Ordering number : ENA2301A

CPH3459

Power MOSFET
200V, 3.7Ω, 0.5A, Single N-Channel

ON Semiconductor®

http://onsemi.com

Features

- On-resistance $R_{DS}(on)1$=2.8Ω (typ)
- 4V drive
- Halogen free compliance
- Input Capacitance Ciss=90pF (typ)
- Protection Diode in

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Value	Unit
Drain to Source Voltage	V_{DSS}		200	V
Gate to Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		0.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	2	A
Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm)	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.

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm^2×0.8mm)	$R_{\theta JA}$	125	°C/W

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.

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	200			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=200V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=1mA	1.2		2.6	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.25A		0.8		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=0.25A, V_{GS}=10V		2.8	3.7	Ω
	$R_{DS}(on)2$	I_D=0.25A, V_{GS}=4V		2.9	4.1	Ω

Continued on next page.

ORDERING INFORMATION

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

Semiconductor Components Industries, LLC, 2014

Continued from preceding page.

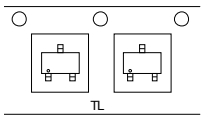
Parameter	Symbol	Conditions	Value			Unit
			min	Typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		90		pF
Output Capacitance	Coss			10		pF
Reverse Transfer Capacitance	Crss			6		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		4		ns
Rise Time	t_{r}			3.5		ns
Turn-OFF Delay Time	t_{d}(off)			14		ns
Fall Time	t_{f}			45		ns
Total Gate Charge	Qg	V_{DS}=100V, V_{GS}=10V, I_{D}=0.5A		2.4		nC
Gate to Source Charge	Qgs			0.3		nC
Gate to Drain “Miller” Charge	Qgd			0.8		nC
Forward Diode Voltage	V_{SD}	I_{S}=0.5A, 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.

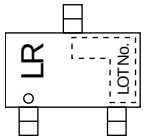
Ordering & Package Information

Device	Package	Shipping	note
CPH3459-TL-W	CPH3, SC-59 SOT-23, TO-236	3,000 pcs. / reel	Pb-Free and Halogen Free

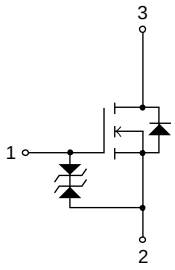
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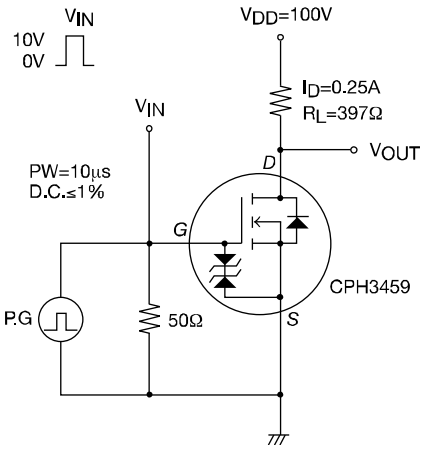
Marking

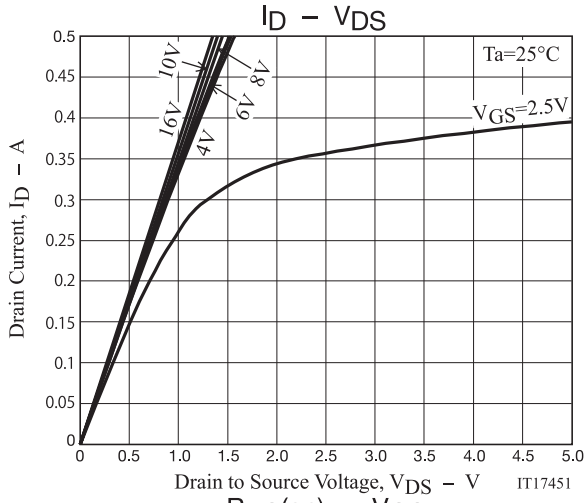


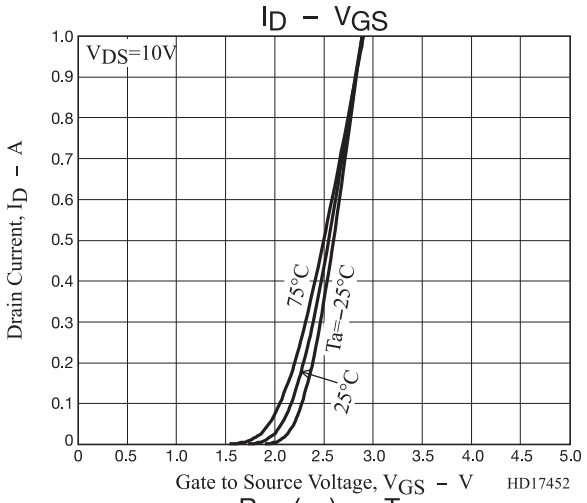
Electrical Connection

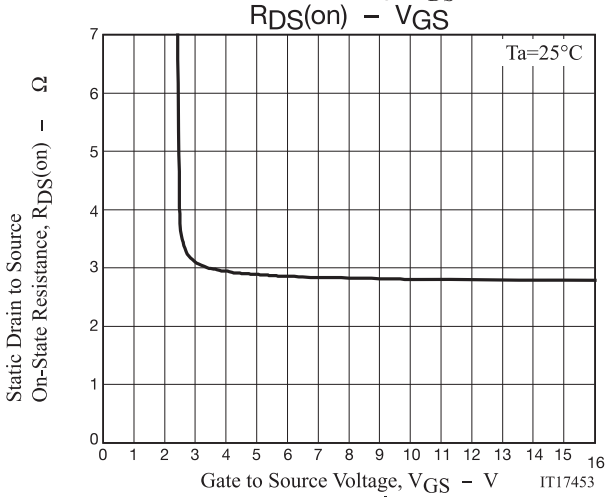


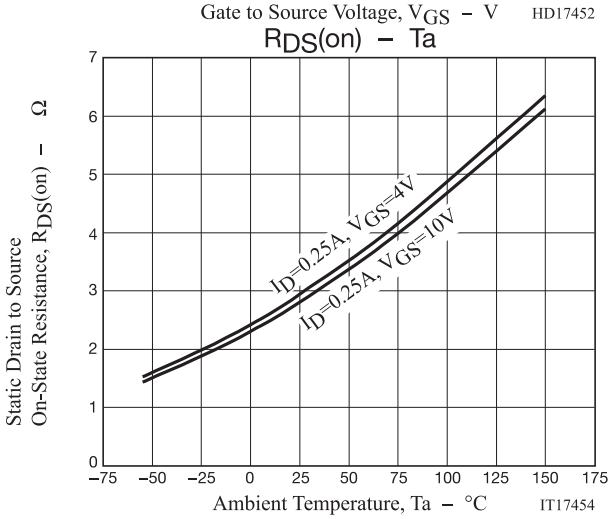
Switching Time Test Circuit

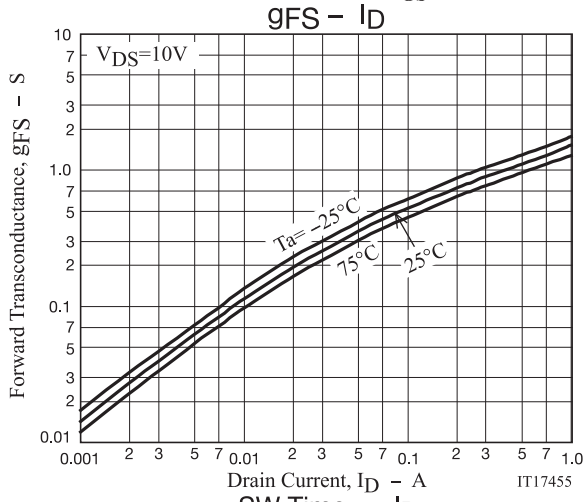


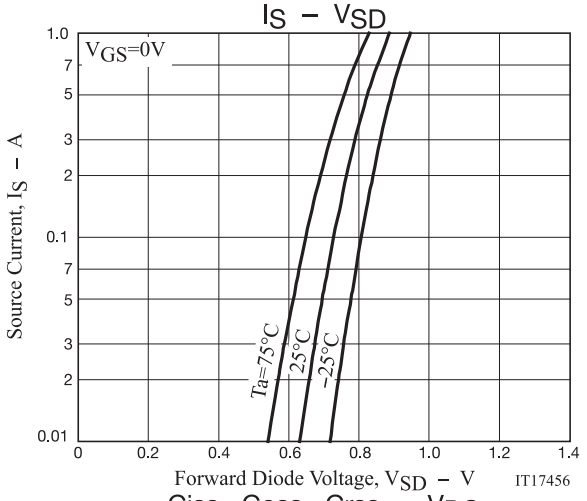

ID – VDS
Ta=25°C
VGS=2.5V
10V
8V
6V
4V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT17451

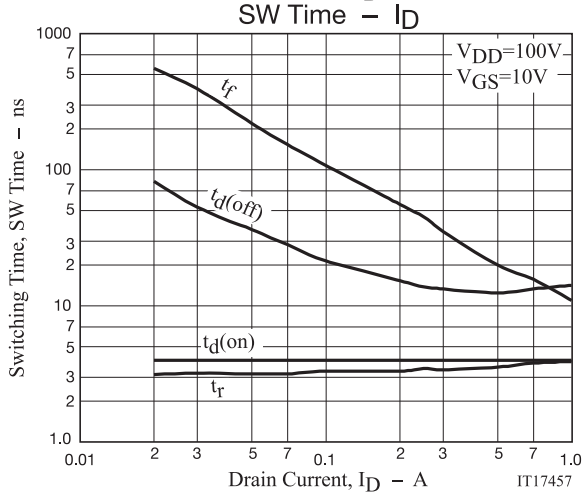

ID – VGS
VDS=10V
75°C
Ta=–25°C
25°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
HD17452

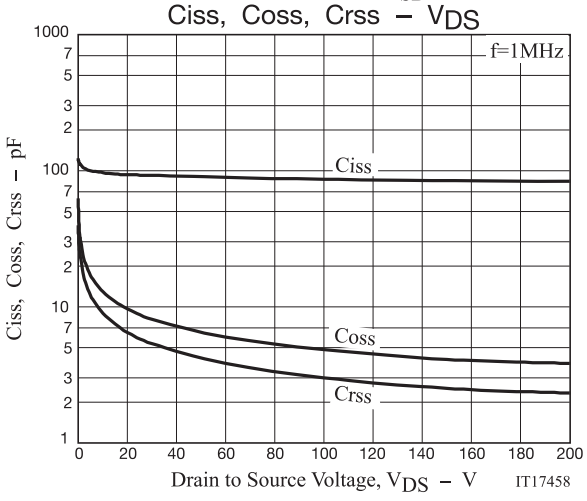

RDS(on) – VGS
Ta=25°C
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
IT17453

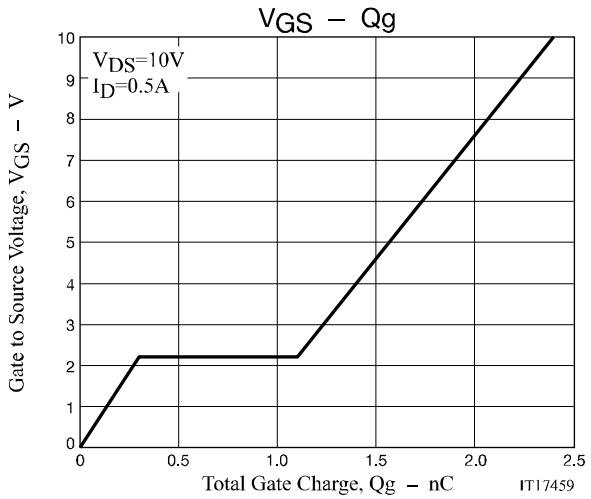

RDS(on) – Ta
ID=0.25A, VGS=4V
ID=0.25A, VGS=10V
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT17454

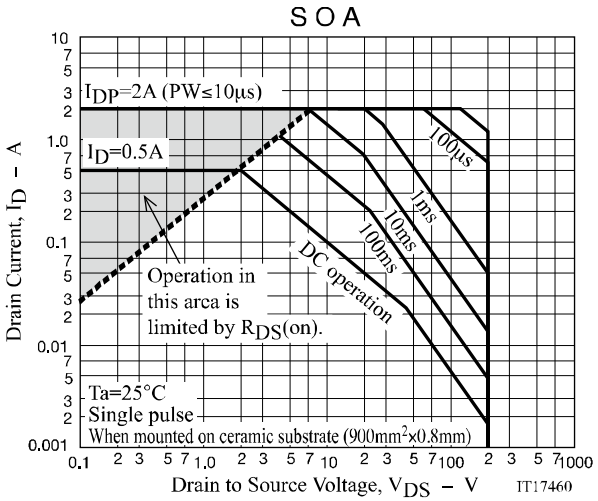

gFS – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transconductance, gFS – S
Drain Current, ID – A
IT17455

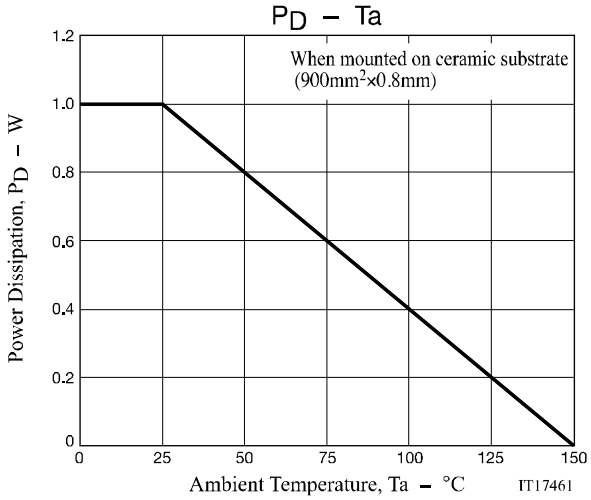

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT17456

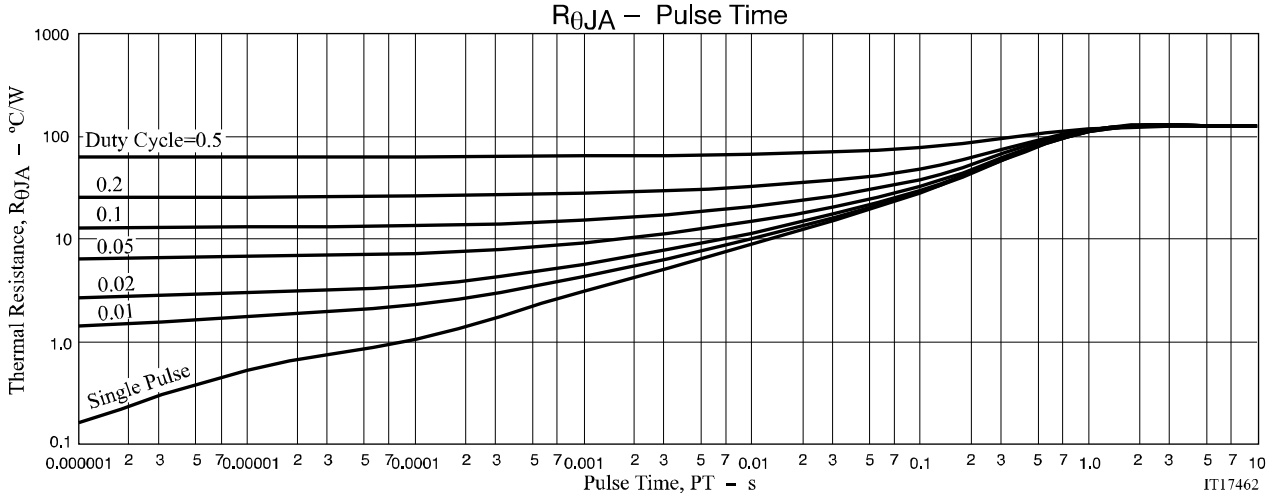

SW Time – ID
VDD=100V
VGS=10V
tf
td(off)
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT17457


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT17458


VGS – Qg
VDS=10V
ID=0.5A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT17459


S O A
IDP=2A (PW≤10μs)
ID=0.5A
100μs
1ms
10ms
100ms
DC operation
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
IT17460


PD – Ta
When mounted on ceramic substrate (900mm²×0.8mm)
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT17461


RθJA – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Thermal Resistance, RθJA – °C/W
Pulse Time, PT – s
IT17462

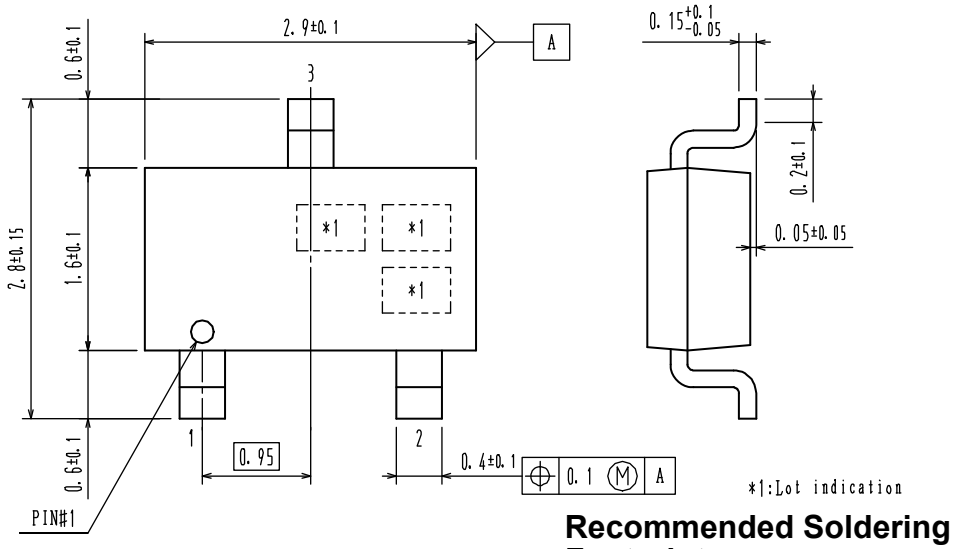
Package Dimensions

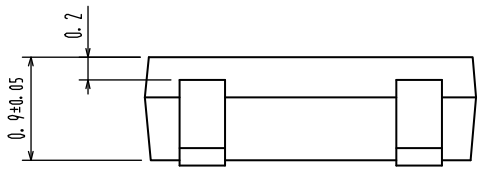
CPH3459-TL-W

CPH3

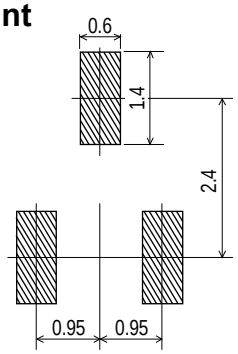
CASE 318BA
ISSUE O
unit : mm

1 : Gate
2 : Source
3 : Drain





Recommended Soldering Footprint



Note on usage : Since the CPH3459 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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