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# ON Semiconductor DATA SHEET

## EFC4615R — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- 2.5V drive
- Best suited for LiB charging and discharging switch
- Common-drain type

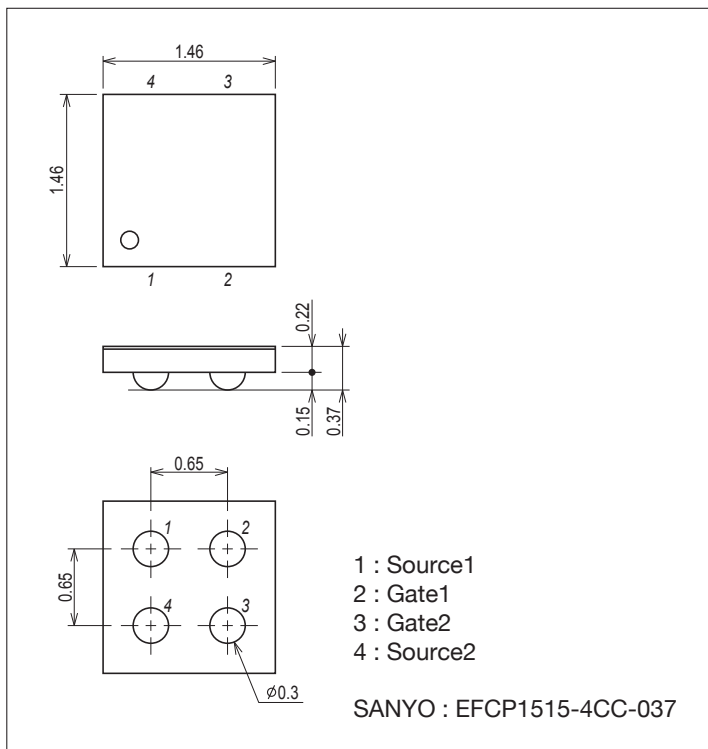
### Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter                | Symbol           | Conditions   | Ratings     | Unit |
|--------------------------|------------------|--|-------------|------|
| Source-to-Source Voltage | V <sub>SSS</sub> |  | 24          | V    |
| Gate-to-Source Voltage   | V <sub>GSS</sub> |  | ±12         | V    |
| Source Current (DC)      | I <sub>S</sub>   |  | 6           | A    |
| Source Current (Pulse)   | I <sub>SP</sub>  | PW≤10 μs, duty cycle≤1%  | 60          | A    |
| Total Dissipation        | P <sub>T</sub>   | When mounted on ceramic substrate (5000mm <sup>2</sup> ×0.8mm) | 1.6         | W    |
| Channel Temperature      | T <sub>ch</sub>  |  | 150         | °C   |
| Storage Temperature      | T <sub>stg</sub> |  | -55 to +150 | °C   |

### Package Dimensions

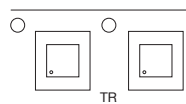
unit : mm (typ)  
7067-001



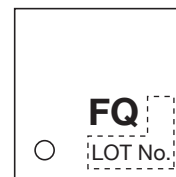
### Product & Package Information

- Package : EFCP
- JEITA, JEDEC : -
- Minimum Packing Quantity : 5,000 pcs./reel

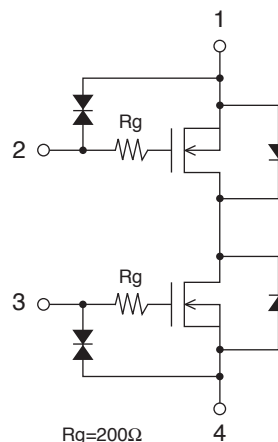
### Taping Type : TR



### Marking



### Electrical Connection



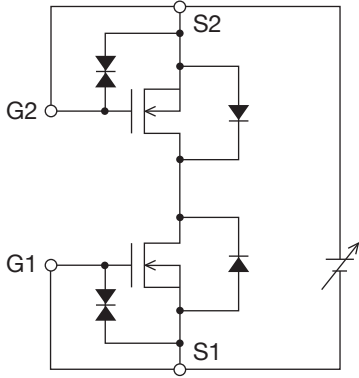
# EFC4615R

## Electrical Characteristics at Ta=25°C

| Parameter                                   | Symbol        | Conditions                                 | Ratings |     |          | Unit       |
|---|---------------|--|---------|-----|----------|------------|
|   |               |  | min     | typ | max      |            |
| Source-to-Source Breakdown Voltage          | $V_{(BR)SSS}$ | $I_S=1mA, V_{GS}=0V$ Test Circuit 1        | 24      |     |          | V          |
| Zero-Gate Voltage Source Current            | $I_{SSS}$     | $V_{SS}=20V, V_{GS}=0V$ Test Circuit 1     |         |     | 1        | A          |
| Gate-to-Source Leakage Current              | $I_{GSS}$     | $V_{GS}=\pm 8V, V_{SS}=0V$ Test Circuit 2  |         |     | $\pm 10$ | A          |
| Cutoff Voltage                              | $V_{GS(off)}$ | $V_{SS}=10V, I_S=1mA$ Test Circuit 3       | 0.5     |     | 1.3      | V          |
| Forward Transfer Admittance                 | $ y_{fs} $    | $V_{SS}=10V, I_S=3A$ Test Circuit 4        |         | 5.4 |          | S          |
| Static Source-to-Source On-State Resistance | $R_{SS(on)1}$ | $I_S=3A, V_{GS}=4.5V$ Test Circuit 5       | 19      | 27  | 31       | m $\Omega$ |
|   | $R_{SS(on)2}$ | $I_S=3A, V_{GS}=4.0V$ Test Circuit 5       | 21      | 28  | 33       | m $\Omega$ |
|   | $R_{SS(on)3}$ | $I_S=3A, V_{GS}=3.1V$ Test Circuit 5       | 24      | 33  | 44       | m $\Omega$ |
|   | $R_{SS(on)4}$ | $I_S=3A, V_{GS}=2.5V$ Test Circuit 5       | 28      | 39  | 52       | m $\Omega$ |
| Turn-ON Delay Time                          | $t_{d(on)}$   | See specified Test Circuit. Test Circuit 7 |         | 13  |          | ns         |
| Rise Time                                   | $t_r$         | See specified Test Circuit. Test Circuit 7 |         | 235 |          | ns         |
| Turn-OFF Delay Time                         | $t_{d(off)}$  | See specified Test Circuit. Test Circuit 7 |         | 335 |          | ns         |
| Fall Time                                   | $t_f$         | See specified Test Circuit. Test Circuit 7 |         | 360 |          | ns         |
| Total Gate Charge                           | $Q_g$         | $V_{SS}=10V, V_{GS}=4.5V, I_S=6A$          |         | 8.8 |          | nC         |
| Forward Source-to-Source Voltage            | $V_{F(S-S)}$  | $I_S=6A, V_{GS}=0V$ Test Circuit 6         |         | 1   | 1.2      | V          |

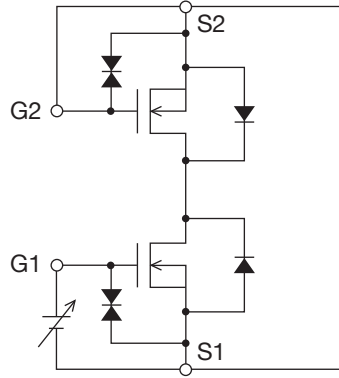
### Test circuits are example of measuring FET1 side

Test Circuit 1  
 $V_{SSS} / I_{SSS}$



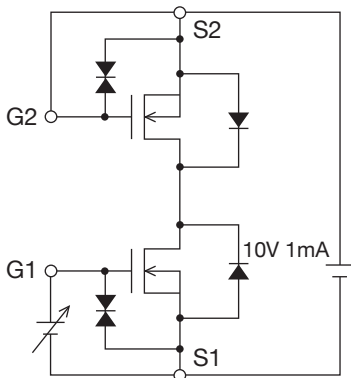
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Test Circuit 2  
 $I_{GSS(+)} / (-)$



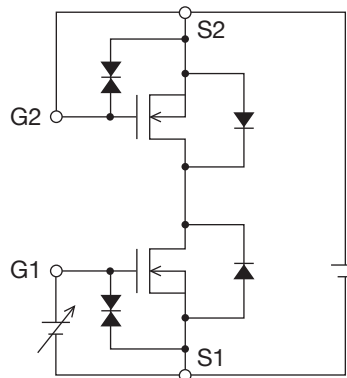
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Test Circuit 3  
 $V_{GS(off)}$



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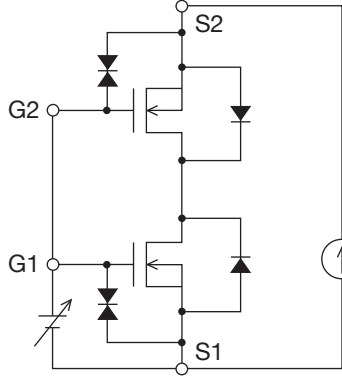
Test Circuit 4  
 $|y_{fs}|$



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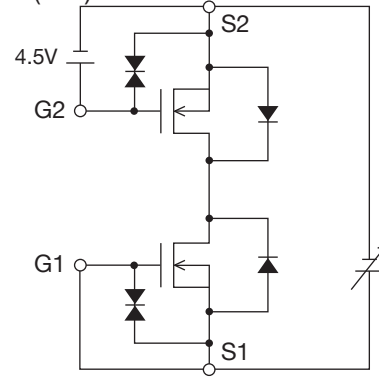
\* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.

Test Circuit 5  
RSS(on)



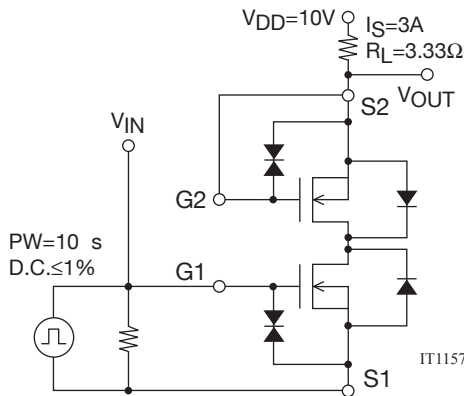
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Test Circuit 6  
VF(S-S)



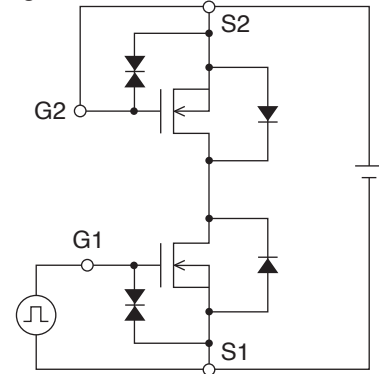
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Test Circuit 7  
td(on), tr, td(off), tf



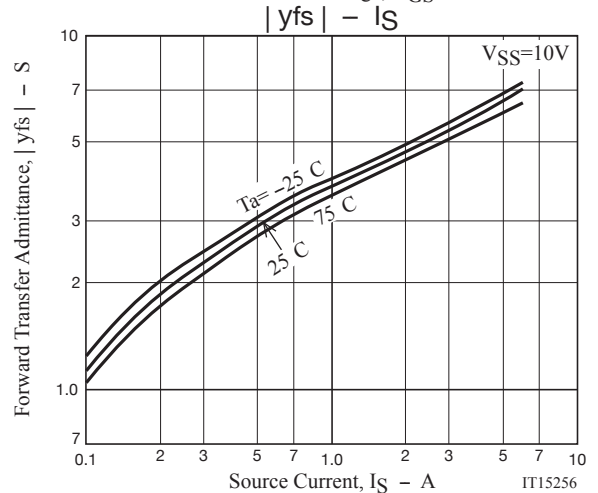
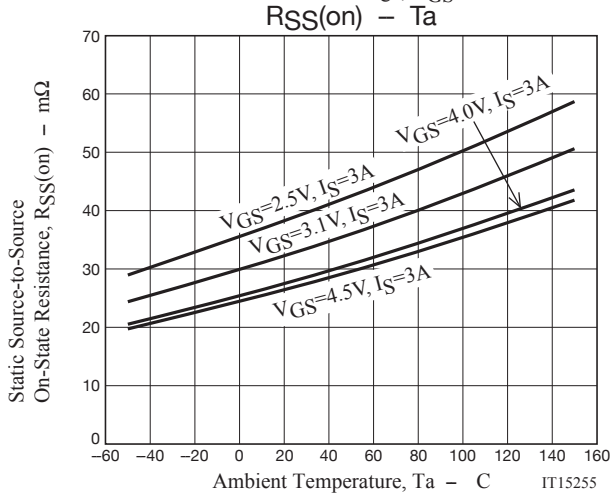
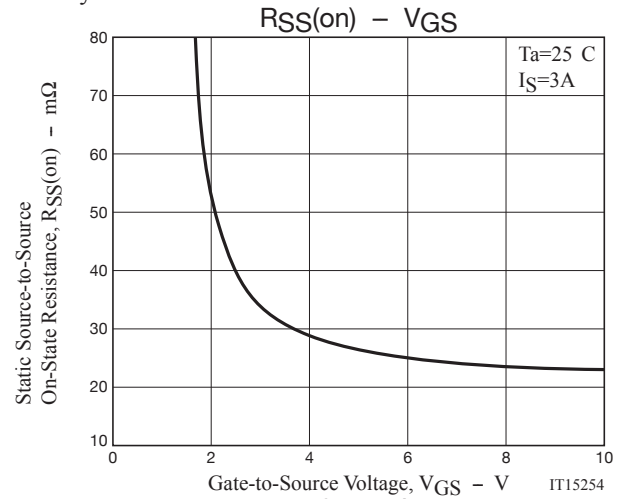
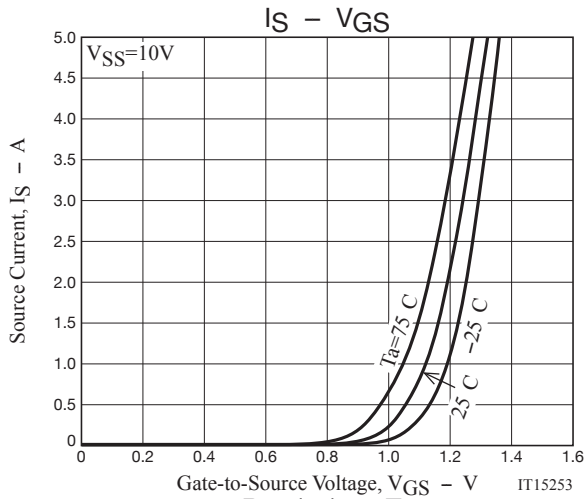
IT11571

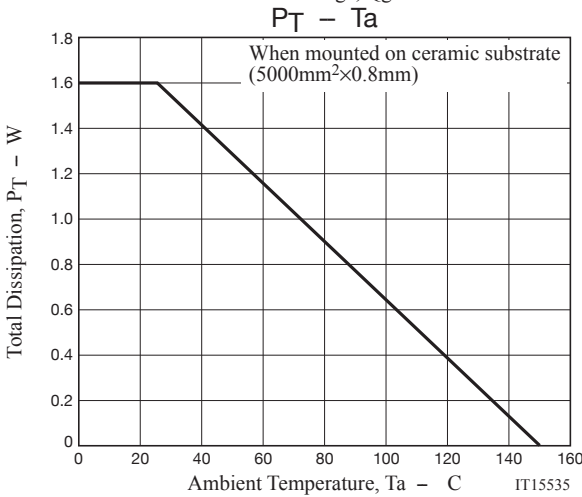
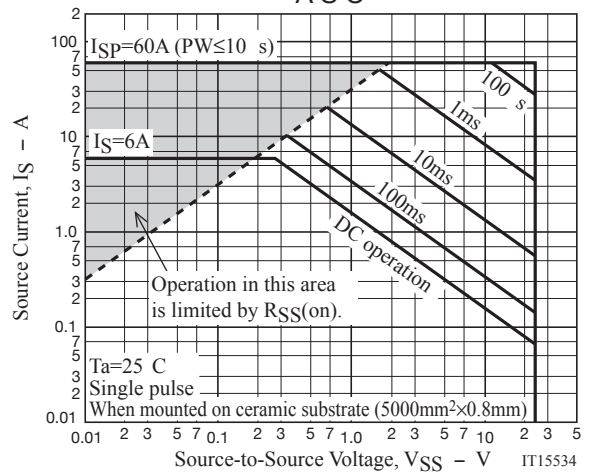
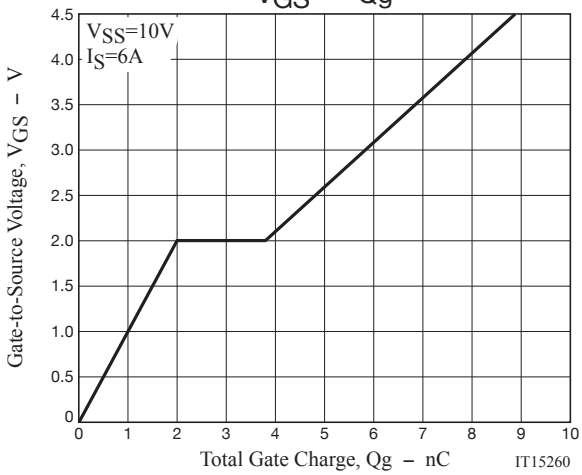
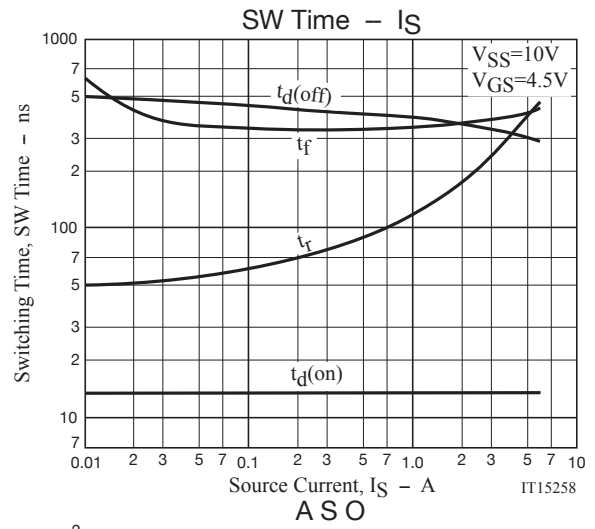
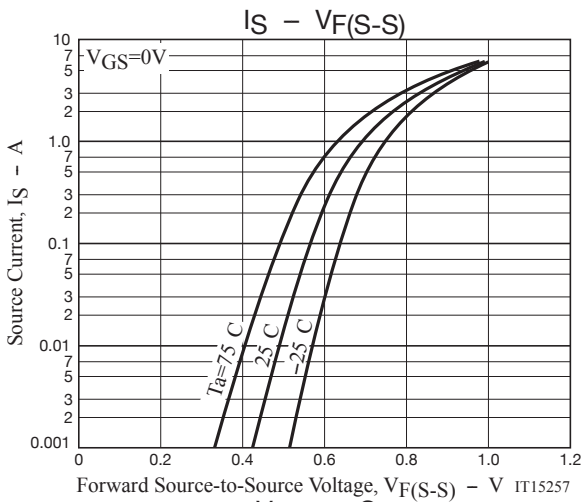
Test Circuit 8  
Qg



IT15409

\* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.





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