



# CPH3461

## Power MOSFET 250V, 6.5Ω, 350mA, Single N-Channel

ON Semiconductor®

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### Features

- On-Resistance  $R_{DS(on)1}=5\Omega$  (typ)
- 2.5V Drive
- Pb-Free, Halogen Free and RoHS Compliance
- ESD Diode - Protected Gate
- Low Ciss and High Speed Switching

### Specifications

**Absolute Maximum Ratings** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
Drain to Source Voltage	$V_{DSS}$		250	V
Gate to Source Voltage	$V_{GSS}$		$\pm 10$	V
Drain to Gate Voltage	$V_{DGS}$		250	V
Gate to Drain Voltage	$V_{GDS}$		$\pm 10$	V
Drain Current (DC)	$I_D$		350	mA
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	1.4	A
Power Dissipation	$P_D$	When mounted on ceramic substrate ( $900\text{mm}^2 \times 0.8\text{mm}$ )	1.0	W
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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 ( $900\text{mm}^2 \times 0.8\text{mm}$ )	$R_{\theta JA}$	125	$^\circ\text{C/W}$

### Electrical Characteristics

 at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	250			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=250\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	0.4		1.3	V
Forward Transconductance	$g_{FS}$	$V_{DS}=10\text{V}$ , $I_D=170\text{mA}$		1		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=170\text{mA}$ , $V_{GS}=4.5\text{V}$		5	6.5	$\Omega$
	$R_{DS(on)2}$	$I_D=170\text{mA}$ , $V_{GS}=2.5\text{V}$		5.1	7.2	$\Omega$

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### ORDERING INFORMATION

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

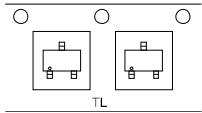
# CPH3461

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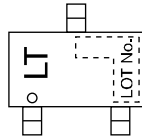
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=20V, f=1MHz$		140		pF
Output Capacitance	Coss			8		pF
Reverse Transfer Capacitance	Crss			3		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		7.5		ns
Rise Time	$t_r$			7.3		ns
Turn-OFF Delay Time	$t_{d(off)}$			23		ns
Fall Time	$t_f$			43		ns
Total Gate Charge	Qg	$V_{DS}=125V, V_{GS}=4.5V, I_D=350mA$		2.1		nC
Gate to Source Charge	Qgs			0.3		nC
Gate to Drain "Miller" Charge	Qgd			0.7		nC
Forward Diode Voltage	VSD	$I_S=350mA, V_{GS}=0V$		0.79	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.

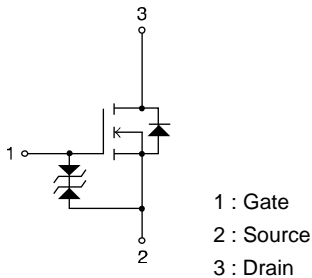
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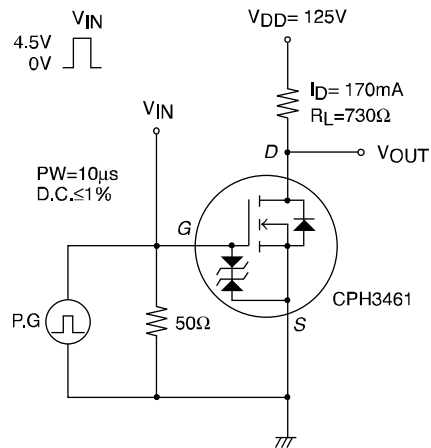
## Marking



## Electrical Connection

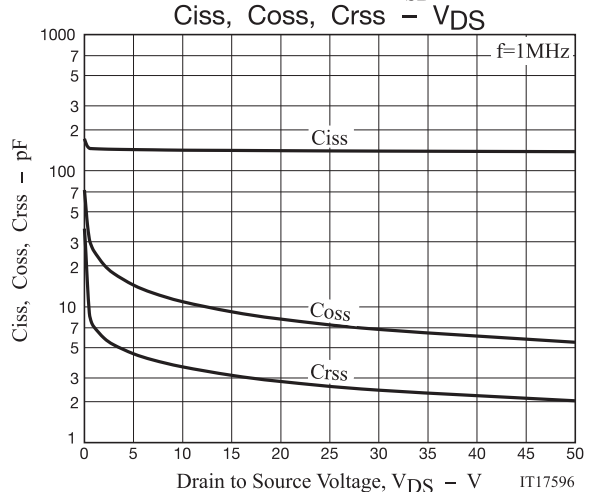
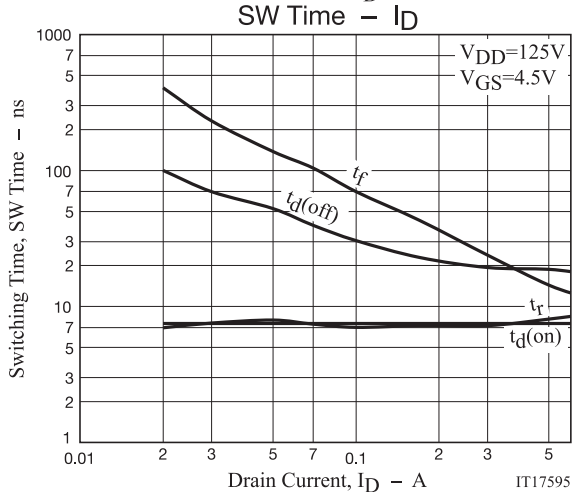
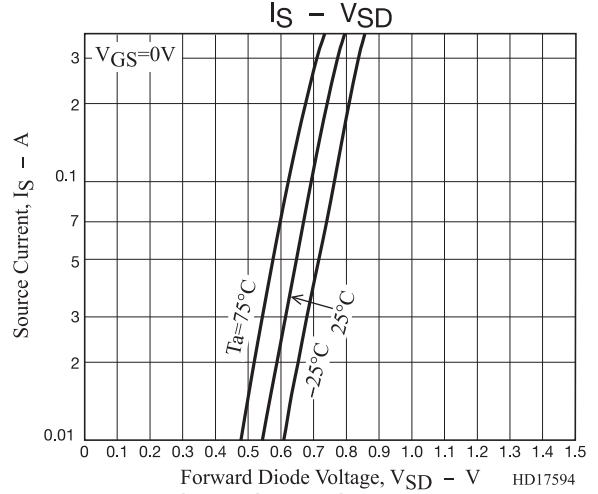
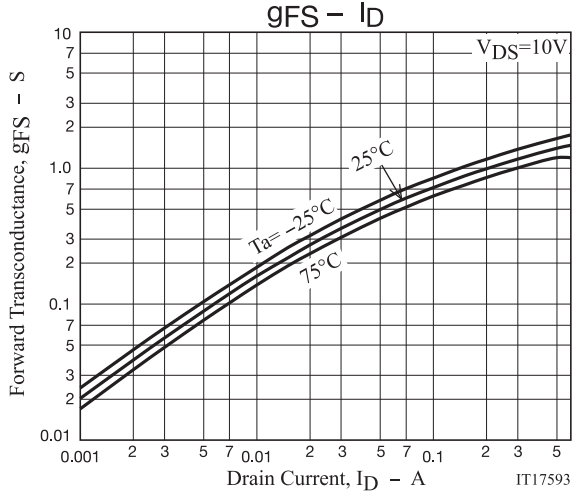
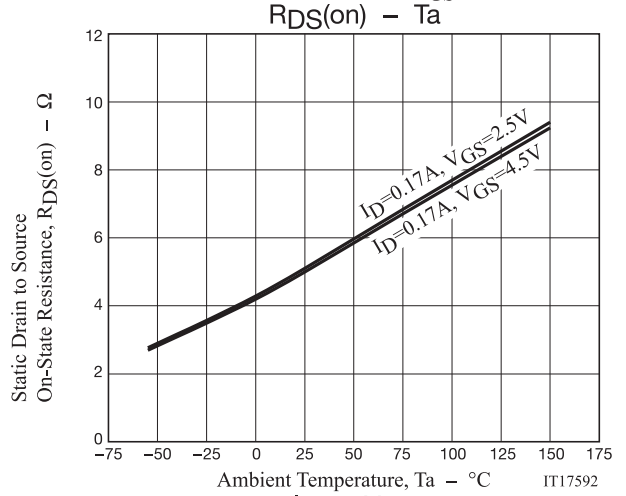
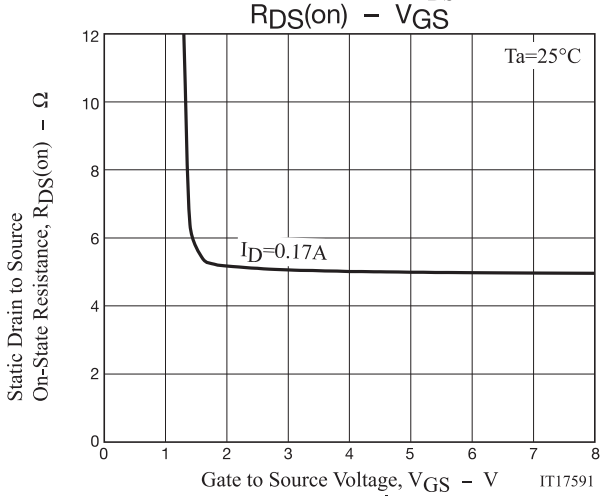
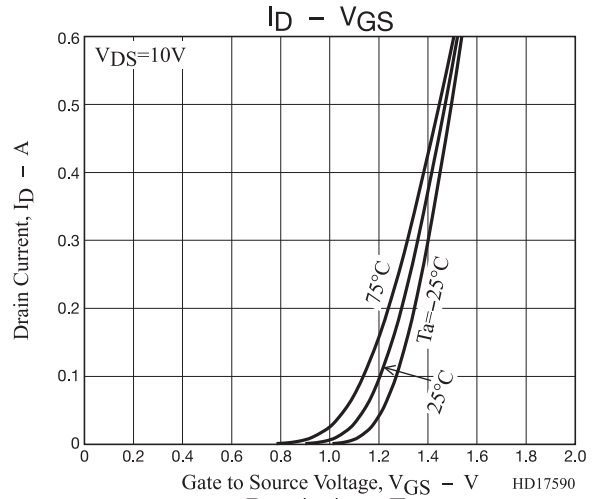
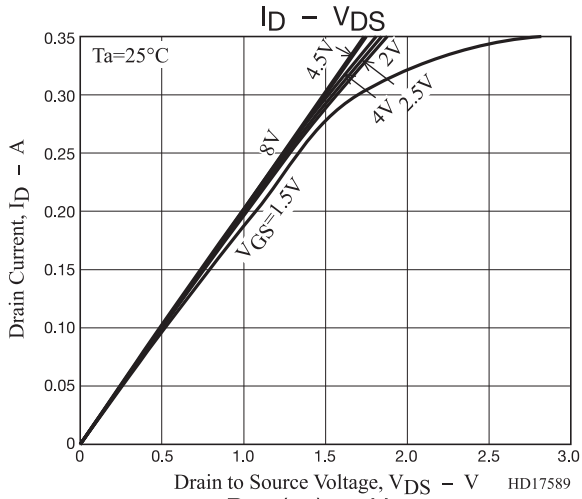


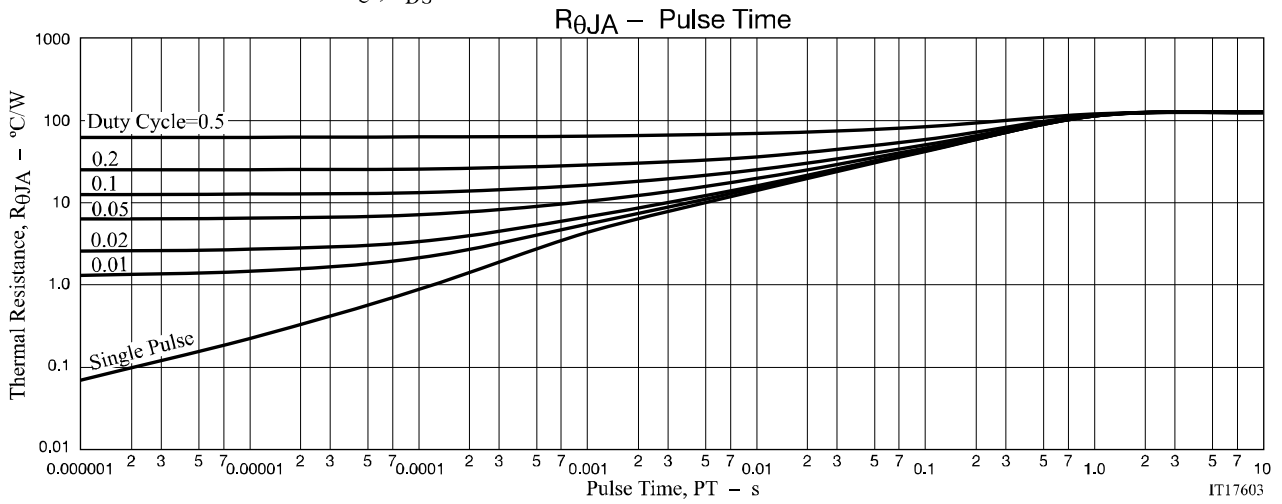
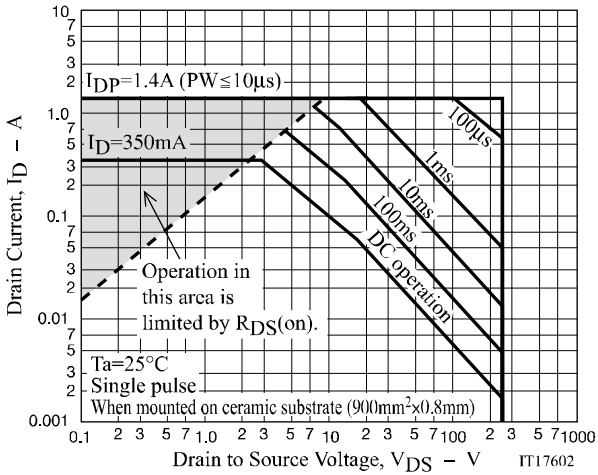
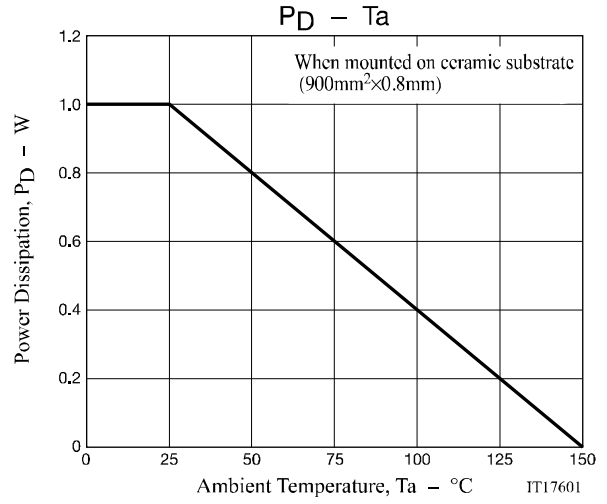
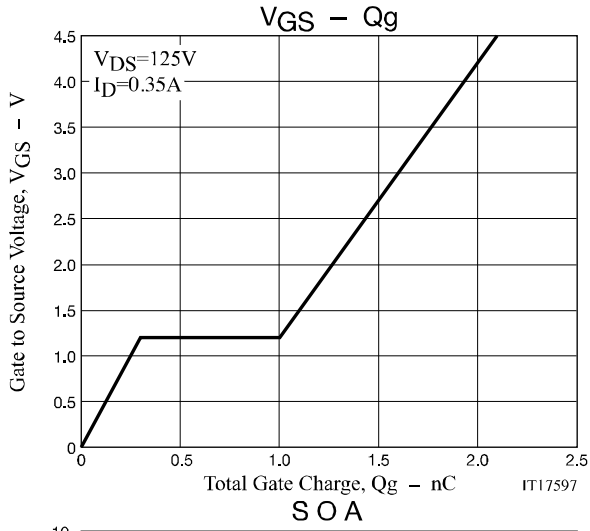
## Switching Time Test Circuit



## ORDERING INFORMATION

Device	Package	Shipping	Note
CPH3461-TL-H	CPH3,SC-59	3,000pcs. / Tape & Reel	Pb-Free and Halogen Free
CPH3461-TL-W	SOT-23,TO-236		





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## Package Dimensions

CPH3461-TL-H, CPH3461-TL-W

### CPH3

CASE 318BA

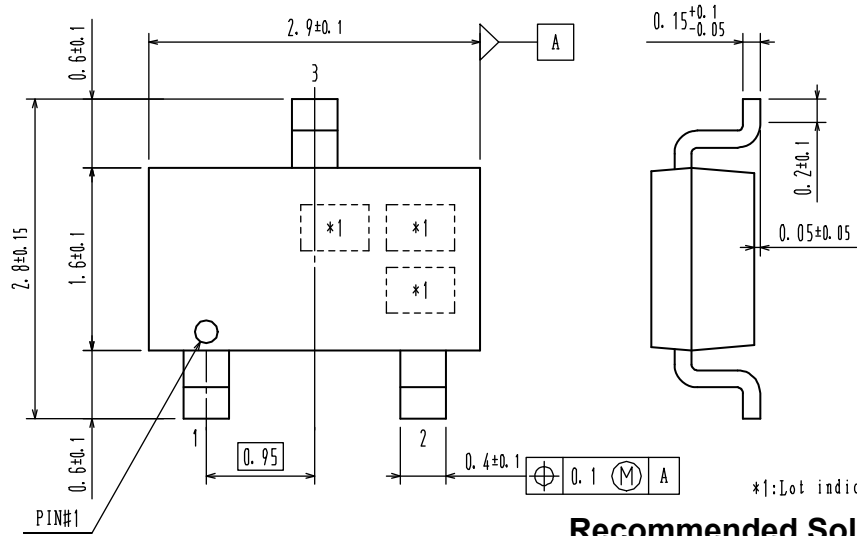
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unit : mm

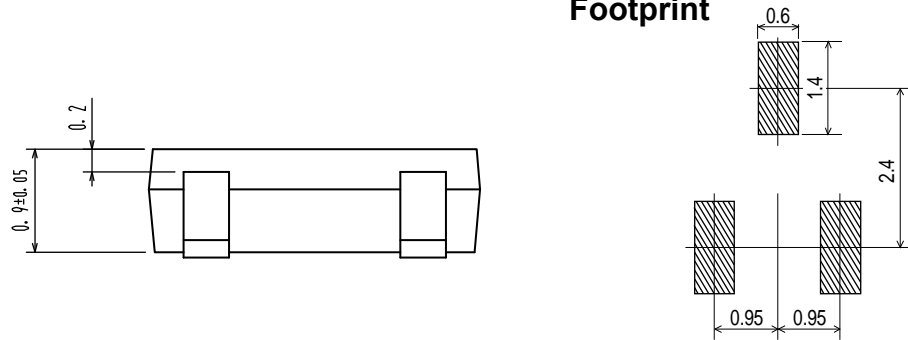
1: Gate

2: Source

3: Drain



### Recommended Soldering Footprint



Note on usage : Since the CPH3461 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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