Ordering number : ENA1804B

CPH3457

N-Channel Power MOSFET
30V, 3A, 95mΩ, Single CPH3

ON Semiconductor®
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Features

- ON-resistance $R_{DS}(on)1$=73mΩ(typ.)
- 1.8V drive
- Halogen free compliance
- Protection diode in

Specifications

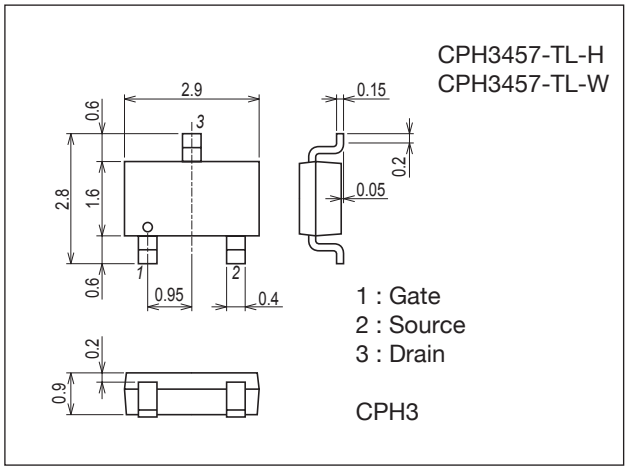
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Value	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I_D		3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	12	A
Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm)	1.0	W
Junction Temperature	Tj		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

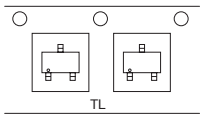
unit : mm (typ)
7015A-004



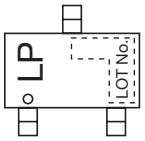
Product & Package Information

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

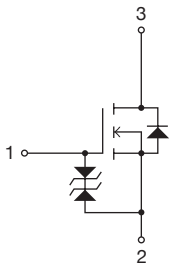
Packing Type: TL



Marking



Electrical Connection



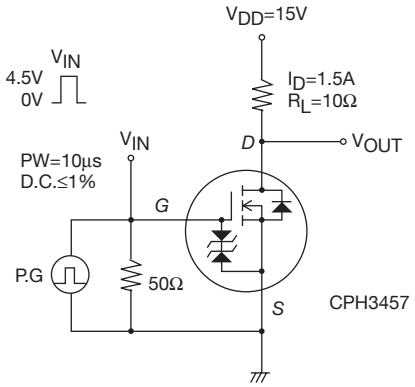
ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Value			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
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=1.5A		2.7		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	I_D=1.5A, V_{GS}=4.5V		73	95	mΩ
	$R_{DS(on)2}$	I_D=0.75A, V_{GS}=2.5V		95	133	mΩ
	$R_{DS(on)2}$	I_D=0.3A, V_{GS}=1.8V		135	203	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		265		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		35		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		28		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		5.1		ns
Rise Time	t_r	See specified Test Circuit.		10		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		137		ns
Fall Time	t_f	See specified Test Circuit.		36		ns
Total Gate Charge	Qg	V_{DS}=15V, V_{GS}=4.5V, I_D=3A		3.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=15V, V_{GS}=4.5V, I_D=3A		0.57		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=15V, V_{GS}=4.5V, I_D=3A		0.93		nC
Forward Diode Voltage	V_{SD}	I_S=3A, V_{GS}=0V		0.87	1.2	V

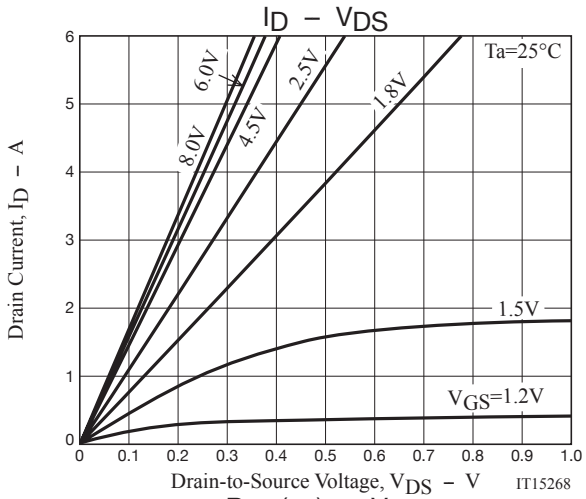
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

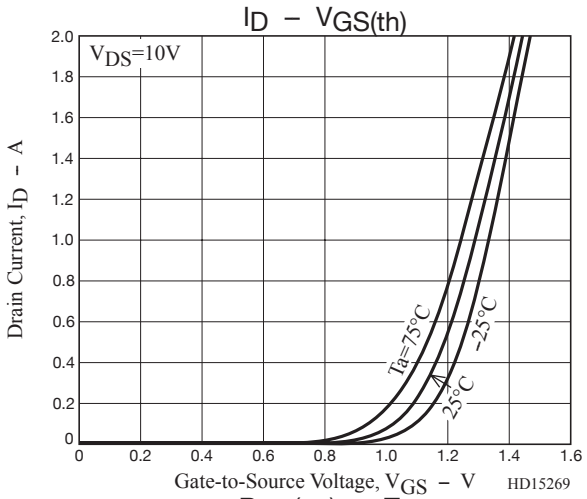
Switching Time Test Circuit

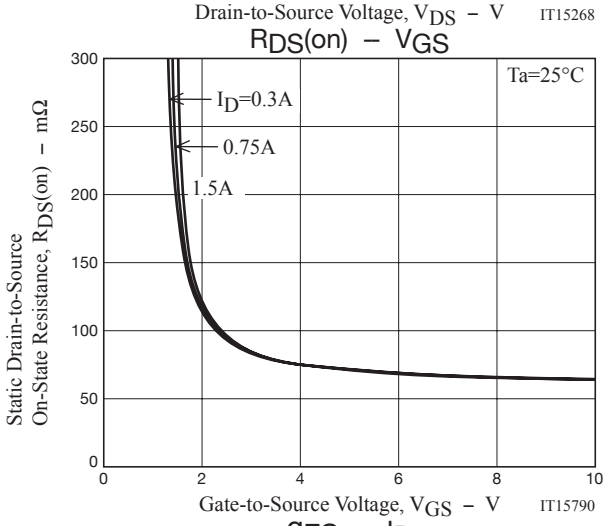


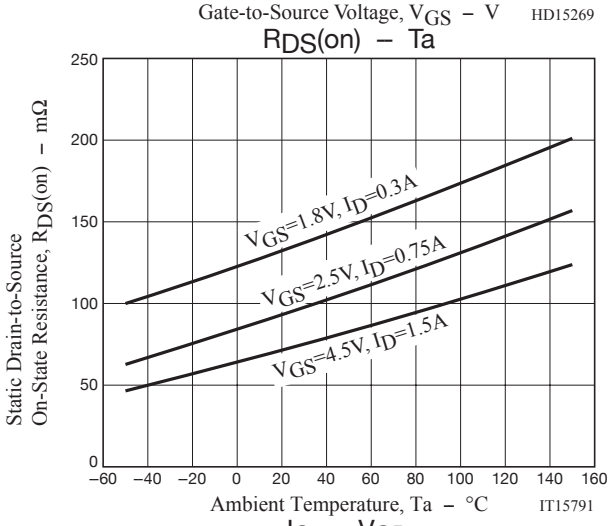
Ordering Information

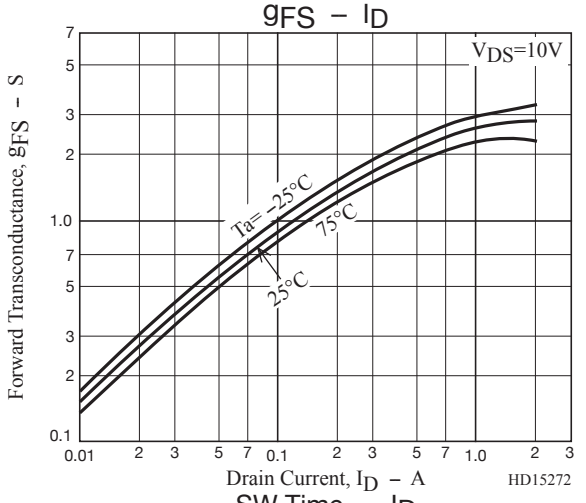
Device	Package	Shipping	memo
CPH3457-TL-H	CPH3	3,000pcs./reel	Pb-Free and Halogen Free
CPH3457-TL-W			

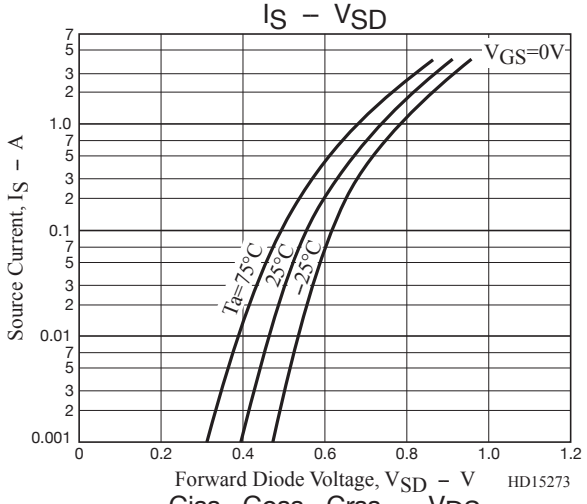

ID – VDS
Ta=25°C
6.0V
8.0V
4.5V
2.5V
1.8V
1.5V
VGS=1.2V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15268

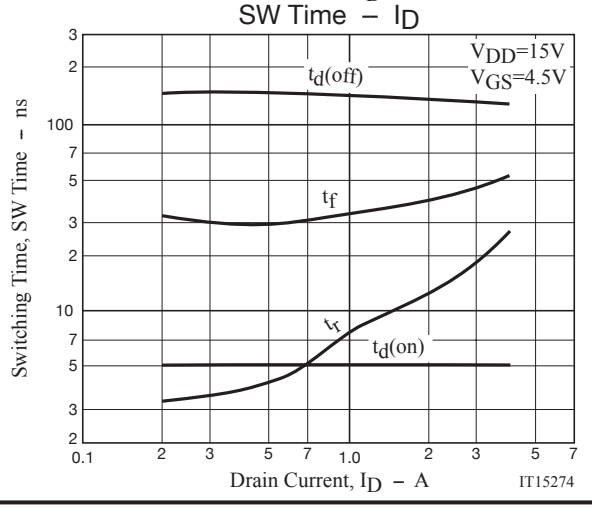

ID – VGS(th)
VDS=10V
Ta=75°C
–25°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
HD15269

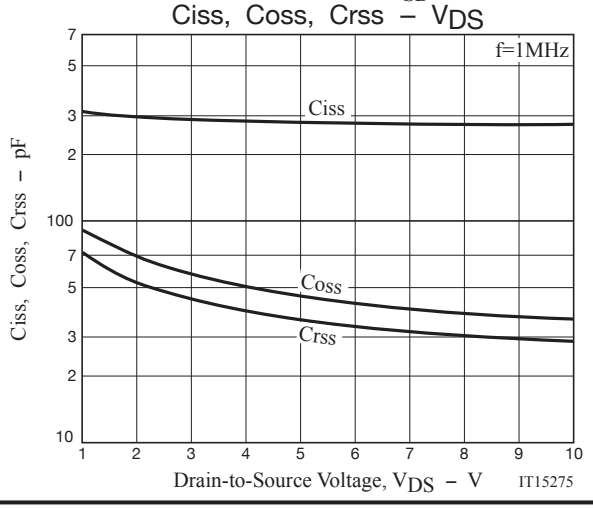

RDS(on) – VGS
Ta=25°C
ID=0.3A
0.75A
1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15790

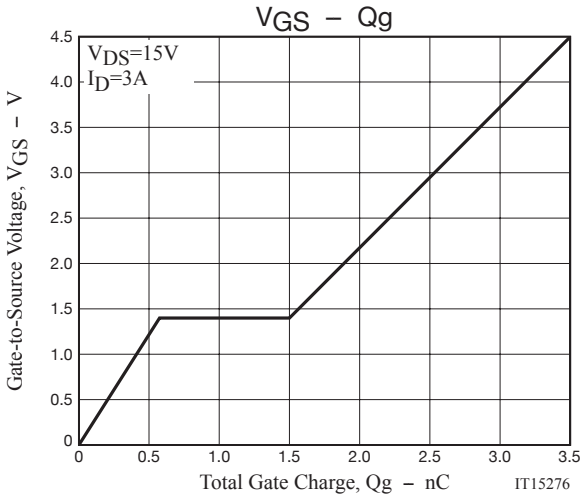

RDS(on) – Ta
VGS=1.8V, ID=0.3A
VGS=2.5V, ID=0.75A
VGS=4.5V, ID=1.5A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT15791

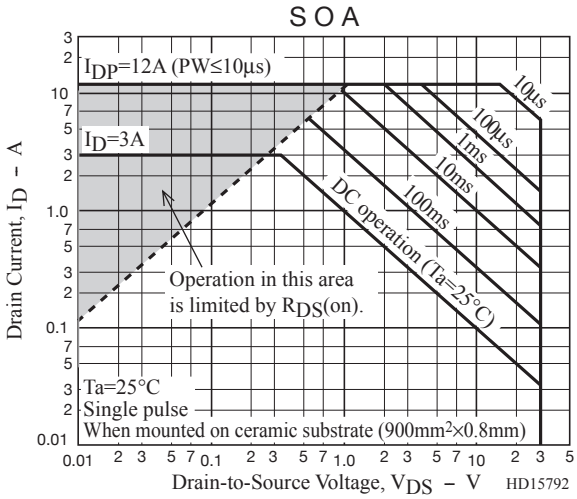

gFS – ID
VDS=10V
Ta=–25°C
75°C
25°C
Forward Transconductance, gFS – S
Drain Current, ID – A
HD15272

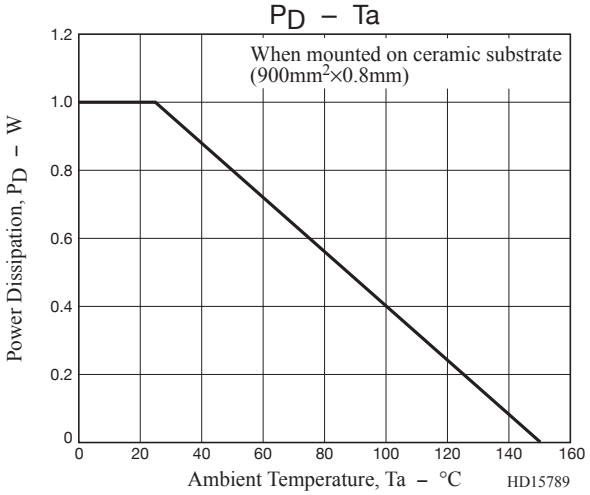

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Forward Diode Voltage, VSD – V
HD15273


SW Time – ID
VDD=15V
VGS=4.5V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT15274


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15275

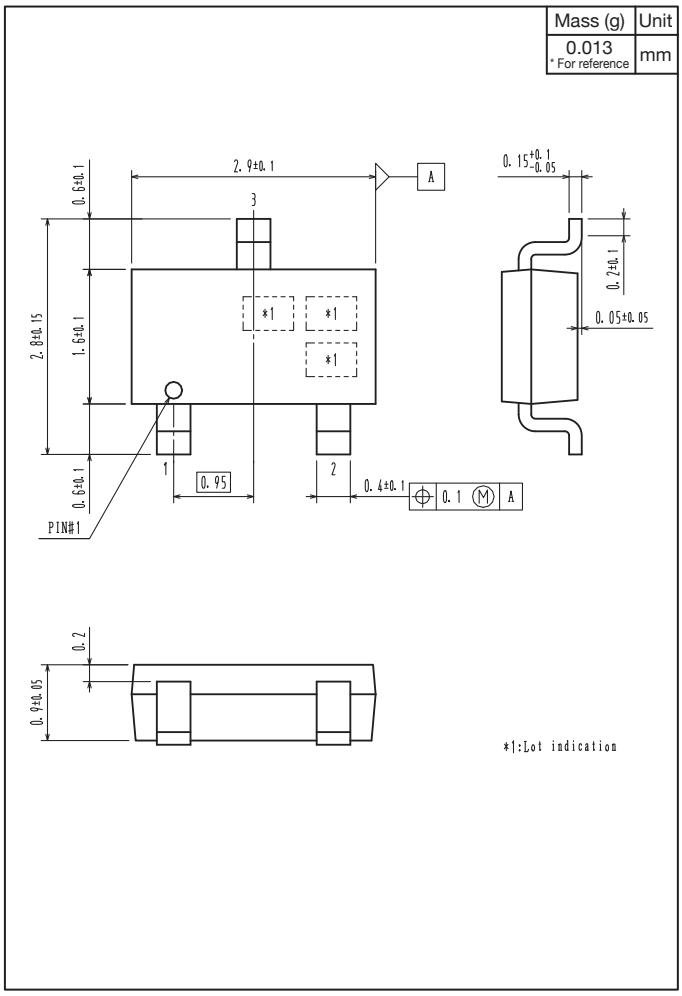

VGS – Qg
VDS=15V
ID=3A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15276


S O A
IDP=12A (PW≤10μs)
ID=3A
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 (900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
HD15792

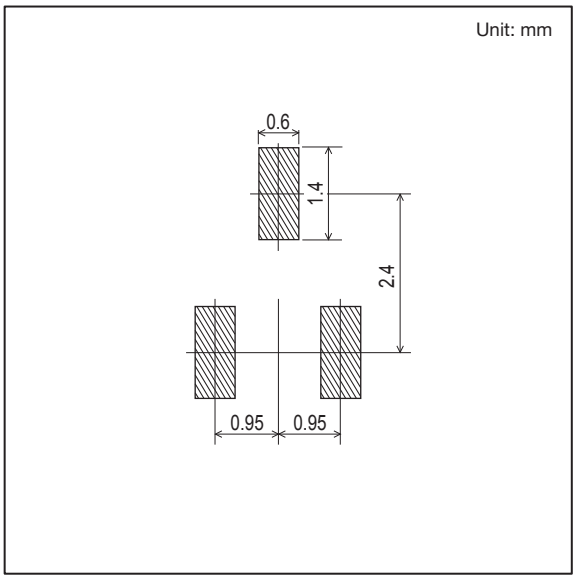

PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
HD15789

Outline Drawing

CPH3457-TL-H, CPH3457-TL-W



Land Pattern Example



Note on usage : Since the CPH3457 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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