



EFC4630R

Advance Information

ON Semiconductor®

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N-Channel Power MOSFET 24V, 6A, 45mΩ, Dual EFCP

Features

- 2.5V drive
- Built-in gate protection resistor
- Best suited for LiB charging and discharging switch
- Common-drain type
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

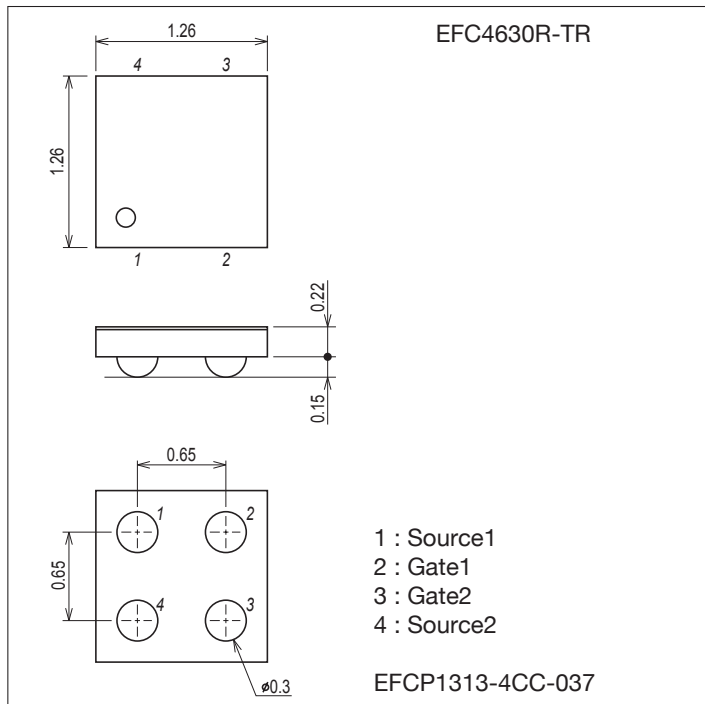
| Parameter | Symbol | Conditions | Value | Unit |
|--------------------------|------------------|--|-------------|------|
| Source-to-Source Voltage | V _{SSS} | | 24 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±12 | V |
| Source Current (DC) | I _S | | 6 | A |
| Source Current (Pulse) | I _{SP} | PW≤10μs, duty cycle≤1% | 60 | A |
| Total Dissipation | P _T | When mounted on ceramic substrate (5000mm ² ×0.8mm) | 1.6 | W |
| Junction Temperature | T _j | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

unit : mm (typ)

7064-001



This document contains information on a new product. Specifications and information herein are subject to change without notice.

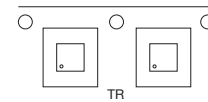
ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

Product & Package Information

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

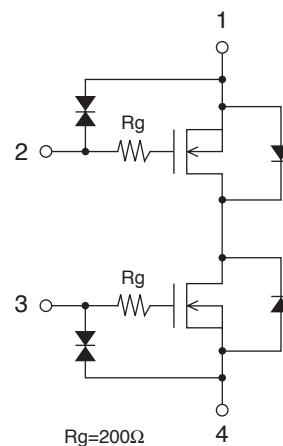
Taping Type : TR



Marking



Electrical Connection



EFC4630R

Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Value | | | 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 | μA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±8V, V _{SS} =0V Test Circuit 2 | | | ±10 | μA |
| Gate Threshold Voltage | V _{GS(th)} | V _{SS} =10V, I _S =1mA Test Circuit 3 | 0.5 | | 1.3 | V |
| Forward Transconductance | g _{FS} | V _{SS} =10V, I _S =3A Test Circuit 4 | | 3.1 | | S |
| Static Source-to-Source On-State Resistance | R _{SS(on)1} | I _S =3A, V _{GS} =4.5V Test Circuit 5 | 24 | 39 | 45 | mΩ |
| | R _{SS(on)2} | I _S =3A, V _{GS} =4.0V Test Circuit 5 | 25 | 41 | 48 | mΩ |
| | R _{SS(on)3} | I _S =3A, V _{GS} =3.7V Test Circuit 5 | 27.5 | 43 | 50 | mΩ |
| | R _{SS(on)4} | I _S =3A, V _{GS} =3.1V Test Circuit 5 | 31.5 | 48 | 57 | mΩ |
| | R _{SS(on)5} | I _S =3A, V _{GS} =2.5V Test Circuit 5 | 33.5 | 58 | 72 | mΩ |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit. Test Circuit 6 | | 20 | | ns |
| Rise Time | t _r | | | 230 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | | | 130 | | ns |
| Fall Time | t _f | | | 210 | | ns |
| Total Gate Charge | Q _g | | V _{SS} =10V, V _{GS} =4.5V, I _S =6A Test Circuit 7 | | 7 | |
| Forward Source-to-Source Voltage | V _{F(S-S)} | I _S =3A, V _{GS} =0V Test Circuit 8 | | 0.8 | 1.2 | V |

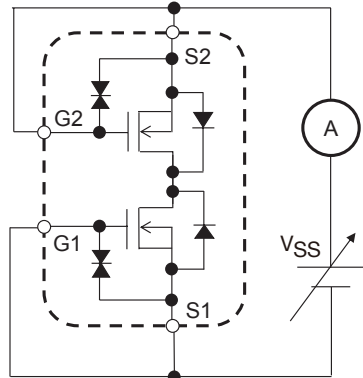
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Ordering Information

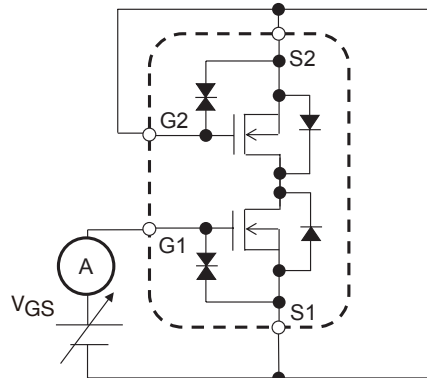
| Device | Package | Shipping | memo |
|-------------|---------|----------------|--------------------------|
| EFC4630R-TR | EFCP | 5,000pcs./reel | Pb-Free and Halogen Free |

Test circuits are example of measuring FET1 side

Test Circuit 1
ISSS

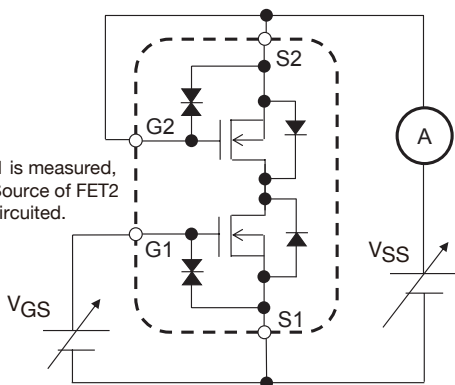


Test Circuit 2
IGSS



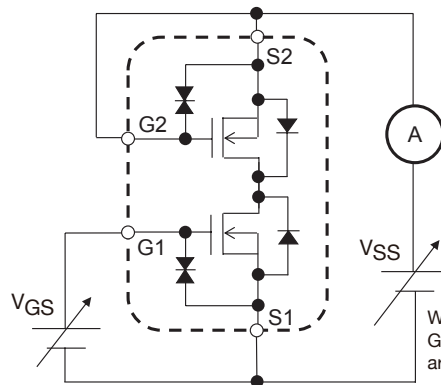
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 3
VGS(th)



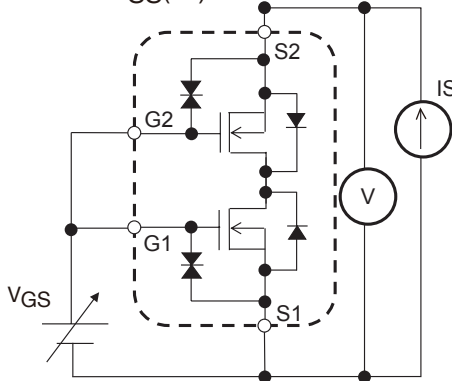
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 4
gFS

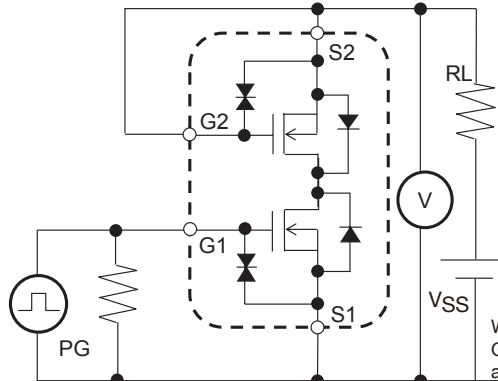


When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 5
RSS(on)

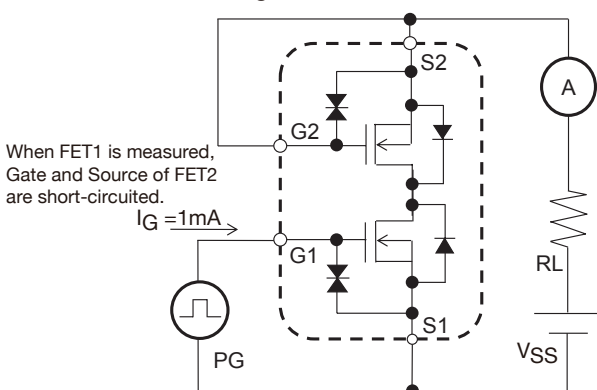


Test Circuit 6
td(on), tr, td(off), tf



When FET1 is measured, Gate and Source of FET2 are short-circuited.

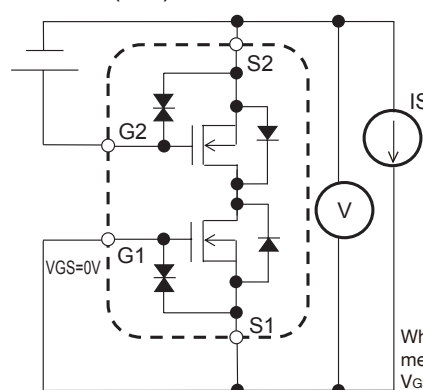
Test Circuit 7
Qg



When FET1 is measured, Gate and Source of FET2 are short-circuited.

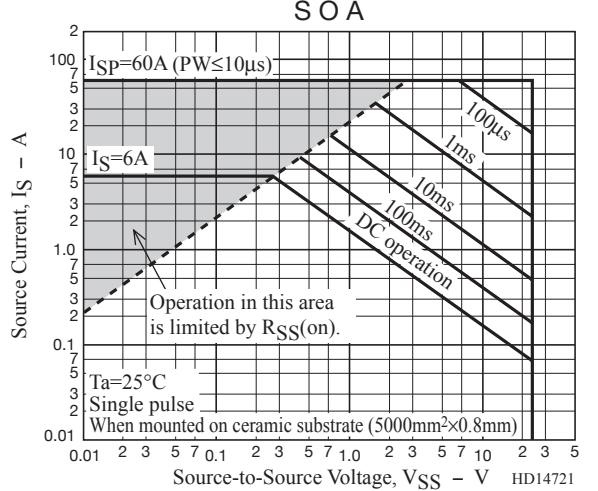
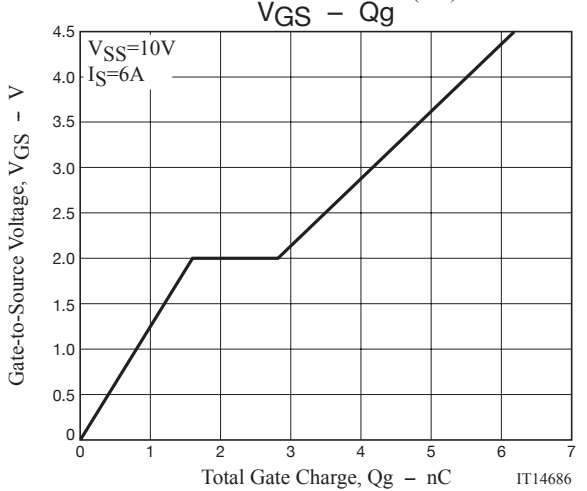
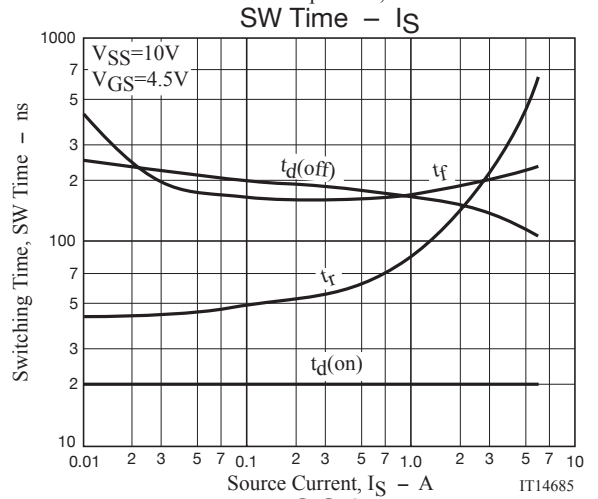
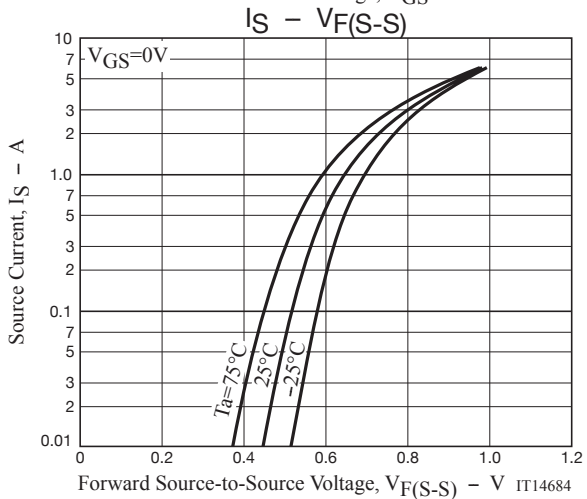
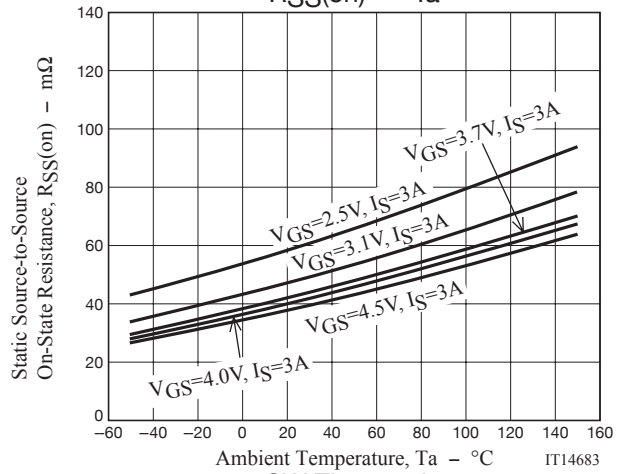
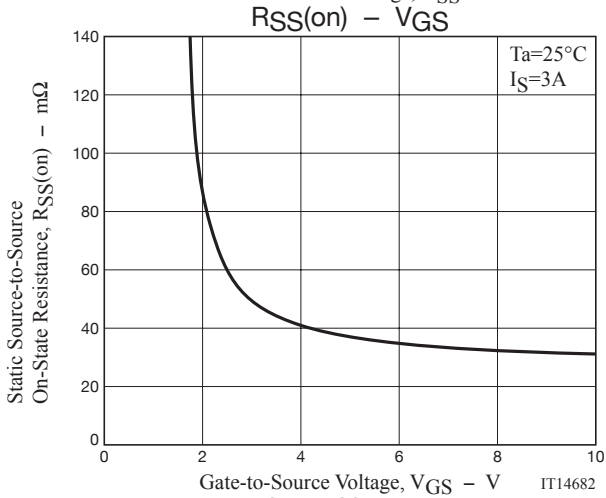
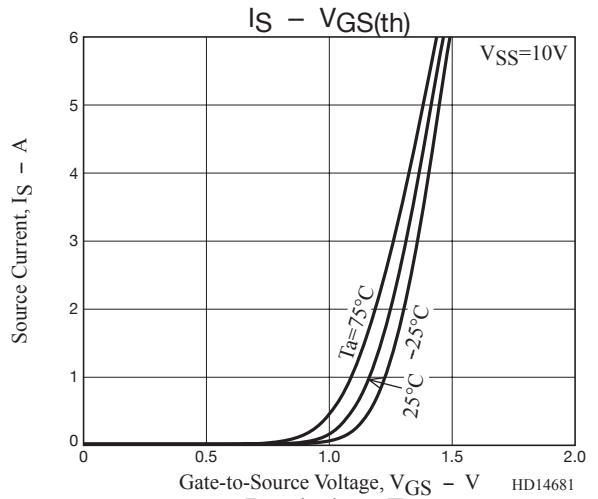
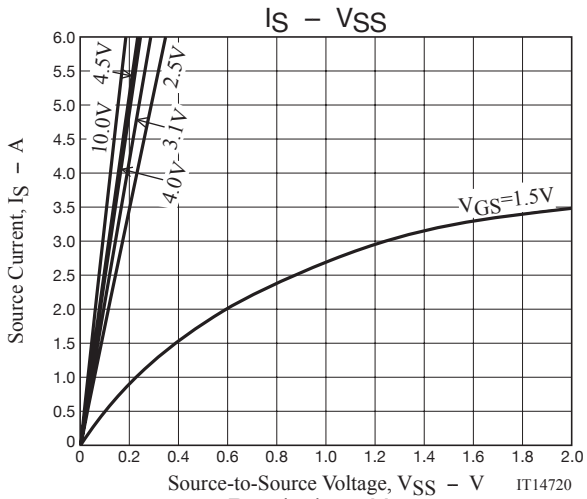
$I_G = 1\text{mA}$

Test Circuit 8
VF(S-S)

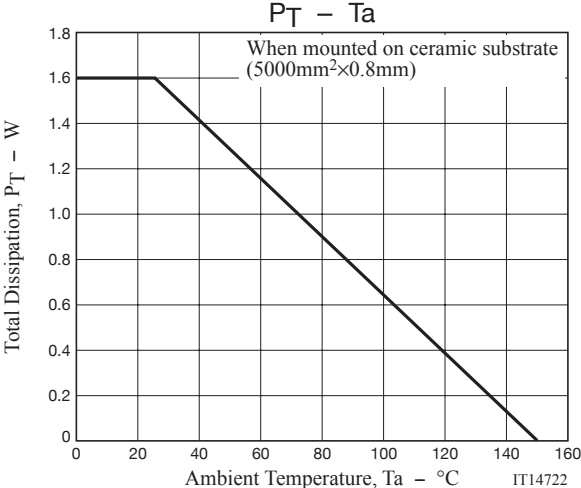


When FET1 is measured, +4.5V is added to Vgs of FET2.

When FET2 is measured, the position of FET 1 and FET 2 is switched.



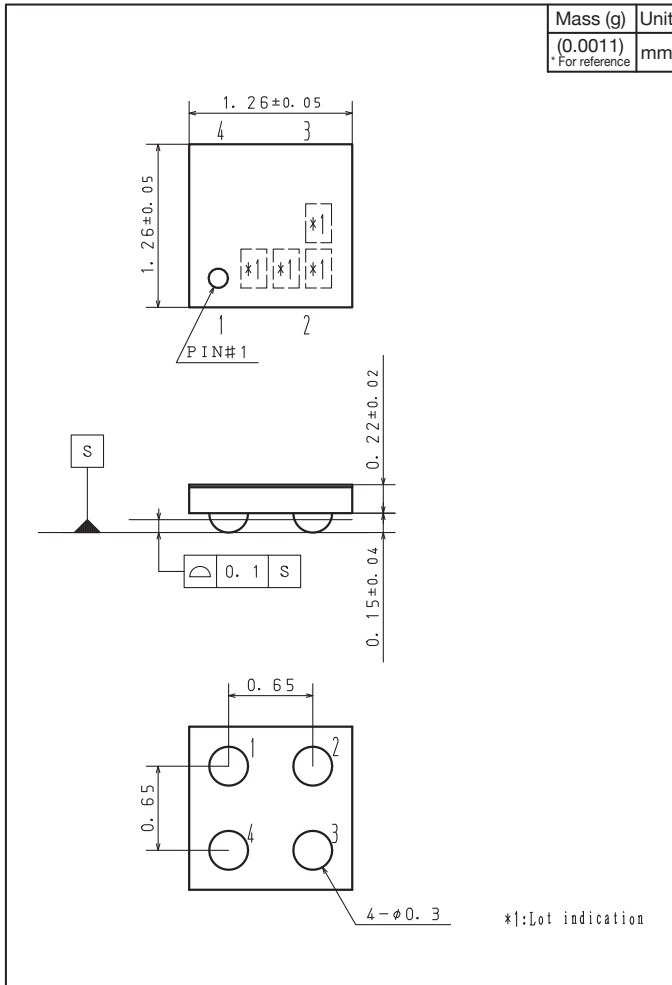
EFC4630R



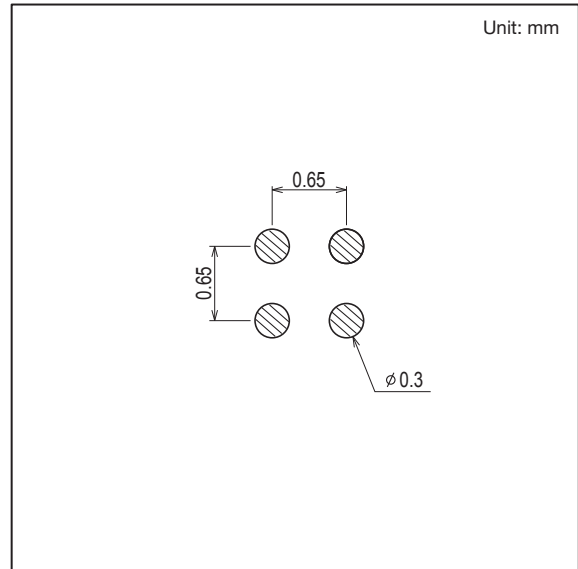
EFC4630R

Outline Drawing

EFC4630R-TR



Land Pattern Example



Note on usage : Since the EFC4630R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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