Ordering number : EN7035A

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

EC4302C — Small Signal Switch and Interface Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		-50	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		-0.07	A
Drain Current (Pulse)	I_{DP}	PW≤10µs, duty cycle≤1%	-0.28	A
Allowable Power Dissipation	P_D		0.15	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-1mA, V_{GS}=0V	-50			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-50V, V_{GS}=0V			-1	µA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	µA
Cutoff Voltage	V_{GS}(off)	V_{DS}=-10V, I_D=-100µA	-0.4		-1.4	V
Forward Transfer Admittance	|yfs|	V_{DS}=-10V, I_D=-40mA	70	100		mS
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=-40mA, V_{GS}=-4V		18	23	Ω
	R_{DS}(on)2	I_D=-20mA, V_{GS}=-2.5V		20	28	Ω
	R_{DS}(on)3	I_D=-5mA, V_{GS}=-1.5V		30	60	Ω
Input Capacitance	Ciss	V_{DS}=-10V, f=1MHz		7.4		pF
Output Capacitance	Coss	V_{DS}=-10V, f=1MHz		4.2		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-10V, f=1MHz		1.3		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		20		ns
Rise Time	t_r	See specified Test Circuit.		35		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		160		ns
Fall Time	t_f	See specified Test Circuit.		150		ns

Continued on next page.

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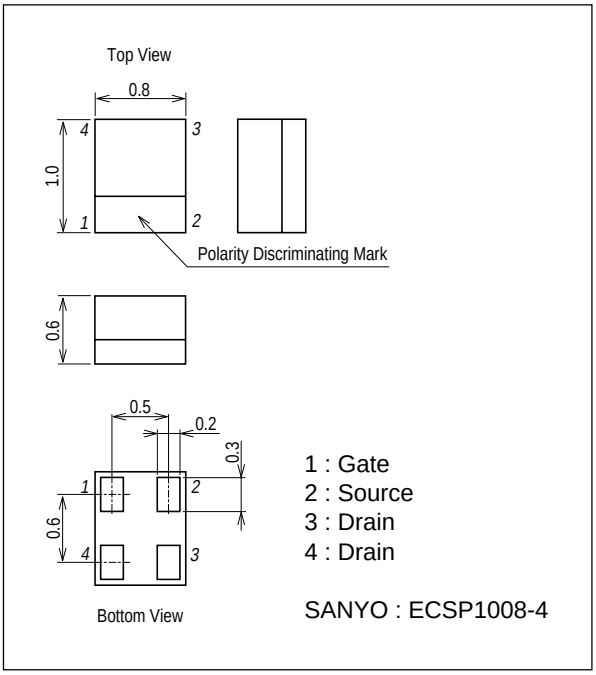
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		1.40		nC
Gate-to-Source Charge	Qgs	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		0.16		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=-10V, V_{GS}=-10V, I_D=-70mA		0.23		nC
Diode Forward Voltage	V_{SD}	I_S=-70mA, V_{GS}=0V		-0.9	-1.2	V

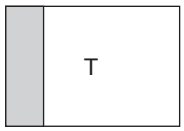
Package Dimensions

unit : mm

7036-001

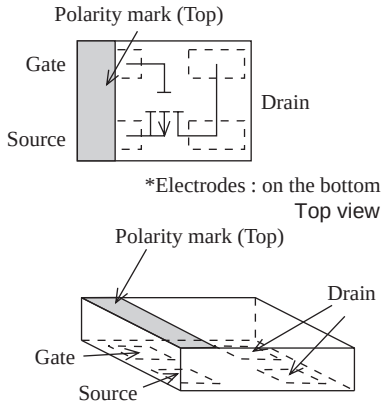


Type No. Indication

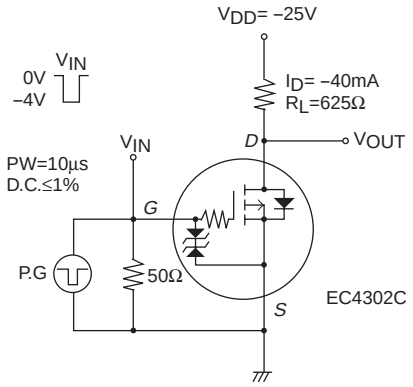


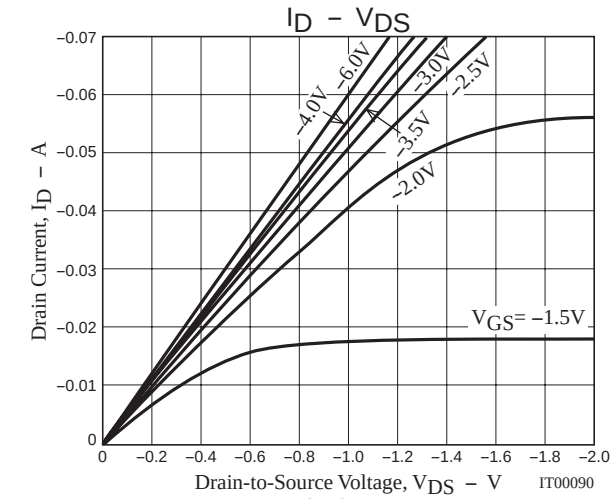
Top view

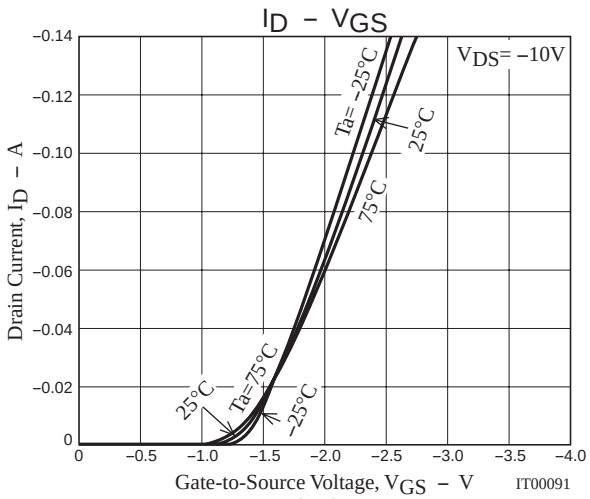
Electrical Connection

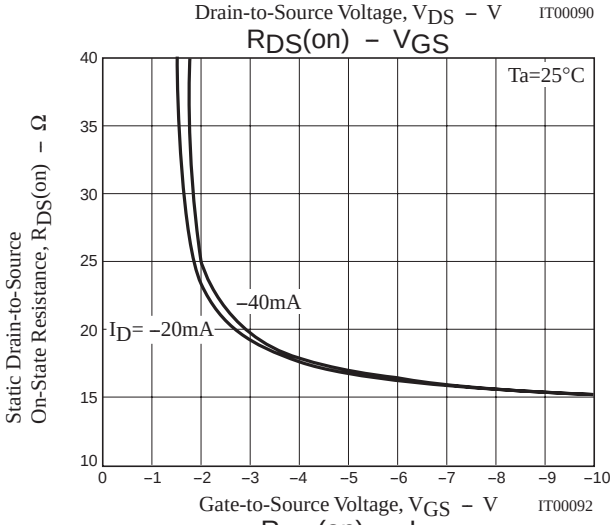


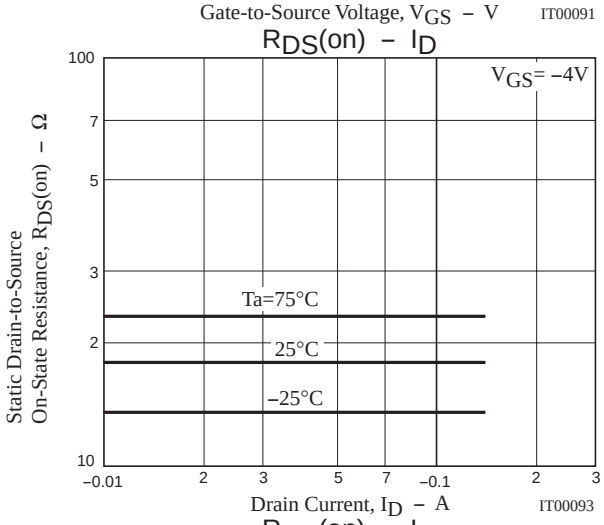
Switching Time Test Circuit

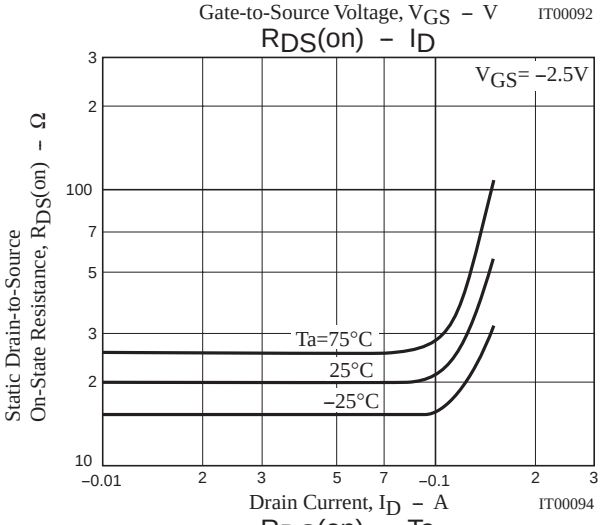


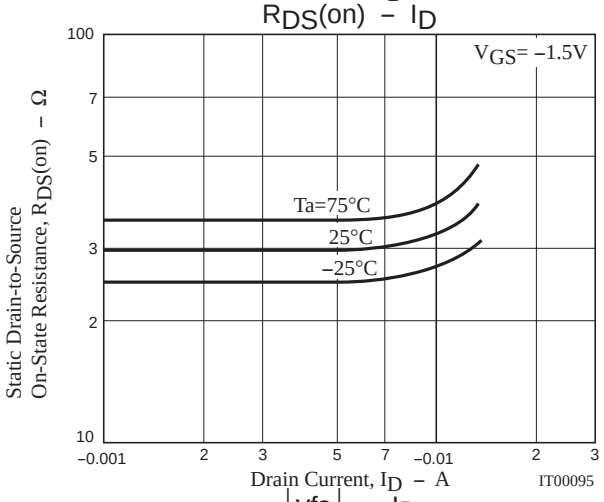

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
–4.0V
–6.0V
–3.0V
–2.5V
–3.5V
–2.0V
VGS= –1.5V
IT00090

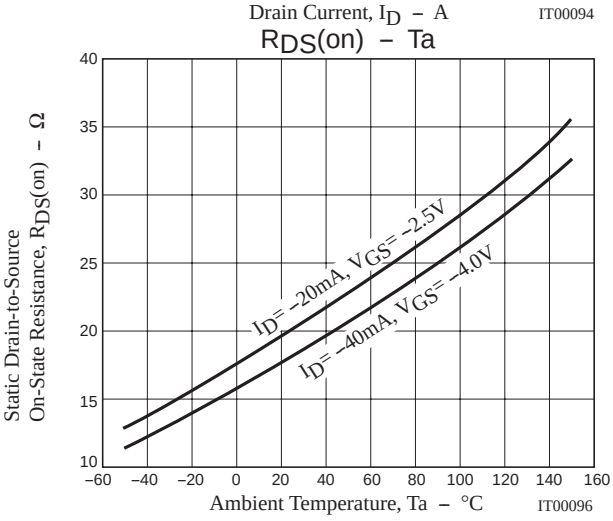

ID – VGS
VDS= –10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
Ta= –25°C
25°C
75°C
Ta=75°C
–25°C
IT00091

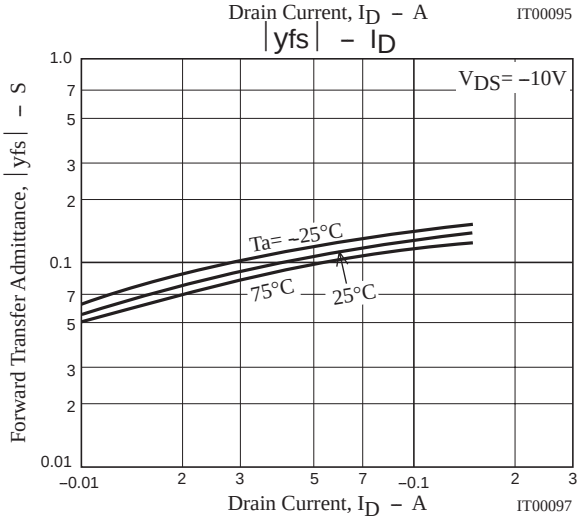

RDS(on) – VGS
Ta=25°C
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
–40mA
ID= –20mA
Gate-to-Source Voltage, VGS – V
IT00092

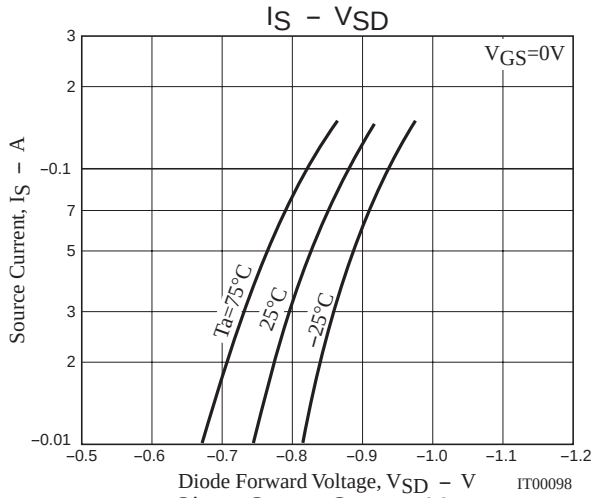

RDS(on) – ID
VGS= –4V
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
Ta=75°C
25°C
–25°C
Drain Current, ID – A
IT00093

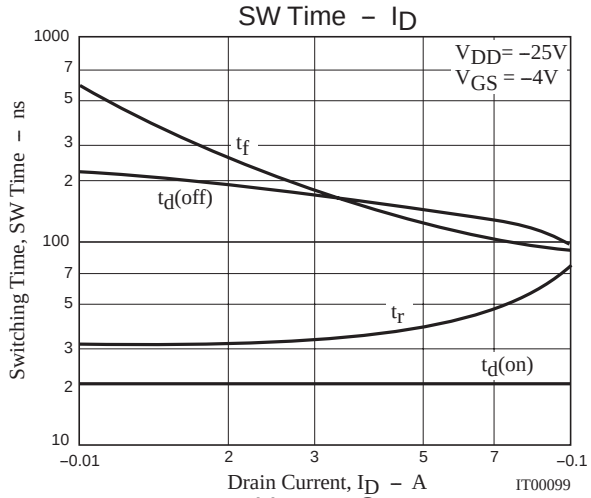

RDS(on) – ID
VGS= –2.5V
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
Ta=75°C
25°C
–25°C
Drain Current, ID – A
IT00094

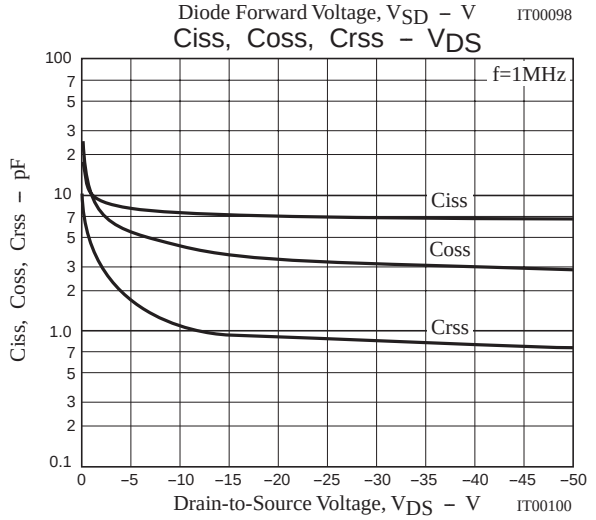

RDS(on) – ID
VGS= –1.5V
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
Ta=75°C
25°C
–25°C
Drain Current, ID – A
IT00095

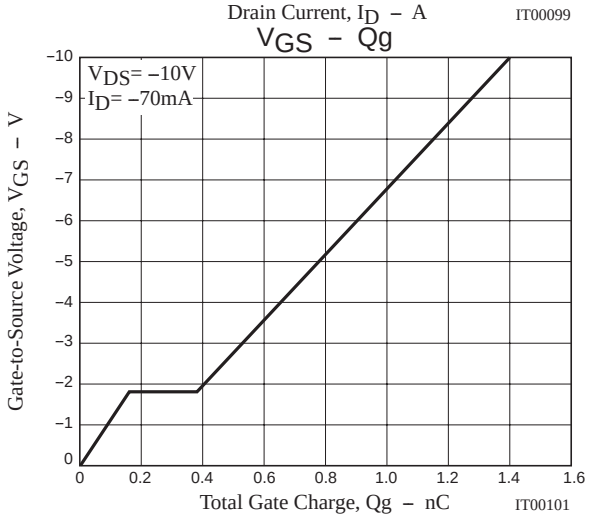

RDS(on) – Ta
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
ID= –20mA, VGS= –2.5V
ID= –40mA, VGS= –4.0V
Ambient Temperature, Ta – °C
IT00096

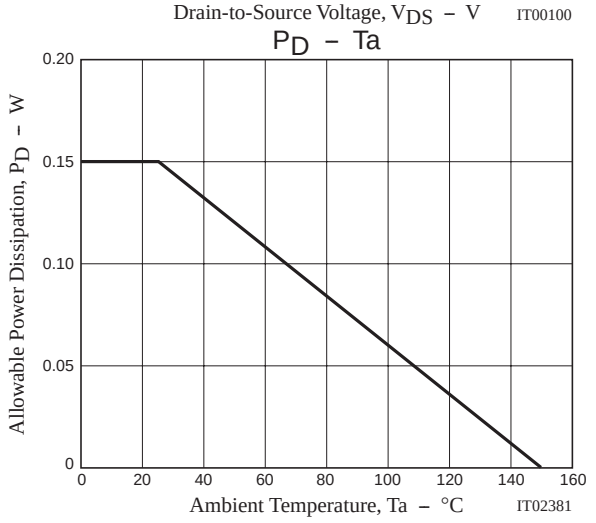

|yfs| – ID
VDS= –10V
Forward Transfer Admittance, |yfs| – S
Ta= –25°C
75°C
25°C
Drain Current, ID – A
IT00097


IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT00098


SW Time – ID
VDD= –25V
VGS = –4V
tf
td(off)
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00099


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00100


VGS – Qg
VDS= –10V
ID= –70mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00101


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT02381

Note on usage : Since the EC4302C is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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