Ordering number : ENN8182

SANYO Semiconductors
DATA SHEET

CPH6613 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 1.8V drive.
- Composite type with two MOSFETs contained in a single package facilitating high-density mounting.

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}		±12	V
Drain Current (DC)	I_D		2.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	10	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)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	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}= ±8V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=1.5A	2.0	3.4		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=1.5A, V_{GS}=4V		70	95	mΩ
	R_{DS}(on)2	I_D=0.8A, V_{GS}=2.5V		95	135	mΩ
	R_{DS}(on)3	I_D=0.4A, V_{GS}=1.8V		130	198	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		270		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		53		pF

Marking : FZ

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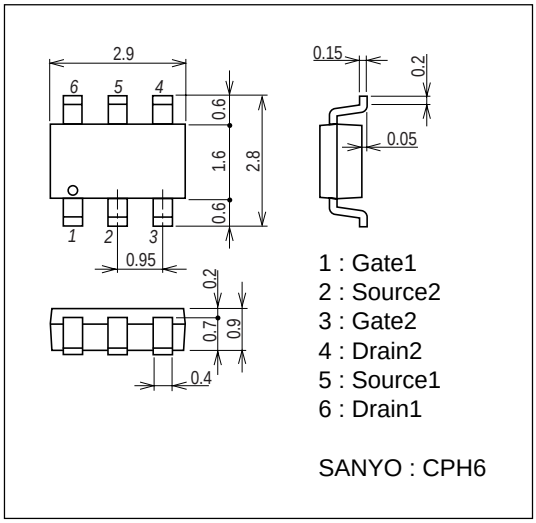
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		44		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		37		ns
Fall Time	t_f	See specified Test Circuit.		38		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4V, I_D=2.5A		4.0		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4V, I_D=2.5A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4V, I_D=2.5A		1.9		nC
Diode Forward Voltage	V_{SD}	I_S=2.5A, V_{GS}=0		0.91	1.2	V

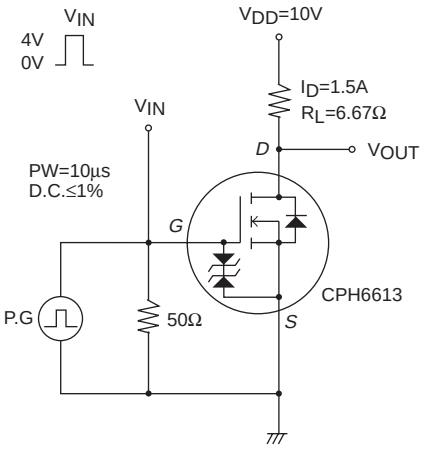
Package Dimensions

unit : mm

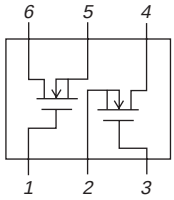
2238

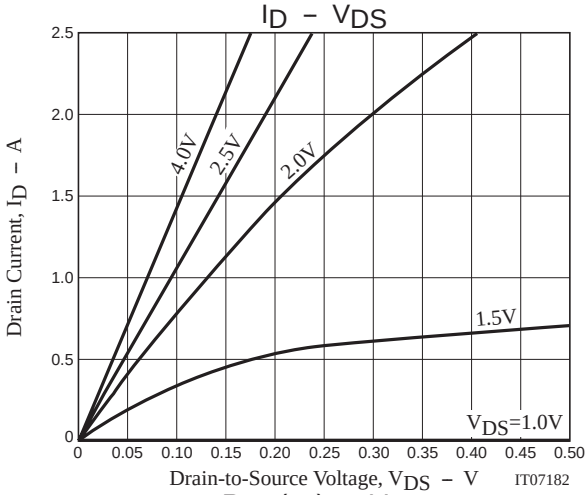


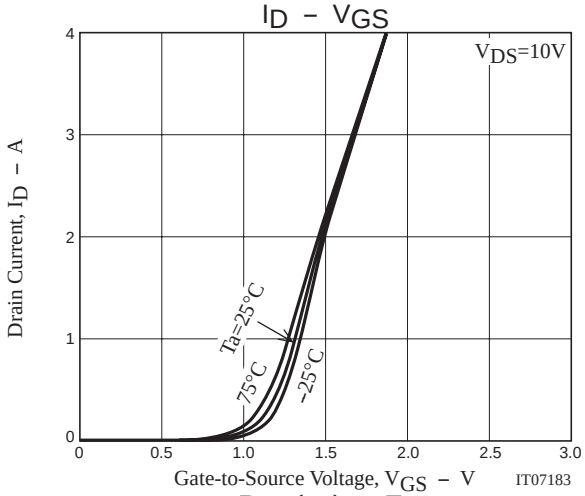
Switching Time Test Circuit

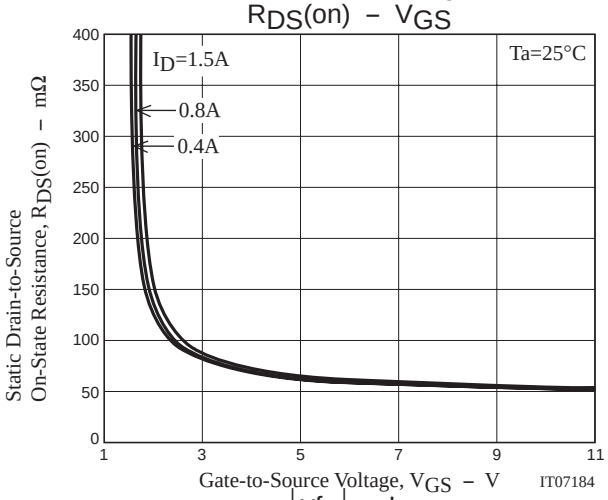


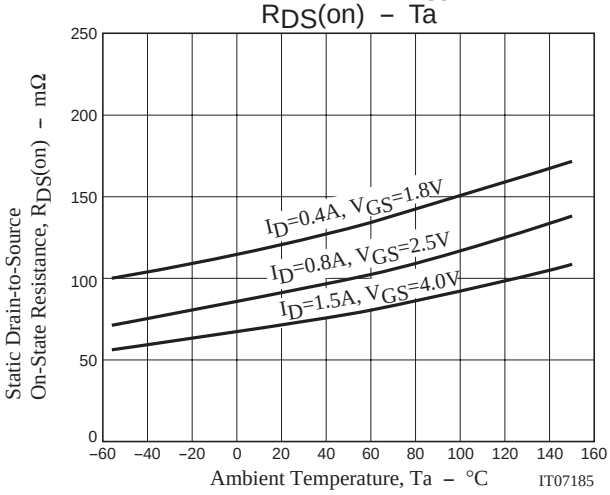
Electrical Connection

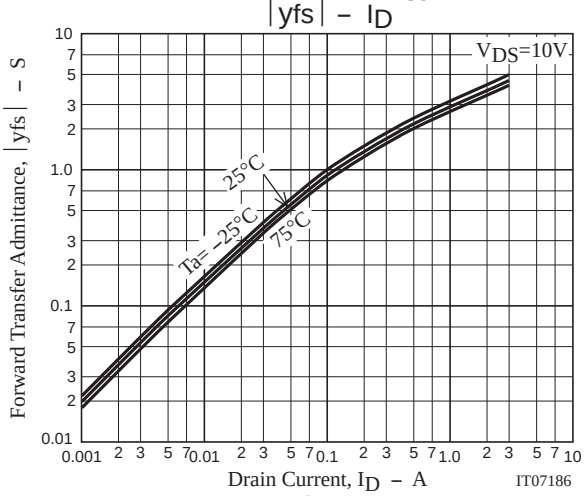


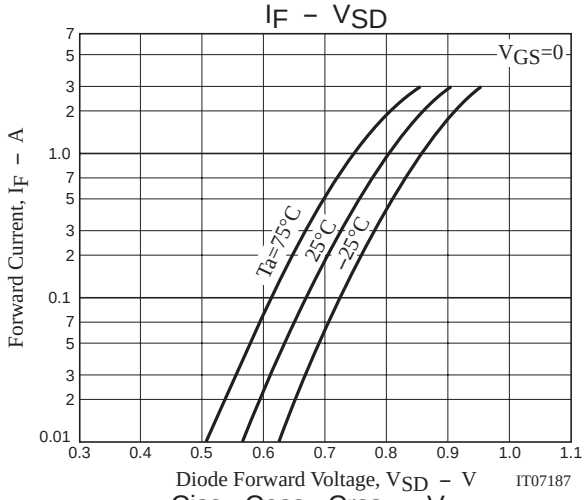

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT07182
4.0V
2.5V
2.0V
1.5V
VDS=1.0V

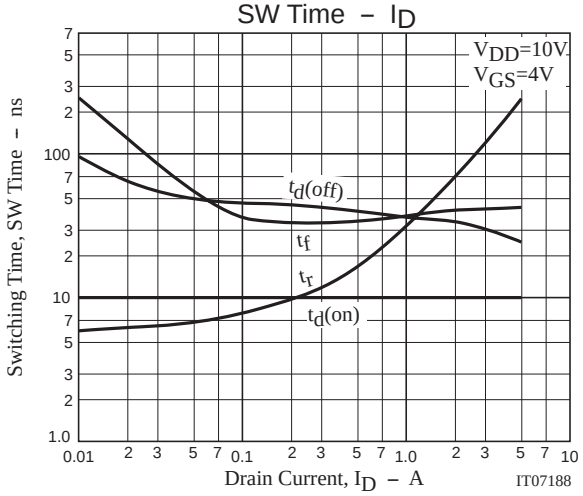

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT07183
VDS=10V
Ta=25°C
75°C
–25°C

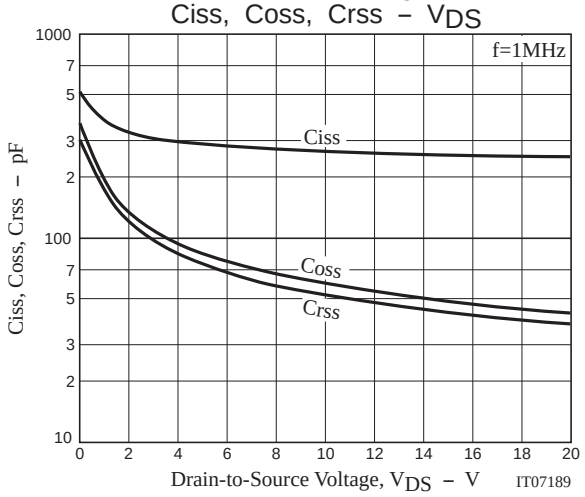

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT07184
ID=1.5A
0.8A
0.4A
Ta=25°C

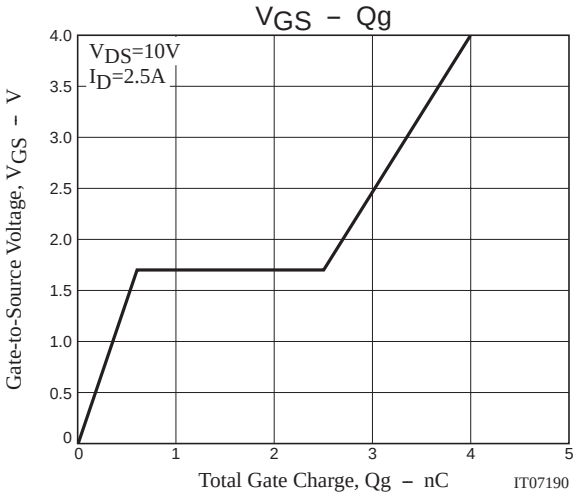

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT07185
ID=0.4A, VGS=1.8V
ID=0.8A, VGS=2.5V
ID=1.5A, VGS=4.0V

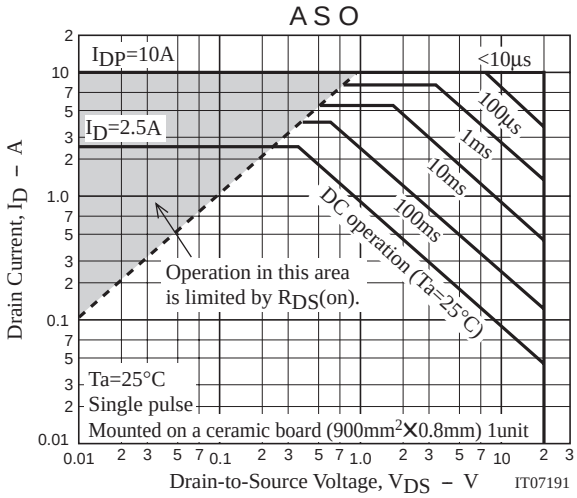

|yfs| – ID
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07186
VDS=10V
25°C
Ta=–25°C
75°C

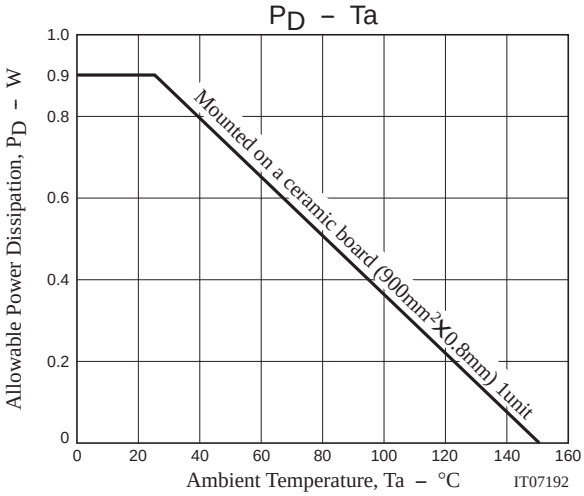

IF – VSD
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07187
VGS=0
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT07188
VDD=10V
VGS=4V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07189
f=1MHz
Ciss
Coss
Crss







Note on usage : Since the CPH6613 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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