Ordering number : ENA1648B

CPH3448

Power MOSFET
30V, 50mΩ, 4A, Single N-Channel

ON Semiconductor®
http://onsemi.com

Features

- 1.8V drive
- Halogen free compliance
- Protection diode in

Specifications

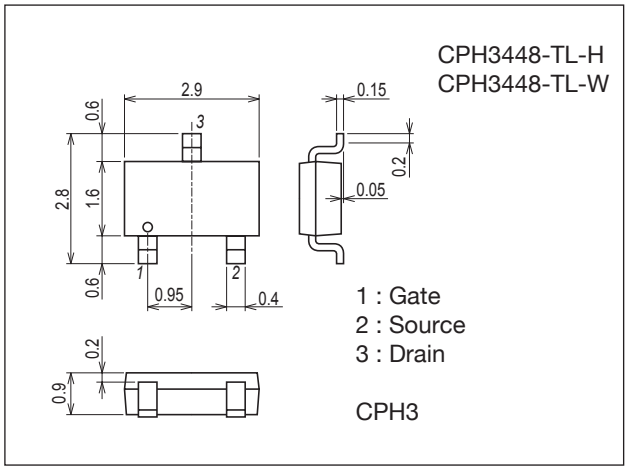
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I_D		4	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	16	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm)	1.0	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

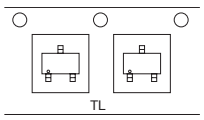
unit : mm (typ)
7015A-004



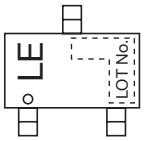
Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-59, TO-236, SOT-23
- Minimum Packing Quantity : 3,000 pcs./reel

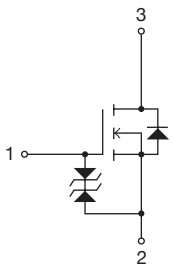
Packing Type: TL



Marking



Electrical Connection



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

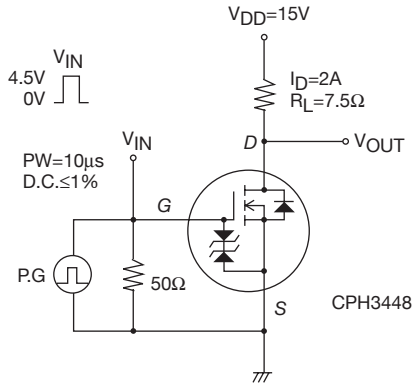
Semiconductor Components Industries, LLC, 2014

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	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±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=2A		3.4		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=2A, V_{GS}=4.5V		38	50	mΩ
	R_{DS}(on)2	I_D=1A, V_{GS}=2.5V		51	72	mΩ
	R_{DS}(on)3	I_D=0.5A, V_{GS}=1.8V		80	130	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		430		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		59		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		38		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		41		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		36		ns
Fall Time	t_f	See specified Test Circuit.		37		ns
Total Gate Charge	Qg	V_{DS}=15V, V_{GS}=4.5V, I_D=4A		4.7		nC
Gate-to-Source Charge	Qgs	V_{DS}=15V, V_{GS}=4.5V, I_D=4A		0.8		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=15V, V_{GS}=4.5V, I_D=4A		1.1		nC
Diode Forward Voltage	V_{SD}	I_S=4A, V_{GS}=0V		0.82	1.2	V

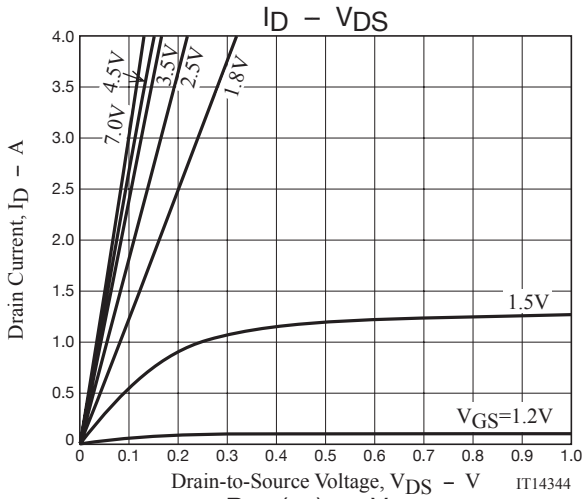
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

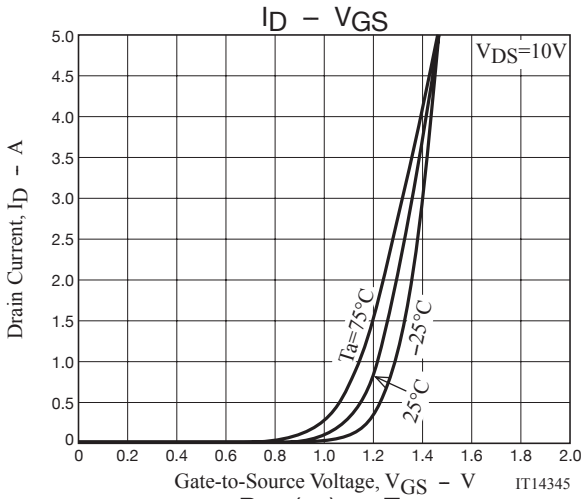
Switching Time Test Circuit

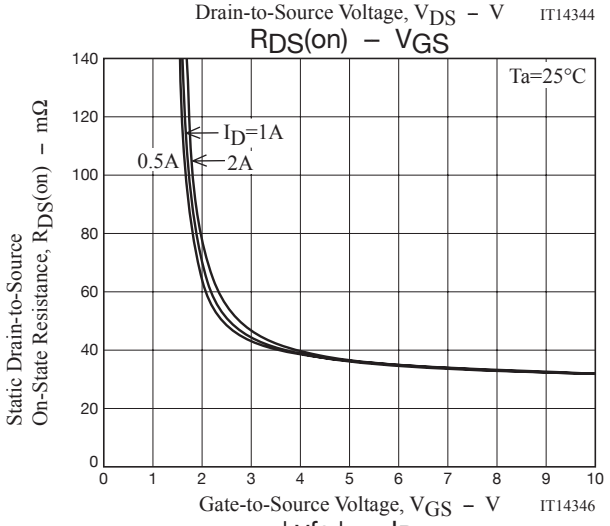


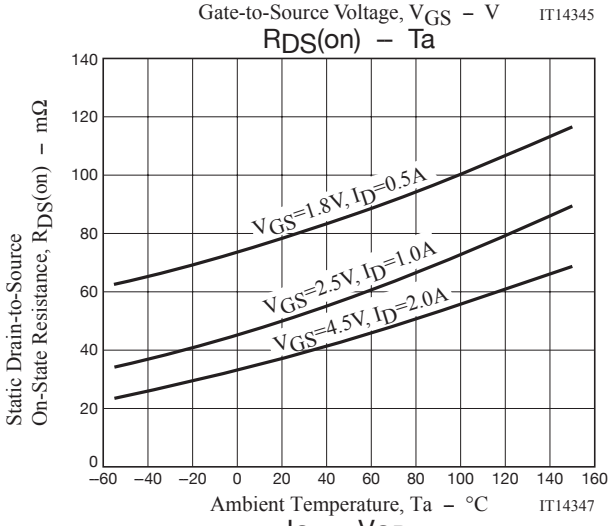
Ordering Information

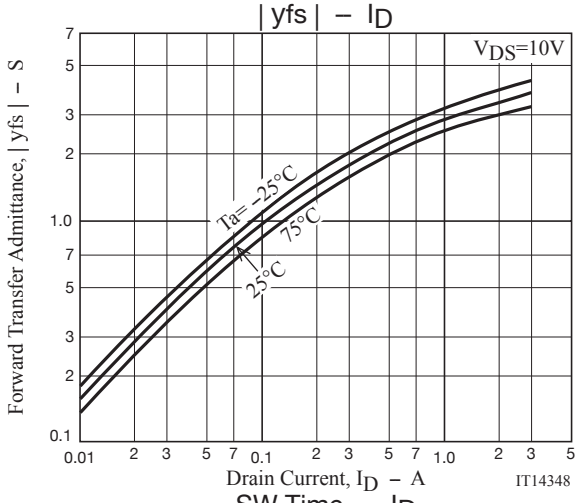
Device	Package	Shipping	memo
CPH3448-TL-H	CPH3	3,000pcs./reel	Pb-Free and Halogen Free
CPH3448-TL-W			

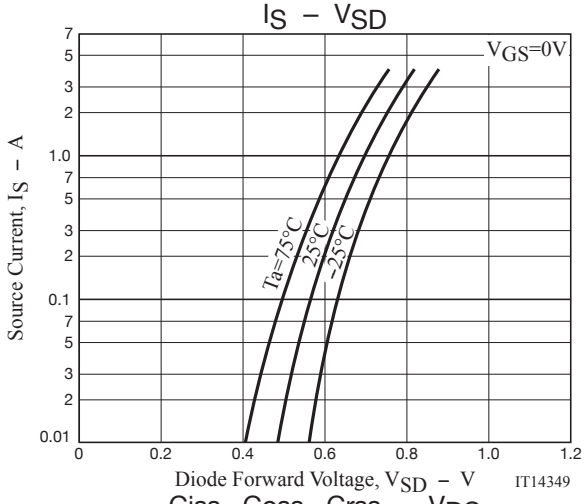

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT14344
4.5V
3.5V
2.5V
1.8V
7.0V
1.5V
VGS=1.2V

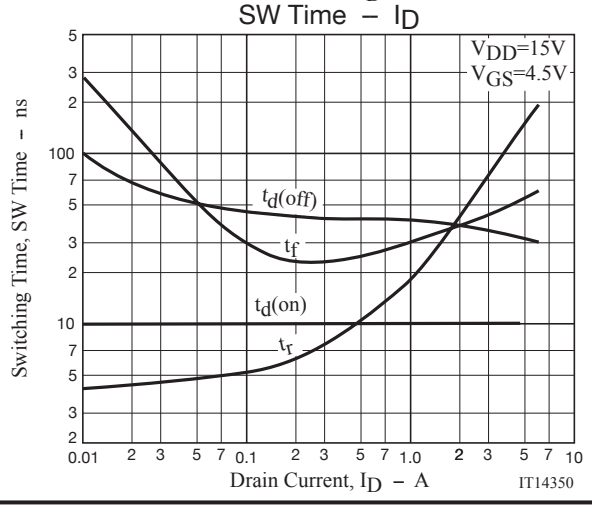

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT14345
VDS=10V
Ta=75°C
25°C
–25°C

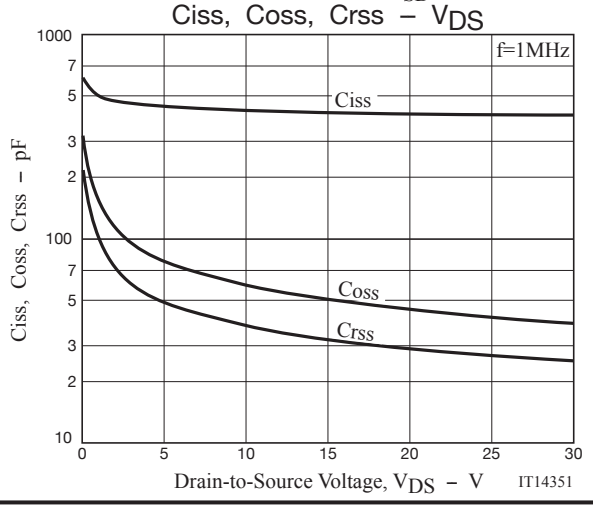

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT14346
Ta=25°C
ID=1A
0.5A
2A

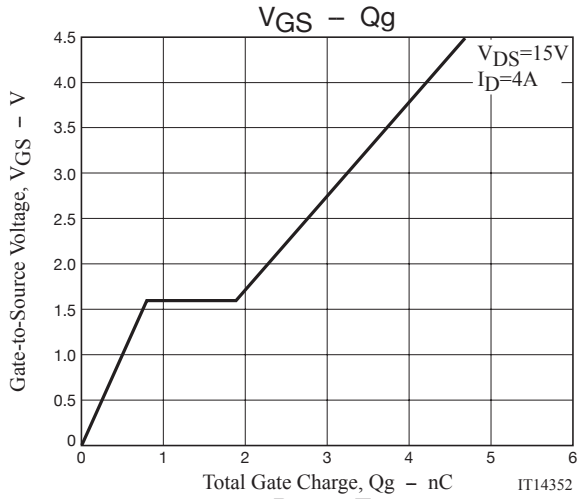

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14347
VGS=1.8V, ID=0.5A
VGS=2.5V, ID=1.0A
VGS=4.5V, ID=2.0A

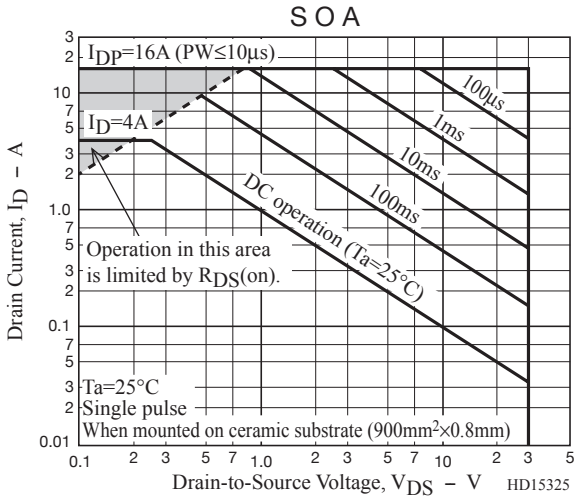

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT14348
VDS=10V
Ta= –25°C
75°C
25°C

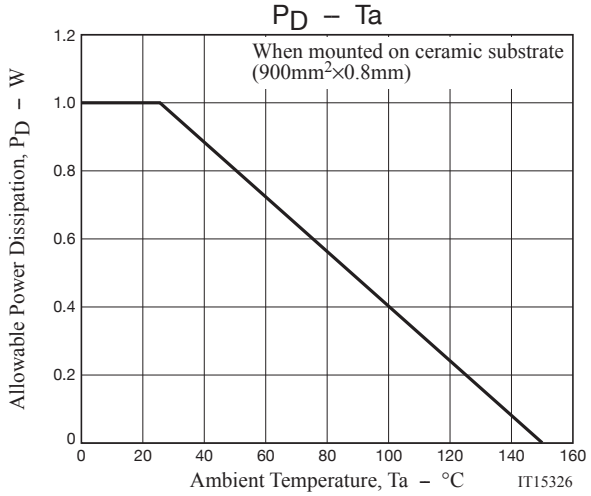

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT14349
VGS=0V
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT14350
VDD=15V
VGS=4.5V
td(off)
tf
td(on)
tr


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT14351
f=1MHz
Ciss
Coss
Crss

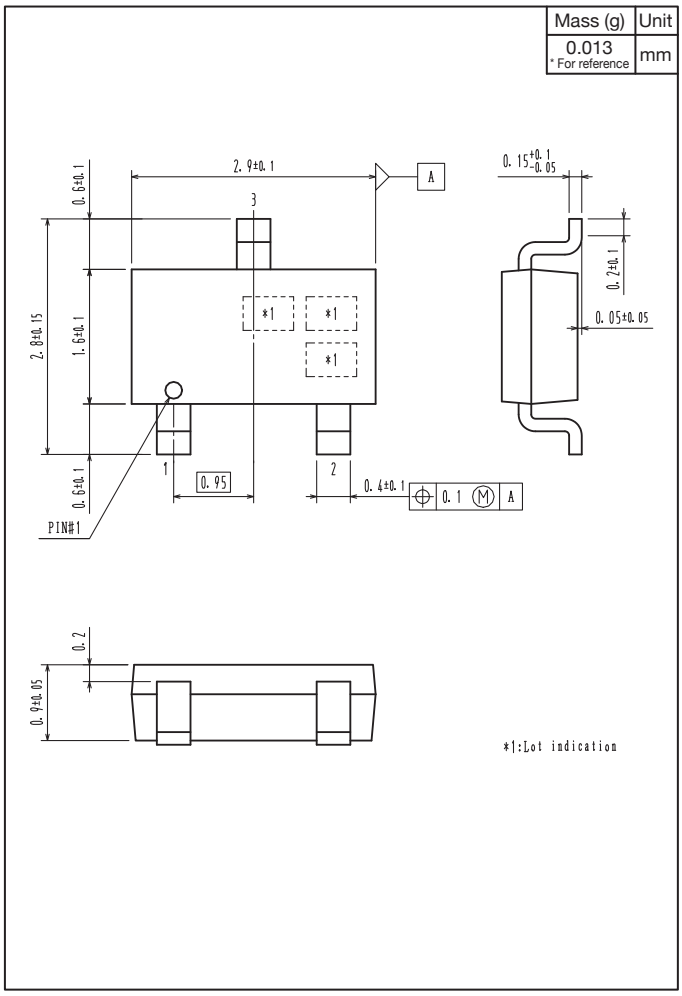

VGS – Qg
VDS=15V
ID=4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14352


S O A
IDP=16A (PW≤10μs)
ID=4A
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
HD15325

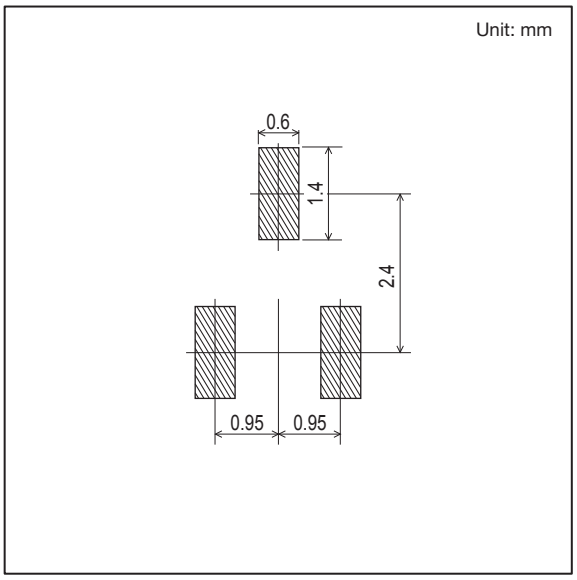

PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT15326

Outline Drawing

CPH3448-TL-H, CPH3448-TL-W



Land Pattern Example



Note on usage : Since the CPH3448 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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