Ordering number : EN6794A

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

CPH6311 — General-Purpose Switching Device 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}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−20	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	1.6	W
		Mounted on a FR4 board PW≤5S	2.0	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	−20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−20V, 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=−1mA	−0.4		−1.4	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=−10V, I_D=−3A	5.8	8.5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−3A, V_{GS}=−4.5V		32	42	mΩ
	R_{DS}(on)2	I_D=−1A, V_{GS}=−2.5V		46	60	mΩ

Marking : JM

Continued on next page.

SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

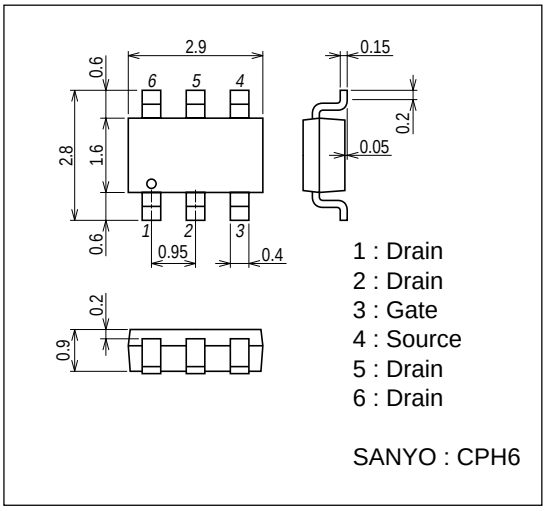
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		1230		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		200		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		170		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		17		ns
Rise Time	t_{r}	See specified Test Circuit.		100		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		100		ns
Fall Time	t_{f}	See specified Test Circuit.		95		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−5A		31		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−5A		2.8		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−5A		4.2		nC
Diode Forward Voltage	V_{SD}	I_{S}=−5A, V_{GS}=0V		−0.83	−1.5	V

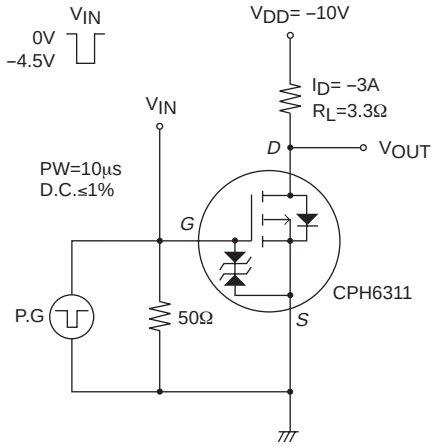
Package Dimensions

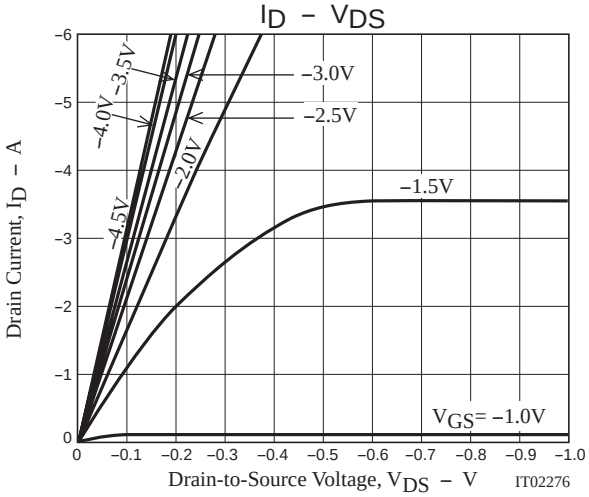
unit : mm (typ)

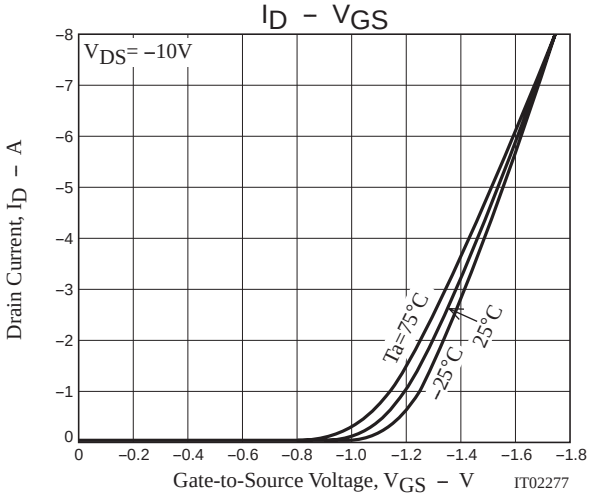
7018A-003

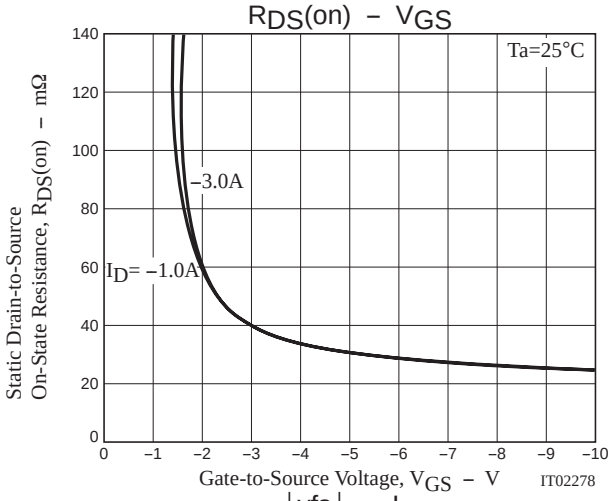


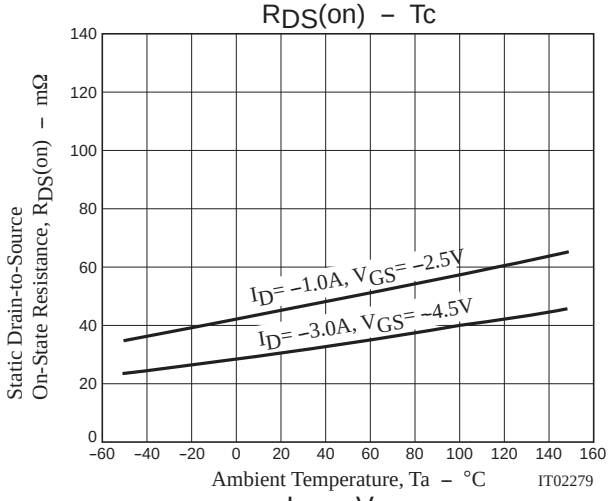
Switching Time Test Circuit

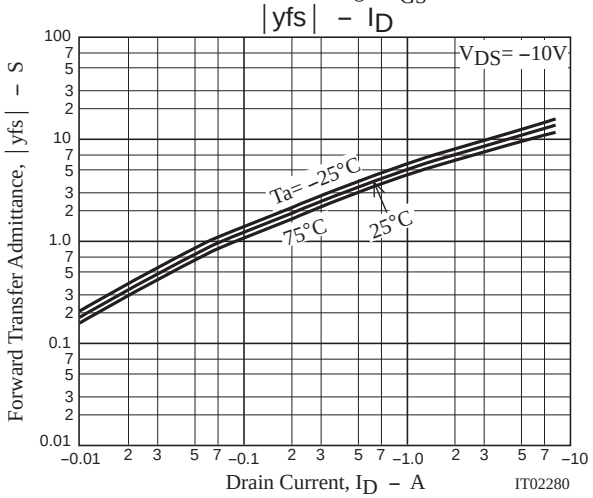


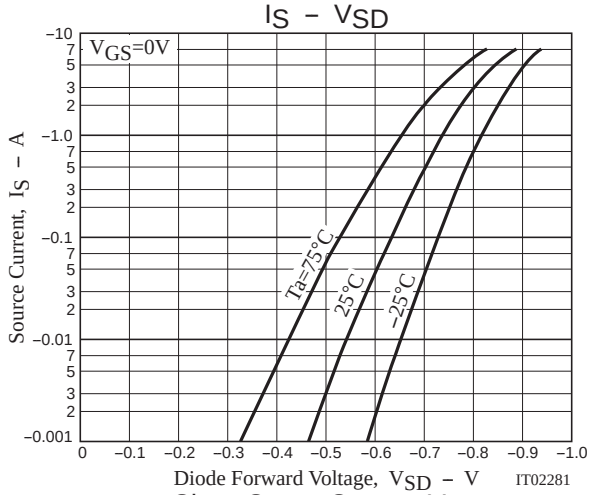


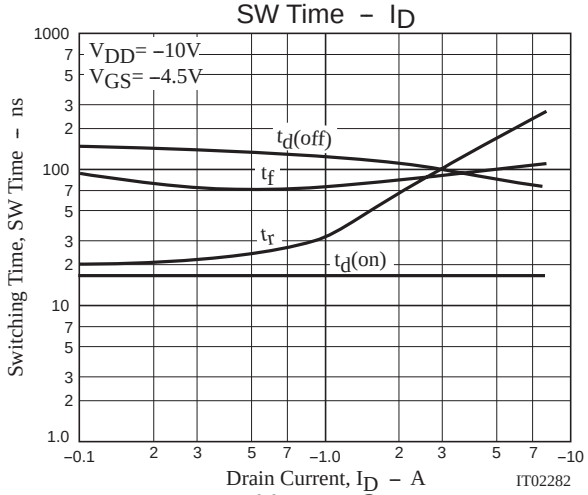


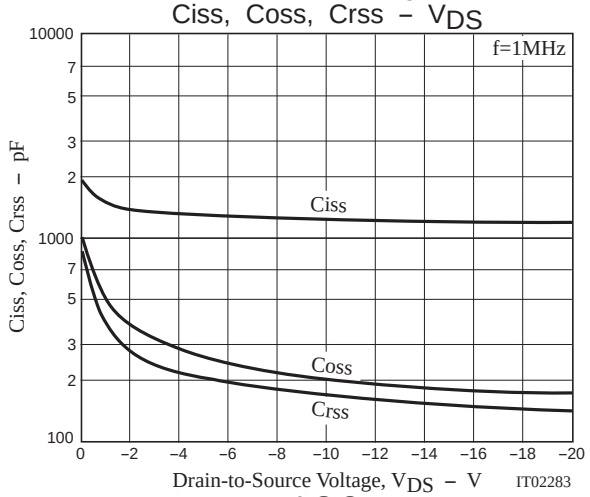

RDS(on) – VGS
Ta=25°C
–3.0A
ID= –1.0A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT02278

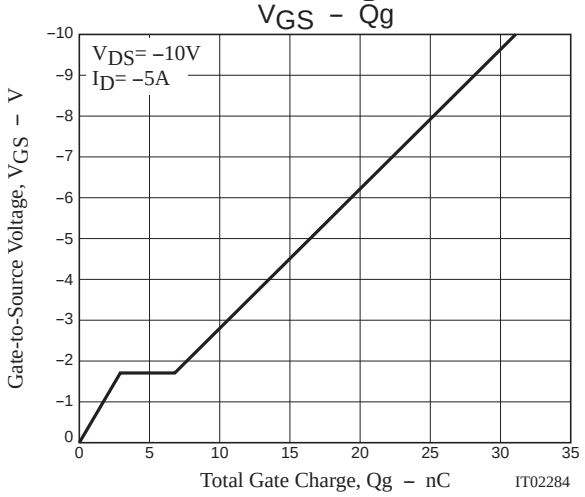

RDS(on) – Tc
ID= –1.0A, VGS= –2.5V
ID= –3.0A, VGS= –4.5V
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT02279

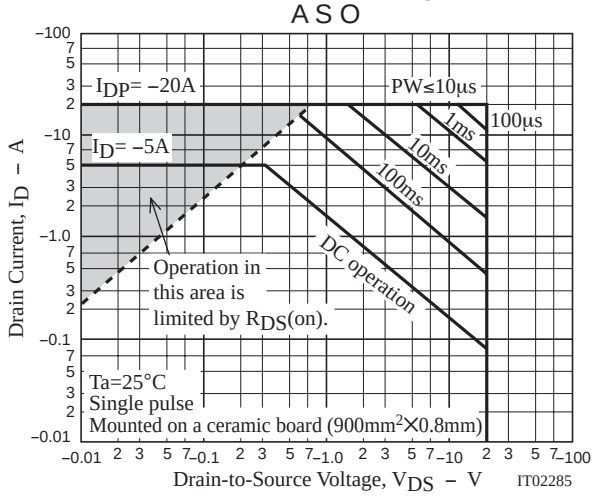

|yfs| – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02280

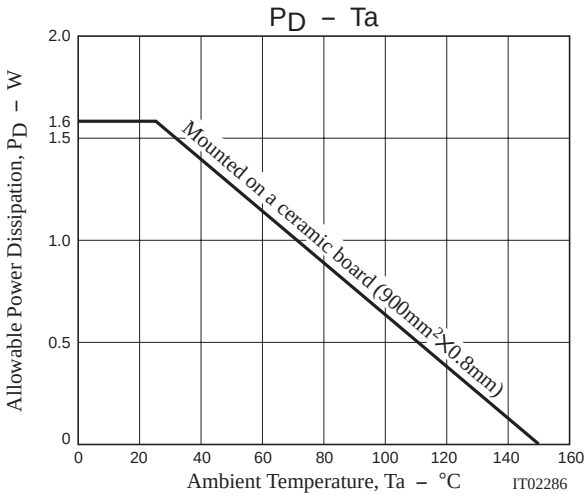

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT02281

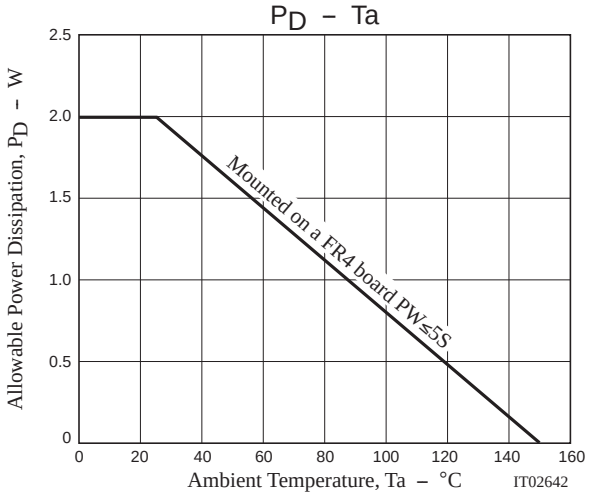

SW Time – ID
VDD= –10V
VGS= –4.5V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT02282


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02283


VGS – Qg
VDS= –10V
ID= –5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT02284


ASO
IDP= –20A
ID= –5A
PW≤10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT02285





Note on usage : Since the CPH6311 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.