Ordering number : ENA1243C

CPH6444

N-Channel Power MOSFET
60V, 4.5A, 78mΩ, Single CPH6

ON Semiconductor®
http://onsemi.com

Features

- Low ON-resistance
- 4V drive
- Protection diode in
- Halogen free compliance

Specifications

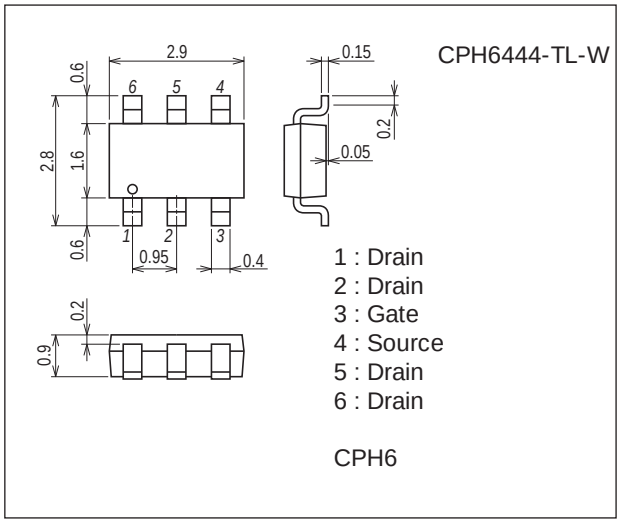
Absolute Maximum Ratings at Ta=25°C

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		4.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	18	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm)	1.6	W
Channel Temperature	Tch		150	℃
Storage Temperature	Tstg		−55 to +150	℃

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

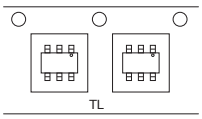
unit : mm (typ)
7018A-003



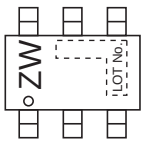
Ordering & Package Information

Device	Package	Shipping	memo
CPH6444-TL-W	CPH6 SC-74, SOT-26, SOT-457	3,000 pcs./reel	Pb-Free and Halogen Free

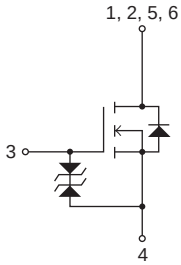
Packing Type: TL



Marking



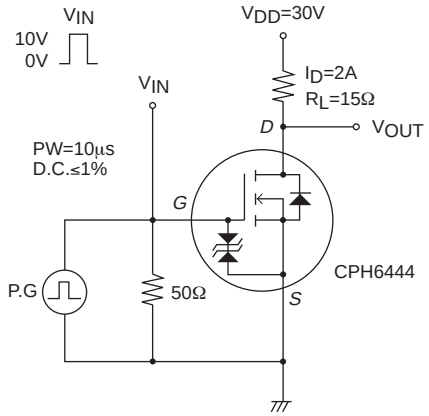
Electrical Connection

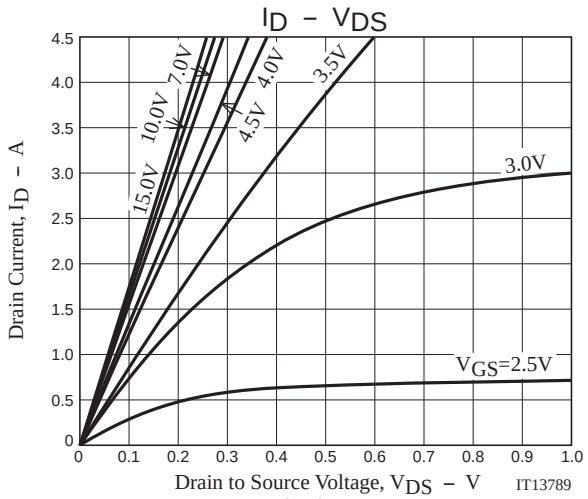


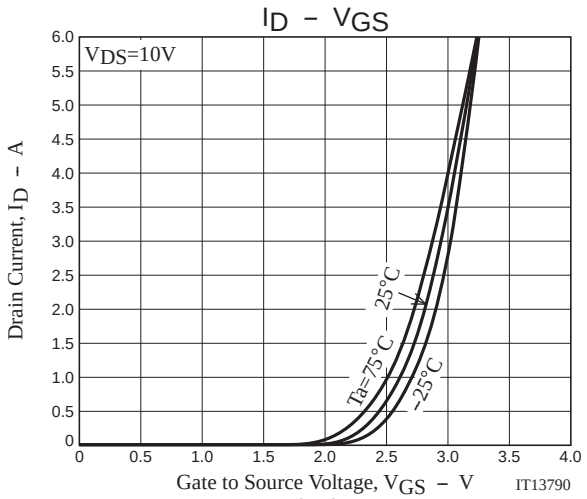
Electrical Characteristics at Ta=25°C

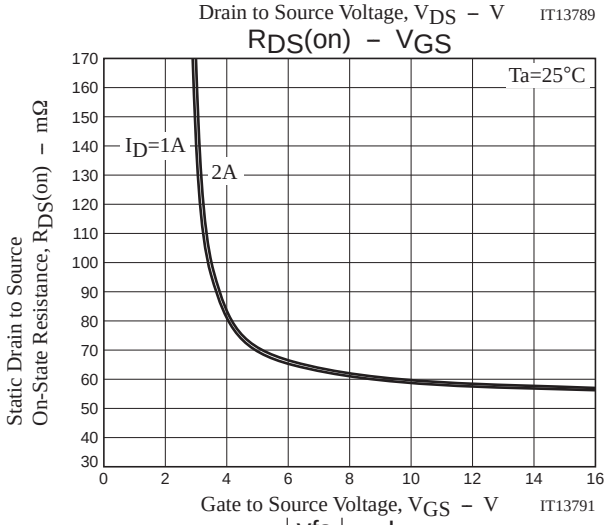
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=2A	1.8	3		S
Static Drain to Source On-State Resistance	R_{DS}(on)1	I_D=2A, V_{GS}=10V		60	78	mΩ
	R_{DS}(on)2	I_D=1A, V_{GS}=4.5V		74	104	mΩ
	R_{DS}(on)3	I_D=1A, V_{GS}=4V		81	114	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		505		pF
Output Capacitance	Coss			57		pF
Reverse Transfer Capacitance	Crss			37		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		7.3		ns
Rise Time	t_r			9.8		ns
Turn-OFF Delay Time	t_d(off)			40		ns
Fall Time	t_f			24		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=4.5A		10		nC
Gate to Source Charge	Qgs			1.6		nC
Gate to Drain “Miller” Charge	Qgd			2.1		nC
Diode Forward Voltage	V_{SD}	I_S=4.5A, V_{GS}=0V		0.83	1.2	V

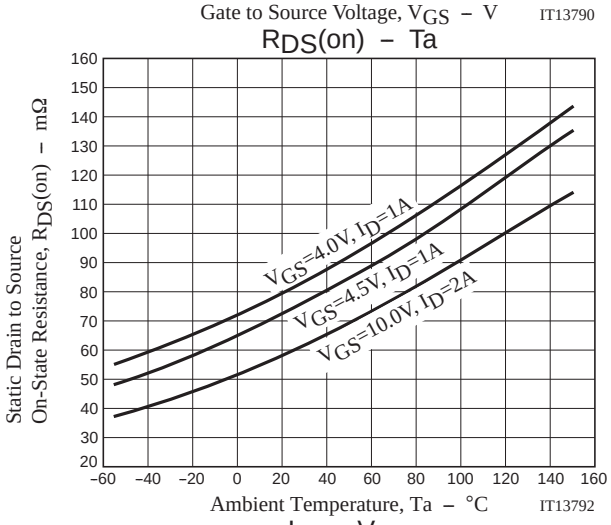
Switching Time Test Circuit

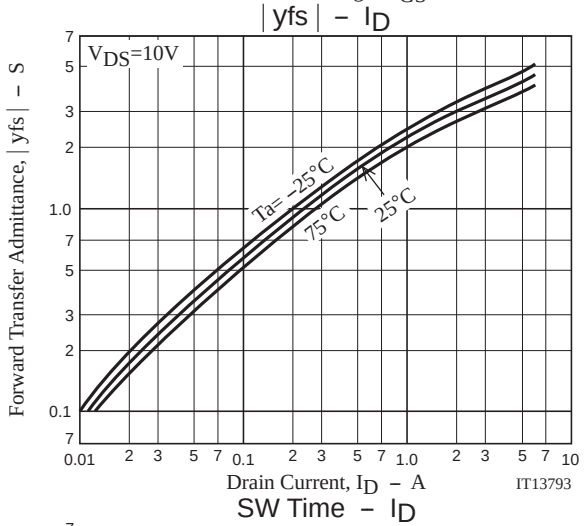


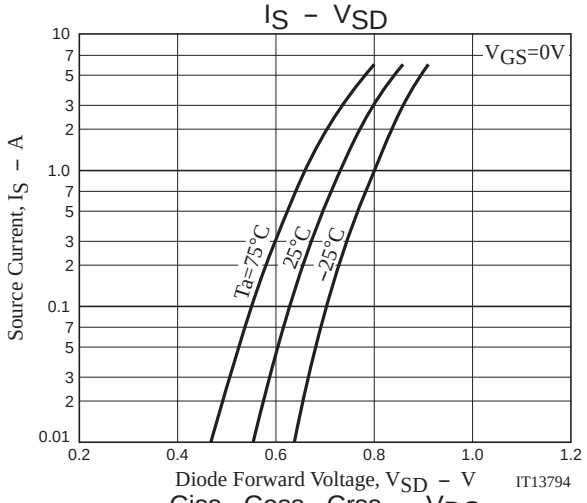

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT13789
10.0V
7.0V
4.0V
3.5V
4.5V
15.0V
3.0V
VGS=2.5V

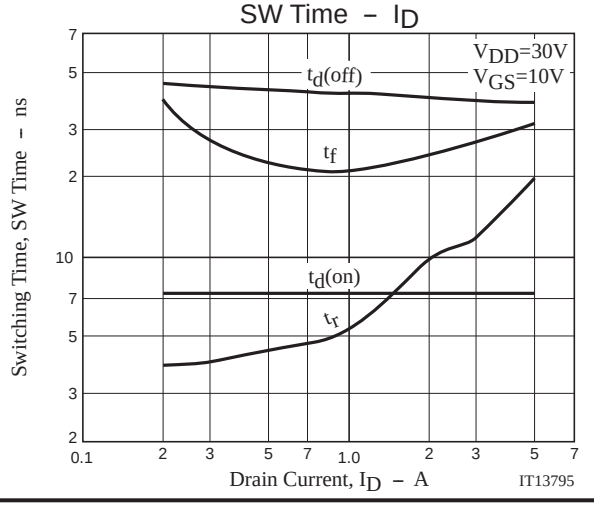

ID – VGS
VDS=10V
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT13790
Ta=75°C
25°C
–25°C

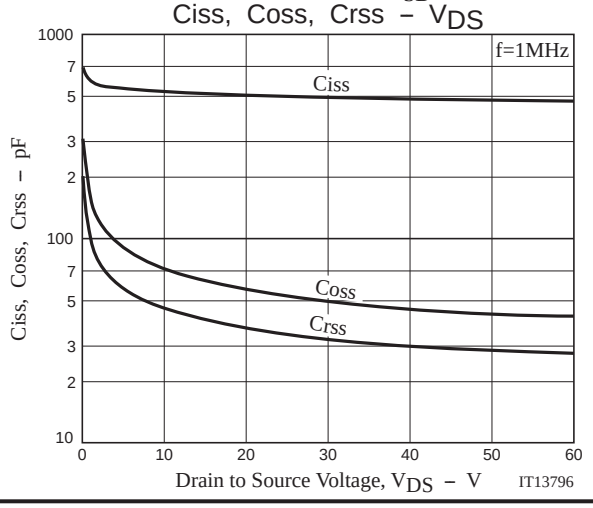

RDS(on) – VGS
Ta=25°C
ID=1A
2A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT13791

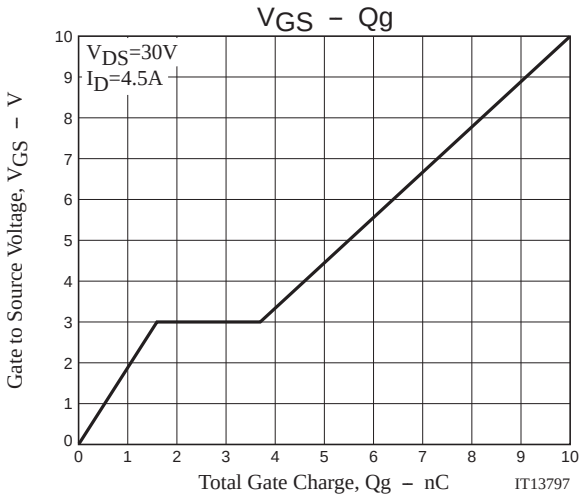

RDS(on) – Ta
VGS=4.0V, ID=1A
VGS=4.5V, ID=1A
VGS=10.0V, ID=2A
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT13792

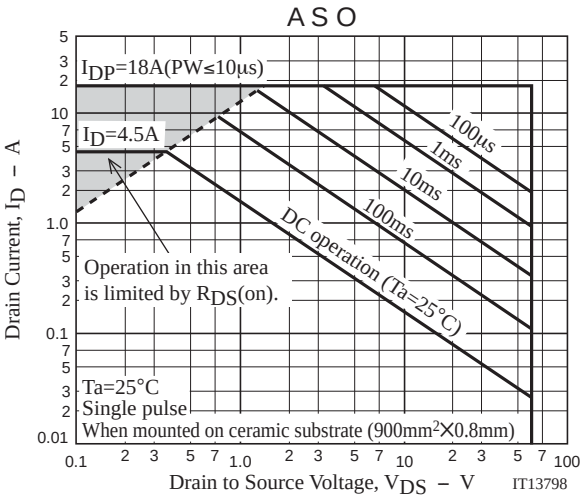

| yfs | – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13793

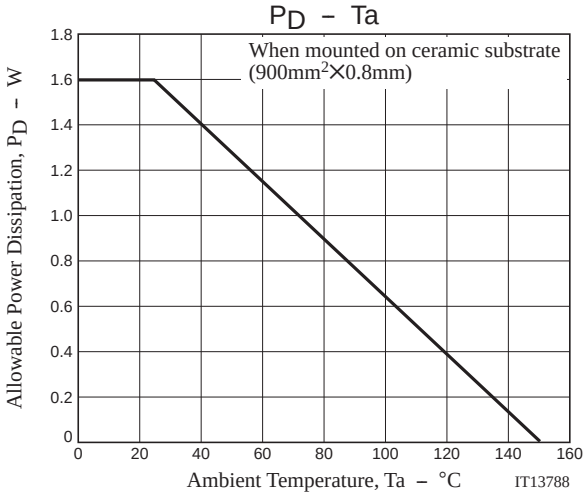

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13794


SW Time – ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT13795


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT13796

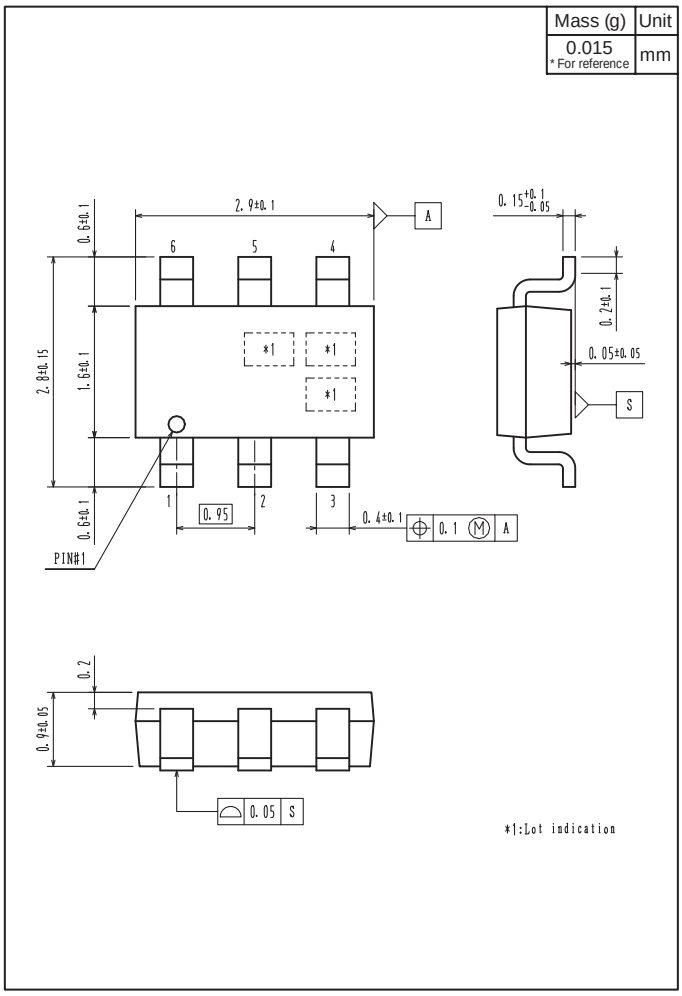

VGS – Qg
VDS=30V
ID=4.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13797


A S O
IDP=18A(PW≤10μs)
ID=4.5A
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
IT13798

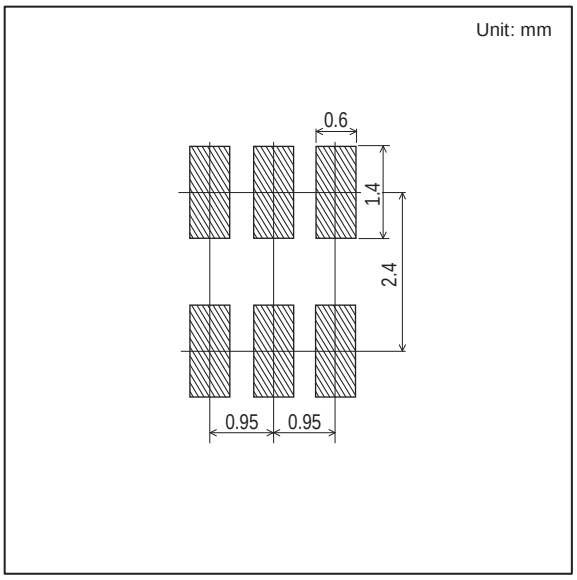

PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT13788

Outline Drawing

CPH6444-TL-W



Land Pattern Example



Note on usage : Since the CPH6444 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.