Ordering number : ENN6862

N-Channel Silicon MOSFET

CPH3414

Ultrahigh-Speed Switching Applications

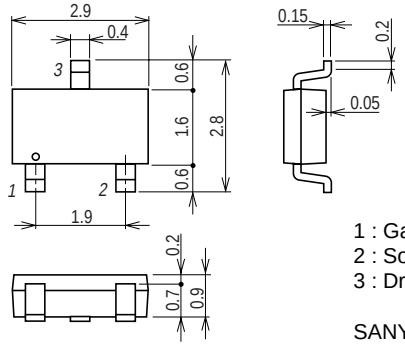
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit : mm
2152A

[CPH3414]



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		2.2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	8.8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	1.0	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}=0	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=1A	1.4	2.0		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1A, V_{GS}=10V		115	150	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=4V		190	270	mΩ

Marking : KP

Continued on next page.

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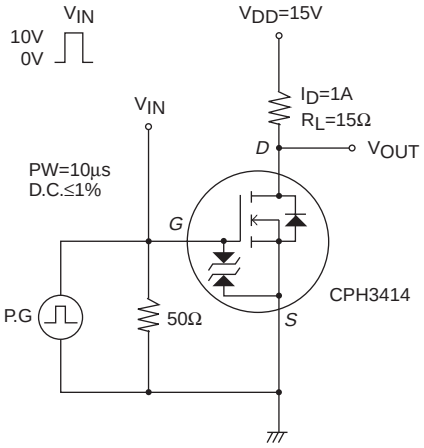
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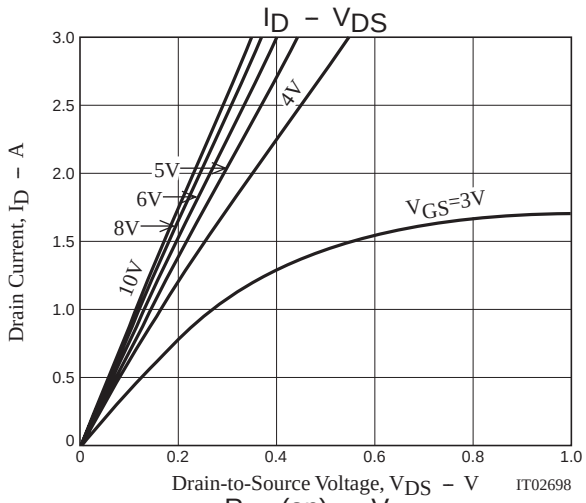
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

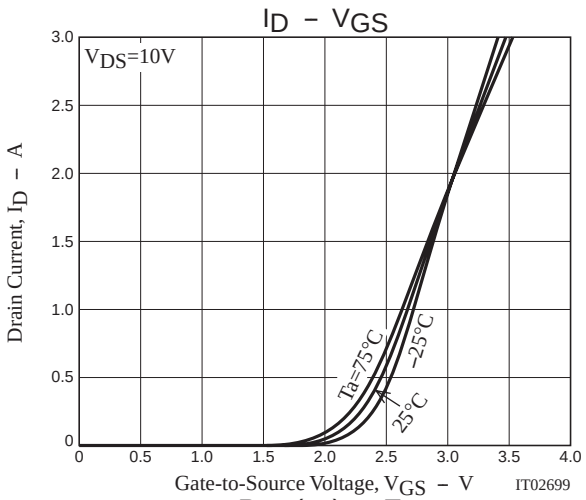
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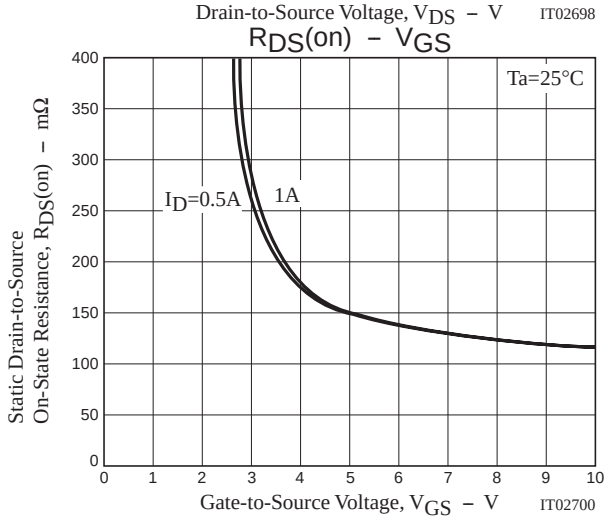
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		120		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		30		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		15		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		6		ns
Rise Time	t_{r}	See specified Test Circuit		4		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit		17		ns
Fall Time	t_{f}	See specified Test Circuit		5		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_{D}=2.2A		3.6		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_{D}=2.2A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_{D}=2.2A		0.5		nC
Diode Forward Voltage	V_{SD}	I_{S}=2.2A, V_{GS}=0		0.9	1.2	V

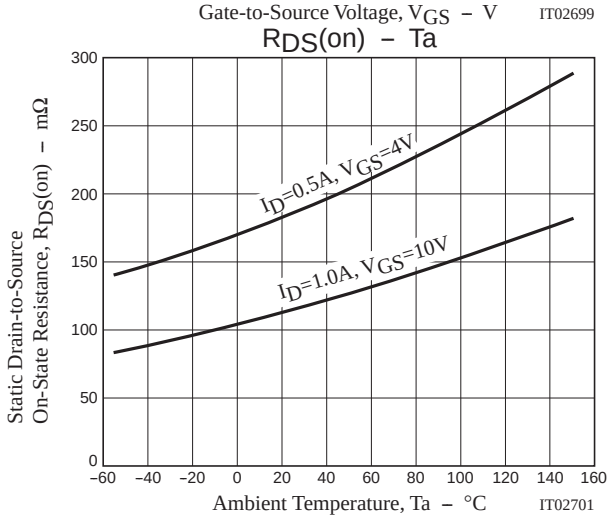
Switching Time Test Circuit

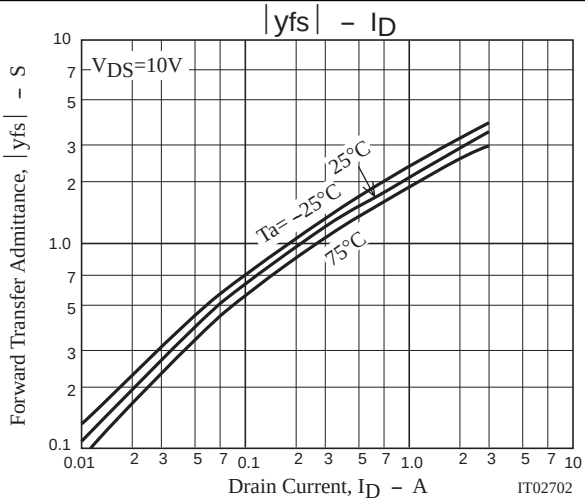


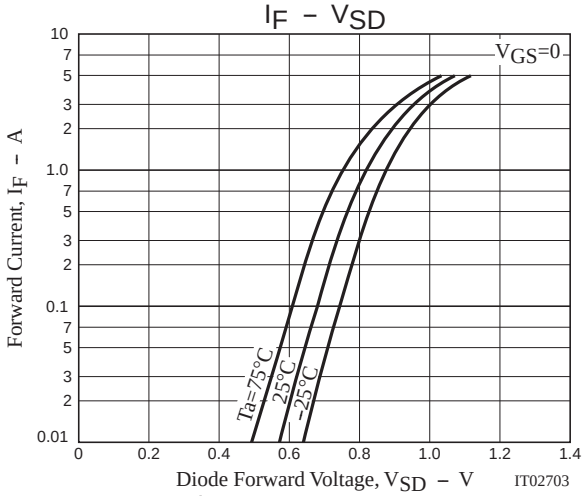


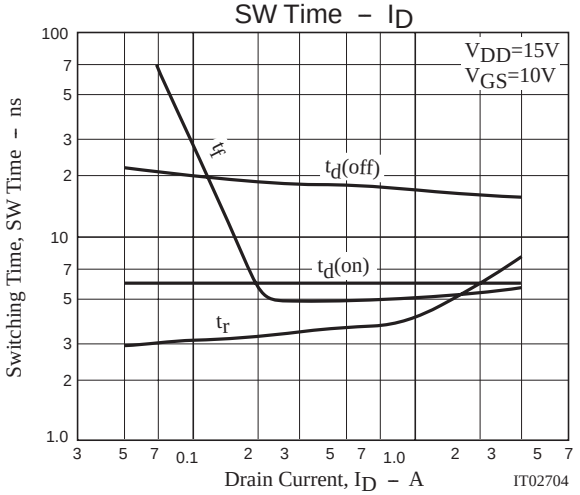


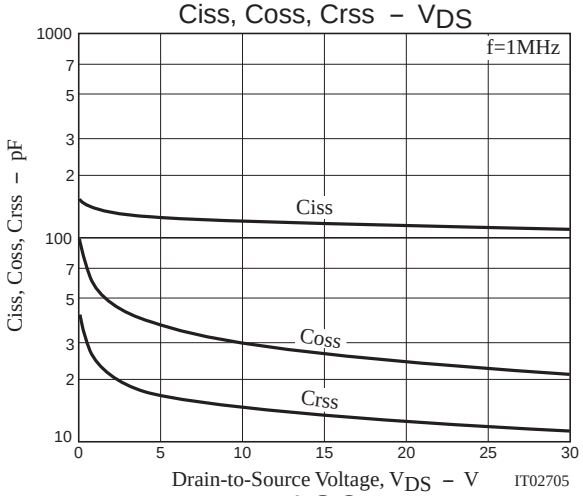


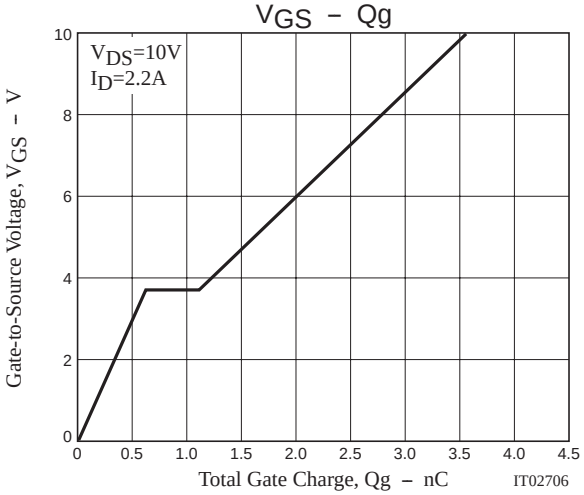


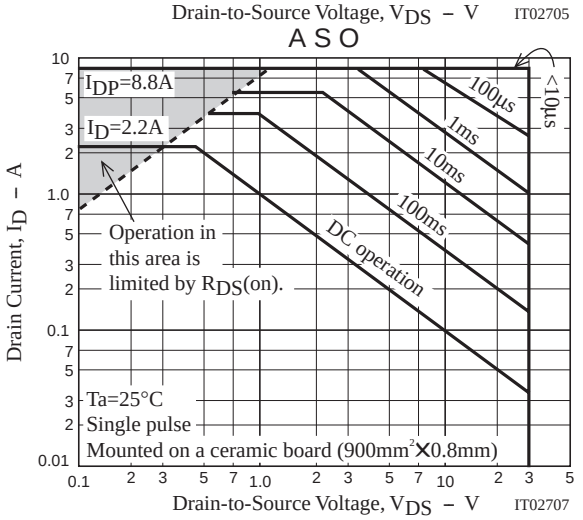

|yfs| – ID
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02702

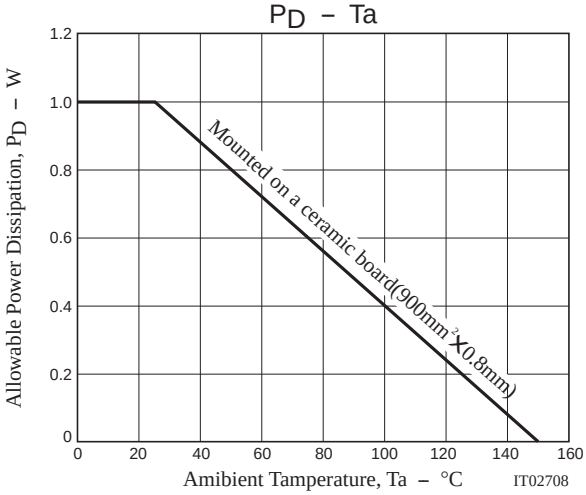

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT02703


SW Time – ID
VDD=15V
VGS=10V
tf
td(off)
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT02704


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02705


VGS – Qg
VDS=10V
ID=2.2A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT02706


A S O
IDP=8.8A
ID=2.2A
100µs
1ms
10ms
100ms
DC operation
<10µs
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
IT02707


PD – Ta
Mounted on a ceramic board(900mm²×0.8mm)
Allowable Power Dissipation, PD – W
Amibient Tamperature, Ta – °C
IT02708

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