Ordering number:ENN6440

N-Channel Silicon MOSFET

CPH5604

Ultrahigh-Speed Switching Applications

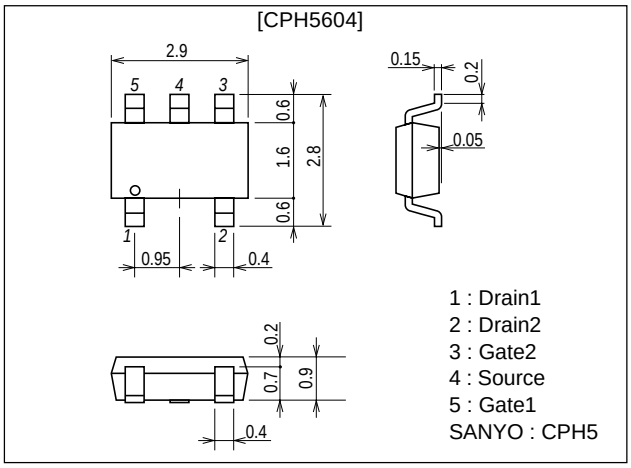
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- 4V drive.
- Composite type with 2 MOSFETs contained in a single package, facilitaing high-density mounting.

Package Dimensions

unit:mm

2168



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		1.4	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	5.6	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (600mm²×0.8mm) 1unit	0.9	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		2.4	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=700mA	1.2	1.7		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}1$	I_D=700mA, V_{GS}=10V		230	300	mΩ
	$R_{DS(on)}2$	I_D=400mA, V_{GS}=4V		350	490	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		90		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		50		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		22		pF

Marking : FD

Continued on next page.

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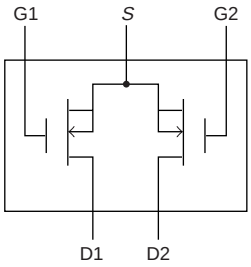
Continued from preceding page.

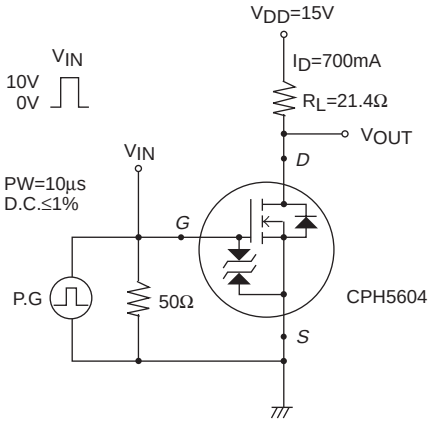
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		7		ns
Rise Time	t_r	See specified Test Circuit		8		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		18		ns
Fall Time	t_f	See specified Test Circuit		8		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=1.4A		5		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=1.4A		1		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=1.4A		1		nC
Diode Forward Voltage	V_{SD}	I_S=1.4A, V_{GS}=0		0.92	1.2	V

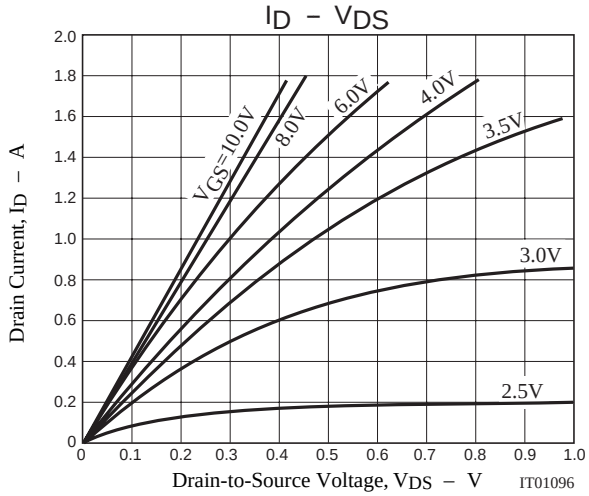
Electrical Connection

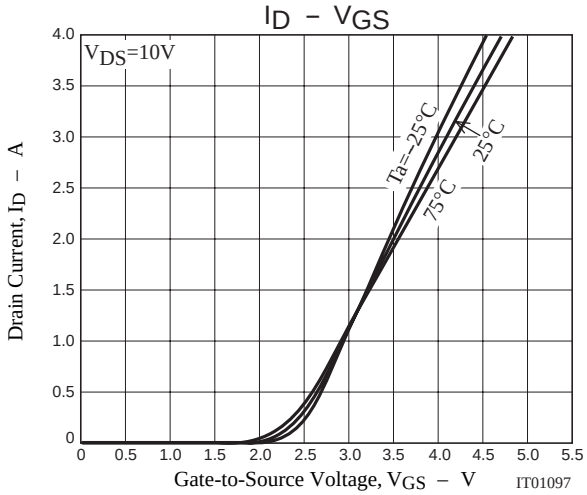


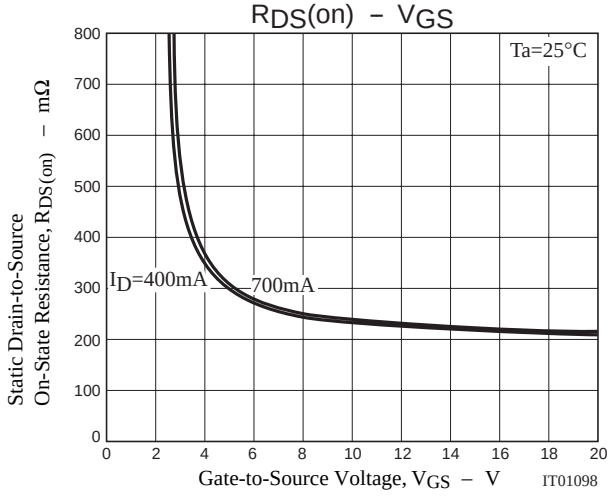
(Top view)

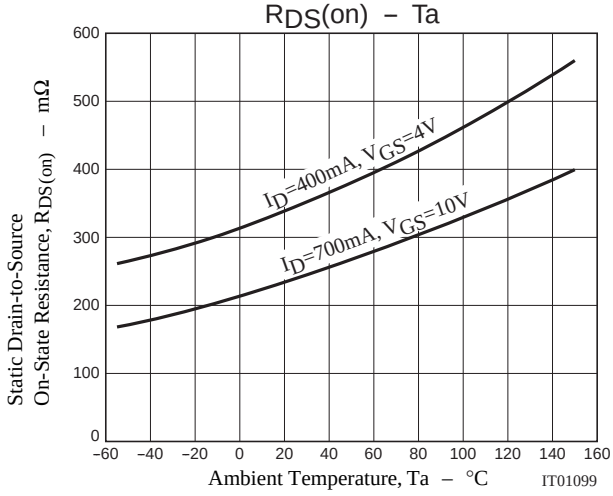
Switching Time Test Circuit

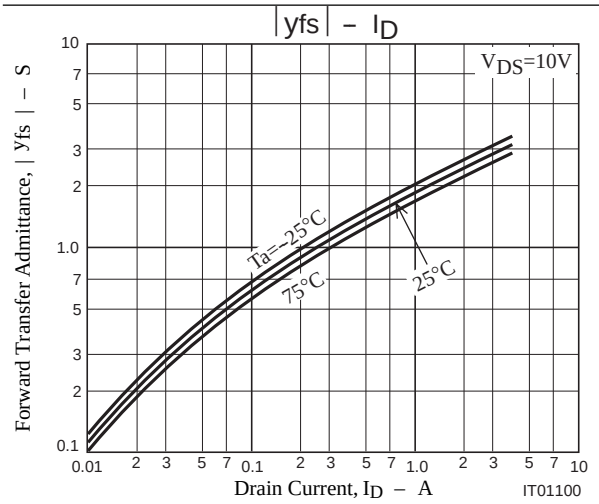


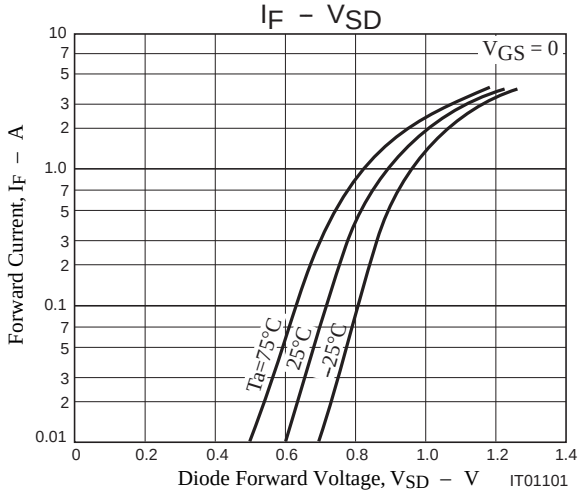


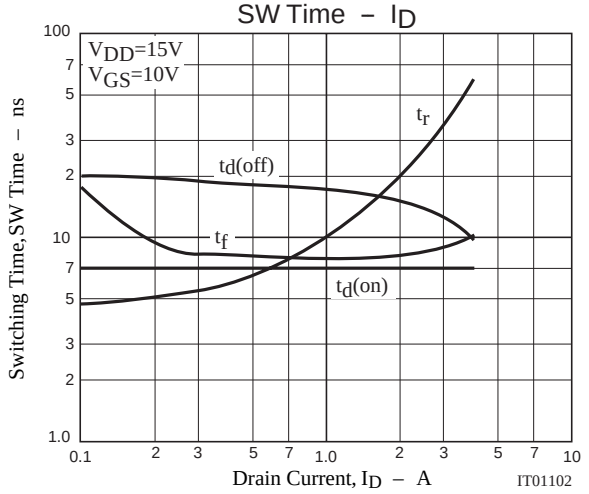


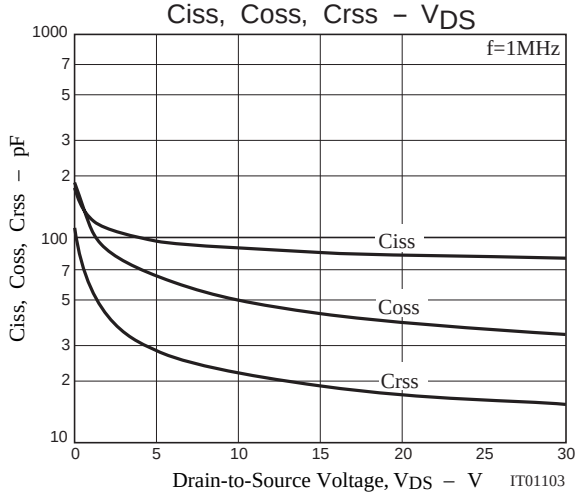


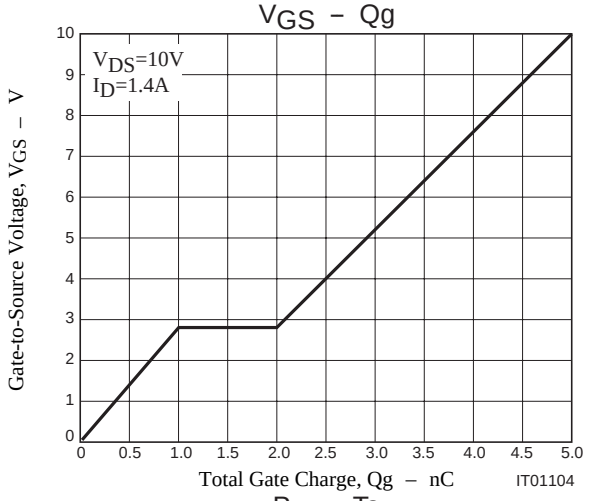


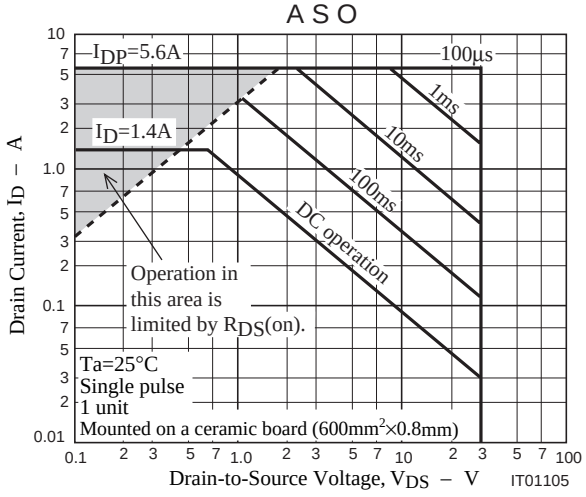

|yfs| – ID
VDS=10V
Ta=–25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT01100

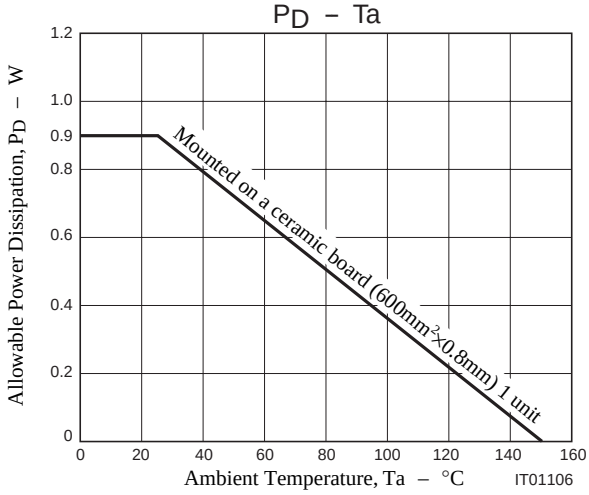

IF – VSD
VGS = 0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT01101


SW Time – ID
VDD=15V
VGS=10V
tr
td(off)
tf
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT01102


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT01103


VGS – Qg
VDS=10V
ID=1.4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT01104


ASO
IDP=5.6A
100µs
1ms
10ms
100ms
DC operation
ID=1.4A
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
1 unit
Mounted on a ceramic board (600mm²×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT01105


PD – Ta
Mounted on a ceramic board (600mm²×0.8mm) 1 unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT01106