

CPH6442



Power MOSFET

60V, 43mΩ, 6A, Single N-Channel

ON Semiconductor®

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Features

- 4V Drive
- Low On-Resistance
- ESD Diode-Protected Gate
- Pb-Free, and RoHS Compliance
- Halogen Free Compliance : CPH6442-TL-W

Specifications

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

Parameter	Symbol	Value	Unit
Drain to Source Voltage	VDSS	60	V
Gate to Source Voltage	VGSS	±20	V
Drain Current (DC)	ID	6	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	IDP	24	A
Power Dissipation When mounted on ceramic substrate (900mm ² ×0.8mm)	PD	1.6	W
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

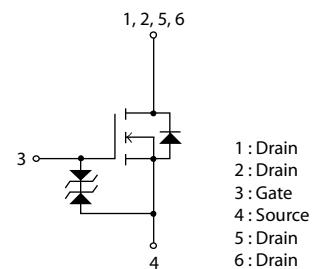
Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Ambient			
When mounted on ceramic substrate (900mm ² × 0.8mm)	R _{θJA}	78.1	°C/W

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.

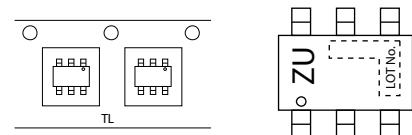
V_{DSS}	$R_{DS(on)}$ Max	I_D Max
60V	43 m Ω @10V	6A
	59 m Ω @4.5V	
	65 m Ω @4V	

Electrical Connection N-Channel



Packing Type : TL

Marking



ORDERING INFORMATION

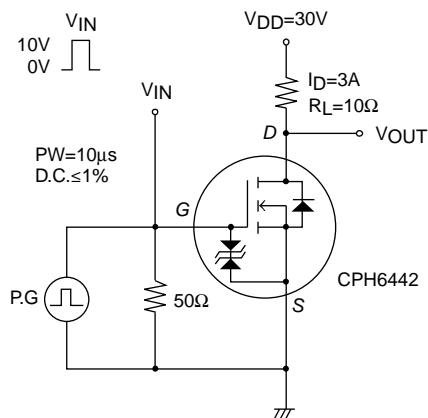
ORDERING INFORMATION
See detailed ordering and shipping information on page 5 of this data sheet.

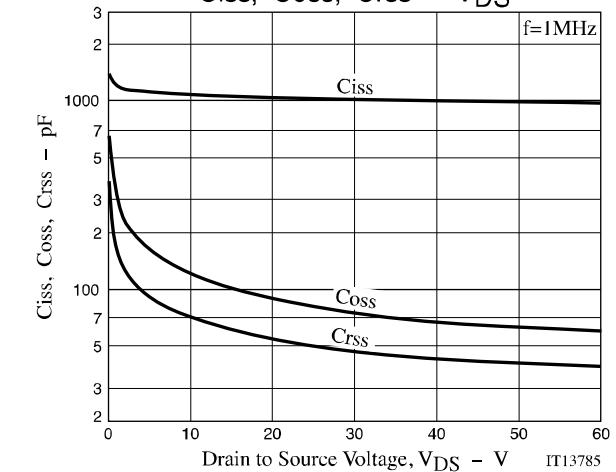
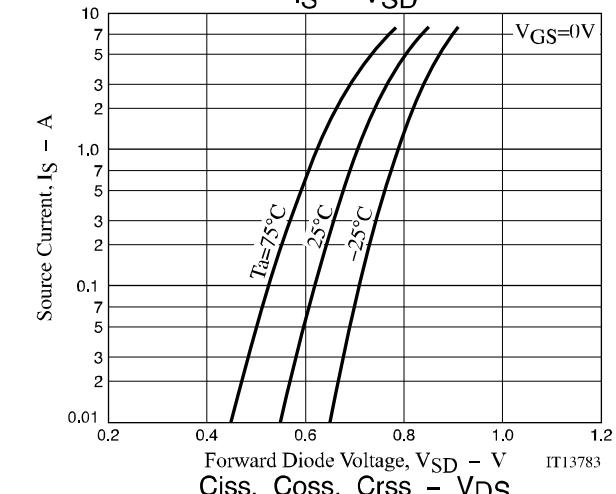
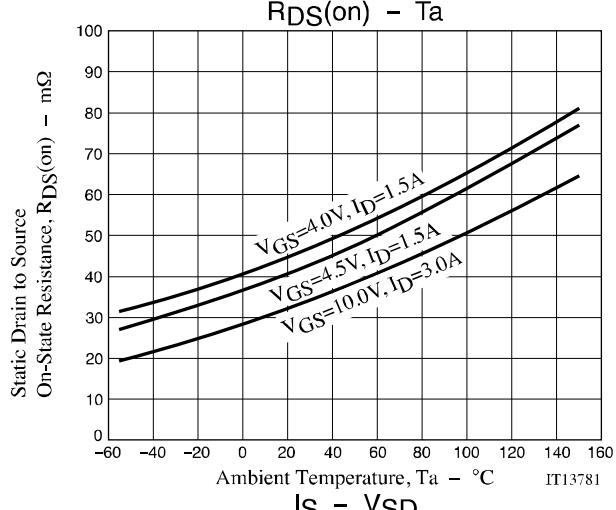
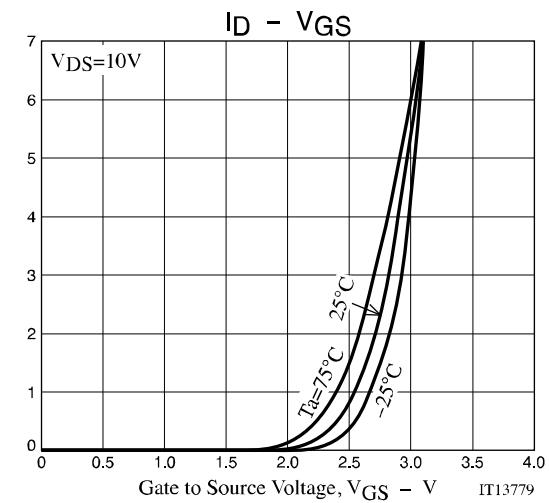
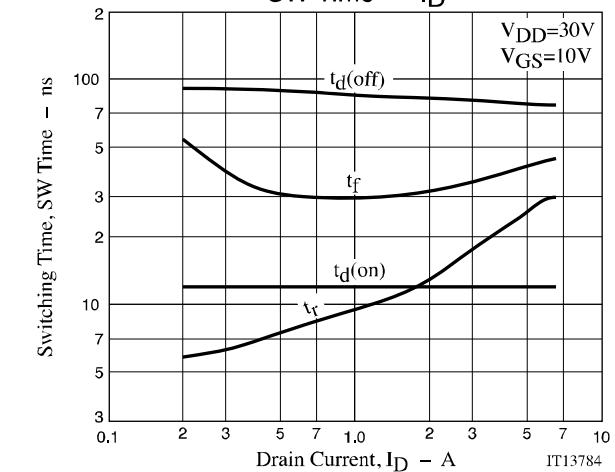
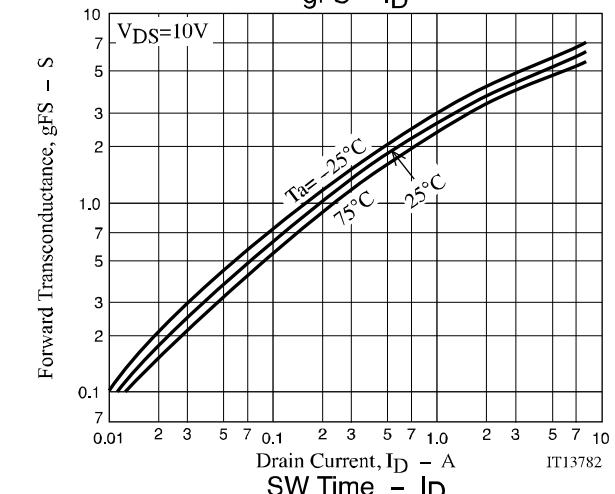
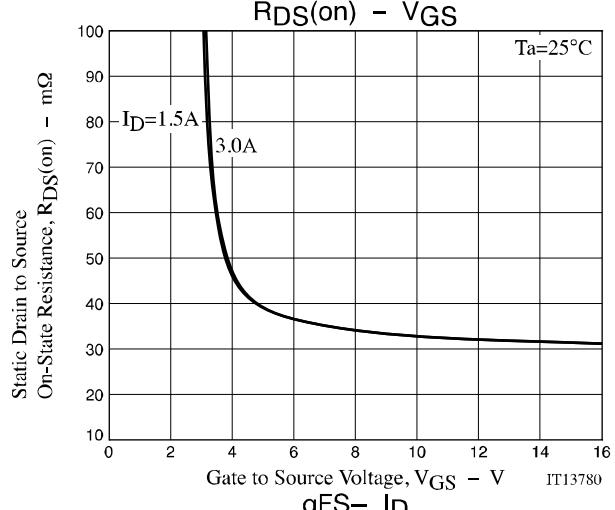
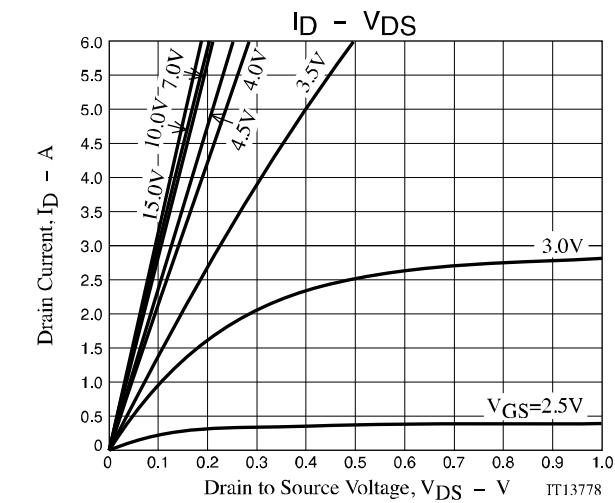
Electrical Characteristics at $T_a = 25^\circ\text{C}$

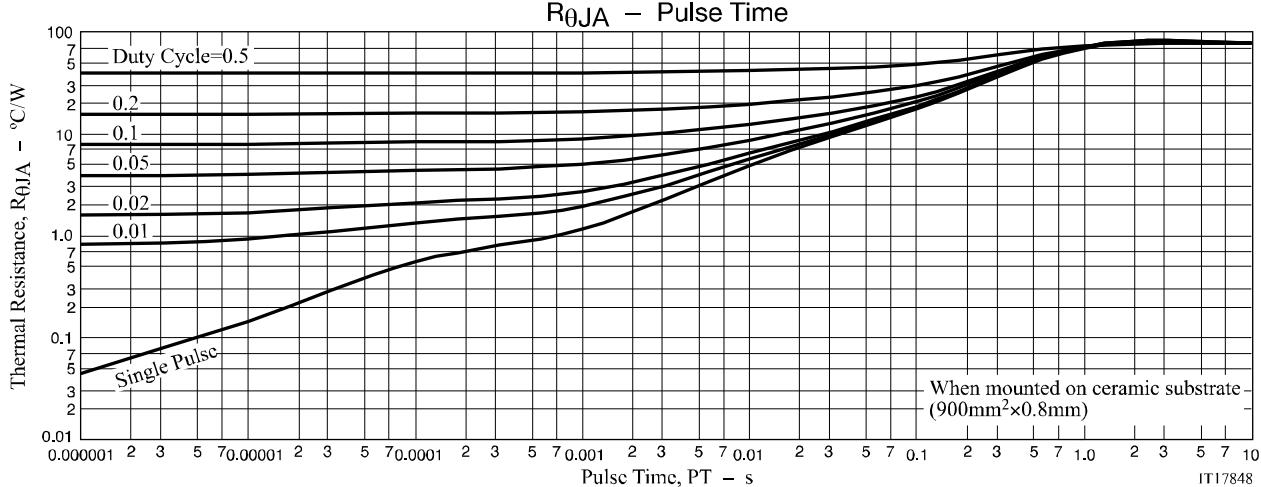
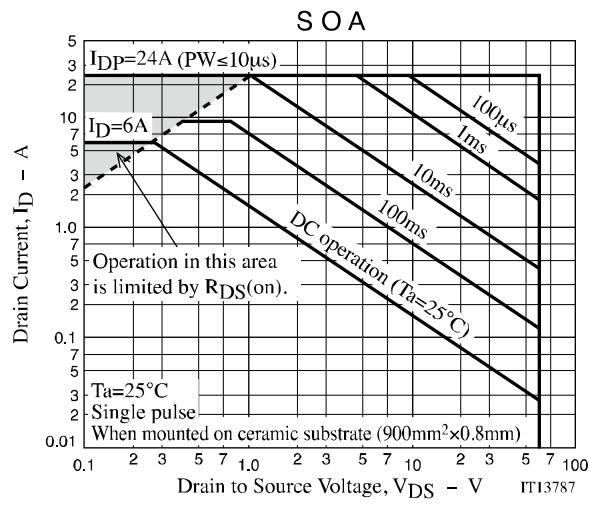
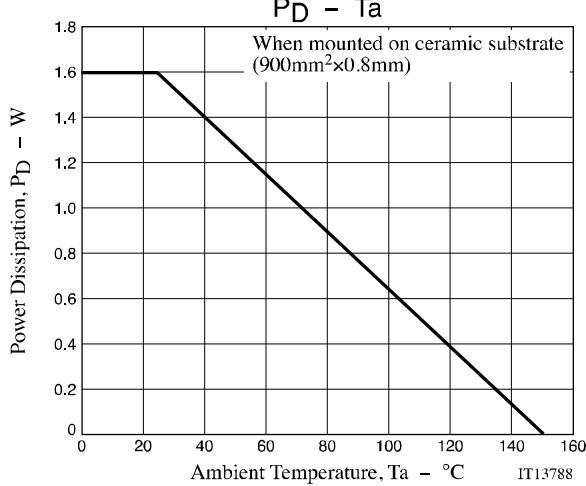
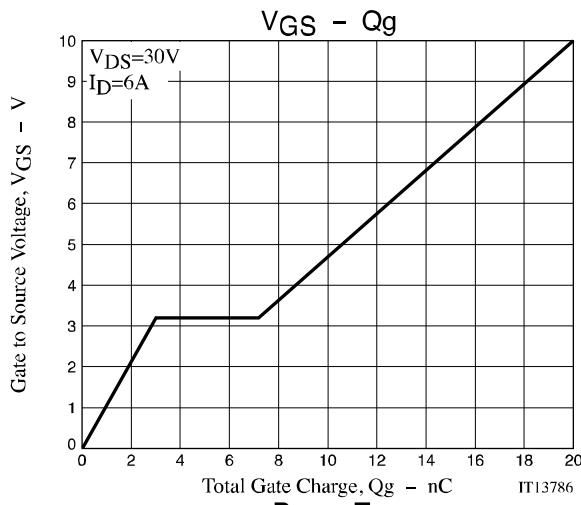
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V(\text{BR})_{\text{DSS}}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	1.2		2.6	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=3\text{A}$	2.6	4.4		S
Static Drain to Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=3\text{A}, V_{GS}=10\text{V}$		33	43	$\text{m}\Omega$
	$R_{DS(\text{on})2}$	$I_D=1.5\text{A}, V_{GS}=4.5\text{V}$		42	59	$\text{m}\Omega$
	$R_{DS(\text{on})3}$	$I_D=1.5\text{A}, V_{GS}=4\text{V}$		46	65	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20\text{V}, f=1\text{MHz}$		1040		pF
Output Capacitance	C_{oss}			90		pF
Reverse Transfer Capacitance	C_{rss}			55		pF
Turn-ON Delay Time	$t_{\text{d(on)}}$	See specified Test Circuit		12		ns
Rise Time	t_r			18		ns
Turn-OFF Delay Time	$t_{\text{d(off)}}$			80		ns
Fall Time	t_f			35		ns
Total Gate Charge	Q_g	$V_{DS}=30\text{V}, V_{GS}=10\text{V}, I_D=6\text{A}$		20		nC
Gate to Source Charge	Q_{gs}			3.0		nC
Gate to Drain "Miller" Charge	Q_{gd}			4.2		nC
Forward Diode Voltage	V_{SD}	$I_S=6\text{A}, V_{GS}=0\text{V}$		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







Package Dimensions

CPH6442-TL-E / CPH6442-TL-W

CPH6

CASE 318BD

ISSUE O

Unit : mm

1 : Drain

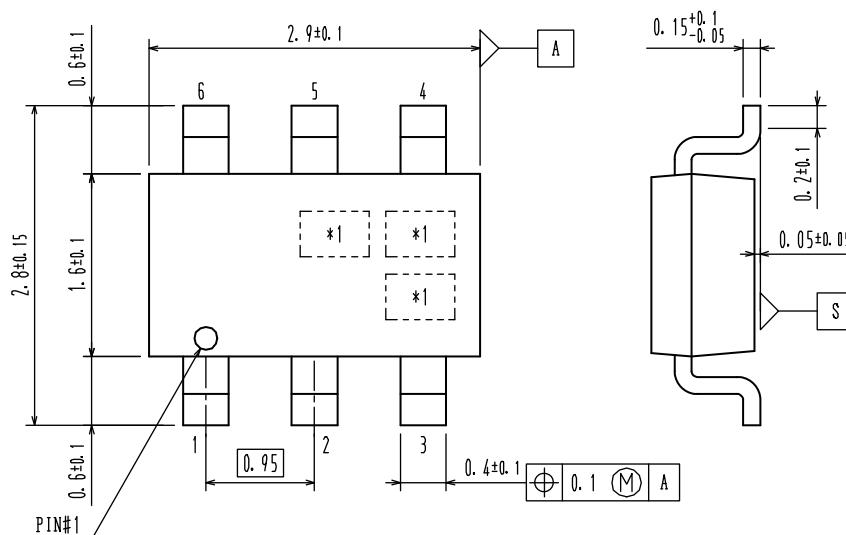
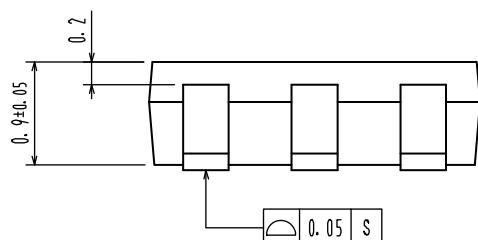
2 : Drain

3 : Gate

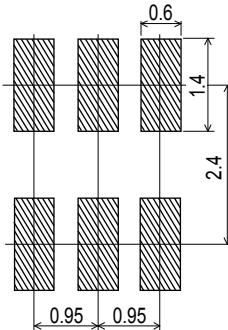
4 : Source

5 : Drain

6 : Drain


**Recommended
Soldering Footprint**


*1:Lot indication

**ORDERING INFORMATION**

Device	Package	Shipping	Note
CPH6442-TL-E	CPH6, SC-74 SOT-26, SOT-457	3,000 pcs. / Tape & Reel	Pb-Free
CPH6442-TL-W			Pb-Free and Halogen Free

Note on usage : Since the CPH6442 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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