



N-Channel 30-V (D-S) MOSFET

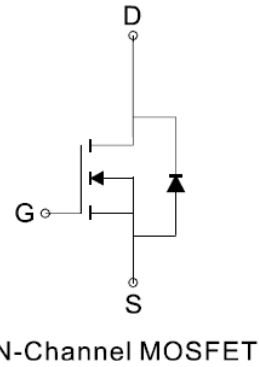
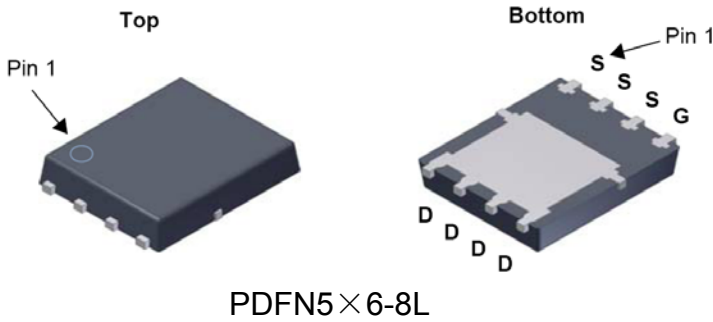
● FEATURES

- $R_{DS(ON)} \leq 2.2m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 3.2m\Omega @ V_{GS}=4.5V$
- high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

● GENERAL DESCRIPTION

The FS4470 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● PIN CONFIGURATION



● Absolute Maximum Ratings ($T_A=25^\circ C$ Unless Otherwise Noted)

| Parameter | Symbol | Limit | Unit |
|--|--------|------------|------|
| Drain-Source Voltage | VDSS | 30 | V |
| Gate-Source Voltage | VGSS | ±20 | V |
| Continuous Drain Current($T_J = 150^\circ C$)* | ID | TA=25°C | 21 |
| | | TA=70°C | 16.9 |
| Pulsed Drain Current | IDM | 84 | A |
| Maximum Power Dissipation* | PD | TA=25°C | 2.5 |
| | | TA=70°C | 1.6 |
| Operating Junction Temperature | TJ | -55 to 150 | °C |
| Thermal Resistance-Junction to Ambient* | RθJA | 50 | °C/W |
| Thermal Resistance-Junction to Lead* | RθJL | 24 | |

* The device mounted on 1in2 FR4 board with 2 oz copper



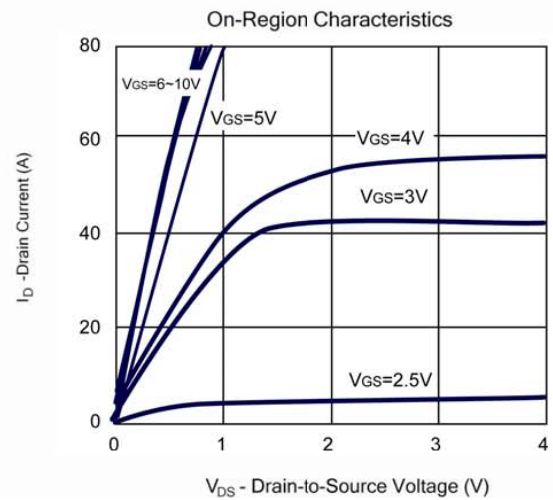
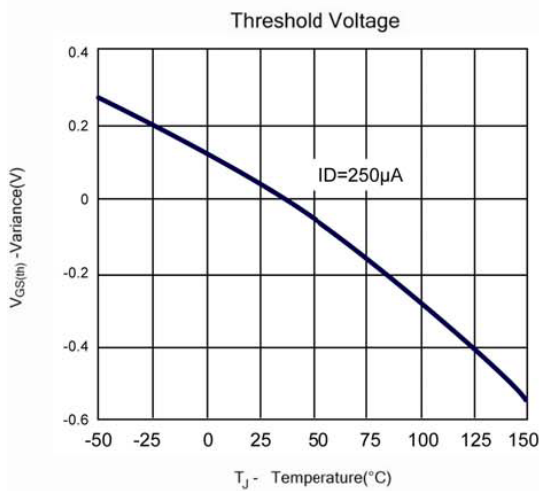
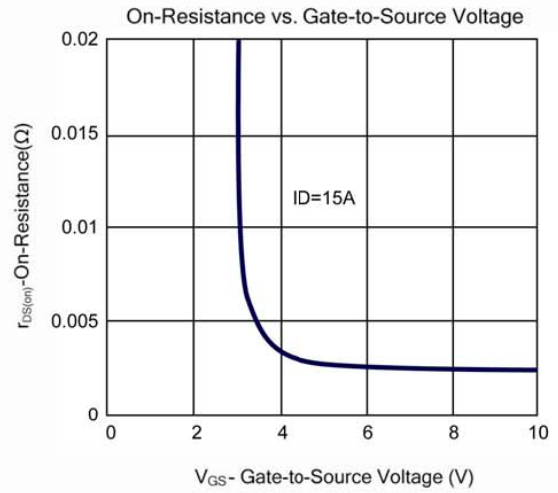
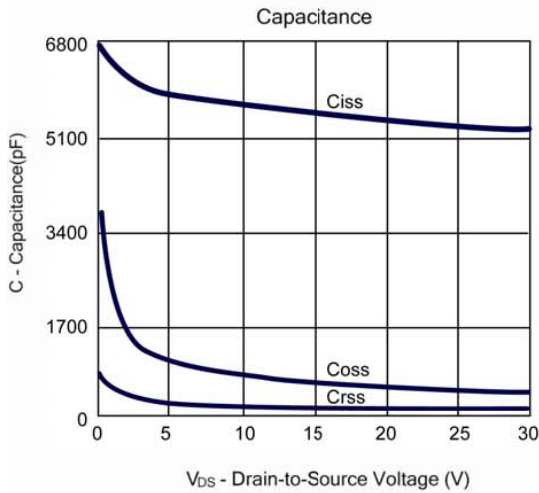
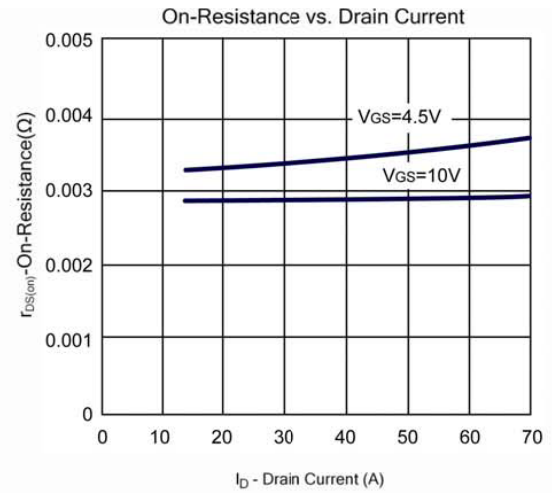
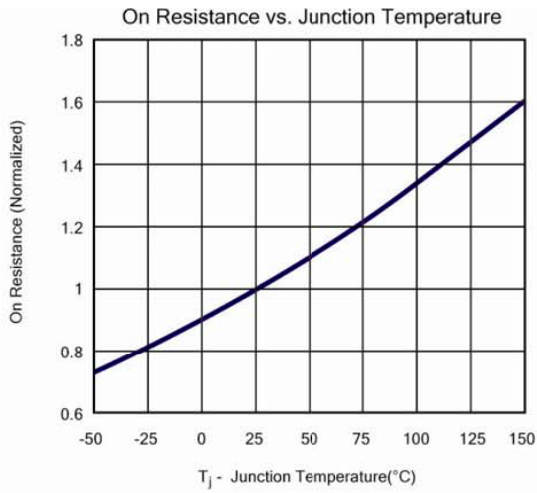
● **Electrical Characteristics** ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol | Parameter | Limit | Min | Typ | Max | Unit |
|----------------|---------------------------------------|--|-----|------|-----------|------------|
| STATIC | | | | | | |
| BVDSS | Drain-Source Breakdown Voltage | VGS=0V, ID=250 μ A | 30 | | | V |
| VGS(th) | Gate Threshold Voltage | VDS=VGS, ID=250 μ A | 1.3 | 1.8 | 3 | V |
| IGSS | Gate Leakage Current | VDS=0V, VGS= \pm 20V | | | \pm 100 | nA |
| IDSS | Zero Gate Voltage Drain Current | VDS=30V, VGS=0V | | | 1 | μ A |
| RDS(ON) | Drain-Source On-State Resistance a | VGS=10V, ID= 10A | | 2.2 | 3.1 | m Ω |
| | | VGS=4.5V, ID= 7.5A | | 3.2 | 4.5 | |
| VSD | Diode Forward Voltage | IS=2.7A, VGS=0V | | 0.72 | 1.1 | V |
| DYNAMIC | | | | | | |
| Qg | Total Gate Charge(10V) | VDS=15V, VGS=10V, ID=17A | | 55 | | nC |
| Qg | Total Gate Charge(4.5V) | VDS=15V, VGS=4.5V, ID=17A | | 29 | | |
| Qgs | Gate-Source Charge | | | 10 | | |
| Qgd | Gate-Drain Charge | | | 15 | | |
| Ciss | Input capacitance | VDS=15V, VGS=0V, f=1.0MHz | | 3400 | | pF |
| Coss | Output Capacitance | | | 550 | | |
| Crss | Reverse Transfer Capacitance | | | 210 | | |
| Rg | Gate-Resistance | VDS=0V, VGS=0V, f=1MHz | | 1.2 | | Ω |
| td(on) | Turn-On Delay Time | VDD=15V, RL =15 Ω ID=1A, VGEN=10V RG=6 Ω | | 23 | | ns |
| tr | Turn-On Rise Time | | | 12 | | |
| td(off) | Turn-Off Delay Time | | | 86 | | |
| tf | Turn-Off Fall Time | | | 12 | | |

Note:

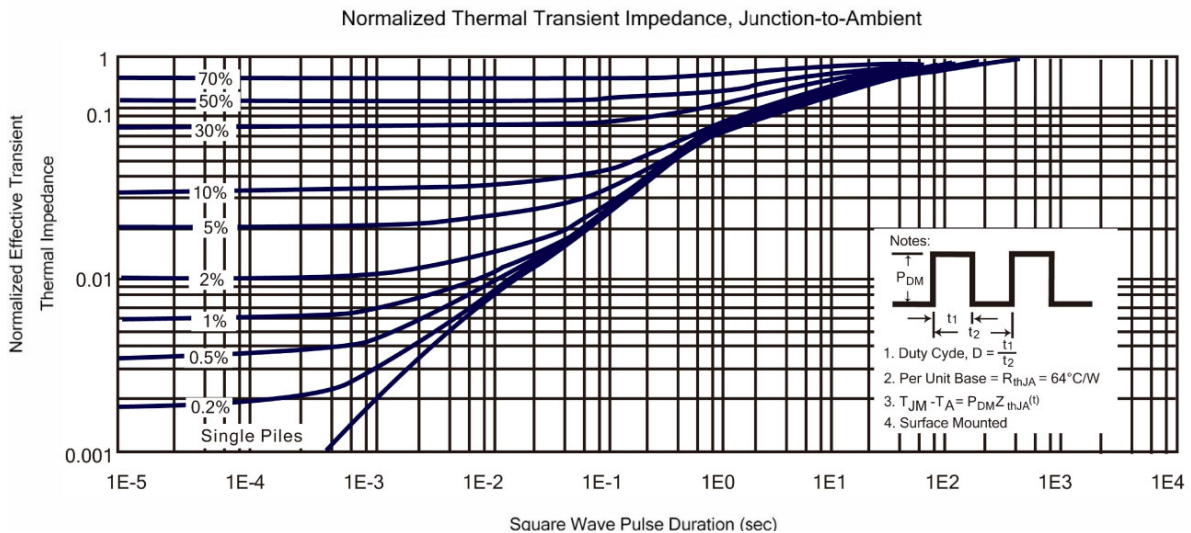
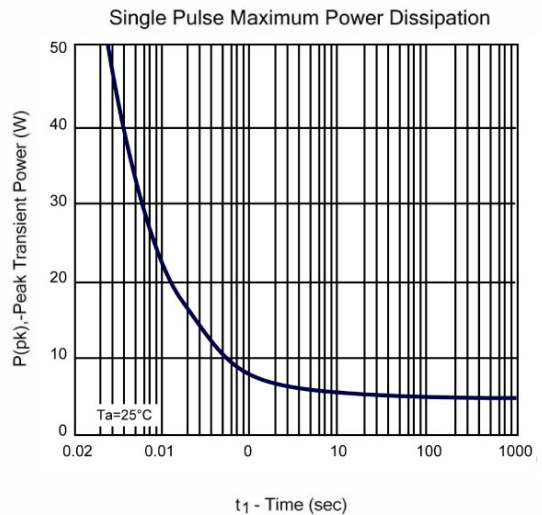
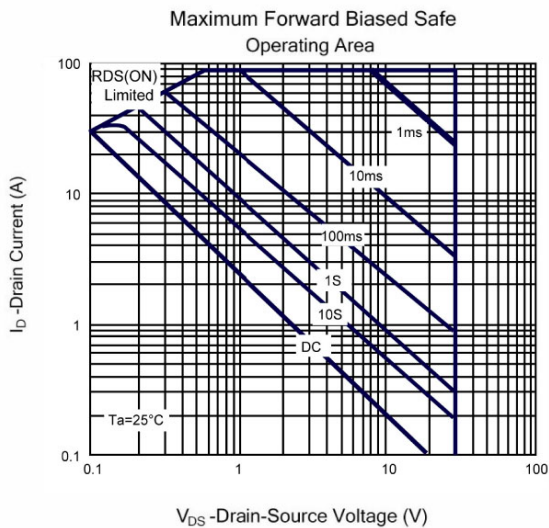
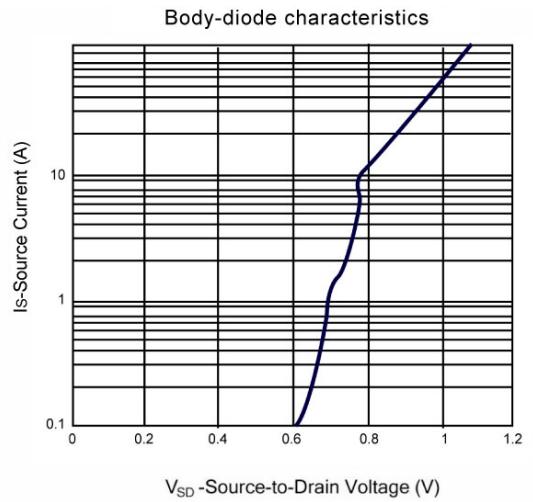
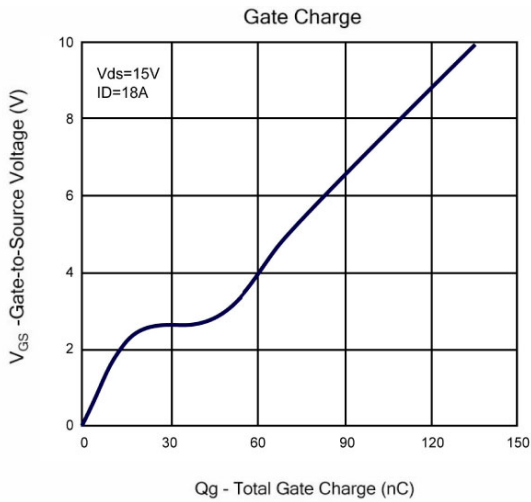
a: Pulse test: pulse width \leq 300 μ s, duty cycle \leq 2%

b: FORSEMI reserves the right to improve product design, functions and reliability without notice.



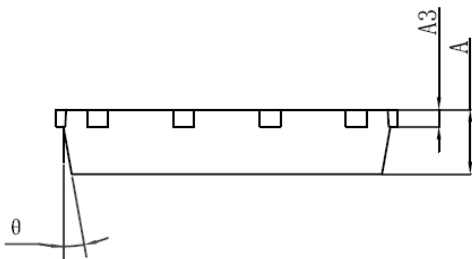
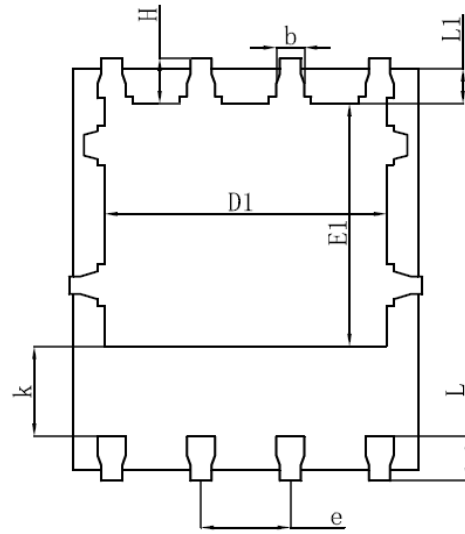
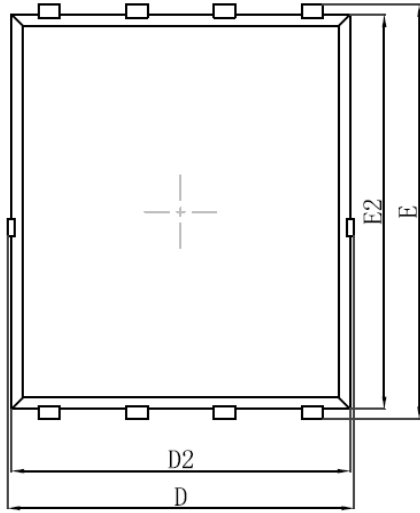


● TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





● PACKAGE PDFN5×6-8L



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.000 | 0.035 | 0.039 |
| A3 | 0.254REF. | | 0.010REF. | |
| D | 4.944 | 5.096 | 0.195 | 0.201 |
| E | 5.974 | 6.126 | 0.235 | 0.241 |
| D1 | 3.910 | 4.110 | 0.154 | 0.162 |
| E1 | 3.375 | 3.575 | 0.133 | 0.141 |
| D2 | 4.824 | 4.976 | 0.190 | 0.196 |
| E2 | 5.674 | 5.826 | 0.223 | 0.229 |
| k | 1.190 | 1.390 | 0.047 | 0.055 |
| b | 0.350 | 0.450 | 0.014 | 0.018 |
| e | 1.270TYP. | | 0.050TYP. | |
| L | 0.559 | 0.711 | 0.022 | 0.028 |
| L1 | 0.424 | 0.576 | 0.017 | 0.023 |
| H | 0.574 | 0.726 | 0.023 | 0.029 |
| θ | 8° | 12° | 8° | 12° |