

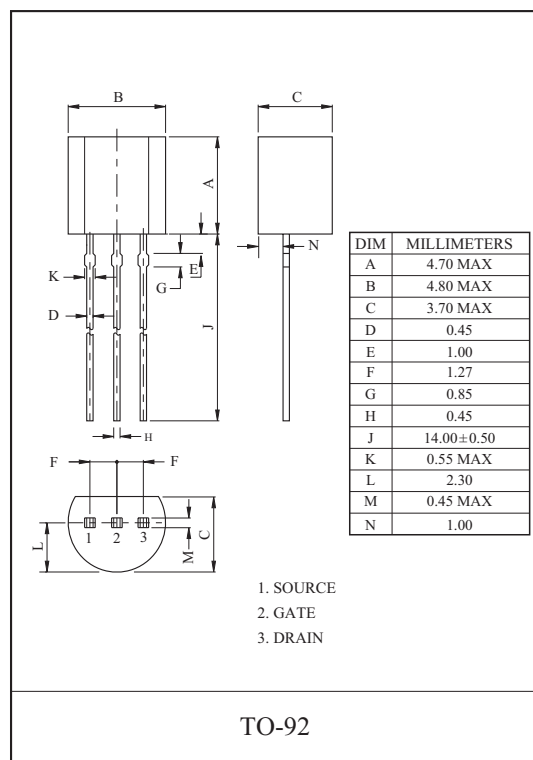
#### INTERFACE AND SWITCHING APPLICATION.

#### FEATURES

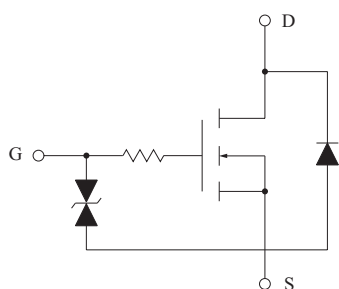
- High density cell design for low  $R_{DS(ON)}$ .
- Voltage controolled small signal switch.
- Rugged and reliable.
- High saturation current capablity.

#### MAXIMUM RATING ( $T_a=25^\circ\text{C}$ )

| CHARACTERISTIC                           |            | SYMBOL    | RATING   | UNIT |
|--|------------|-----------|----------|------|
| Drain-Source Voltage                     |            | $V_{DSS}$ | 60       | V    |
| Drain-Gate Voltage ( $R_{GS}=1M\Omega$ ) |            | $V_{DGR}$ | 60       | V    |
| Gate-Source Voltage                      |            | $V_{GSS}$ | $\pm 20$ | V    |
| Drain Current                            | Continuous | $I_D$     | 200      | mA   |
|  | Pulsed     | $I_{DP}$  | 500      |      |
| Drain Power Dissipation                  |            | $P_D$     | 400      | mW   |
| Junction Temperature                     |            | $T_j$     | 150      |      |
| Storage Temperature Range                |            | $T_{stg}$ | -55 150  |      |



#### EQUIVALENT CIRCUIT



THIS TRANSISTOR IS ELECTROSTATIC SENSITIVE DEVICE.  
PLEASE HANDLE WITH CAUTION.

#### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

| CHARACTERISTIC                  | SYMBOL     | TEST CONDITION           | MIN. | TYP. | MAX. | UNIT    |
|---------------------------------|------------|--------------------------|------|------|------|---------|
| Drain-Source Breakdown Voltage  | $BV_{DSS}$ | $V_{GS}=0V, I_D=10\mu A$ | 60   | -    | -    | V       |
| Zero Gate Voltage Drain Current | $I_{DSS}$  | $V_{DS}=48V, V_{GS}=0V$  | -    | -    | 1    | $\mu A$ |
| Gate-Body Leakage, Forward      | $I_{GSSF}$ | $V_{GS}=15V, V_{DS}=0V$  | -    | -    | 1    | $\mu A$ |
| Gate-Body Leakage, Reverse      | $I_{GSSR}$ | $V_{GS}=-15V, V_{DS}=0V$ | -    | -    | -1   | $\mu A$ |

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## ELECTRICAL CHARACTERISTICS (Ta=25 ) ON CHARACTERISTICS (Note 1)

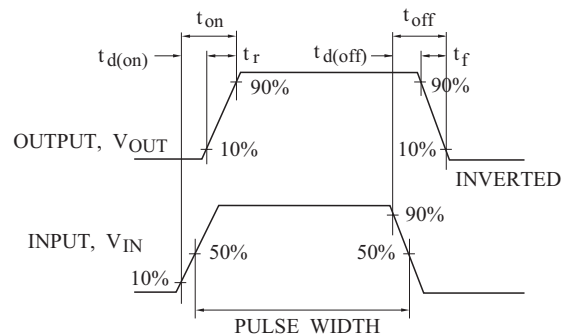
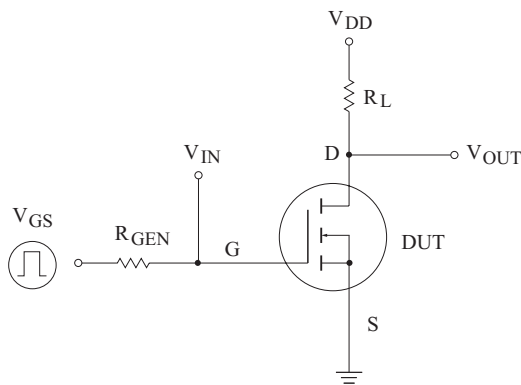
| CHARACTERISTIC                     | SYMBOL       | TEST CONDITION               | MIN. | TYP. | MAX. | UNIT |
|------------------------------------|--------------|------------------------------|------|------|------|------|
| Gate Threshold Voltage             | $V_{th}$     | $V_{DS}=V_{GS}$ , $I_D=1mA$  | 0.8  | 2.1  | 3    | V    |
| Drain-Source ON Resistance         | $R_{DS(ON)}$ | $V_{GS}=10V$ , $I_D=500mA$   | -    | 1.2  | 5    |      |
|                                    |              | $V_{GS}=4.5V$ , $I_D=75mA$   | -    | 1.8  | 5.3  |      |
| Drain-Source ON Voltage            | $V_{DS(ON)}$ | $V_{GS}=10V$ , $I_D=500mA$   | -    | 0.6  | 2.5  | V    |
|                                    |              | $V_{GS}=4.5V$ , $I_D=75mA$   | -    | 0.14 | 0.4  |      |
| On State Drain Current             | $I_{D(ON)}$  | $V_{GS}=4.5V$ , $V_{DS}=10V$ | 75   | 600  | -    | mA   |
| Forward Transconductance           | $g_{FS}$     | $V_{DS}=10V$ , $I_D=200mA$   | 100  | 320  | -    | mS   |
| Drain-Source Diode Forward Voltage | $V_{SD}$     | $V_{GS}=0V$ , $I_S=200mA$    | -    | 0.76 | 1.15 | V    |

Note 1) Pulse Test : Pulse Width 300 $\mu$ s, Duty Cycle 2.0%

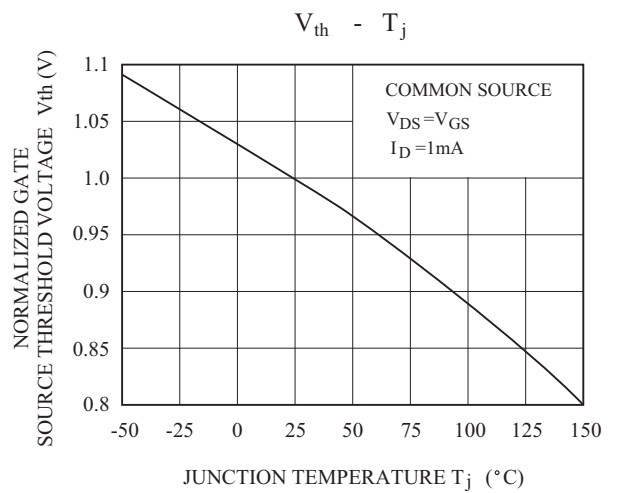
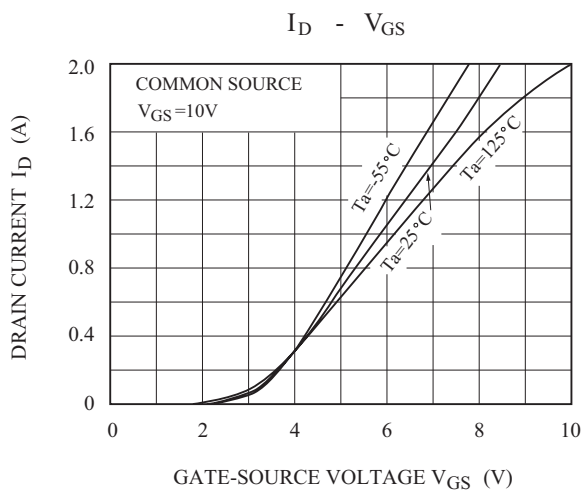
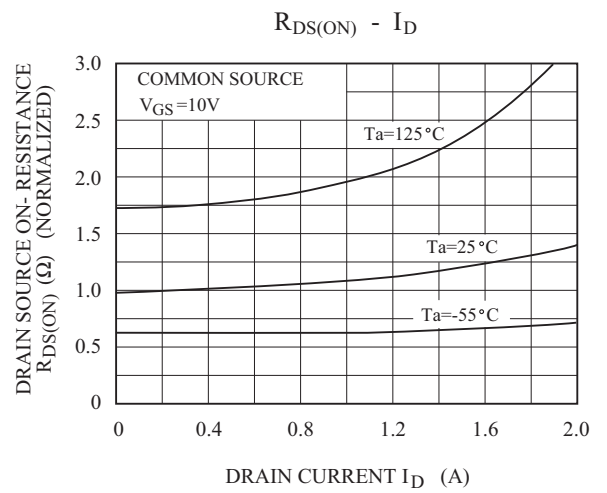
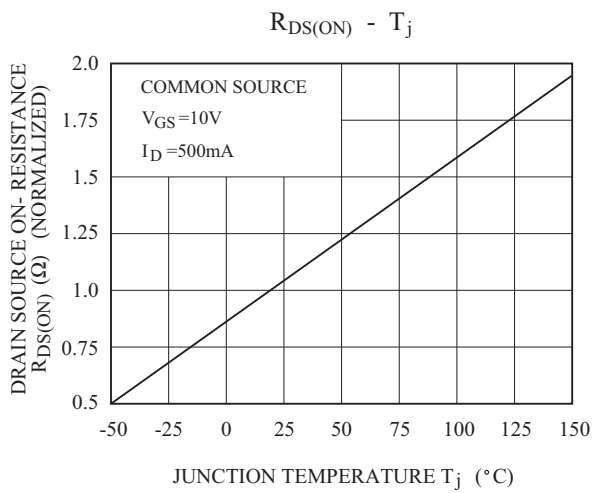
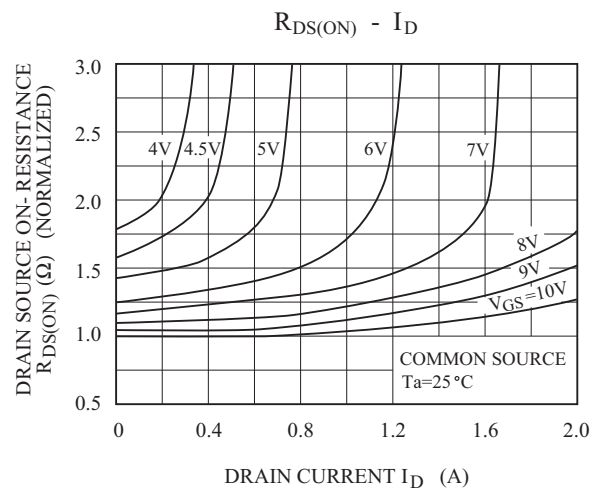
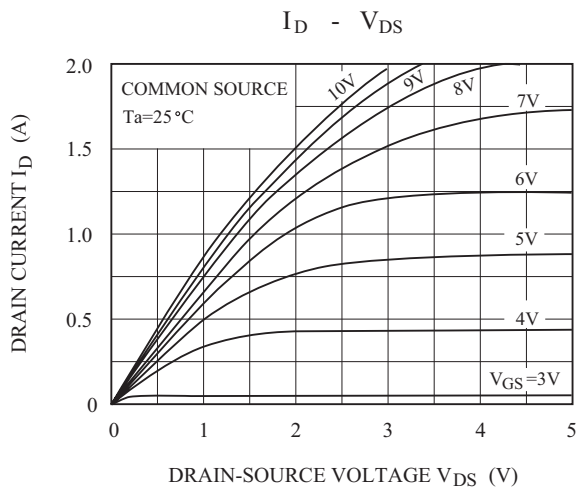
## DYNAMIC CHARACTERISTICS

| CHARACTERISTIC               |               | SYMBOL           | TEST CONDITION   | MIN. | TYP. | MAX. | UNIT |
|------------------------------|---------------|------------------|--|------|------|------|------|
| Input Capacitance            |               | C <sub>iss</sub> | V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz                    | -    | 20   | 50   | pF   |
| Reverse Transfer Capacitance |               | C <sub>rss</sub> |  | -    | 4    | 5    |      |
| Output Capacitance           |               | C <sub>oss</sub> |  | -    | 11   | 25   |      |
| Switching Time               | Turn-On Time  | t <sub>on</sub>  | V <sub>DD</sub> =15V, R <sub>L</sub> =25    , I <sub>D</sub> =200mA, | -    | -    | 10   | nS   |
|                              | Turn-Off Time | t <sub>off</sub> | V <sub>GS</sub> =10V, R <sub>GEN</sub> =25                           | -    | -    | 10   |      |

## SWITCHING TIME TEST CIRCUIT



# 2N7000A



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