Ordering number:EN5983

N-Channel MOS Silicon FET

CPH6402

Ultrahigh-Speed Switching Applications

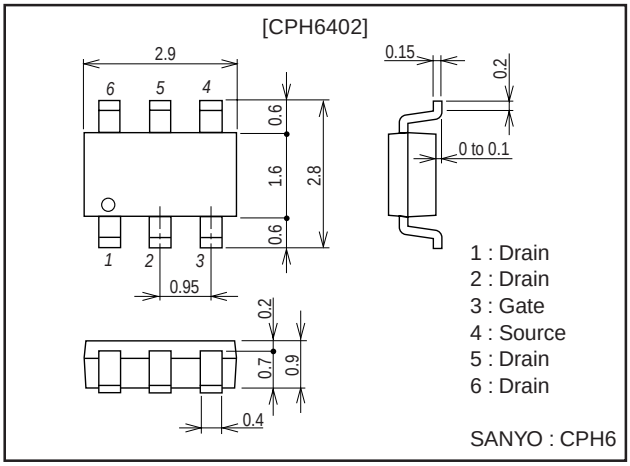
Features

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

Package Dimensions

unit:mm

2151



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}		±24	V
Drain Current (DC)	I_D		4	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	16	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	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			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			10	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	1.0		2.4	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=2A	3.0	4.3		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}1$	I_D=2A, V_{GS}=10V		55	75	mΩ
	$R_{DS(on)}2$	I_D=1A, V_{GS}=4V		110	155	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		240		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		160		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		70		pF

Marking : KB

Continued on next page.

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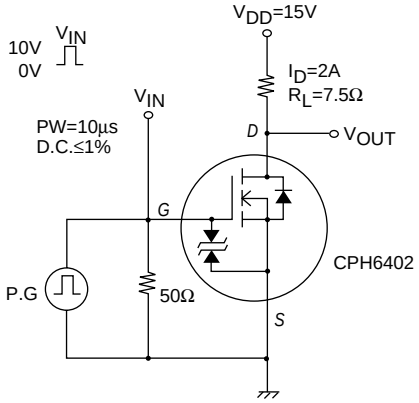
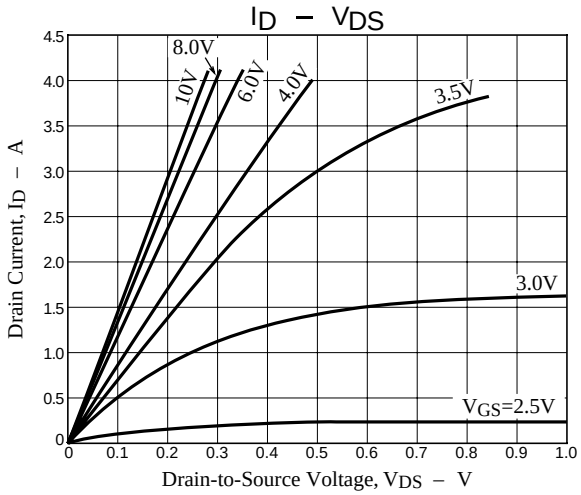
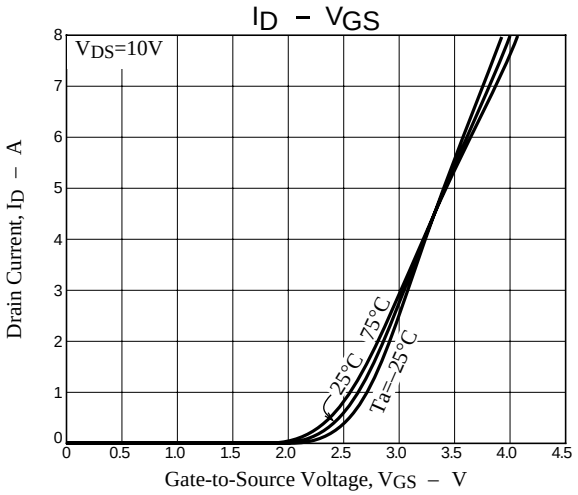
Continued from preceding page.

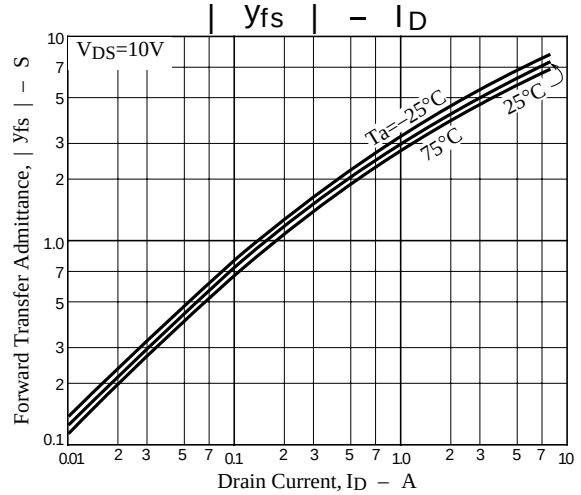
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		9		ns
Rise Time	t_r	See specified Test Circuit		25		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		30		ns
Fall Time	t_f	See specified Test Circuit		28		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=4A		10		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=4A		1		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=4A		2.4		nC
Diode Forward Voltage	V_{SD}	I_S=4A, V_{GS}=0		0.85	1.2	V

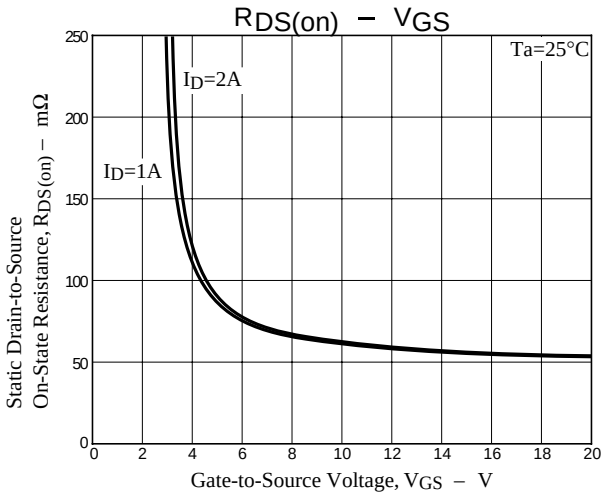
Switching Time Test Circuit

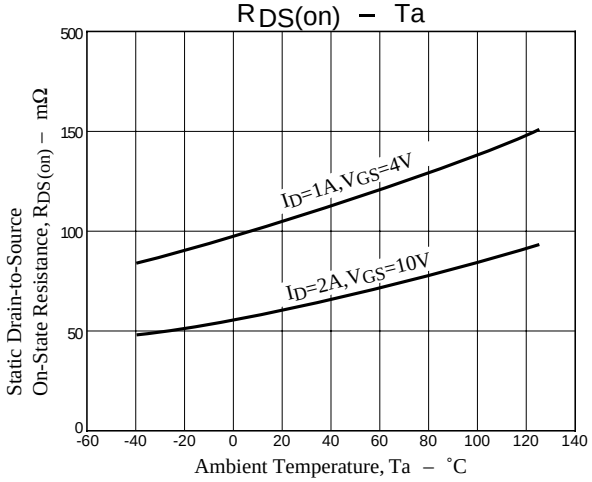


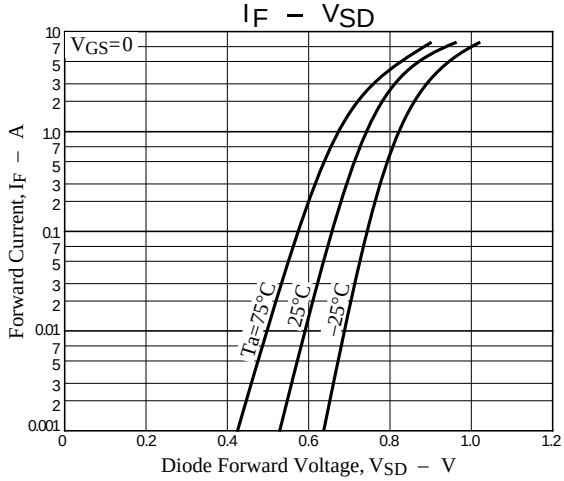


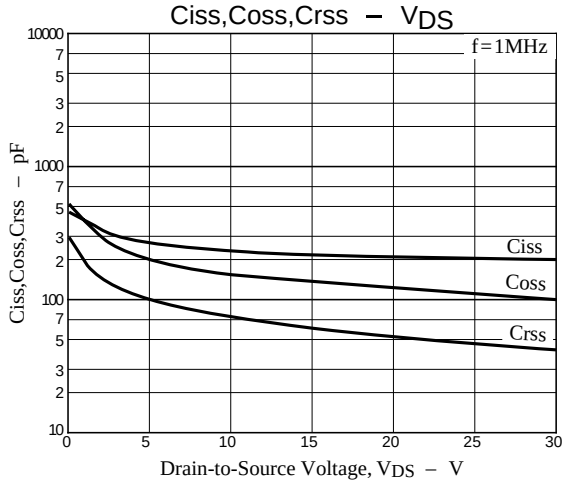


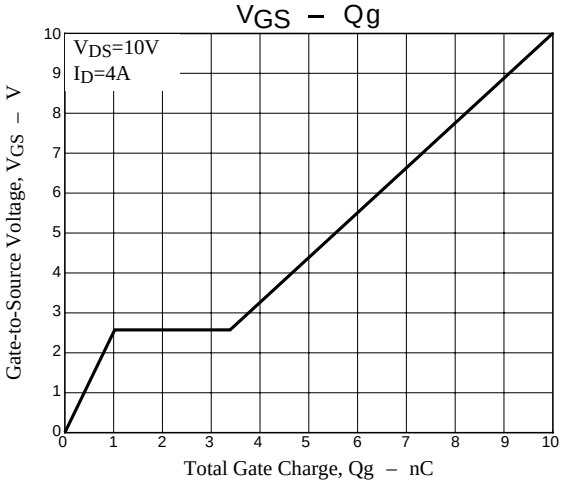


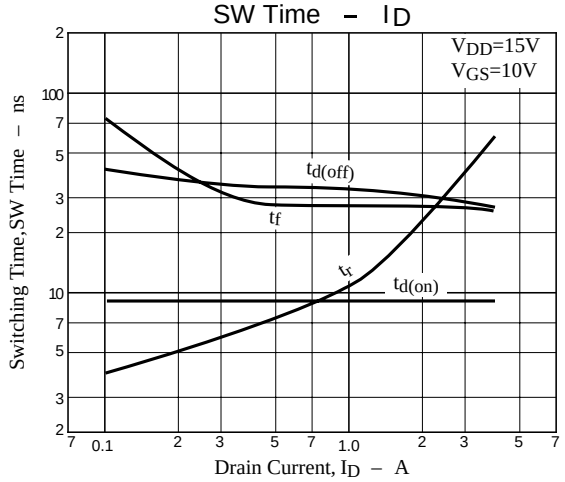


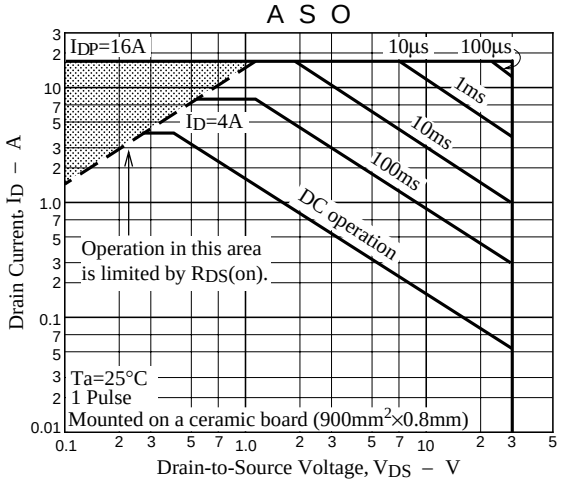

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
ID=1A,VGS=4V
ID=2A,VGS=10V
Ambient Temperature, Ta – °C

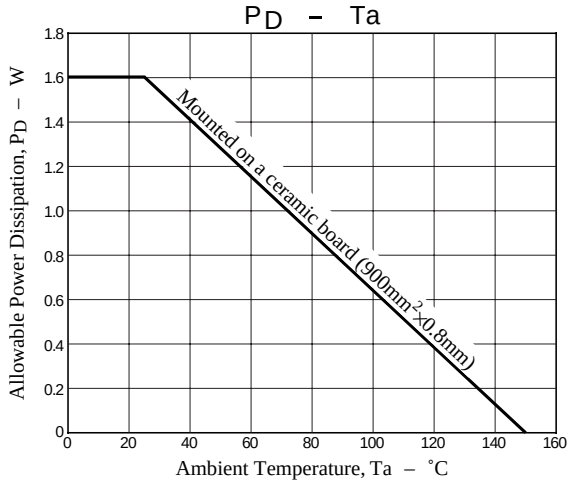

IF – VSD
VGS=0
Forward Current, IF – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V


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


VGS – Qg
VDS=10V
ID=4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC


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


A S O
IDP=16A
ID=4A
10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Ta=25°C
1 Pulse
Mounted on a ceramic board (900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V


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