Ordering number : ENA1242

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

CPH6442 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		6	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	24	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (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}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±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=3A	2.6	4.4		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=3A, V_{GS}=10V		33	43	mΩ
	$R_{DS}(on)2$	I_D=1.5A, V_{GS}=4.5V		42	59	mΩ
	$R_{DS}(on)3$	I_D=1.5A, V_{GS}=4V		46	65	mΩ

Marking : ZU

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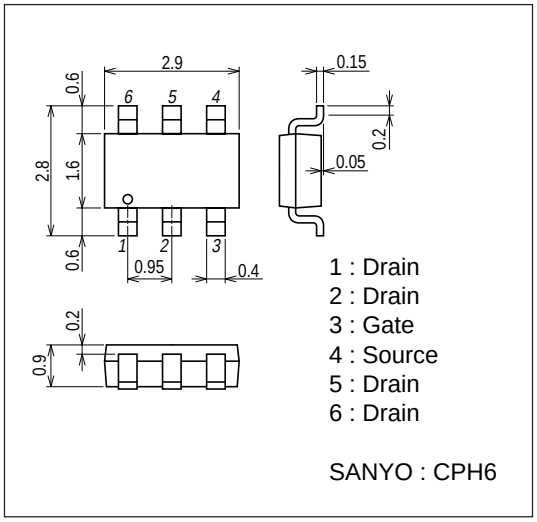
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1040		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		90		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		55		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		12		ns
Rise Time	t_{r}	See specified Test Circuit.		18		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		80		ns
Fall Time	t_{f}	See specified Test Circuit.		35		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_{D}=6A		20		nC
Gate-to-Source Charge	Qgs	V_{DS}=30V, V_{GS}=10V, I_{D}=6A		3.0		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=30V, V_{GS}=10V, I_{D}=6A		4.2		nC
Diode Forward Voltage	V_{SD}	I_{S}=6A, V_{GS}=0V		0.82	1.2	V

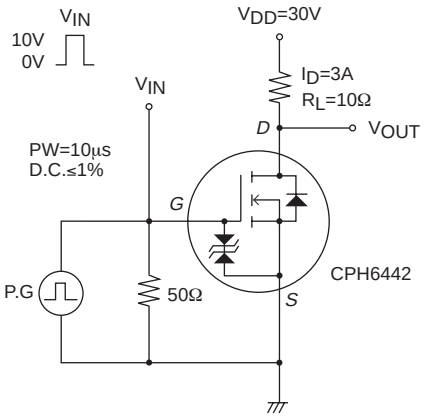
Package Dimensions

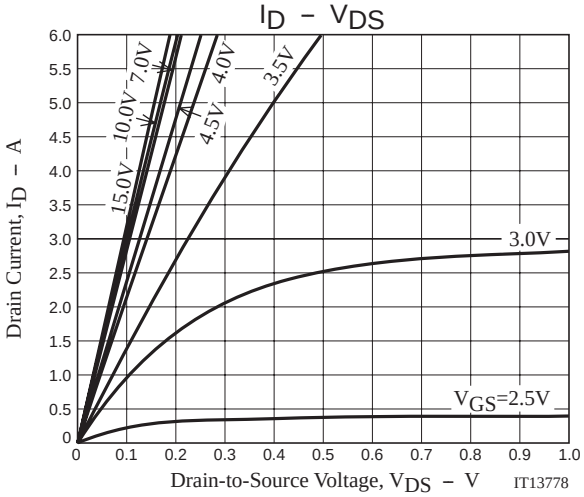
unit : mm (typ)

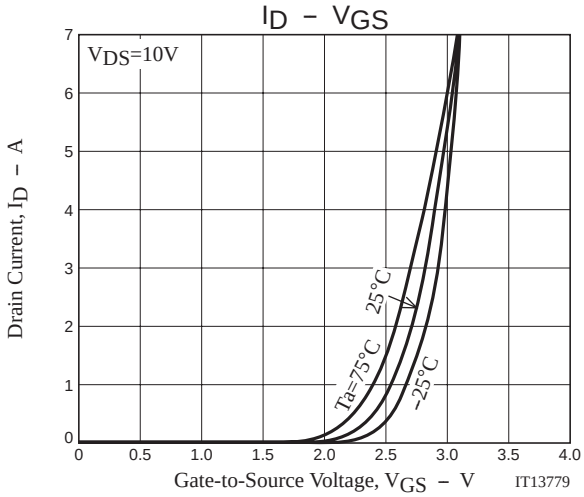
7018A-003

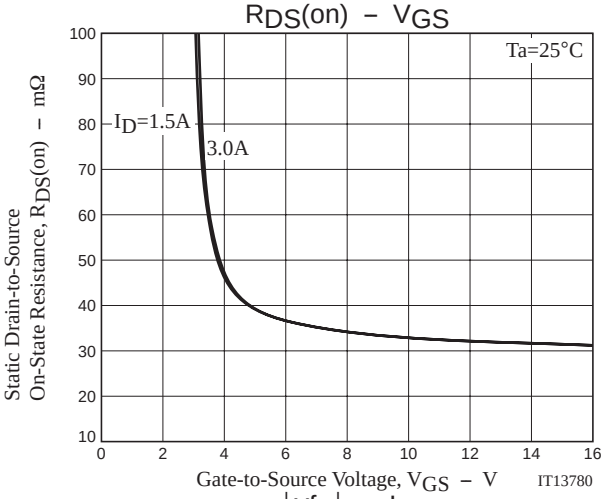


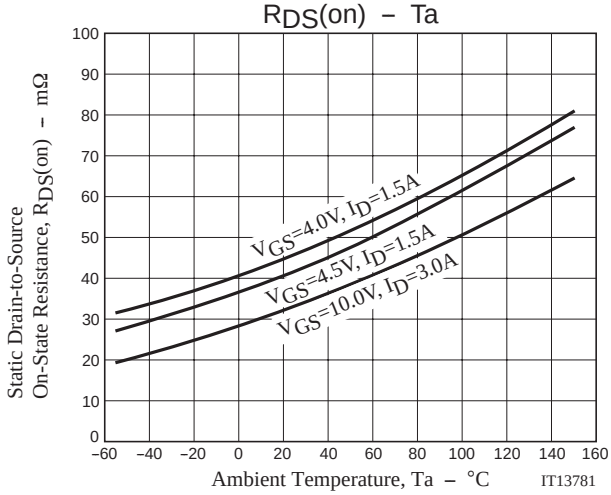
Switching Time Test Circuit

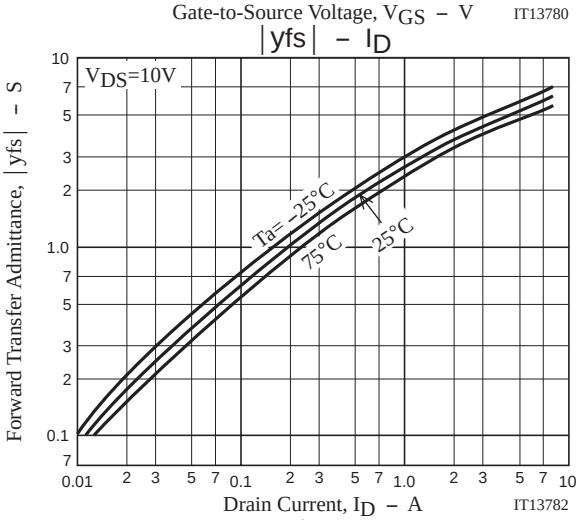


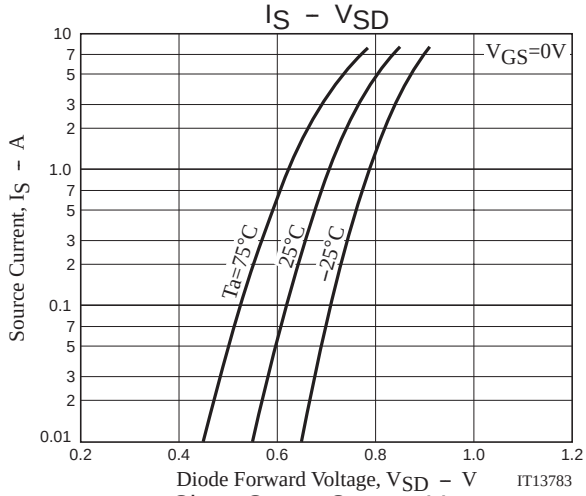


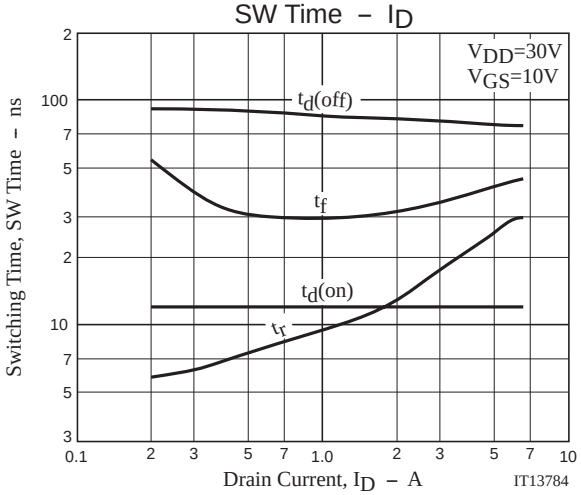


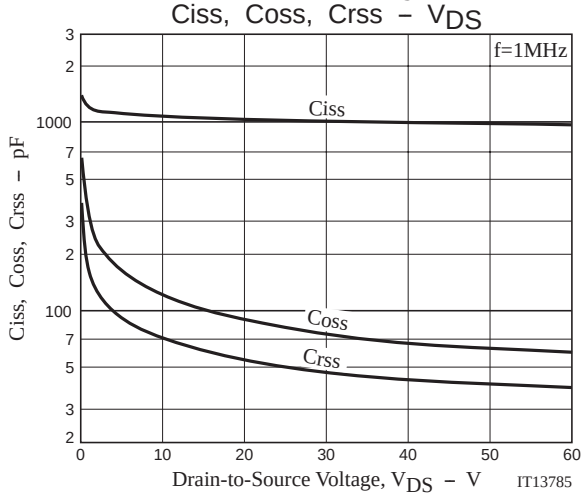

RDS(on) – VGS
Ta=25°C
ID=1.5A
3.0A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13780

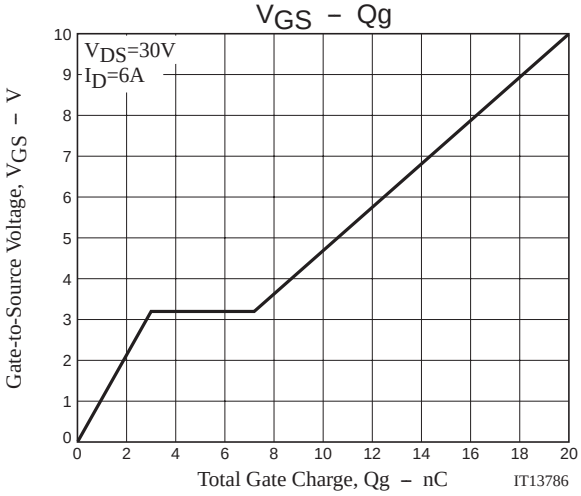

RDS(on) – Ta
VGS=4.0V, ID=1.5A
VGS=4.5V, ID=1.5A
VGS=10.0V, ID=3.0A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT13781

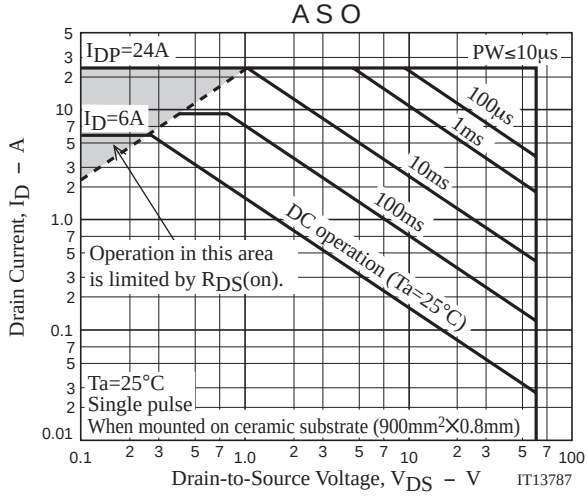

|yfs| – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT13782

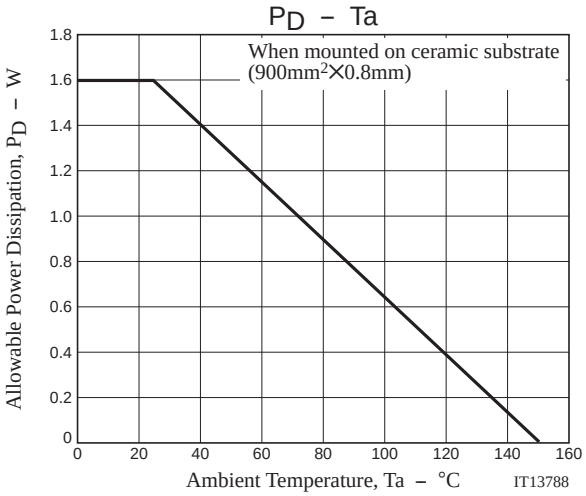

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13783


SW Time – ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT13784


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13785


VGS – Qg
VDS=30V
ID=6A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13786


A S O
IDP=24A
PW≤10μs
ID=6A
100μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Operation in this area
is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm²×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13787



Note on usage : Since the CPH6442 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of June, 2008. Specifications and information herein are subject to change without notice.