=1MHz$                                   |       | 1255 |           | pF         |
| Output Capacitance                                | $C_{oss}$     |  |       | 220  |           |            |
| Reverse Transfer Capacitance                      | $C_{rss}$     |  |       | 190  |           |            |
| Total Gate Charge                                 | $Q_g$         | $V_{DS}=-10V, V_{GS}=-10V, I_D=-8A$                                |       | 29   |           | nC         |
| Gate-Source Charge                                | $Q_{gs}$      |  |       | 5.2  |           |            |
| Gate-Drain Charge                                 | $Q_{gd}$      |  |       | 6.3  |           |            |
| Gate Resistance                                   | $R_g$         | $f=1MHz$   |       | 3.6  |           | $\Omega$   |
| Turn-On Delay Time                                | $t_{d(on)}$   | $V_{DD}=-4V, V_{GEN}=-4.5V, R_L=1.2\Omega, I_D=-3.3A, R_G=1\Omega$ |       | 230  |           | ns         |
| Turn-On Rise Time                                 | $t_r$         |  |       | 800  |           |            |
| Turn-Off Delay Time                               | $t_{d(off)}$  |  |       | 3000 |           |            |
| Turn-Off Fall Time                                | $t_f$         |  |       | 2000 |           |            |
| <b>Drain-Source Body Diode Characteristics</b>    |               |  |       |      |           |            |
| Continuous Source-Drain Diode Current             | $I_S$         | $T_C=25^\circ C$   |       |      | -18       | A          |
| Body Diode Voltage                                | $V_{SD}$      | $I_F=-8.2A$  |       | -0.8 | -1.2      | V          |

Note:

2. Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycles $\leq 2\%$ .

3. Guaranteed by Design, Not Subject to Production Testing.

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

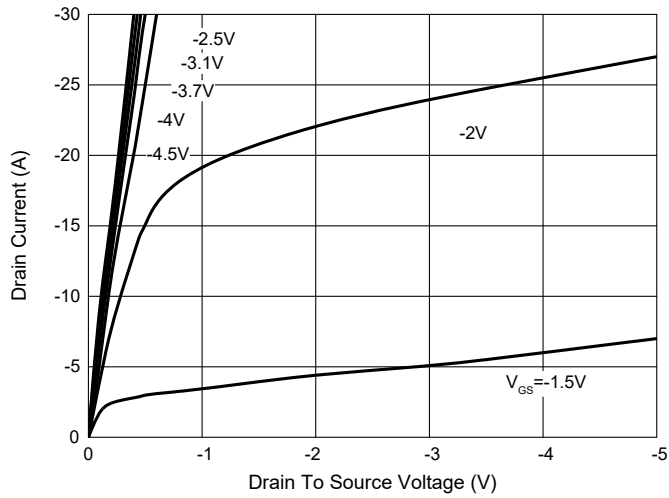


Fig. 2 - Normalized On Resistance Characteristics

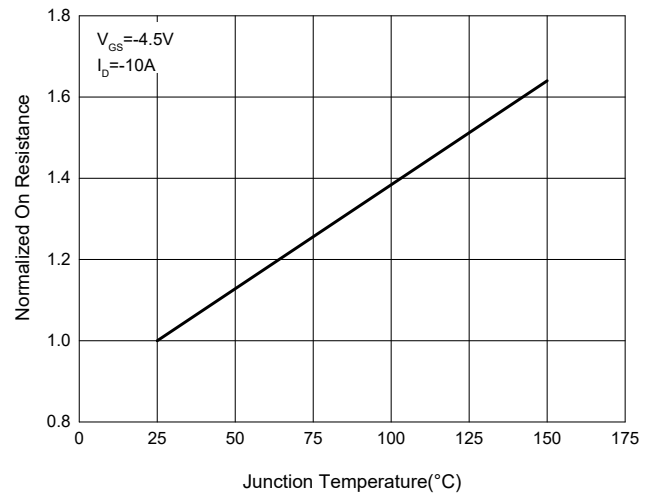


Fig. 3 - Transfer Characteristics

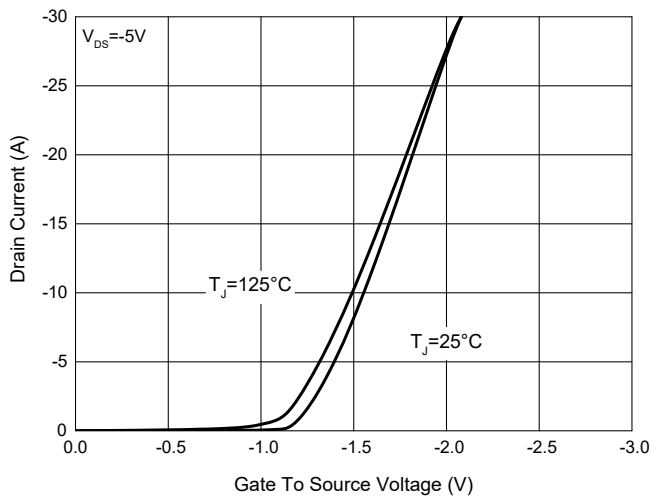


Fig. 4 - Total Gate Charge Characteristics

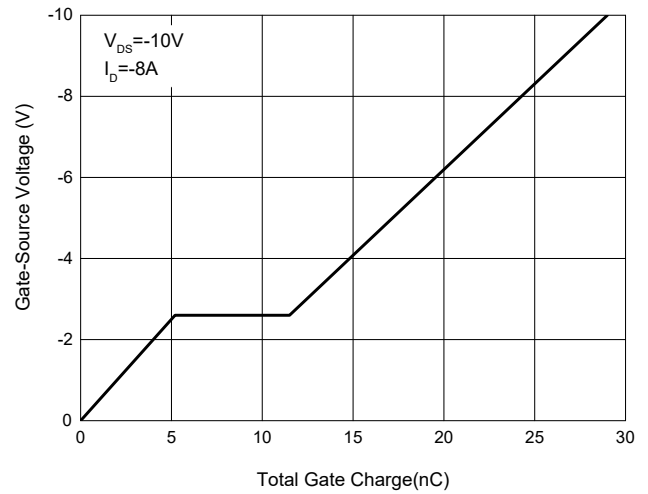


Fig. 5 -  $R_{DS(ON)} - I_D$

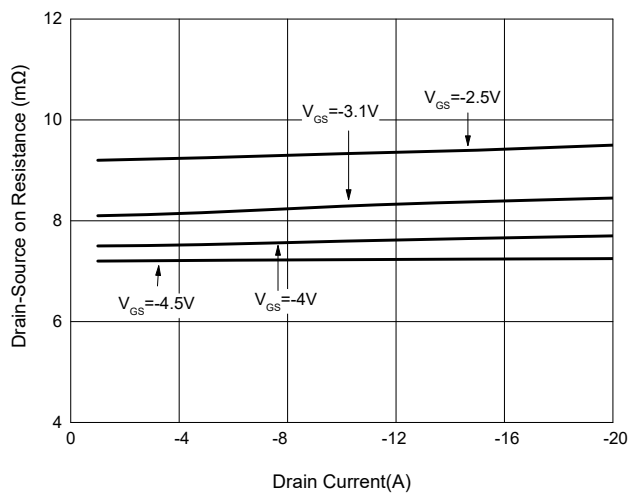
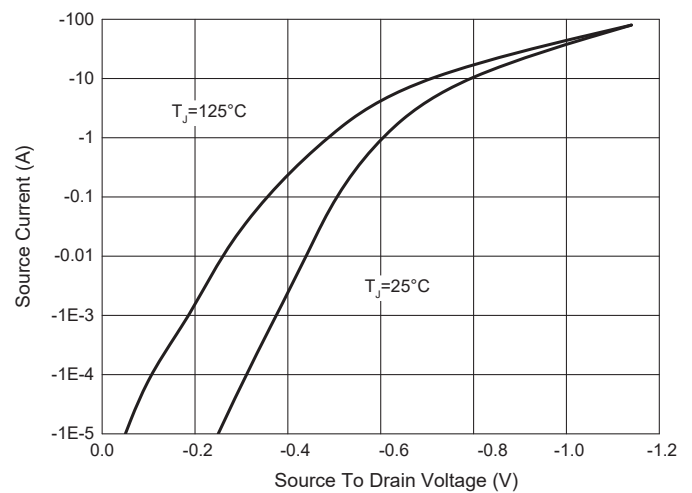


Fig. 6 -  $I_S - V_{SD}$



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

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