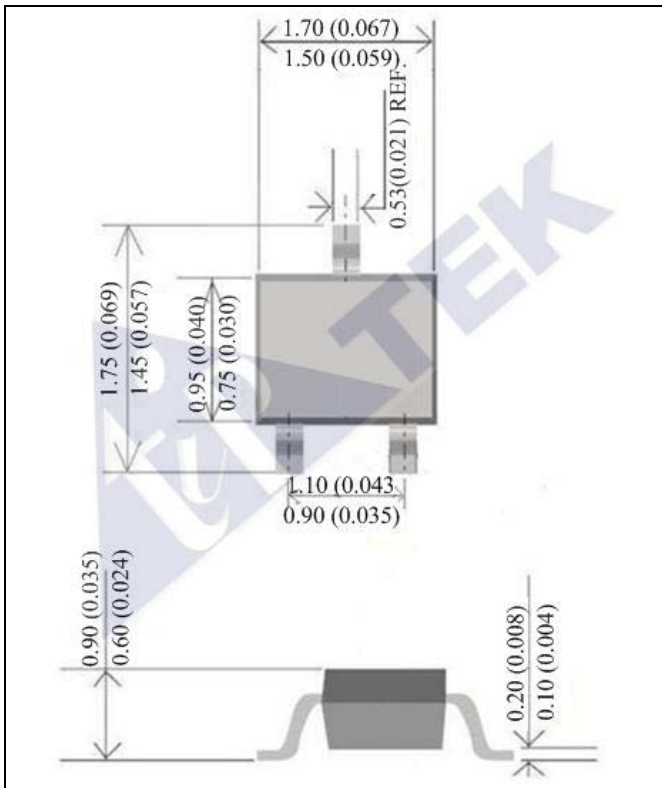


N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



CASE : SOT-523

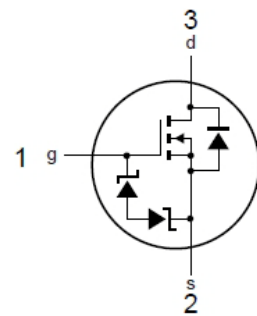
DIMENSIONS IN MILLIMETERS AND (INCHES)

FEATURES

- LOW ON-RESISTANCE
- FAST SWITCHING SPEED
- LOW -VOLTAGE DRIVE
- ESD PROTECTED GATE
- PORTABLE APPLICATIONS SUCH AS CELL PHONES, MEDIA PLAYERS, DIGITAL CAMERAS, PDA'S , VIDEO GAMES, HAND HELD COMPUTERS, ETC.

MECHANICAL DATA

- Pb-Free PACKAGE IS AVAILABLE.
- Pb Free: 2N7002WSK
Halogen Free: 2N7002WSK-H



ABSOLUTE MAXIMUM RATINGS

| RATINGS AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE SPECIFIED. | | | | |
|---|---------------------------|-----------------|--------------|-------|
| PATING | | SYMBOL | VALUE | UNITS |
| DRAIN-SOURCE VOLTAGE | | V_{DSS} | 30 | V |
| GATE-SORUCE VOLTQGE | | V_{GSS} | ±10 | V |
| DRAIN CURRENT | CONTINUOUS | I_D | 154 | mA |
| | PULSED $t_p \leq 10\mu s$ | I_{DP} | 618 | |
| THERMAL RESISTANCE JUNCTION TO AMBIENT | | $R_{\theta JA}$ | 416 | °C/W |
| MAXIMUM POWER DISSIPATION DERATING (NOTE 1) | | P_D | 300 | mW |
| OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE | | T_j, T_{STG} | - 55 TO +150 | °C |

NOTE: 1. Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$
2. When mounted on FR4 board using 1 in² pad size.

ELECTRICAL CHARACTERISTICS

| ELECTRICAL CHARACTERISTICS (At T_A =25°C UNLESS OTHERWISE NOTED) | | | | | | |
|---|---|----------------------|-----|------|-----|-------|
| CHARACTERISTIC | | SYMBOL | MIN | TYP | MAX | UNITS |
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =100μA | V _{(BR)DSS} | 30 | – | – | V |
| Zero Gate Voltage Drain | V _{DS} =30V, V _{GS} =0V | I _{DSS} | – | – | 1.0 | μA |
| Gate-Source Leakage Current (V _{DS} =0, V _{GS} =±10V) | | I _{GSS} | – | – | ±25 | μA |
| ON CHARACTERISTICS (NOTE 2) | | | | | | |
| Gate Threshold Voltage(V _{DS} =V _{GS} , I _D =100μA) | | V _{GS(th)} | 0.5 | 1.0 | 1.5 | V |
| Drain-Source On-State Resistance | V _{GS} =4.5V, I _D =154mA | R _{DS(ON)*} | – | 1.4 | 7.0 | Ω |
| | V _{GS} =2.5V, I _D =154mA | | – | 2.3 | 7.5 | |
| Forward transconductance | V _{DS} =3V, I _D =154mA | g _{FS} * | – | 80 | – | mS |
| DYNAMIC CHARACTERISTICS | | | | | | |
| Input Capacitance | V _{DS} =5V, V _{GS} =0V, f=1.0MHz | C _{iss} | – | 11.5 | – | pF |
| Output Capacitance | | C _{oss} | – | 10 | – | pF |
| Reverse Transfer Capacitance | | C _{rss} | – | 3.5 | – | pF |
| SWITCHING CHARACTERISTICS (NOTE 2) | | | | | | |
| Turn-On Delay Time | V _{DS} =5V, I _D =75mA V _{GS} =4.5V, R _G =10Ω | t _{d(on)*} | – | 13 | – | ns |
| Rise Time | | t _r | – | 15 | – | ns |
| Turn-Off Delay Time | | t _{d(off)*} | – | 98 | – | ns |
| Fall Time | | t _f | – | 60 | – | ns |

* P_w≤300μs, Duty cycle≤1%

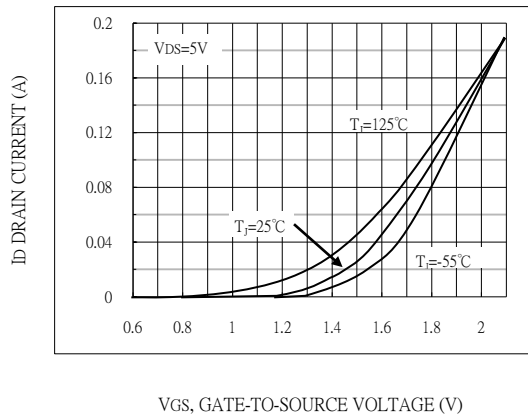


Fig.1-TRANSFER CHARACTERISTICS

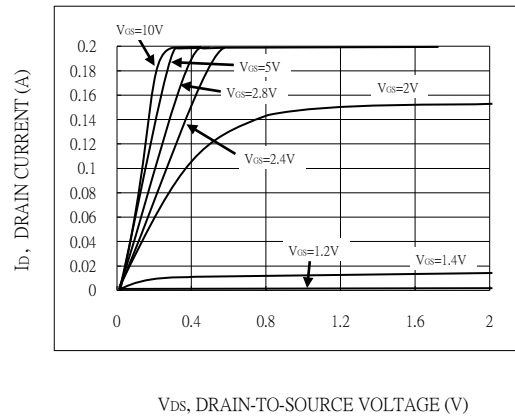


Fig.2-ON-REGION CHARACTERISTICS

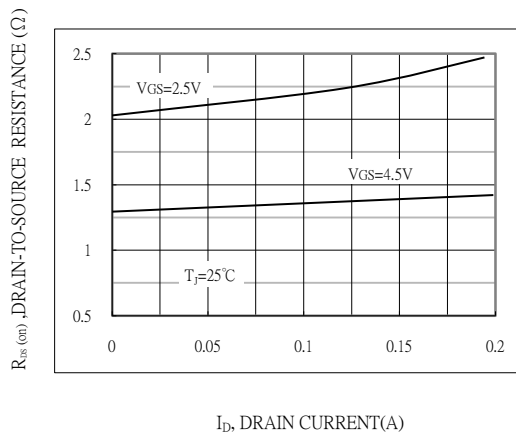


Fig.3- ON-RESISTANCE VERSUS DRAIN-SOURCE AND GATE VOLTAGE

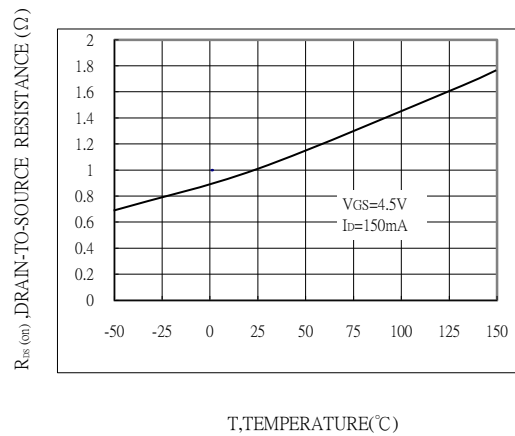


Fig.4-ON-RESISTANCE VARIATION WITH TEMPERATURE