Ordering number : ENA1048

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

EFC4602 — 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_{SSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Source Current (DC)	I_S		6	A
Source Current (Pulse)	I_{SP}	PW≤100μs, duty cycle≤1%	60	A
Total Dissipation	P_T	When mounted on ceramic substrate (5000mm²×0.8mm)	1.6	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	Unit
Source-to-Source Breakdown Voltage	$V_{(BR)SSS}$	I_S=1mA, V_{GS}=0V	Test Circuit 1	20			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
Cutoff Voltage	$V_{GS}(off)$	V_{SS}=10V, I_S=1mA	Test Circuit 3	0.5		1.3	V
Forward Transfer Admittance	$\|yfs\|$	V_{SS}=10V, I_S=3A	Test Circuit 4	4.5	7.5		S
Static Source-to-Source On-State Resistance	$R_{SS}(on)1$	I_S=3A, V_{GS}=4.5V	Test Circuit 5	19.5	28	36.5	mΩ
	$R_{SS}(on)2$	I_S=3A, V_{GS}=4.0V	Test Circuit 5	20	29	38	mΩ
	$R_{SS}(on)3$	I_S=1.5A, V_{GS}=3.1V	Test Circuit 5	23	33	43	mΩ
	$R_{SS}(on)4$	I_S=1.5A, V_{GS}=2.5V	Test Circuit 5	23	38	53.5	mΩ

Marking : FB

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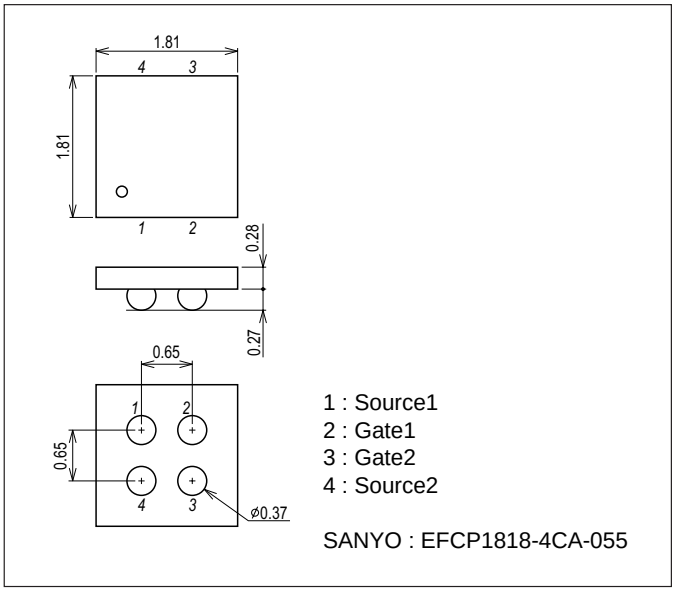
Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	Unit
Input Capacitance	Ciss	V_{SS}=10V, f=1MHz	Test Circuit 8		1000		pF
Output Capacitance	Coss	V_{SS}=10V, f=1MHz	Test Circuit 8		180		pF
Reverse Transfer Capacitance	Crss	V_{SS}=10V, f=1MHz	Test Circuit 8		140		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.	Test Circuit 7		23		ns
Rise Time	t_{r}	See specified Test Circuit.	Test Circuit 7		185		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.	Test Circuit 7		160		ns
Fall Time	t_{f}	See specified Test Circuit.	Test Circuit 7		200		ns
Total Gate Charge	Qg	V_{SS}=10V, V_{GS}=10V, I_{S}=6A			13		nC
Forward Source-to-Source Voltage	$V_{F(S-S)}$	I_{S}=6A, V_{GS}=0V	Test Circuit 6		0.78	1.2	V

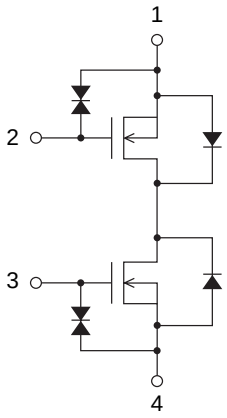
Package Dimensions

unit : mm (typ)

7056-001



Electrical Connection



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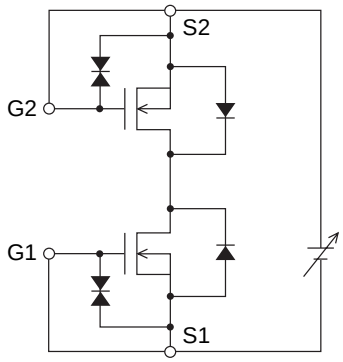
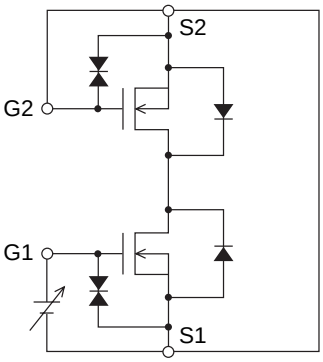
Test Circuits are example of measuring FET1 side

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



IT11565

Test Circuit 2
I_{GSS} (+) / (−)



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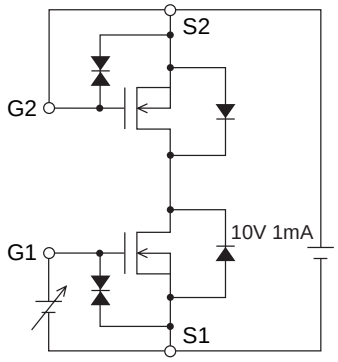
Test Circuit 3
V_{GS} (off)



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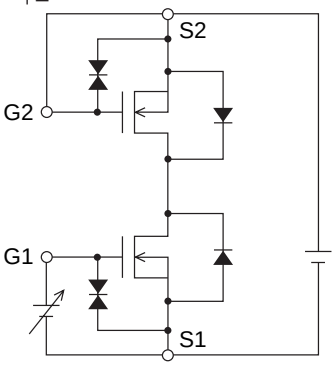
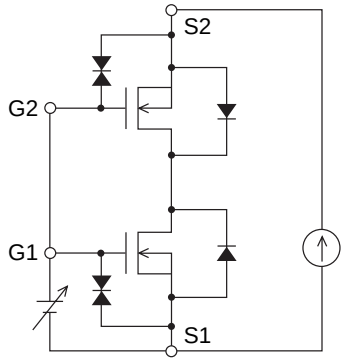
Test Circuit 4
|yfs|



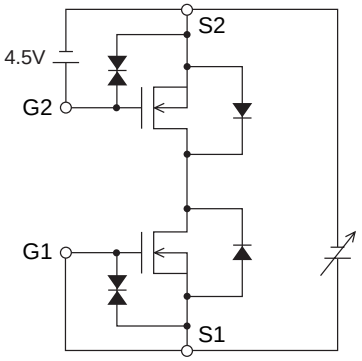
IT11568

Test Circuit 5
R_{SS} (on)



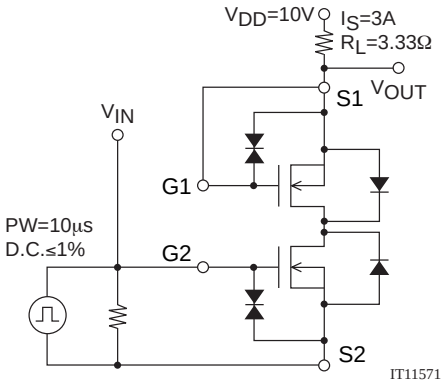
IT11569

Test Circuit 6
V_F (S-S)



IT11570

Test Circuit 7
t_d (on), t_r, t_d (off), t_f



IT11571

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

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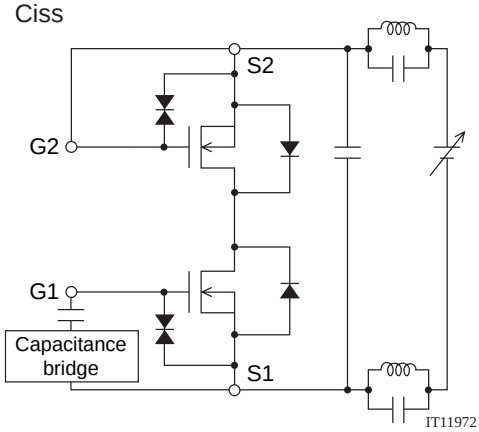
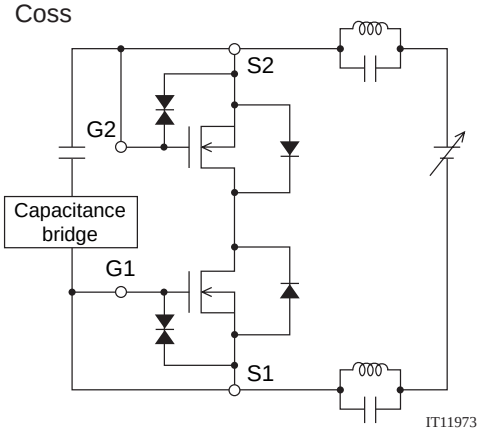
Test Circuit 8

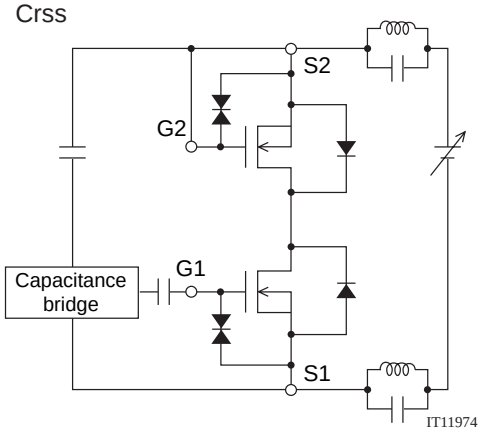
Ciss



Coss

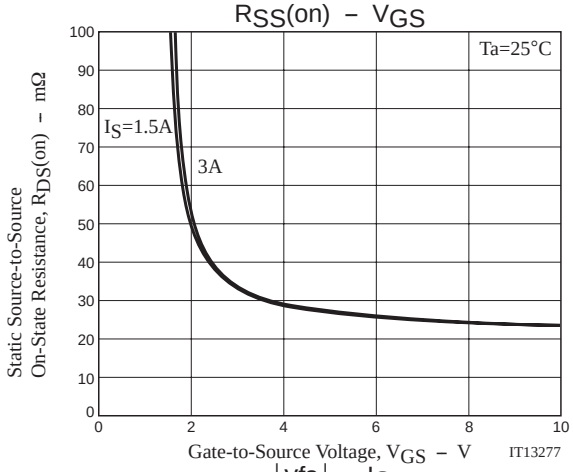


Crss

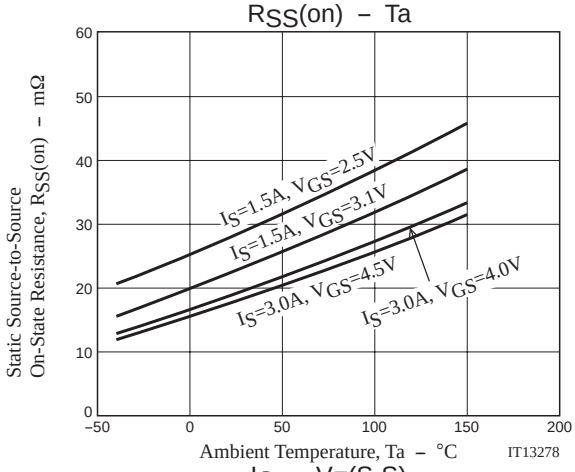


* Note: Connect the mesurement terminal reversely if you want to measure the FET2 side.

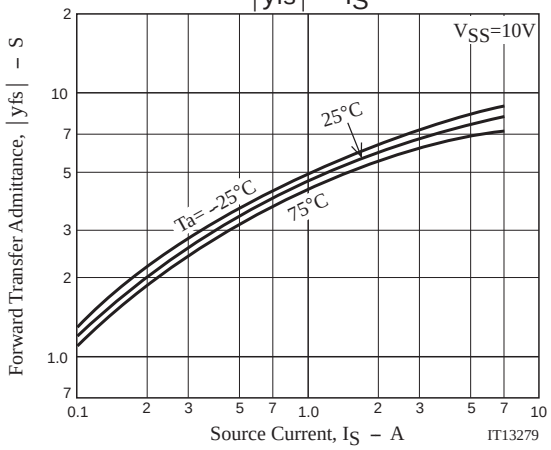
$R_{SS(on)}$ – V_{GS}



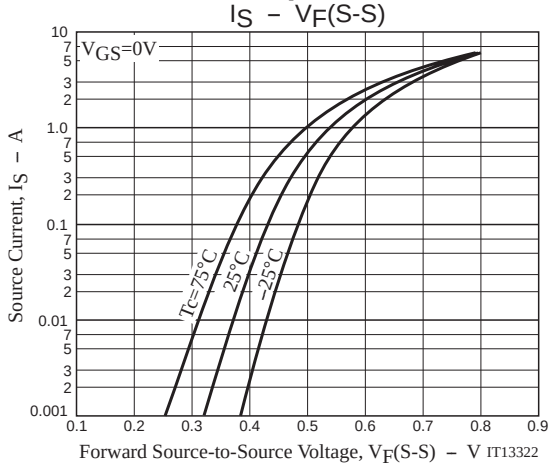
$R_{SS(on)}$ – Ta



|yfs| – IS



IS – $V_{F(S-S)}$



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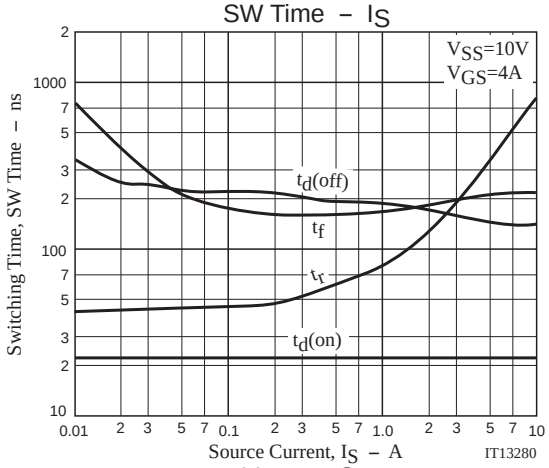
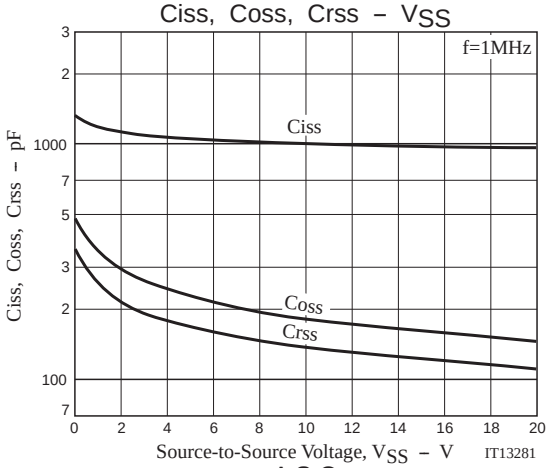
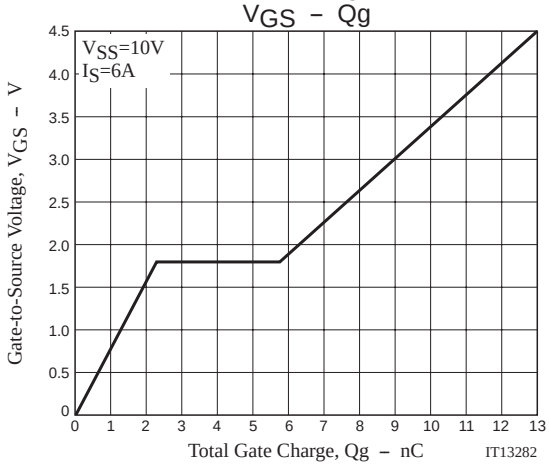
SW Time – I_S



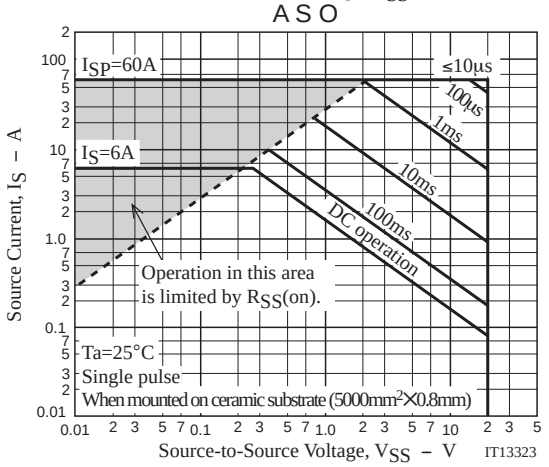
Ciss, Coss, Crss – V_{SS}



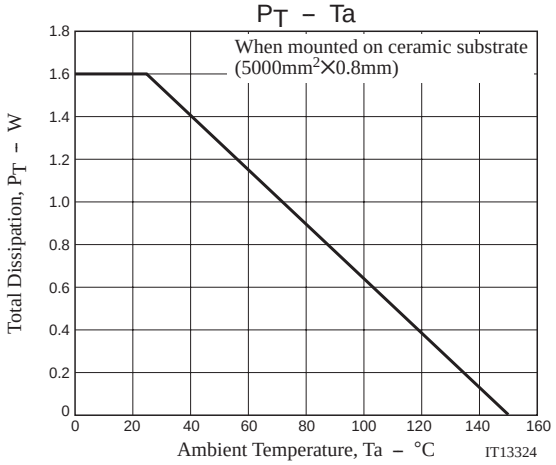
V_{GS} – Qg



A S O



P_T – Ta



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Note on usage : Since the EFC4602 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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