# Single P-channel MOSFET

## ELM57317WSA-N



## ■General description

ELM57317WSA-N uses advanced trench technology to provide excellent Rds(on), low gate charge and low gate threshold voltage.

## ■Features

- Vds=-150V
- Id=-3.0A
- Rds(on) = 750mΩ (Vgs=-10V)
- Rds(on) = 800mΩ (Vgs=-6V)

## ■Maximum absolute ratings

Ta=25°C. Unless otherwise noted.

| Parameter | | Symbol | Limit | Unit |
|---|---|---|---|---|
| Drain-source voltage | | Vds | -150 | V |
| Gate-source voltage | | Vgs | ±20 | V |
| Continuous drain current(Tj=150°C) | Ta=25°C | Id | -3.0 | A |
| | Ta=70°C | | -2.4 | |
| Pulsed drain current | | Idm | -2 | A |
| Power dissipation | Tc=25°C | Pd | 28 | W |
| | Tc=70°C | | 18 | |
| Operating junction temperature | | Tj | 150 | °C |
| Storage temperature range | | Tstg | - 55 to 150 | °C |

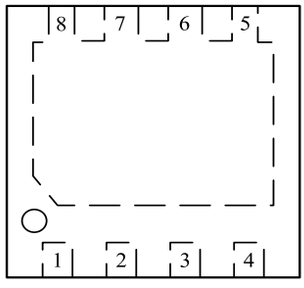
## ■Thermal characteristics

| Parameter | Symbol | Typ. | Max. | Unit |
|---|---|---|---|---|
| Thermal resistance junction-to-ambient | Rθja | | 120 | °C/W |

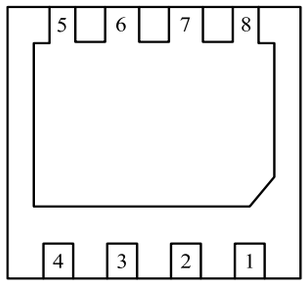
## ■Pin configuration

DFN8-3×3

(TOP VIEW)

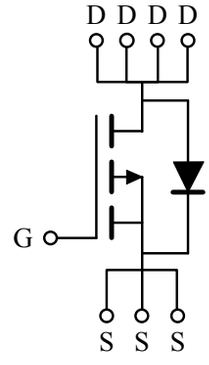



(BOTTOM VIEW)




| Pin No. | Pin name |
|---|---|
| 1 | SOURCE |
| 2 | SOURCE |
| 3 | SOURCE |
| 4 | GATE |
| 5 | DRAIN |
| 6 | DRAIN |
| 7 | DRAIN |
| 8 | DRAIN |

## ■Circuit

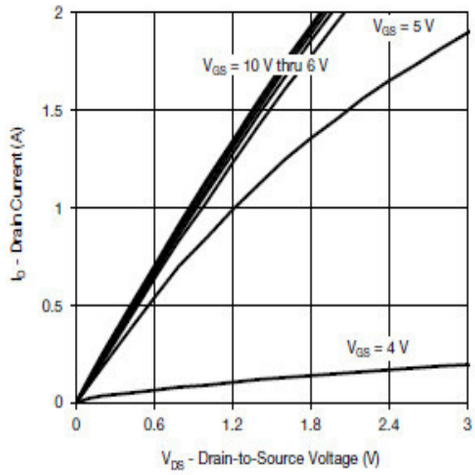


## ■Electrical characteristics

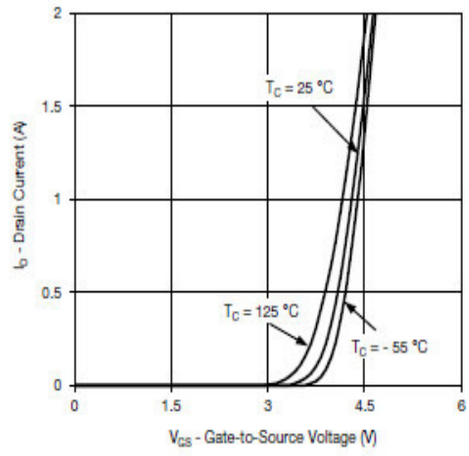
Ta=25°C. Unless otherwise noted.

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| STATIC PARAMETERS | | | | | | |
| Drain-source breakdown voltage | BVdss | Vgs=0V, Id=-250μA | -150 | | | V |
| Zero gate voltage drain current | Idss | Vds=-120V, Vgs=0V | | | -1 | μA |
| | | Vds=-120V, Vgs=0V, Ta=85°C | | | -30 | |
| Gate-body leakage current | Igss | Vds=0V, Vgs=±20V | | | ±100 | nA |
| Gate threshold voltage | Vgs(th) | Vds=Vgs, Id=-250μA | -2.0 | | -4.0 | V |
| On state drain current | Id(on) | Vgs=-10V, Vds≥-15V | -1.6 | | | A |
| Static drain-source on-resistance | Rds(on) | Vgs=-10V, Id=-1.4A | | 675 | 750 | mΩ |
| | | Vgs=-6V, Id=-1.0A | | 720 | 800 | |
| Forward transconductance | Gfs | Vds=-15V, Id=-0.5A | | 3 | | S |
| Diode forward voltage | Vsd | Is=-1.0A, Vgs=0V | | -0.75 | -1.20 | V |
| Max. body-diode continuous current | Is | | | | -2.7 | A |
| DYNAMIC PARAMETERS | | | | | | |
| Input capacitance | Ciss | Vgs=0V, Vds=-75V, f=1MHz | | 280 | | pF |
| Output capacitance | Coss | | | 20 | | pF |
| Reverse transfer capacitance | Crss | | | 15 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Total gate charge | Qg | Vgs=-10V, Vds=-75V Id≡-1.1A | | 8.0 | 15.0 | nC |
| Gate-source charge | Qgs | | | 2.0 | | nC |
| Gate-drain charge | Qgd | | | 2.5 | | nC |
| Turn-on delay time | td(on) | Vgs=-10V, Vds=-75V RL=85Ω, Id≡-1.0A Rgen=1.0Ω | | 10 | 20 | ns |
| Turn-on rise time | tr | | | 15 | 30 | ns |
| Turn-off delay time | td(off) | | | 15 | 30 | ns |
| Turn-off fall time | tf | | | 10 | 25 | ns |

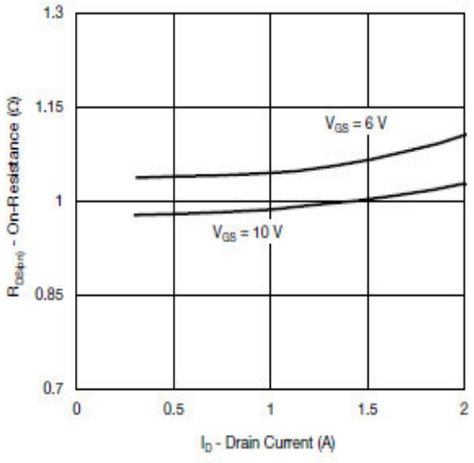
## ■Typical electrical and thermal characteristics



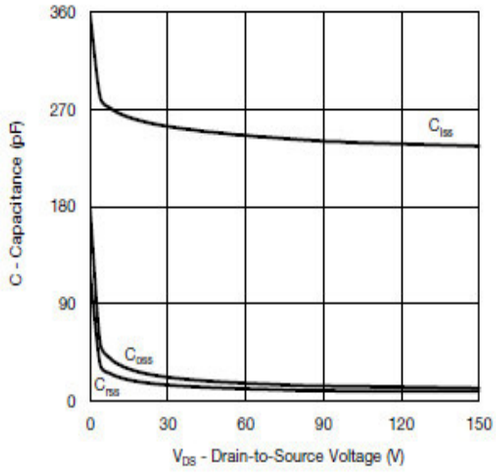

Output Characteristics



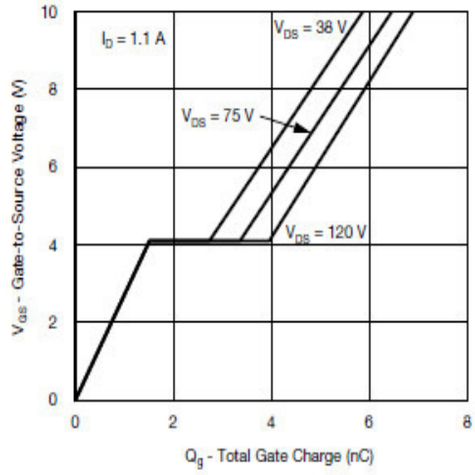

Transfer Characteristics



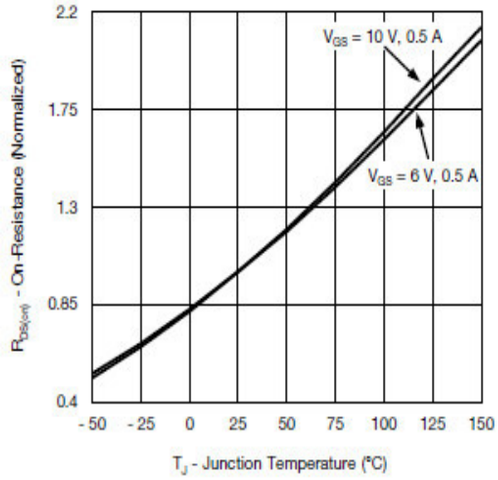

On-Resistance vs. Drain Current and Gate Voltage



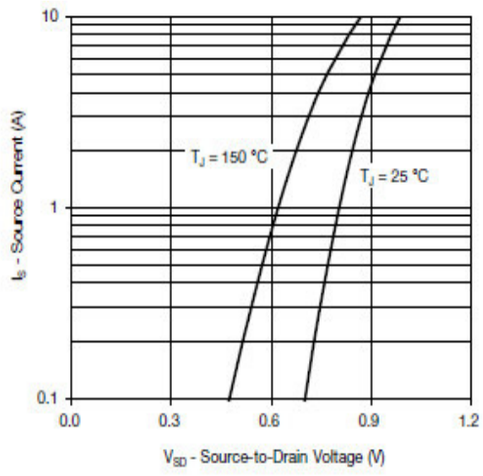

Capacitance



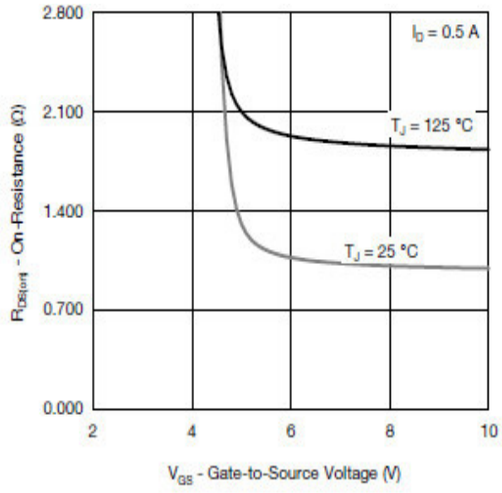

Gate Charge



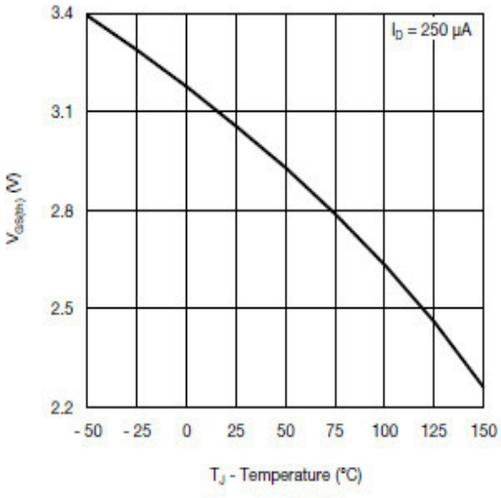

On-Resistance vs. Junction Temperature



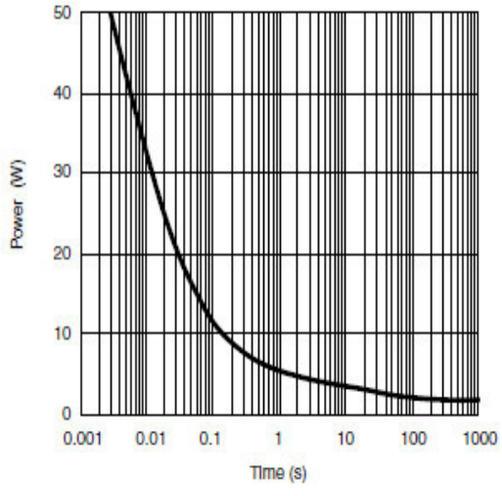

**Source-Drain Diode Forward Voltage**



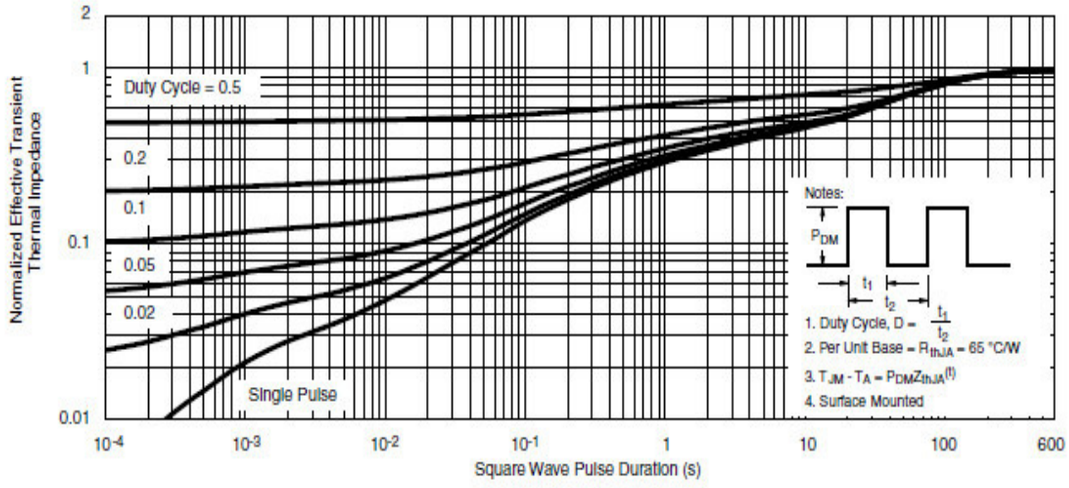

**On-Resistance vs. Gate-to-Source Voltage**




**Threshold Voltage**



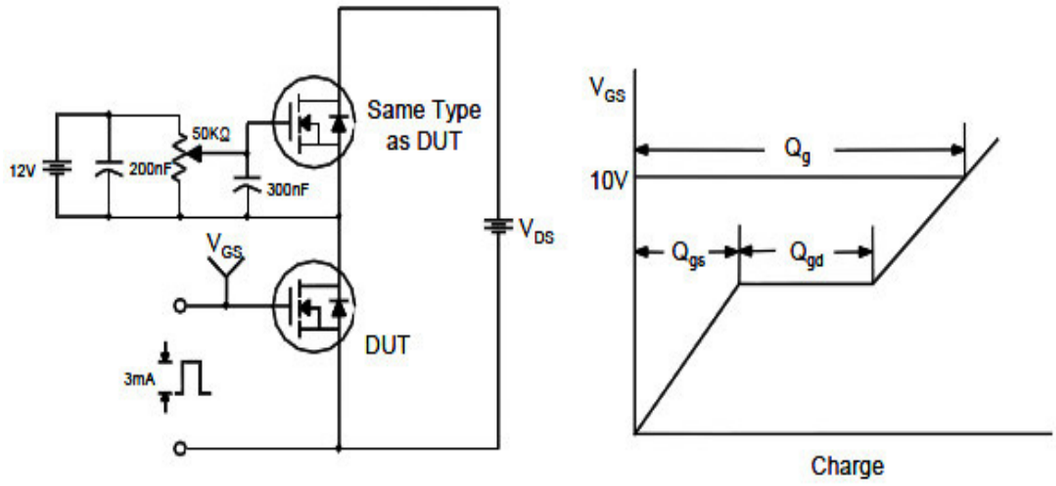

**Single Pulse Power, Junction-to-Ambient**



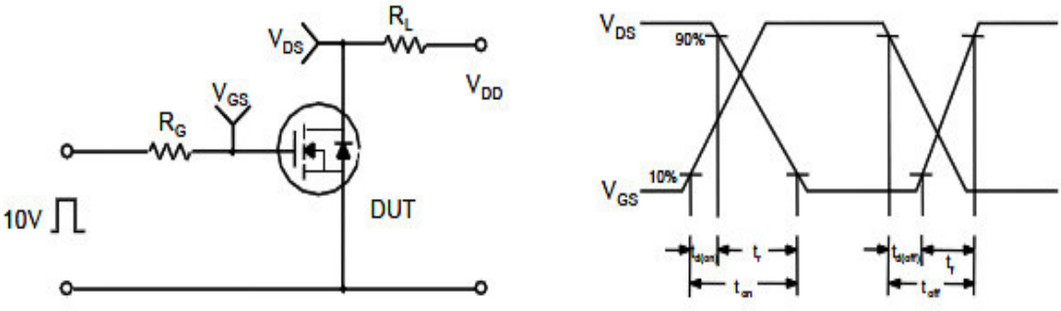

**Normalized Thermal Transient Impedance, Junction-to-Ambient**

## ■Test circuit and waveform

Gate Charge Test Circuit & Waveform




Resistive Switching Test Circuit & Waveforms




Unclamped Inductive Switching Test Circuit & Waveforms