Ordering number : ENA1532B

CPH6445

N-Channel Power MOSFET
60V, 3.5A, 117mΩ, Single CPH6

ON Semiconductor®
http://onsemi.com

Features

- 4V drive
- Low ON-resistance
- Protection diode in

Specifications

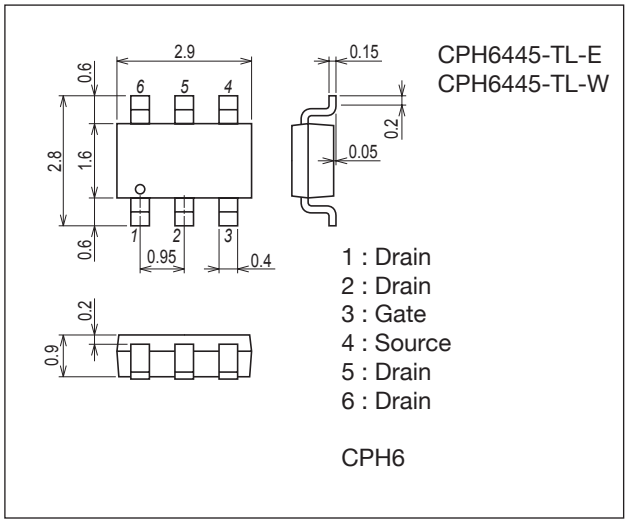
Absolute Maximum Ratings at Ta=25°C

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		3.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1200mm²×0.8mm)	1.6	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

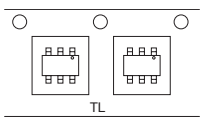
unit : mm (typ)
7018A-003



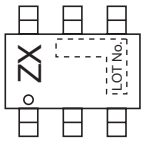
Product & Package Information

- Package : CPH6
- JEITA, JEDEC : SC-74, SOT-26, SOT-457
- Minimum Packing Quantity : 3,000 pcs./reel

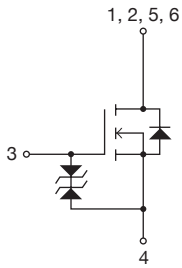
Packing Type: TL



Marking



Electrical Connection



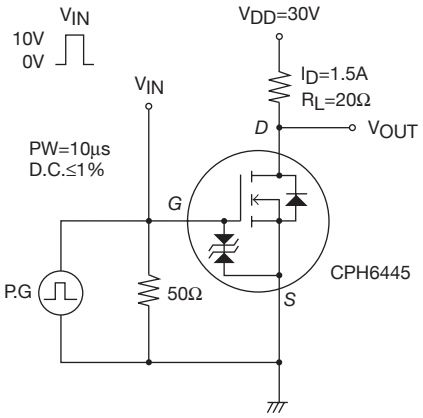
ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.

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=1.5A	1.2	2.0		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=1.5A, V_{GS}=10V		92	117	mΩ
	R_{DS}(on)2	I_D=0.7A, V_{GS}=4.5V		120	168	mΩ
	R_{DS}(on)3	I_D=0.7A, V_{GS}=4V		132	185	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		310		pF
Output Capacitance	Coss			40		pF
Reverse Transfer Capacitance	Crss			25		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		6.0		ns
Rise Time	t_r			5.5		ns
Turn-OFF Delay Time	t_d(off)			27		ns
Fall Time	t_f			13		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=3.5A		6.8		nC
Gate-to-Source Charge	Qgs			1.1		nC
Gate-to-Drain “Miller” Charge	Qgd			1.4		nC
Diode Forward Voltage	V_{SD}	I_S=3.5A, V_{GS}=0V		0.85	1.2	V

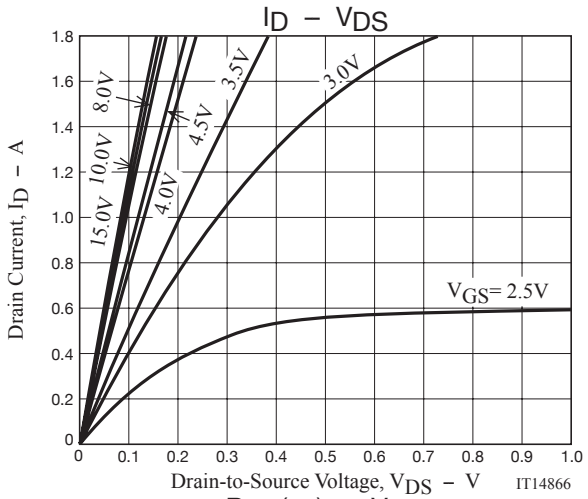
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

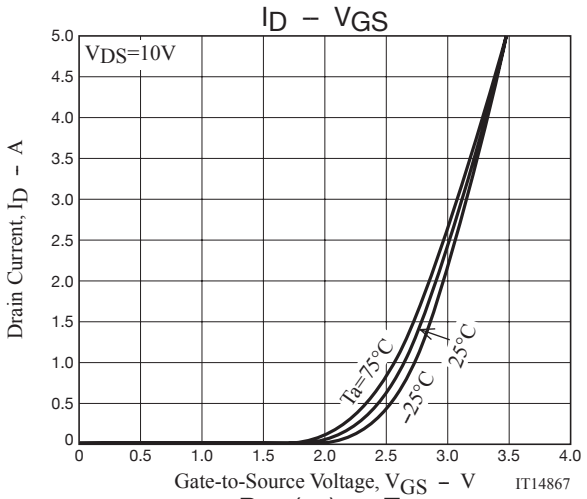
Switching Time Test Circuit

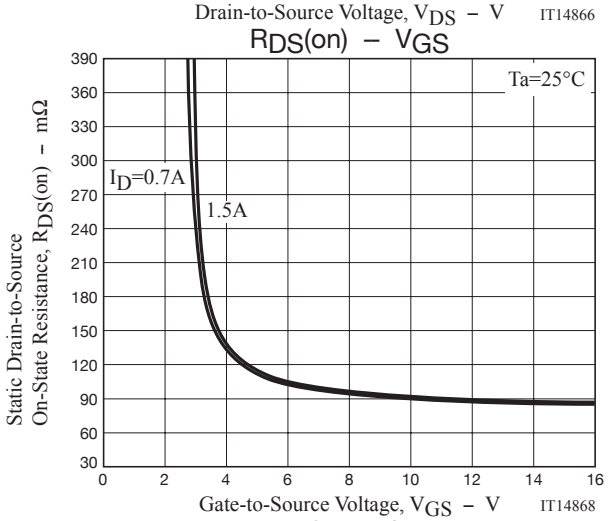


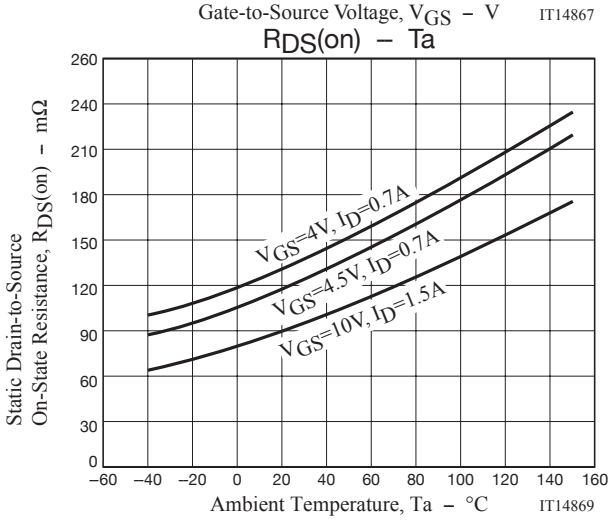
Ordering Information

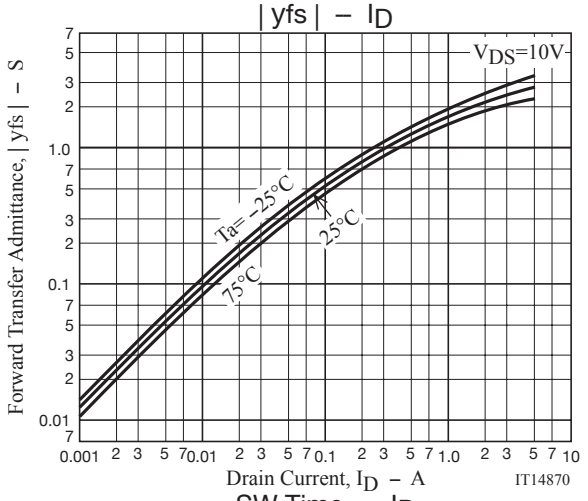
Device	Package	Shipping	memo
CPH6445-TL-E	CPH6	3,000pcs./reel	Pb-Free
CPH6445-TL-W			Pb-Free and Halogen Free

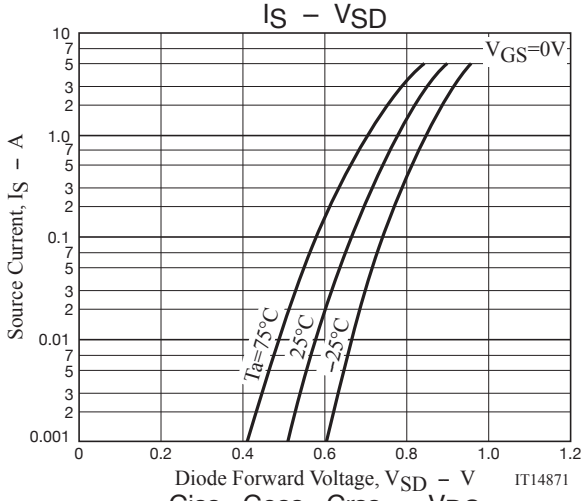

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14866
8.0V
10.0V
15.0V
4.0V
4.5V
3.5V
3.0V
VGS= 2.5V

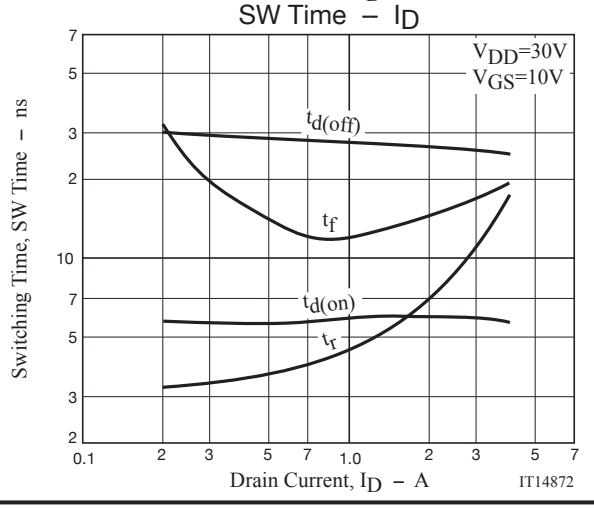

ID – VGS
VDS=10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT14867
Ta=75°C
25°C
–25°C

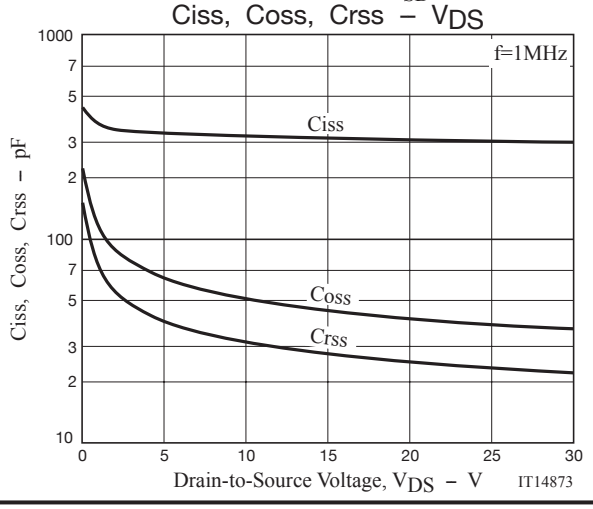

RDS(on) – VGS
Ta=25°C
ID=0.7A
1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14868

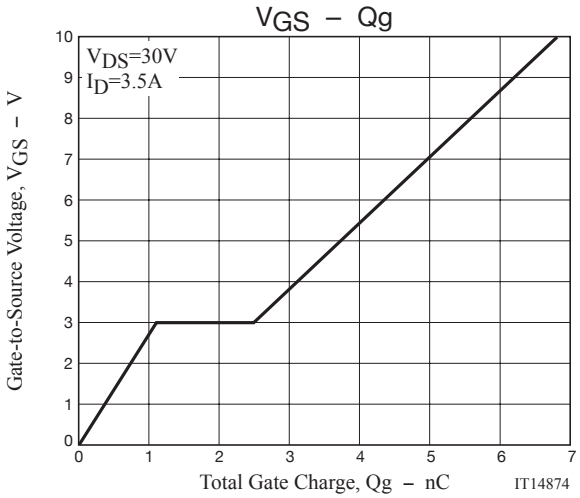

RDS(on) – Ta
VGS=4V, ID=0.7A
VGS=4.5V, ID=0.7A
VGS=10V, ID=1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14869

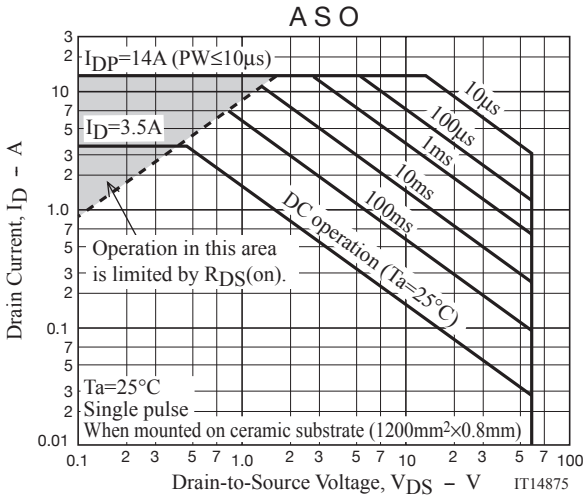

| yfs | – ID
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14870

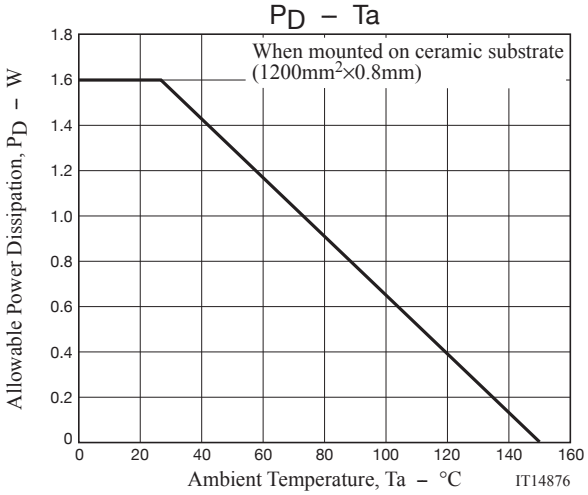

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14871


SW Time – ID
VDD=30V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT14872


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14873

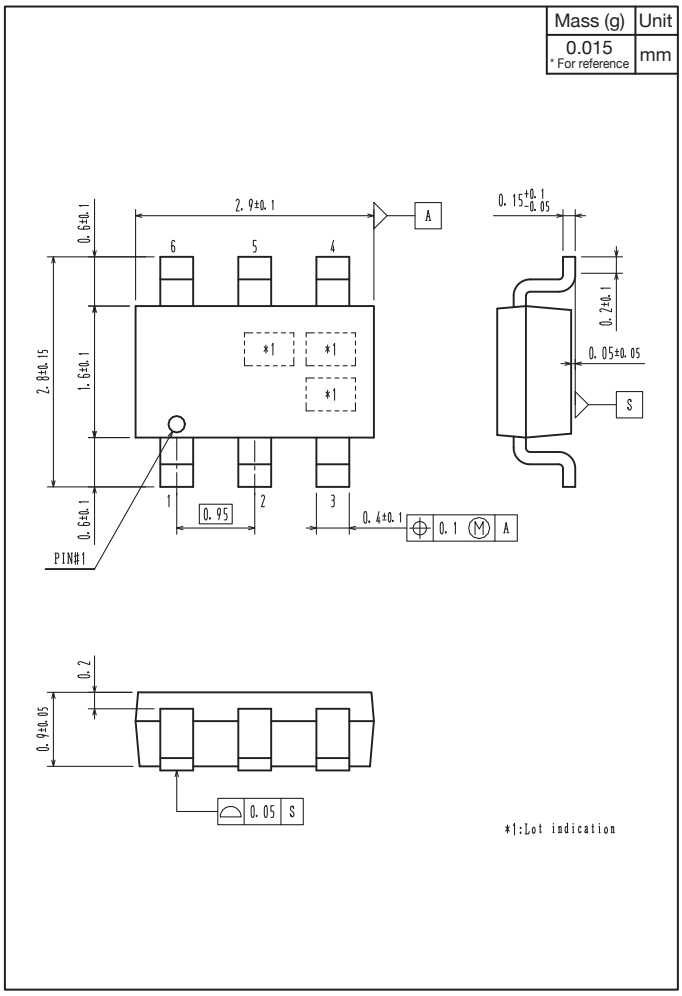

VGS – Qg
VDS=30V
ID=3.5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14874


A S O
IDP=14A (PW≤10μs)
ID=3.5A
10μs
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 (1200mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14875

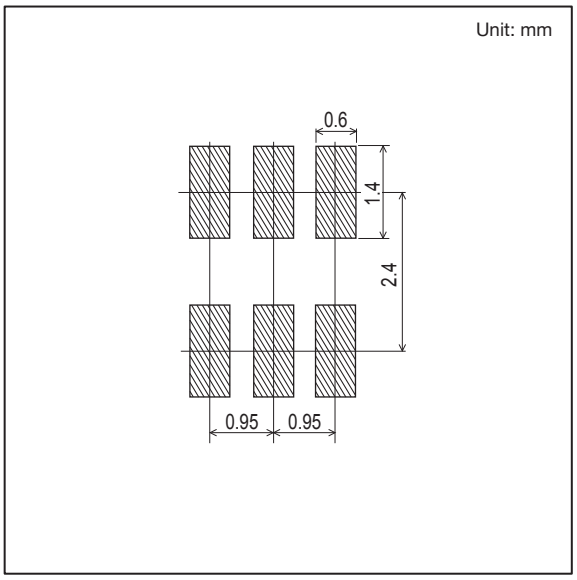

PD – Ta
When mounted on ceramic substrate
(1200mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT14876

Outline Drawing

CPH6445-TL-E, CPH6445-TL-W



Land Pattern Example



Note on usage : Since the CPH6445 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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