## Features

- High Density Cell Design for Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

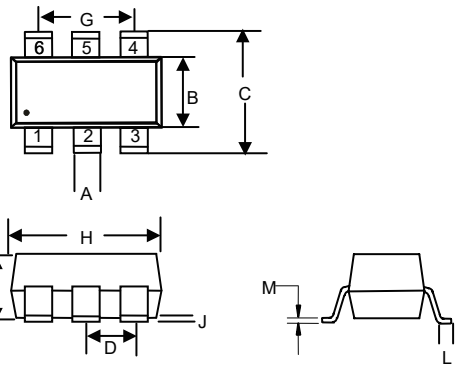
# Dual N&P-Channel MOSFET

## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Case

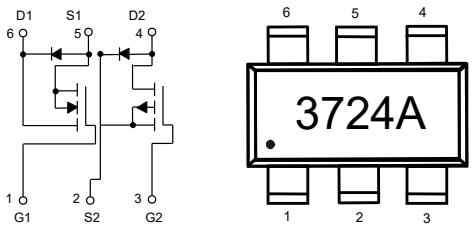
| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Total Power Dissipation | $P_D$ | 2 | W |
| **N-Channel** | | | |
| Drain-Source Voltage | $V_{DS}$ | 30 | V |
| Gate-Source Volltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ | 4.5 | A |
| **P-Channel** | | | |
| Drain-Source Voltage | $V_{DS}$ | -30 | V |
| Gate-Source Volltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ | -3.5 | A |

SOT23-6L




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | 0.012 | 0.020 | 0.30 | 0.50 | |
| B | 0.051 | 0.070 | 1.30 | 1.80 | |
| C | 0.087 | 0.126 | 2.20 | 3.20 | |
| D | 0.037 | | 0.95 | | TYP. |
| G | 0.074 | | 1.90 | | TYP. |
| H | 0.106 | 0.122 | 2.70 | 3.10 | |
| J | 0.002 | 0.006 | 0.05 | 0.15 | |
| K | 0.030 | 0.051 | 0.75 | 1.30 | |
| L | 0.012 | 0.024 | 0.30 | 0.60 | |
| M | 0.003 | 0.008 | 0.08 | 0.22 | |

## Internal Structure and Marking Code



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

**N-Channel**

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 30 | | | V |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$ =±20V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=30V, $V_{GS}$=0V | | | 1 | μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 1.0 | 1.5 | 2.5 | V |
| Drain-Source On-Resistance(Note1) | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=3A | | | 35 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=2A | | | 50 | mΩ |
| **Diode Characteristics** | | | | | | |
| Diode Forward Voltage(Note1) | $V_{SD}$ | $V_{GS}$=0V, $I_S$=1A | | | 1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | $I_{SD}$=3.6 A, $dI_{SD}/dt$=100A/μs | | 17.3 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 1.66 | | nC |
| **Dynamic Characteristics(Note2)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=10V,$V_{GS}$=0V,f=1MHz | | 315 | | pF |
| Output Capacitance | $C_{oss}$ | | | 59 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 48 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$V_{GS}$=15V,$I_D$=3.6A | | 6.08 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.26 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 1.32 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=10V,$V_{DS}$=15V, $R_{GEN}$=3Ω,$R_L$=4.1Ω | | 3.8 | | ns |
| Turn-On Rise Time | $t_r$ | | | 23.2 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 7 | | |
| Turn-Off Fall Time | $t_f$ | | | 18.6 | | |

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

**P-Channel**

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=-250μA | -30 | | | V |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$ =±20V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-30V, $V_{GS}$=0V | | | -1 | μA |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250μA | -1.0 | -1.5 | -2.5 | V |
| Drain-Source On-Resistance(Note1) | $R_{DS(on)}$ | $V_{GS}$=-10V, $I_D$=-3A | | | 90 | mΩ |
| | | $V_{GS}$=-4.5V, $I_D$=-2A | | | 115 | mΩ |
| **Diode Characteristics** | | | | | | |
| Diode Forward Voltage(Note1) | $V_{SD}$ | $V_{GS}$=0V, $I_S$=-1A | | | -1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | $I_{SD}$=-3 A, $dI_{SD}/dt$=100A/μs | | 25 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 3.8 | | nC |
| **Dynamic Characteristics(Note2)** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=-10V,$V_{GS}$=0V,f=1MHz | | 365 | | pF |
| Output Capacitance | $C_{oss}$ | | | 59 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 45 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-10V,$V_{GS}$=-15V,$I_D$=-3A | | 7.5 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.7 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 1.2 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}$=-10V,$V_{DS}$=-15V, $R_{GEN}$=2.5Ω,$I_{DS}$=-1A | | 3.2 | | ns |
| Turn-On Rise Time | $t_r$ | | | 17.8 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 18 | | |
| Turn-Off Fall Time | $t_f$ | | | 23.5 | | |

Notes:

1. Pulse Test: Pulse Width=300μs,Duty Cycle≤2%.
2. These Parameters Have No Way To Verify.

## Curve Characteristics (N-Channel)

Fig. 1 - Output Characteristics

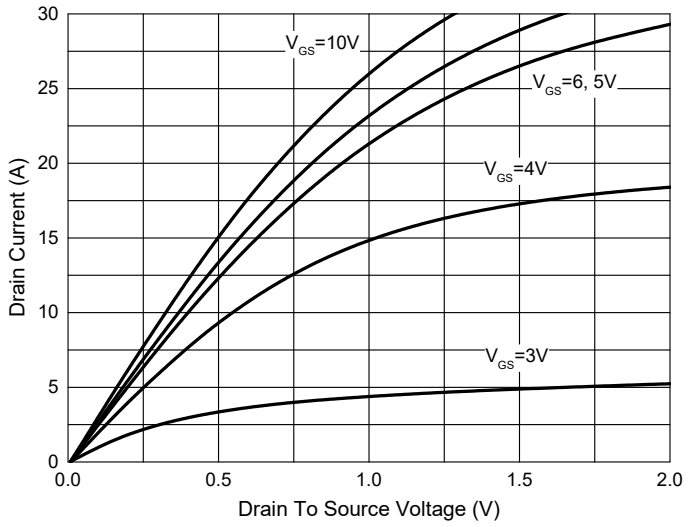



Fig. 2 - Transfer Characteristics

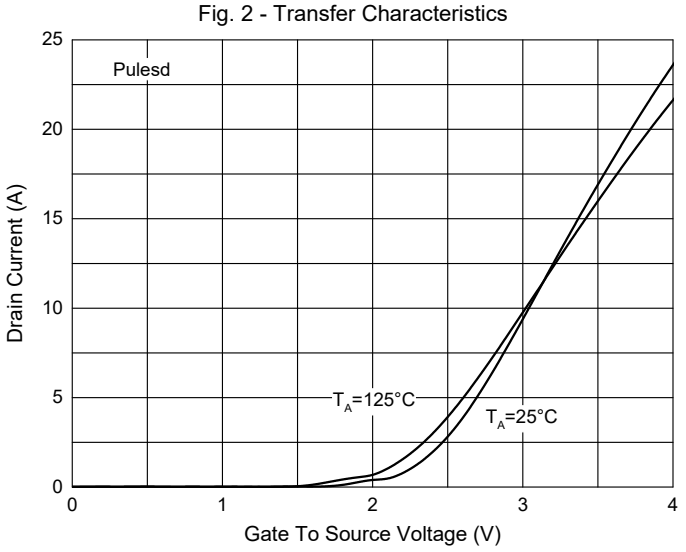



Fig. 3 - $R_{DS(ON)}$—$I_D$

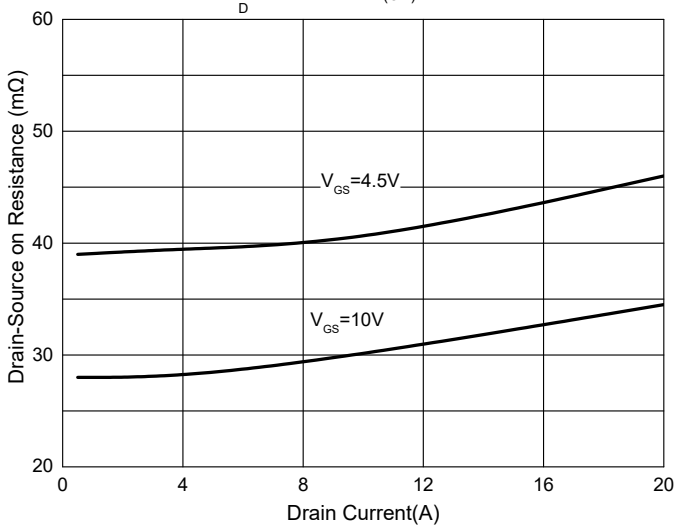



Fig. 4 - Normalized On Resistance Characteristics

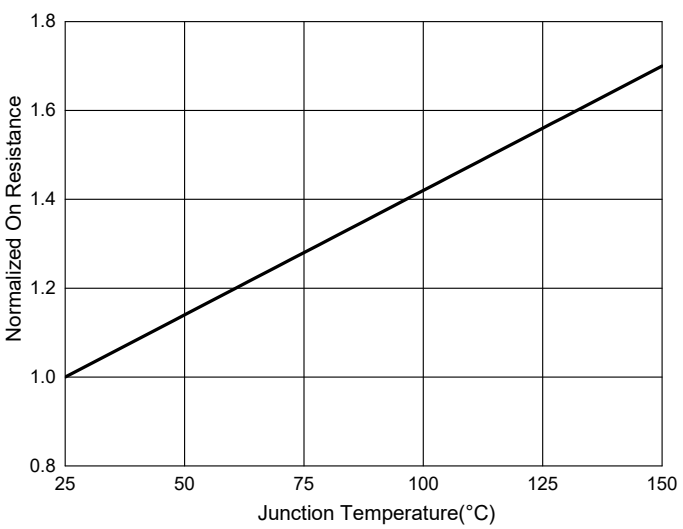



Fig. 5 - Gate Charge

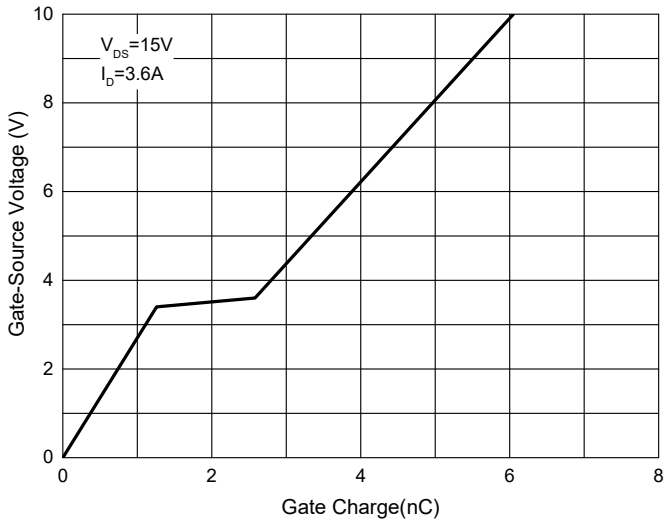
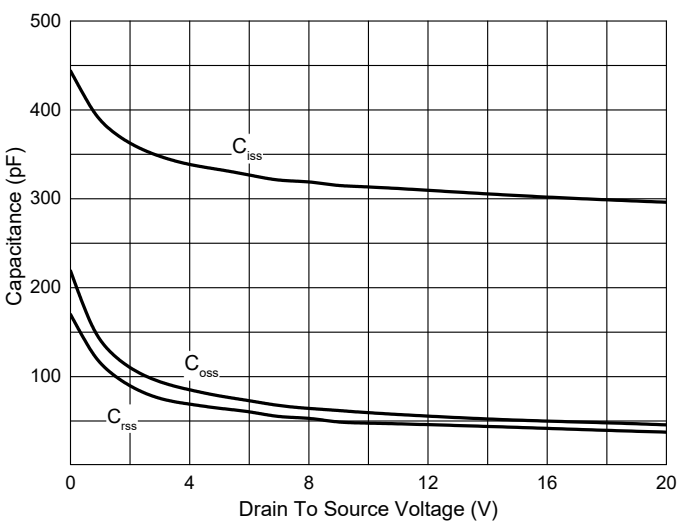



Fig. 6 - Capacitance Characteristics



## Curve Characteristics (P-Channel)

Fig. 7 - Output Characteristics

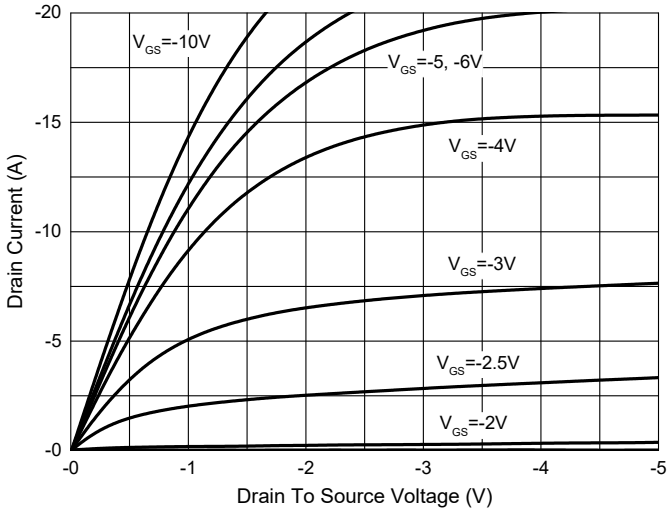



Fig. 8 - Transfer Characteristics

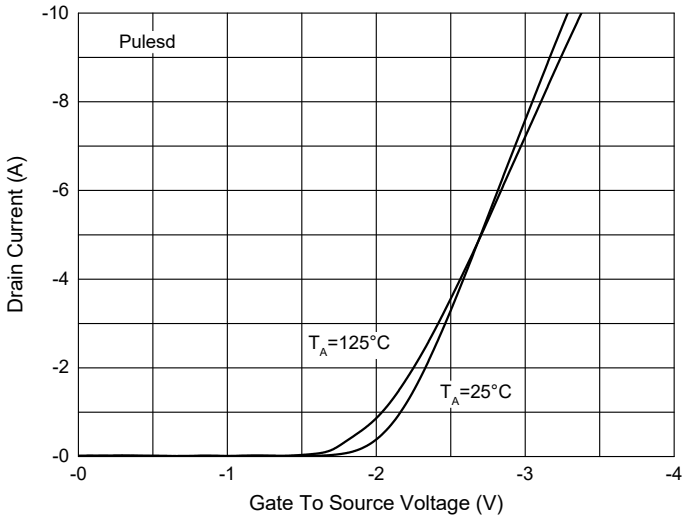



Fig. 9 - $R_{DS(ON)}$—$I_D$

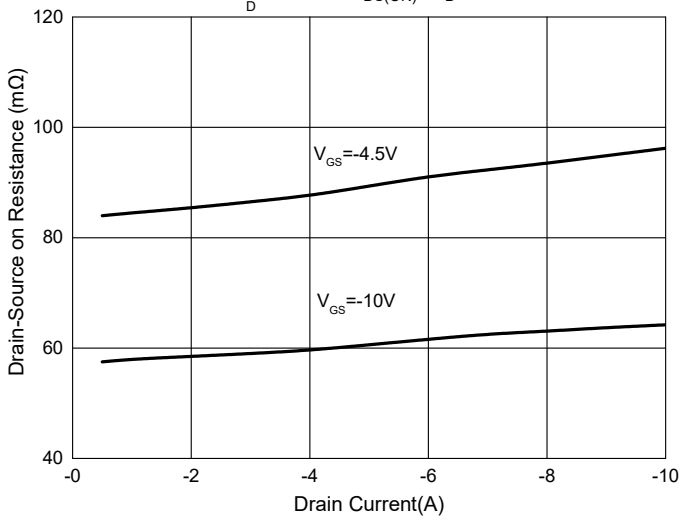



Fig. 10 - Normalized On Resistance Characteristics

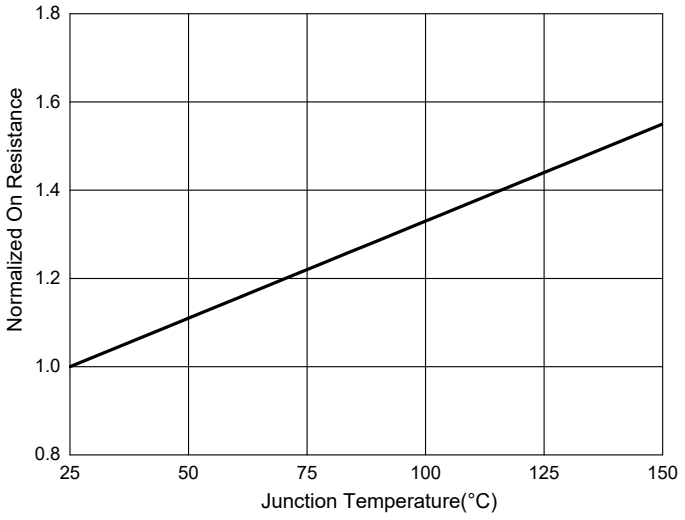



Fig. 11 - Gate Charge

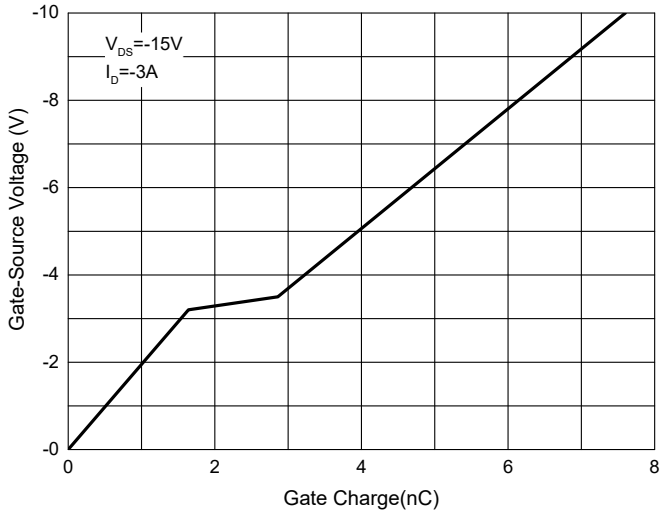
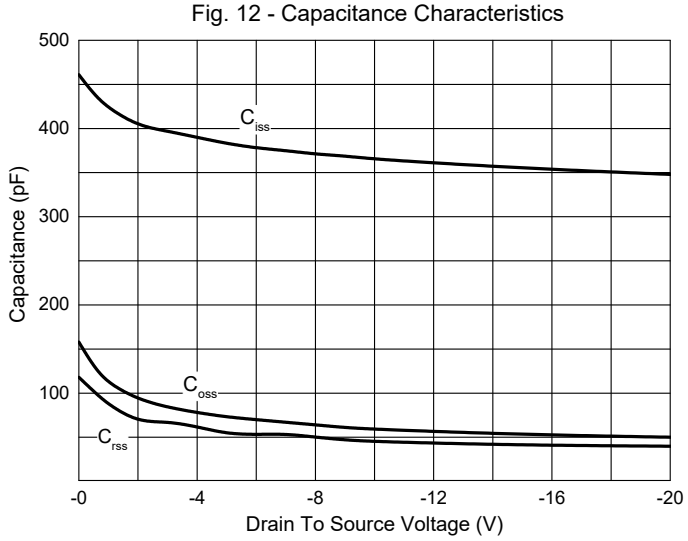



Fig. 12 - Capacitance Characteristics



## Ordering Information

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

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

单击下面可查看定价，库存，交付和生命周期等信息

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