## Features

- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- Halogen Free. “Green” Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

# N-CHANNEL MOSFET

## Maximum Ratings

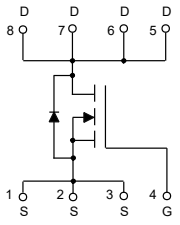
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 3°C/W Junction to Case (2)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 150 | V |
| Gate-Source Volltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ | 16 | A |
| Pulsed Drain Current (3) | $I_{DM}$ | 78 | A |
| Total Power Dissipation | $P_D$ | 41 | W |

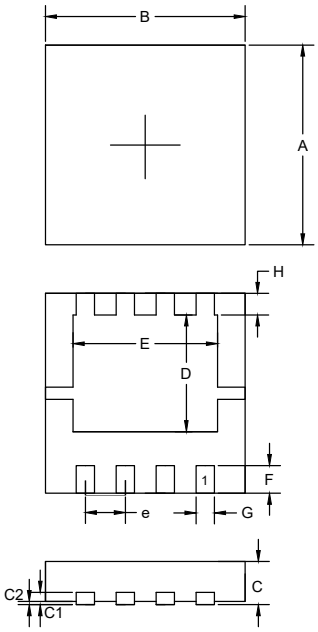
Note:

1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Surface Mounted on 1 $in^2$ Pad Area, t≤10 sec.
3. Pulse Test: Pulse Width≤300μs,Duty Cycle ≤2%.

## Internal Structure




DFN3333




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | 0.126 | 0.130 | 3.20 | 3.30 | |
| B | 0.126 | 0.130 | 3.20 | 3.30 | |
| C | 0.030 | 0.033 | 0.75 | 0.85 | |
| C1 | 0.007 | 0.009 | 0.18 | 0.22 | |
| C2 | --- | 0.002 | --- | 0.05 | |
| D | 0.071 | 0.079 | 1.80 | 2.00 | |
| E | 0.087 | 0.098 | 2.20 | 2.50 | |
| F | 0.016 | 0.020 | 0.40 | 0.50 | |
| G | 0.010 | 0.014 | 0.25 | 0.35 | |
| H | 0.012 | 0.016 | 0.30 | 0.40 | |
| e | 0.024 | 0.028 | 0.60 | 0.70 | |

## Electrical Characteristics @ 25°C (Unless Otherwise Specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 150 | | | V |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$ =±20V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=120V, $V_{GS}$=0V | | | 1 | μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 2 | | 4 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=20A | | 41 | 52 | mΩ |
| | | $V_{GS}$=6V, $I_D$=5A | | 47 | 59 | mΩ |
| **Diode Characteristics** | | | | | | |
| Continuous Body Diode Current | $I_S$ | | | | 16 | A |
| Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V, $I_S$=10A | | | 1.3 | V |
| Reverse Recovery Time | $t_{rr}$ | $I_S$=7A,di/dt=100A/μs | | 64 | | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | | 192 | | nC |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=75V,$V_{GS}$=0V,f=1MHz | | 1231 | | pF |
| Output Capacitance | $C_{oss}$ | | | 80 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 30 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=75V,$V_{GS}$=10V,$I_D$=10A | | 25.8 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 7.7 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 7.9 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DS}$=75V, $V_{GEN}$=10V, $R_G$=4.5Ω, $R_L$=7.5Ω, $I_{DS}$=10A | | 7.8 | | ns |
| Turn-On Rise Time | $t_r$ | | | 19.7 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 17.3 | | |
| Turn-Off Fall Time | $t_f$ | | | 18.5 | | |

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

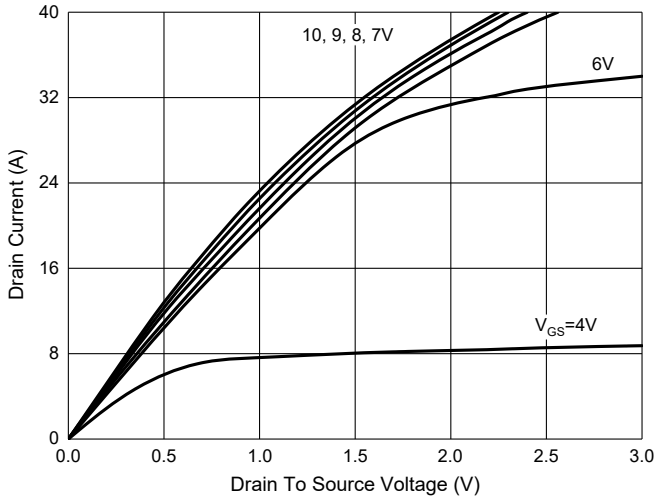



Fig. 2 - $I_S$—$V_{SD}$

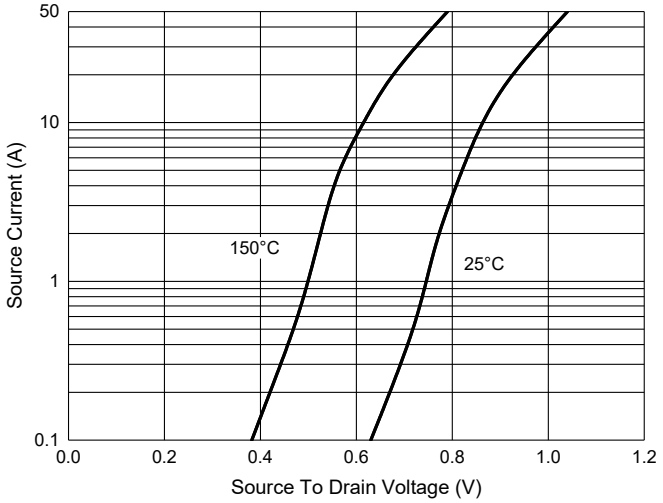



Fig. 3 - $R_{DS(ON)}$—$I_D$

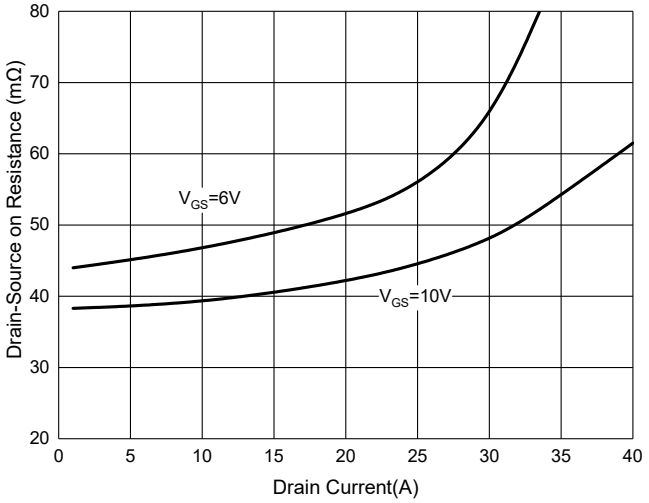



Fig. 4 - Normalized On Resistance Characteristics

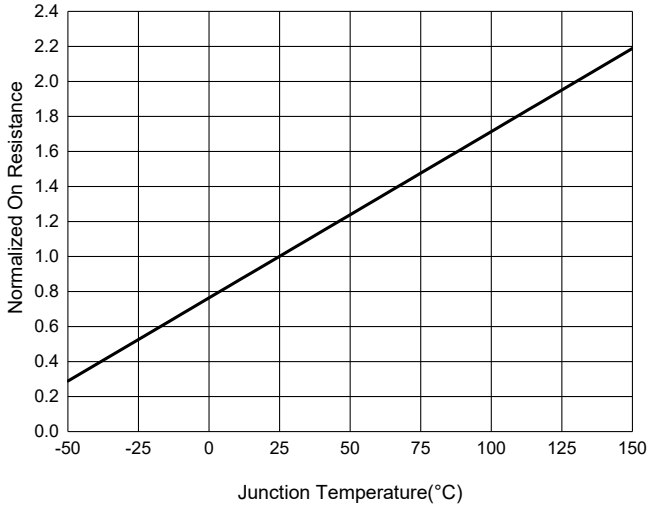



Fig. 5 - Capacitance Characteristics

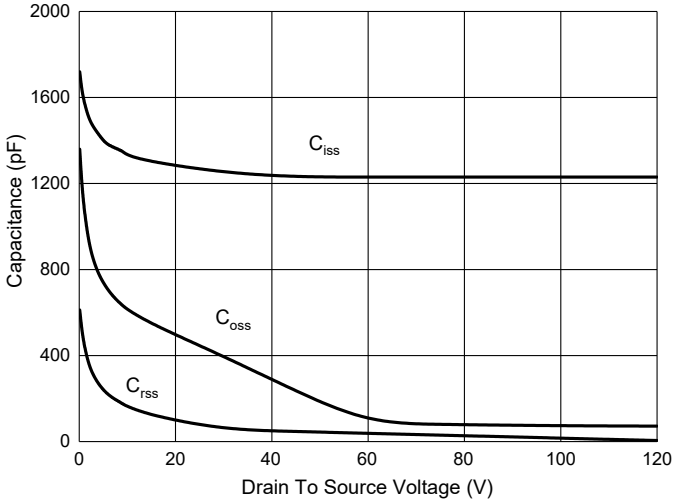
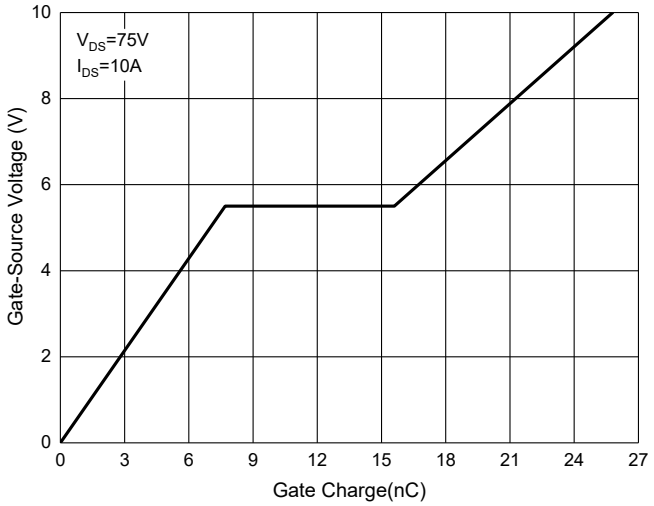
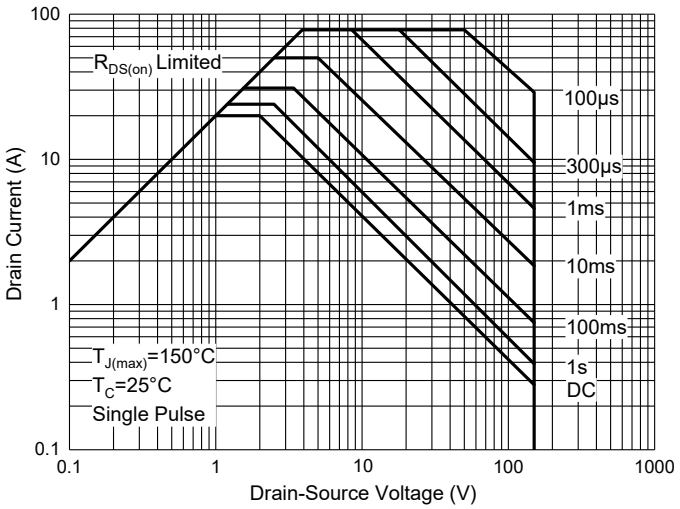



Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

| Device | Packing |
|---|---|
| Part Number-TP | Tape&Reel: 5Kpcs/Reel |

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Micro Commercial Components (MCC):

MCG16N15-TP