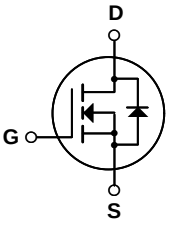
TY Semicondutor®

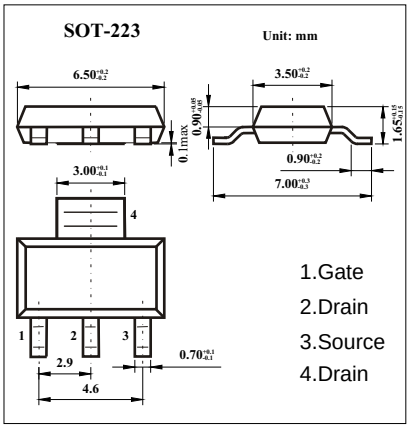
**Product specification**

# KX7N10L

## ■ Features

- $V_{DS\,(V)}$ = 100V
- $I_D$ = 1.7 A ($V_{GS}$ = 10V)
- $R_{DS(ON)}$ < 350mΩ ($V_{GS}$ = 10V), $I_D$=0.85A
- $R_{DS(ON)}$ < 380mΩ ($V_{GS}$ = 5V), $I_D$=0.85A




## ■ Absolute Maximum Ratings Ta = 25°C

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | $V_{GS}$ | ± 20 | |
| Continuous Drain Current - Continuous (TC = 25°C) | $I_D$ | 1.7 | A |
| - Continuous (TC= 70°C) | | 1.36 | |
| Pulsed Drain Current | $I_{DM}$ | 6.8 | |
| Single Pulsed Avalanche Energy | $E_{AS}$ | 50 | mJ |
| Repetitive Avalanche Energy | $E_{AR}$ | 0.2 | |
| Avalanche Current | $I_{AR}$ | 1.7 | A |
| Power Dissipation (T = 25°C) | $P_D$ | 2.0 | W |
| - Derate above 25°C | | 0.016 | °C/W |
| Thermal Resistance.Junction- to-Ambient | $R_{thJA}$ | 62.5 | |
| Peak Diode Recovery dv/dt | dv/dt | 6.0 | V/ns |
| Maximum lead temperature for soldering purposes, 1/8"from case for 5 seconds | $T_L$ | 300 | °C |
| Junction and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to 150 | |

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Testconditons | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{DSS}$ | $I_D$=250μA, $V_{GS}$=0V | 100 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V, $V_{GS}$=0V | | | 1 | μA |
| | | $V_{DS}$=80V, $V_{GS}$=0V, $T_J$=125°C | | | 10 | |
| Gate-Body leakage current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$=±20V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ $I_D$=250μA | 1.0 | | 2.0 | V |
| Static Drain-Source On-Resistance | $R_{DS(On)}$ | $V_{GS}$=10V, $I_D$=0.85A | | 275 | 350 | mΩ |
| | | $V_{GS}$=5V, $I_D$=0.85A | | 300 | 380 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=30V, $I_D$=0.85A | | 2.75 | | S |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V, $V_{DS}$=25V, f=1MHz | | 220 | 290 | pF |
| Output Capacitance | $C_{oss}$ | | | 55 | 72 | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 12 | 15 | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=5V, $V_{DS}$=80V, $I_D$=7.5A | | 4.6 | 6.0 | nC |
| Gate Source Charge | $Q_{gs}$ | | | 1.0 | | |
| Gate Drain Charge | $Q_{gd}$ | | | 2.6 | | |
| Turn-On DelayTime | $t_{d(on)}$ | $V_{DS}$=50V, $I_D$=7.3A,$R_G$=25Ω | | 9 | 30 | ns |
| Turn-On Rise Time | $t_r$ | | | 100 | 210 | |
| Turn-Off DelayTime | $t_{d(off)}$ | | | 17 | 45 | |
| Turn-Off Fall Time | $t_f$ | | | 50 | 110 | |
| Body Diode Reverse Recovery Time | $t_{rr}$ | $I_S$=7.3A, $dI/dt$=100A/μs | | 70 | | |
| Body Diode Reverse Recovery Charge | $Q_{rr}$ | $I_S$=7.3A, $dI/dt$=100A/μs | | 140 | | nC |
| Maximum Body-Diode Continuous Current | $I_S$ | | | | 1.7 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1.7A,$V_{GS}$=0V | | | 1.5 | V |

■ Typlacl Characteristics

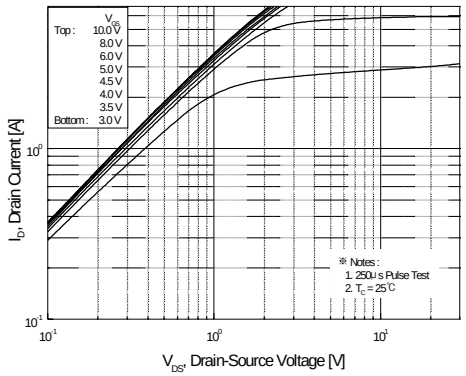



**Figure 1. On-Region Characteristics**

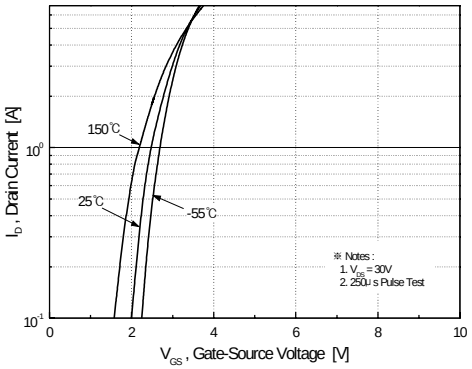



**Figure 2. Transfer Characteristics**

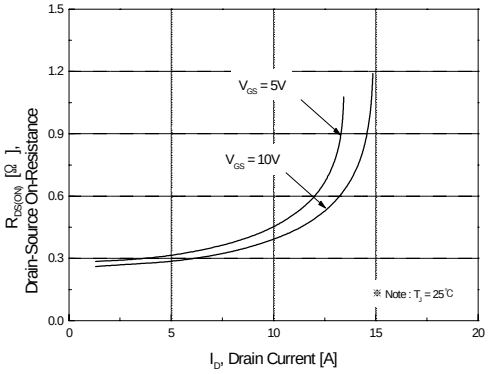



**Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage**

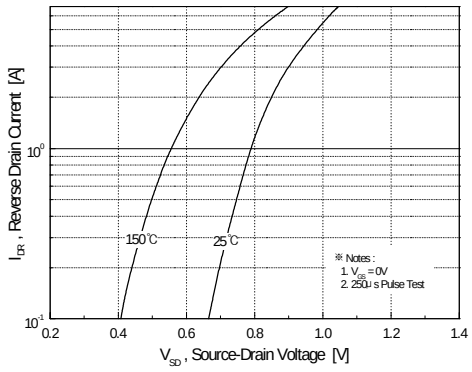



**Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature**

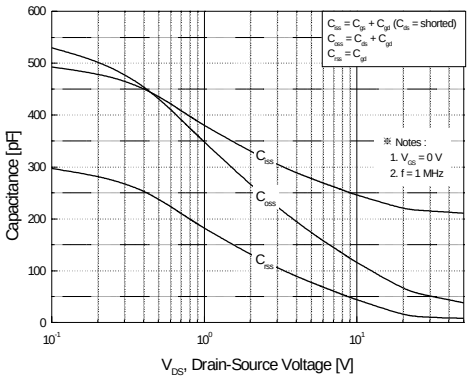



**Figure 5. Capacitance Characteristics**

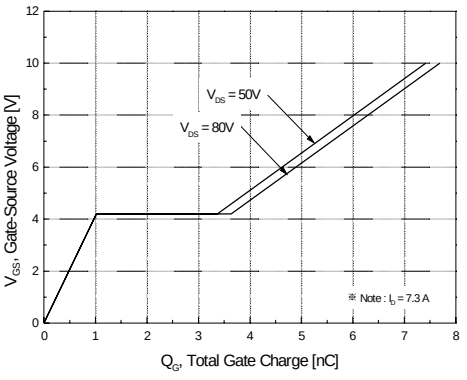



**Figure 6. Gate Charge Characteristics**

■ Typlacl Characteristics

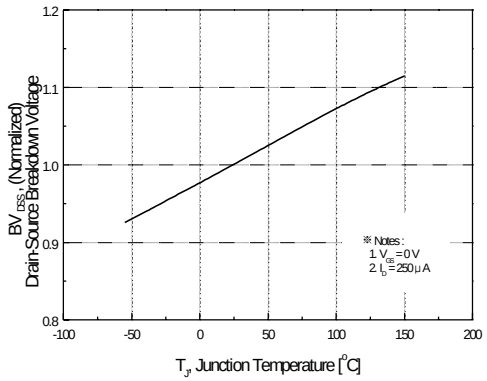



**Figure 7. Breakdown Voltage Variation vs. Temperature**

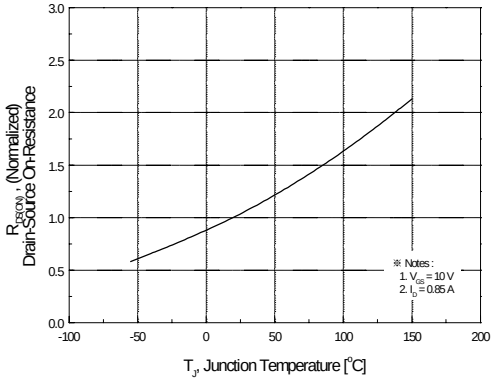



**Figure 8. On-Resistance Variation vs. Temperature**

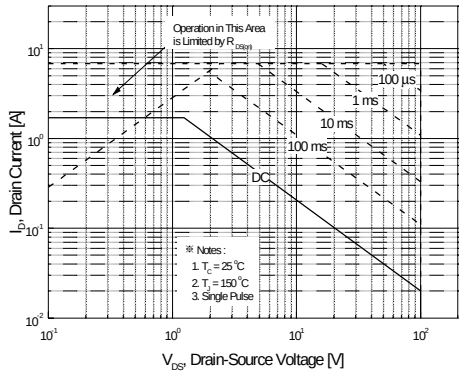



**Figure 9. Maximum Safe Operating Area**

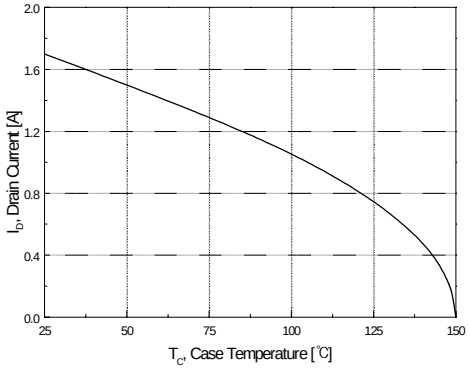



**Figure 10. Maximum Drain Current vs. Case Temperature**

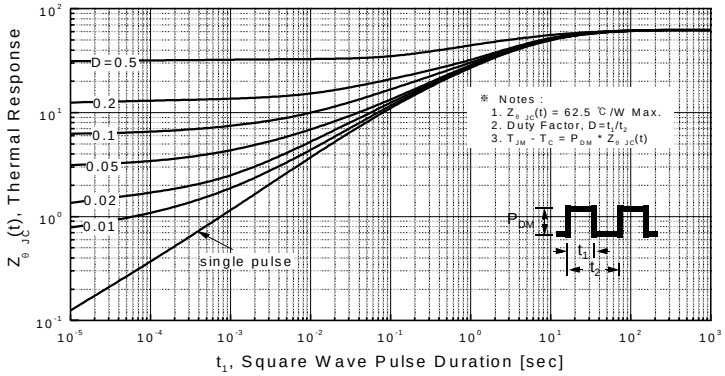



**Figure 11. Transient Thermal Response Curve**