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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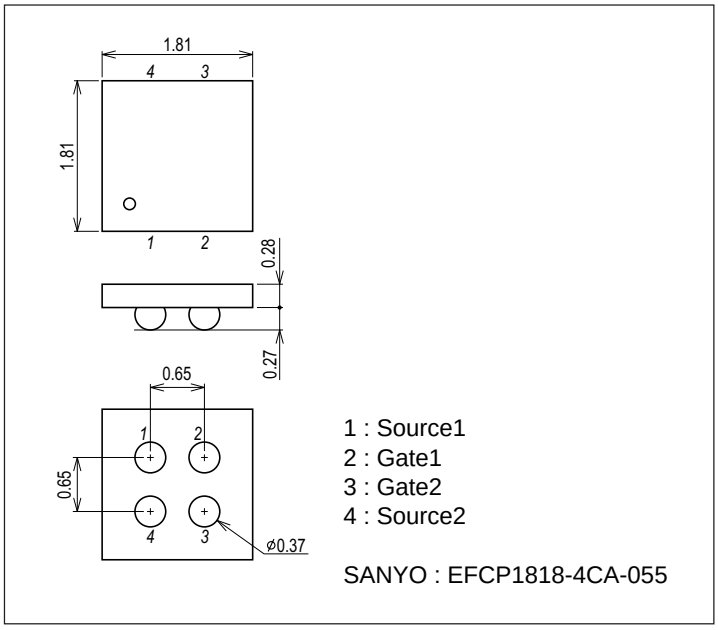
Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	Unit
Input Capacitance	Ciss	V_{SS}=10V, f=1MHz	Test Circuit 8		1000		pF
Output Capacitance	Coss	V_{SS}=10V, f=1MHz	Test Circuit 8		180		pF
Reverse Transfer Capacitance	Crss	V_{SS}=10V, f=1MHz	Test Circuit 8		140		pF
Turn-ON Delay Time	t_{d}(on)	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

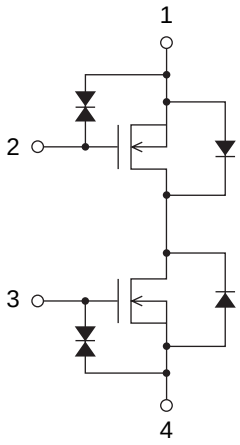
Package Dimensions

unit : mm (typ)

7056-001

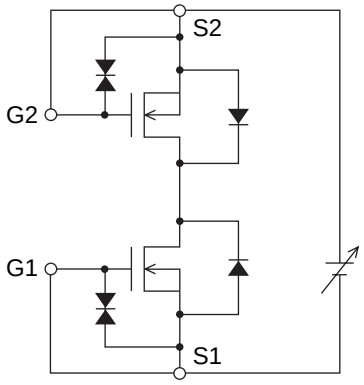


Electrical Connection



Test Circuits are example of measuring FET1 side

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



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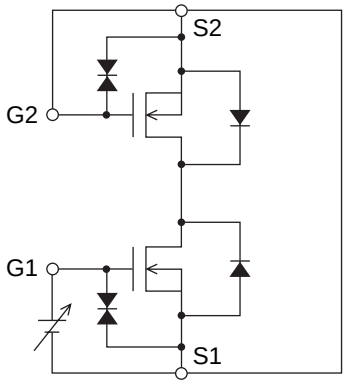
Test Circuit 2
I_{GSS} (+) / (−)



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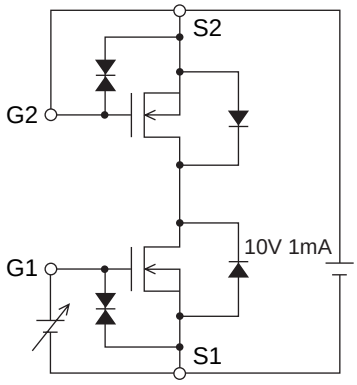
Test Circuit 3
V_{GS} (off)



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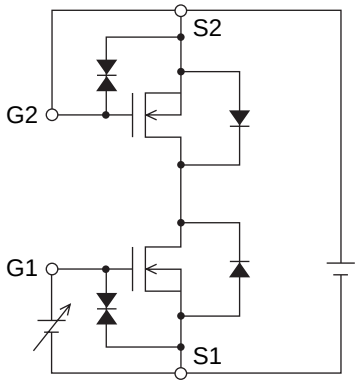
Test Circuit 4
|yfs|



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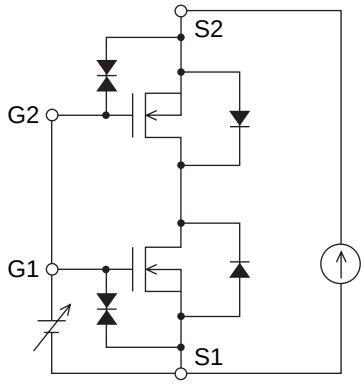
Test Circuit 5
R_{SS} (on)



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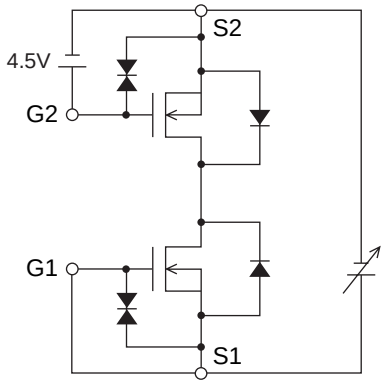
Test Circuit 6
V_F (S-S)



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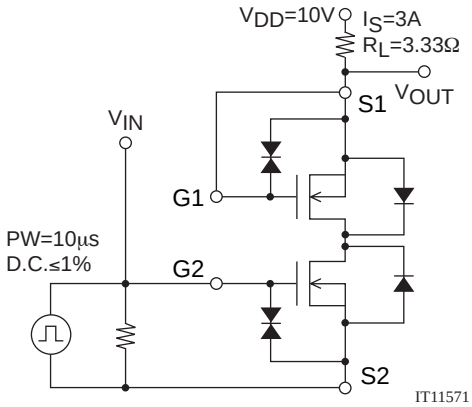
Test Circuit 7
t_d (on), t_r, t_d (off), t_f



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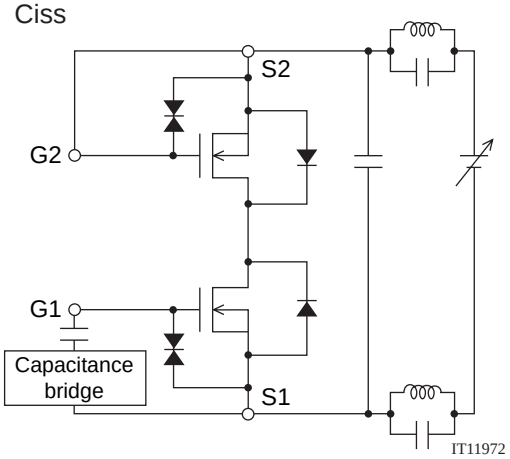
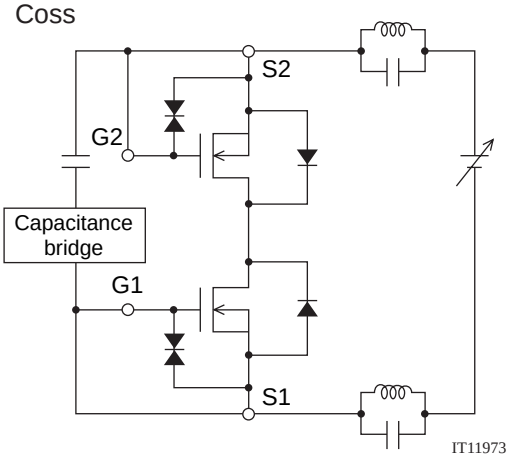
* Note: Connect the mesurement terminal reversely if you want to measure the FET2 side.

Test Circuit 8

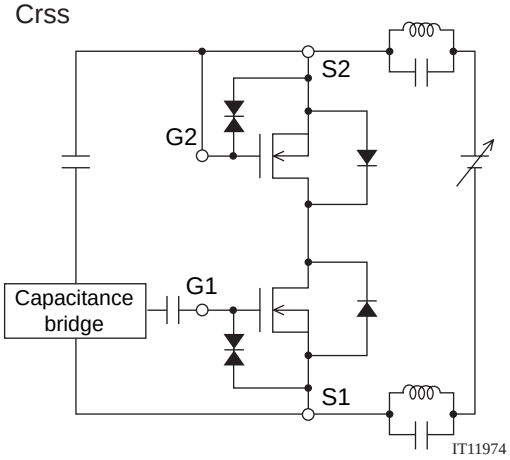
Ciss



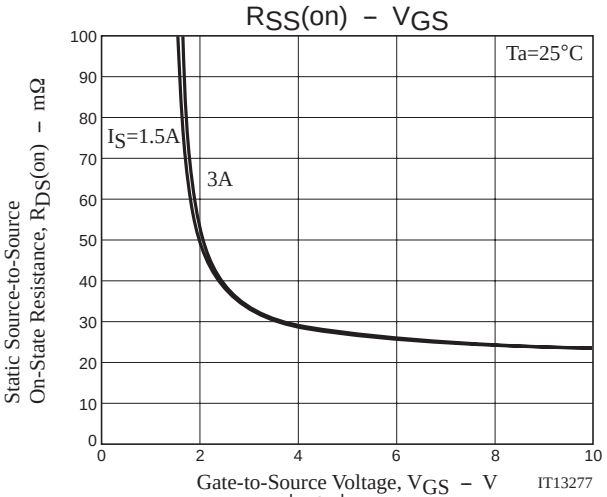
Coss

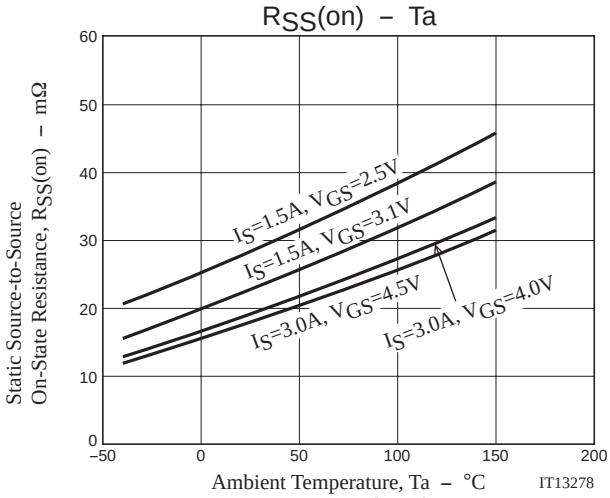


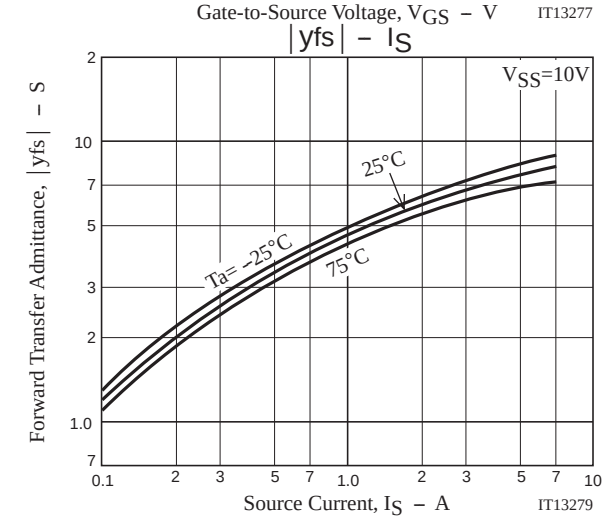
Crss

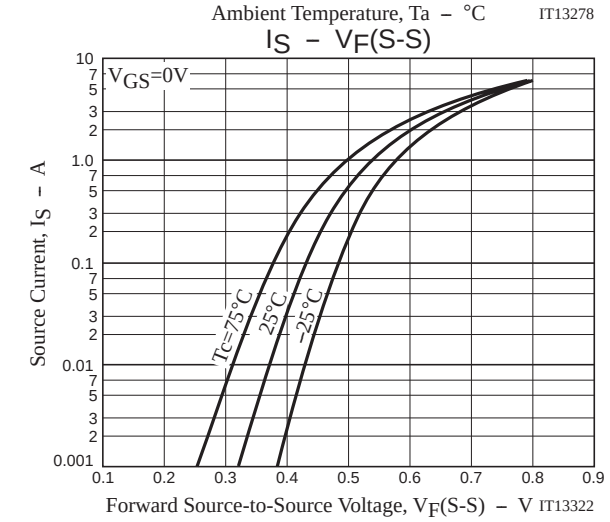


* Note: Connect the mesurement terminal reversely if you want to measure the FET2 side.

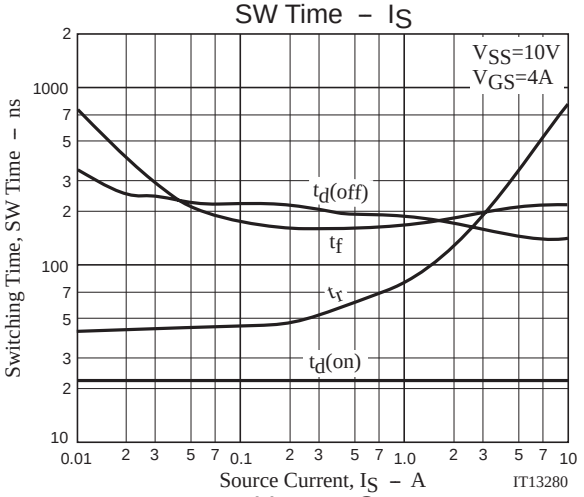




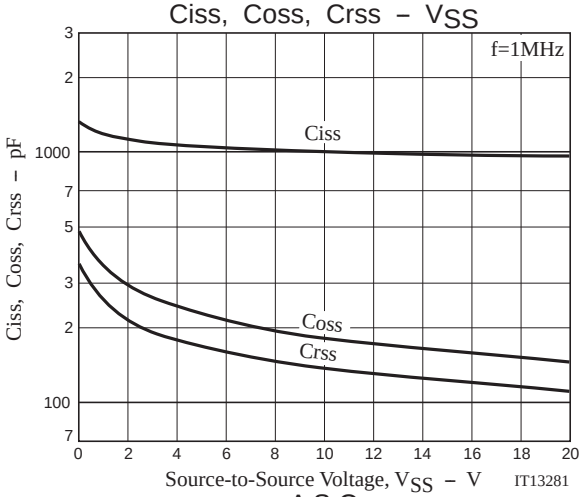




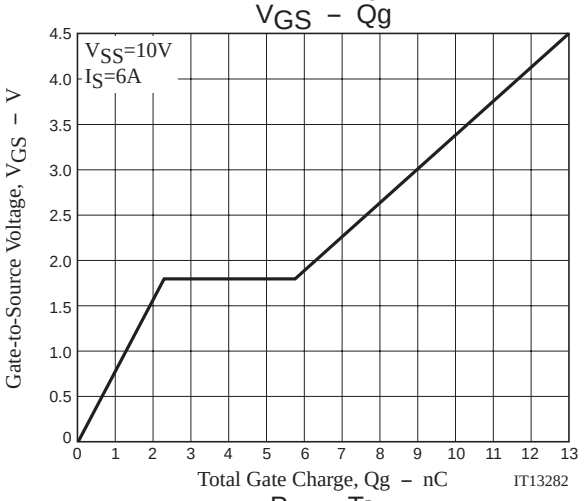
SW Time – I_S



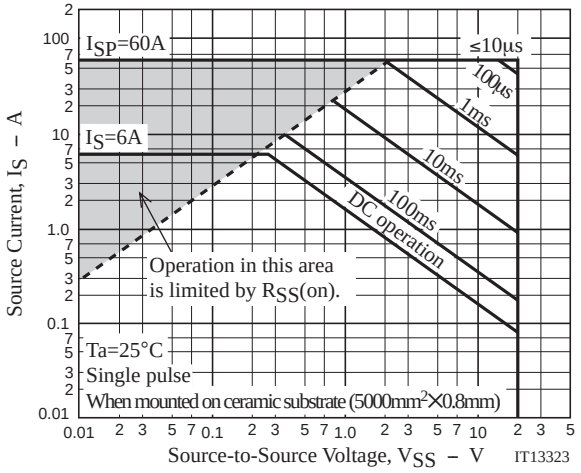
Ciss, Coss, Crss – V_{SS}



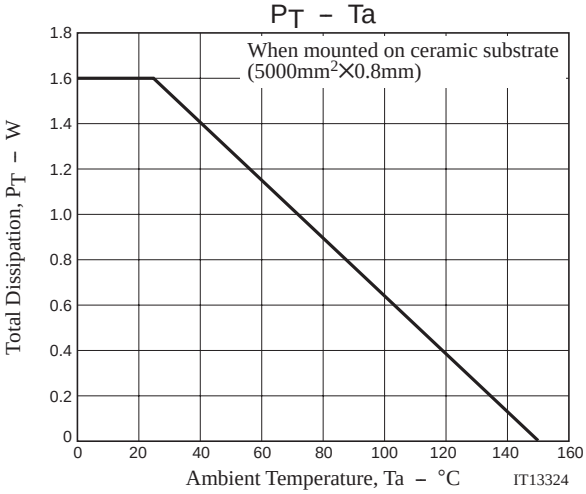
V_{GS} – Qg



A S O



P_T – Ta



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

This catalog provides information as of April, 2008. Specifications and information herein are subject to change without notice.