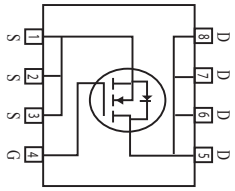
# WEITRON

# WT4410M

## Surface Mount N-Channel
## Enhancement Mode MOSFET

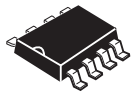
**Pb Lead(Pb)-Free**




**DRAIN CURRENT**
**10 AMPERES**
**DRAIN SOURCE VOLTAGE**
**30 VOLTAGE**

### Features:

*Super high dense cell design for low $R_{DS(ON)}$
$R_{DS(ON)}$ <11 mΩ@$V_{GS}$=10V
$R_{DS(ON)}$ <15 mΩ@$V_{GS}$=4.5V
*Rugged and Reliable
*SO-8 Package



1

**SO-8**

## Maximum Ratings (TA=25°C Unless Otherwise Specified)

| Rating | Symbol | Value | Unite |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current ($T_J$=125°C)(1) | $I_D$ | 10 | A |
| Pulsed Drain Current (2) | $I_{DM}$ | 30 | A |
| Drain-Source Diode Forward Current (1) | $I_S$ | 2.3 | A |
| Power Dissipation (1) | $P_D$ | 2.5 | W |
| Maximax Junction-to-Ambient | $R_{\theta JA}$ | 50 | °C/W |
| Operating Junction and Storage Temperature Range | $T_J$, Tstg | -55 to 150 | °C |

## Device Marking

WT4410M=SDM4410

## Electrical Characteristics (TA=25 °C Unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **Static (2)** | | | | | |
| Drain-Source Breakdown Voltage<br>$V_{GS}$=0V, $I_D$=250 uA | $V_{(BR)DSS}$ | 30 | - | - | V |
| Gate-Source Threshold Voltage<br>$V_{DS}$=$V_{GS}$, $I_D$=250 uA | $V_{GS\ (th)}$ | 1 | 1.5 | 3 | V |
| Gate-Source Leakage Current<br>$V_{DS}$=0V, $V_{GS}$=±16V | $I_{GSS}$ | - | - | ±100 | nA |
| Zero Gate Voltage Drain Current<br>$V_{DS}$=24V, $V_{GS}$=0V | $I_{DSS}$ | - | - | 1 | uA |
| Drain-Source On-Resistance<br>$V_{GS}$=10V, $I_D$=10A<br>$V_{GS}$=4.5V, $I_D$=5A | $r_{DS\ (on)}$ | -<br>- | 11<br>15 | 13.5<br>20 | mΩ |
| On-State Drain Current<br>$V_{DS}$=10V, $V_{GS}$=10A | $I_{D(on)}$ | 40 | - | - | A |
| Forward Transconductance<br>$V_{DS}$=10V, $I_D$=20A | $g_{fs}$ | - | 18 | - | S |
| **Dynamic (3)** | | | | | |
| Input Capacitance<br>$V_{DS}$=15V, $V_{GS}$=0V, f=1MHZ | $C_{iss}$ | - | 1375 | - | PF |
| Output Capacitance<br>$V_{DS}$=15V, $V_{GS}$=0V, f=1MHZ | $C_{oss}$ | - | 670 | - | |
| Reverse Transfer Capacitance<br>$V_{DS}$=15V, $V_{GS}$=0V, f=1MHZ | $C_{rss}$ | - | 200 | - | |
| **Switching (3)** | | | | | |
| Turn-On Delay Time<br>$V_{GS}$=10V, $V_{DD}$=15V, $I_D$=-1A, $R_{GEN}$=6Ω | $t_{d(on)}$ | - | 30 | - | nS |
| Rise Time<br>$V_{GS}$=10V, $V_{DD}$=15V, $I_D$=-1A, $R_{GEN}$=6Ω | $t_r$ | - | 32 | - | nS |
| Turn-Off Time<br>$V_{GS}$=10V, $V_{DD}$=15V, $I_D$=-1A, $R_{GEN}$=6Ω | $t_{d(off)}$ | - | 132 | - | nS |
| Fall Time<br>$V_{GS}$=10V, $V_{DD}$=15V, $I_D$=-1A, $R_{GEN}$=6Ω | $t_f$ | - | 30 | - | nS |
| Total Gate Charge<br>$V_{DS}$=10V, $I_D$=10A, $V_{GS}$=10V<br>$V_{DS}$=10V, $I_D$=10A, $V_{GS}$=4.5V | Qg | -<br>- | 40<br>20 | 50<br>24 | nc |
| Gate-Source Charge<br>$V_{DS}$=10V, $I_D$=10A, $V_{GS}$=10V | Qgs | - | 8.2 | - | nc |
| Gate-Drain Charge<br>$V_{DS}$=10V, $I_D$=10A, $V_{GS}$=10V | Qgd | - | 5.3 | - | nc |
| Drain-Source Diode Forward Voltage<br>$V_{GS}$=0V, $I_S$=2.3A | $V_{SD}$ | - | 0.76 | 1.1 | V |

Note: 1. Surface Mounted on FR4 Board t ≤ 10sec.
2. Pulse Test : PW≤ 300us, Duty Cycle ≤ 2%.
3. Guaranteed by Design, not Subject to Production Testing.

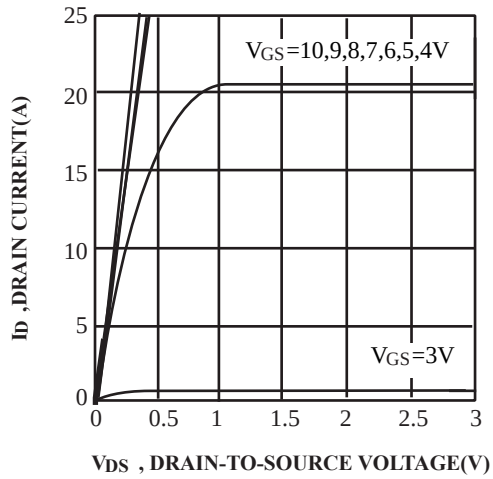



**FIG.1. Output Characteristics**

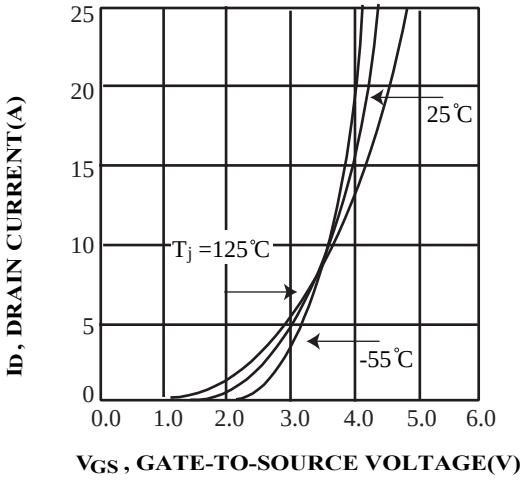



**FIG.2 Transfer Characteristics**

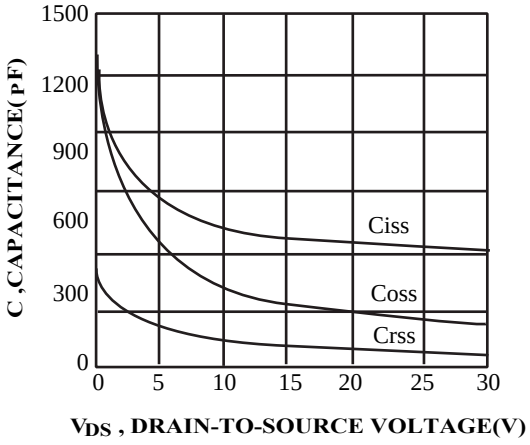



**FIG.3 Capacitance**

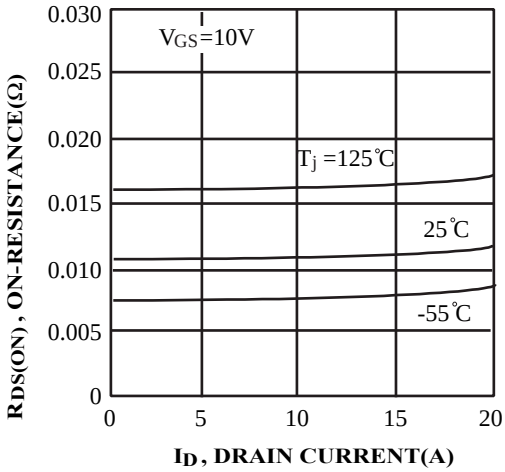



**FIG.4 On-Resistance Variation with Drain Current and Temperature**

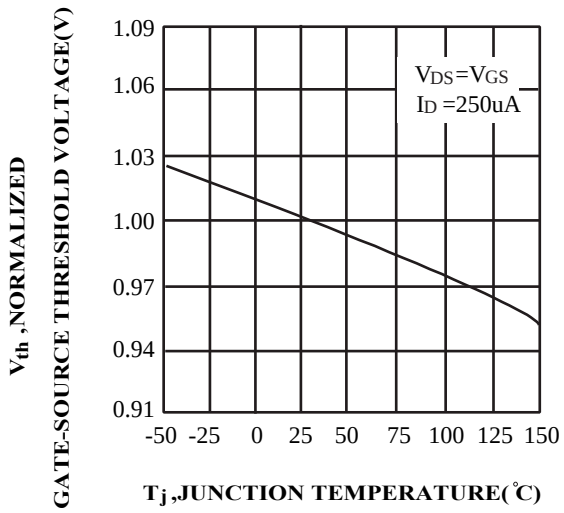



**FIG.5 Gate Threshold Variation with Temperature**

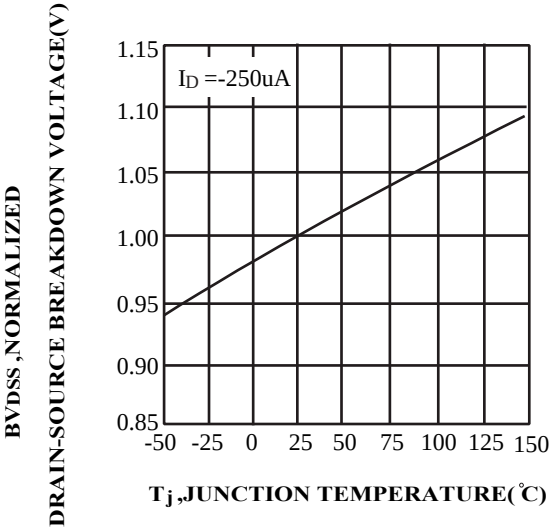



**FIG.6 Breakdown Voltage Variation with Temperature**

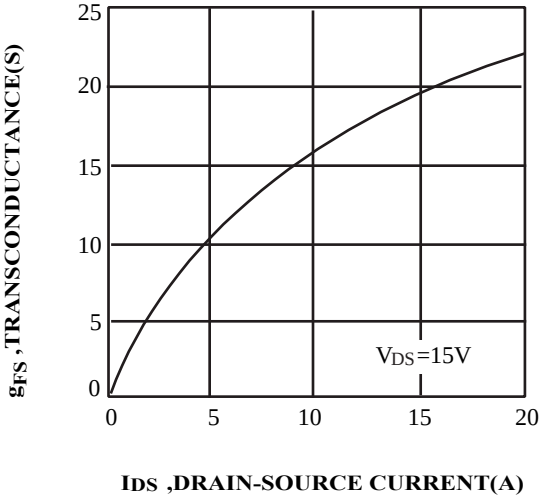



**FIG.7 Transconductance Variation with Drain Current**

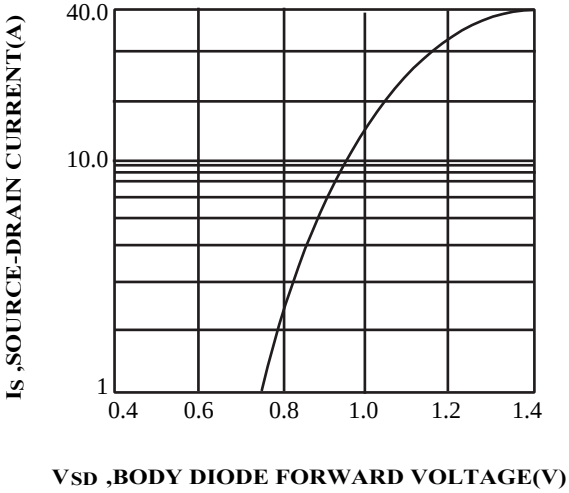



**FIG.8 Body Diode Forward Voltage Variation with Source Current**

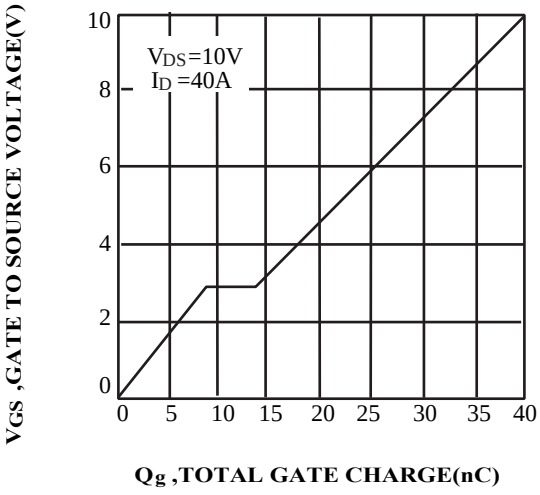



**FIG.9 Gate Charge**

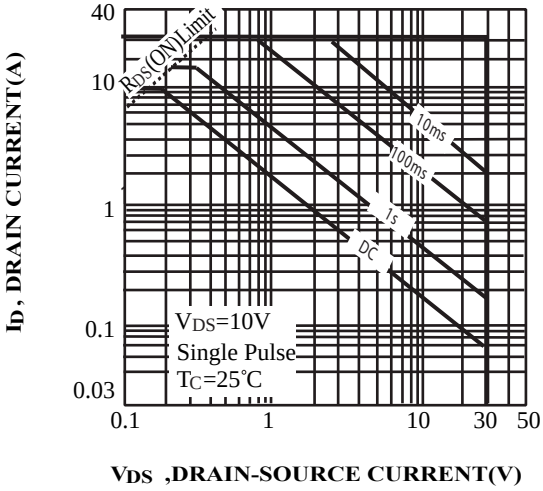



**FIG.10 Maximum Safe Operating Area**

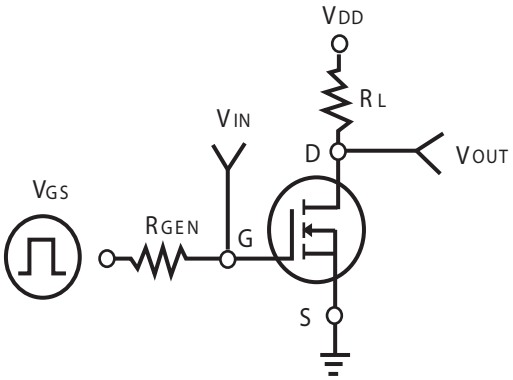



**FIG.11 Switching Test Circuit**

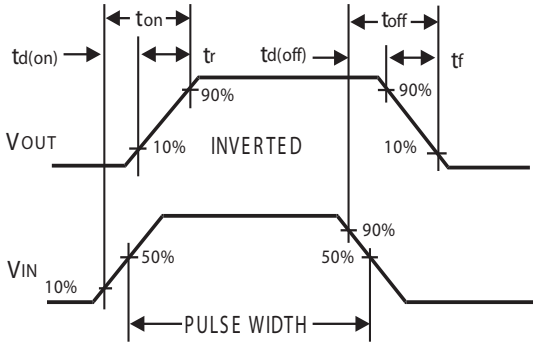
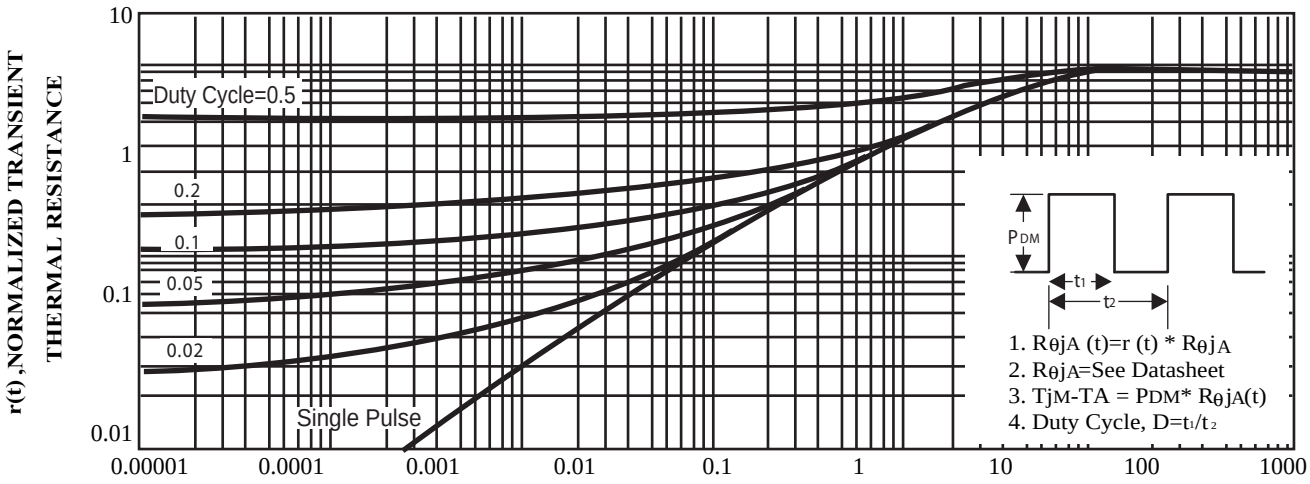



**FIG.12 Switching Waveforms**

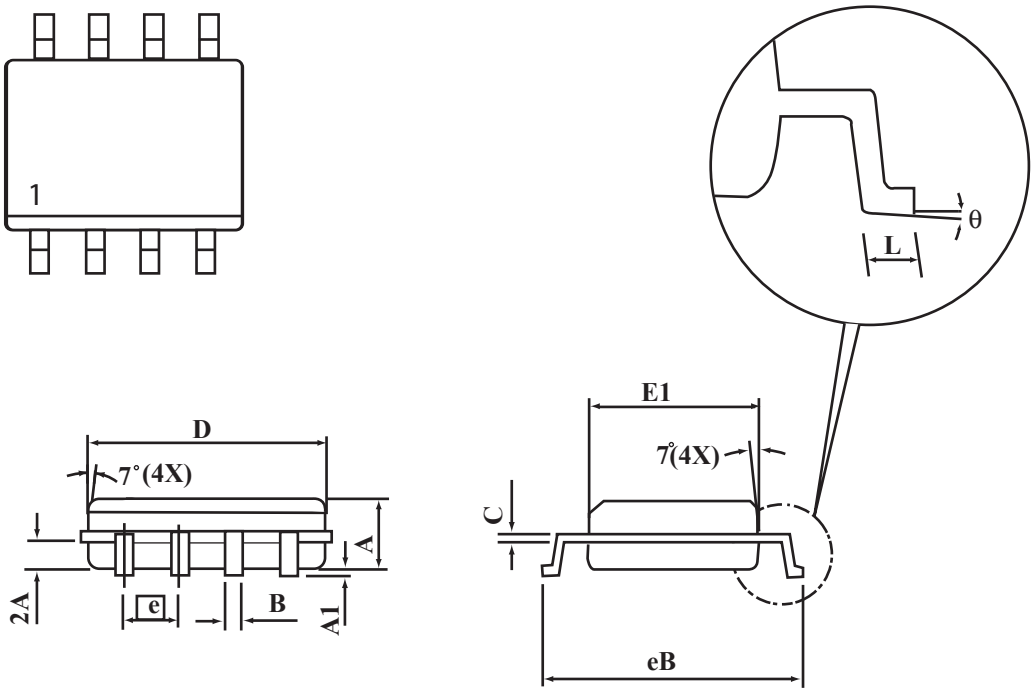



**SQUARE WAVE PULSE DURATION(SEC)**

**FIG.13 NORMALIZED THERMAL TRANSIENT IMPEDANCE CUREVE**

## SO-8 Package Outline Dimensions

Unit:mm




| SYMBOLS | MILLIMETERS | |
|---|---|---|
| | MIN | MAX |
| A | 1.35 | 1.75 |
| A1 | 0.10 | 0.20 |
| B | 0.35 | 0.45 |
| C | 0.18 | 0.23 |
| D | 4.69 | 4.98 |
| E1 | 3.56 | 4.06 |
| eB | 5.70 | 6.30 |
| e | 1.27 BSC | |
| L | 0.60 | 0.80 |
| θ | 0° | 8° |