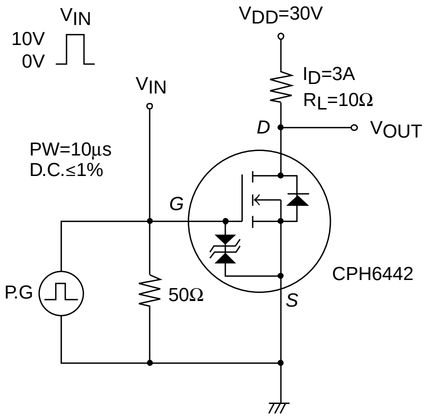
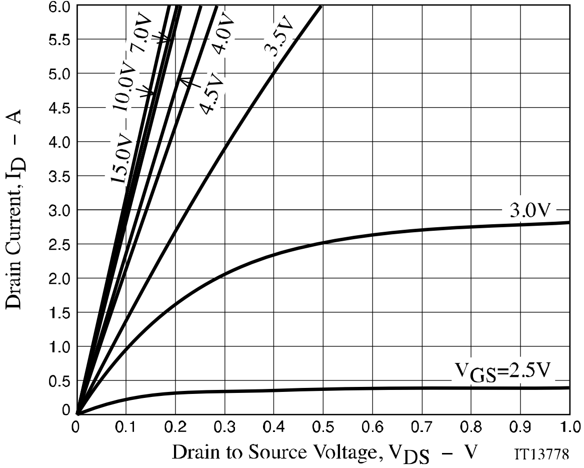
Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, 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=3A	2.6	4.4		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=3A, V_{GS}=10V		33	43	mΩ
	$R_{DS}(on)2$	I_D=1.5A, V_{GS}=4.5V		42	59	mΩ
	$R_{DS}(on)3$	I_D=1.5A, V_{GS}=4V		46	65	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1040		pF
Output Capacitance	Coss			90		pF
Reverse Transfer Capacitance	Crss			55		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		12		ns
Rise Time	t_r			18		ns
Turn-OFF Delay Time	$t_d(off)$			80		ns
Fall Time	t_f			35		ns
Total Gate Charge	Qg	V_{DS}=30V, V_{GS}=10V, I_D=6A		20		nC
Gate to Source Charge	Qgs			3.0		nC
Gate to Drain “Miller” Charge	Qgd			4.2		nC
Forward Diode Voltage	V_{SD}	I_S=6A, V_{GS}=0V		0.82	1.2	V

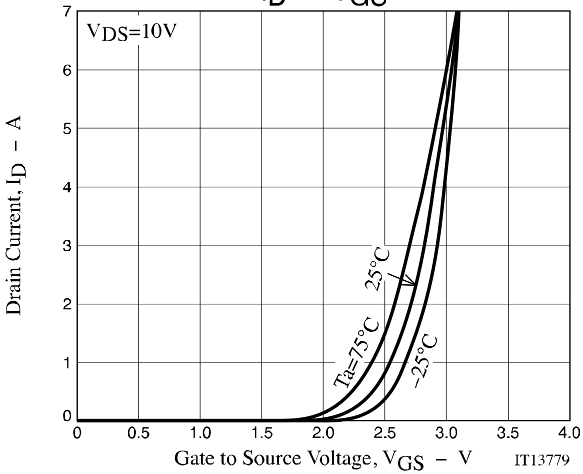
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit

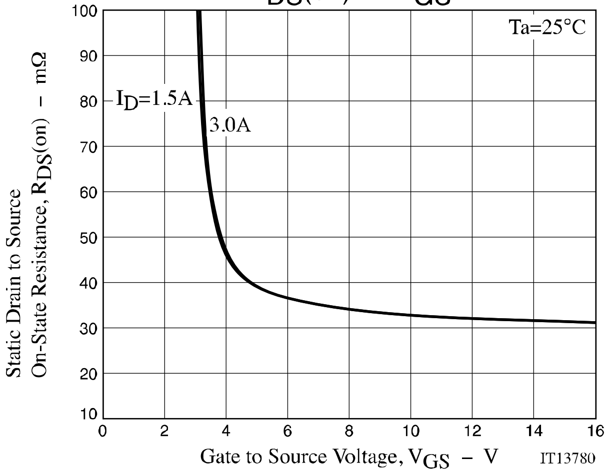




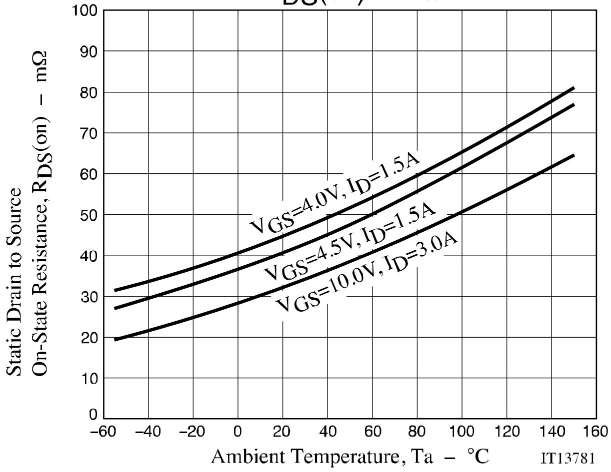
I_D – V_{DS}



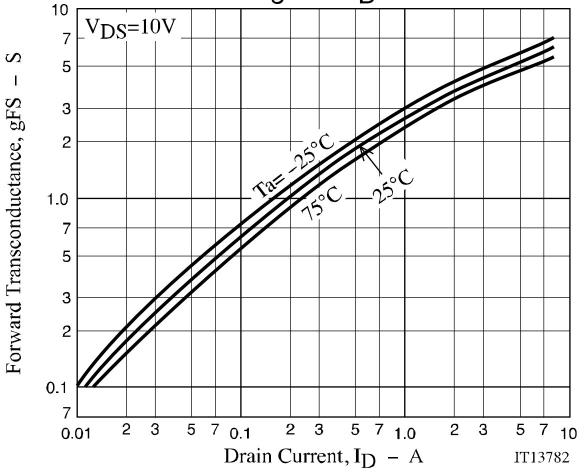
I_D – V_{GS}



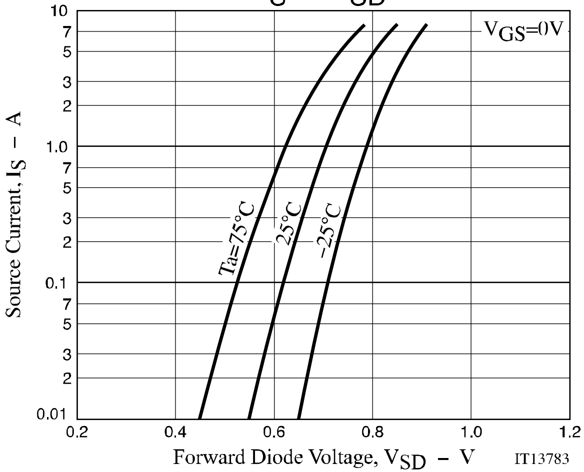
R_{DS}(on) – V_{GS}



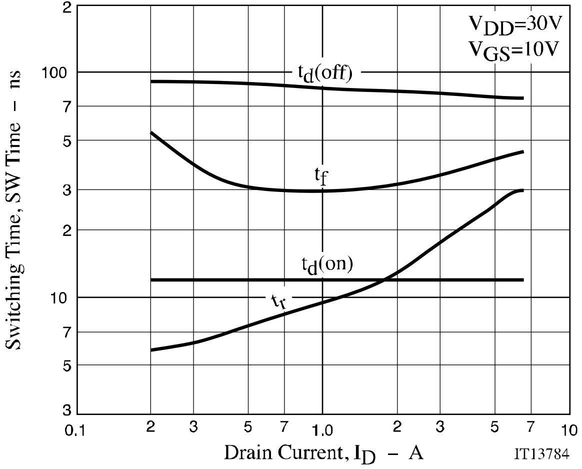
R_{DS}(on) – Ta



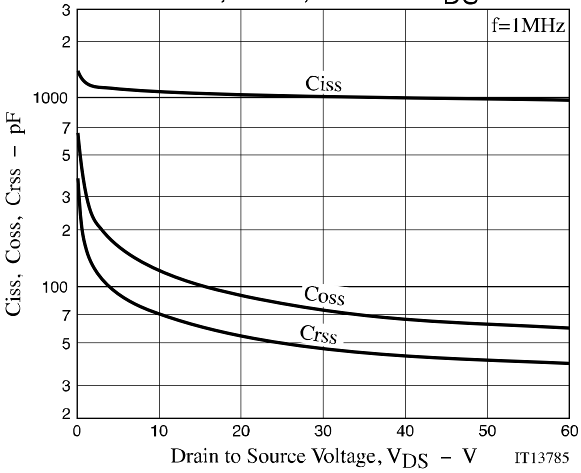
gFS– I_D



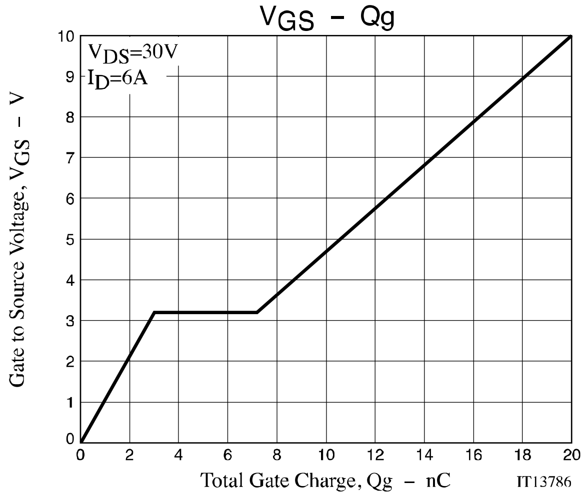
I_S – V_{SD}

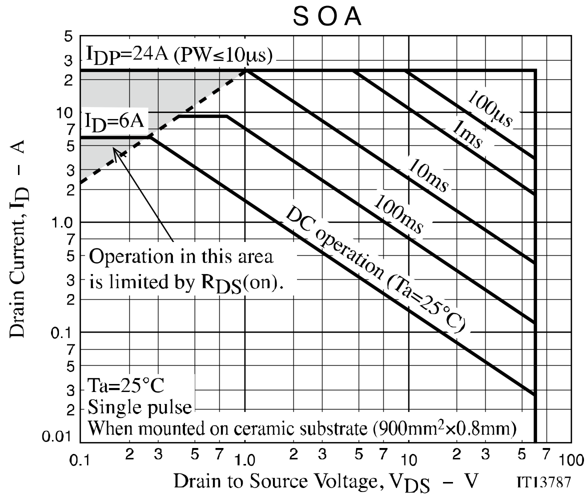


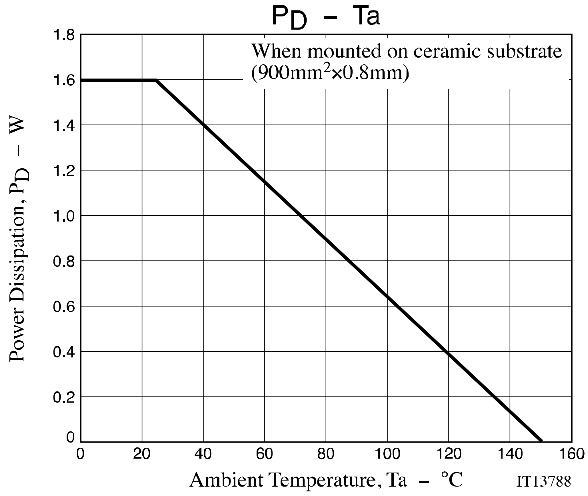
SW Time – I_D

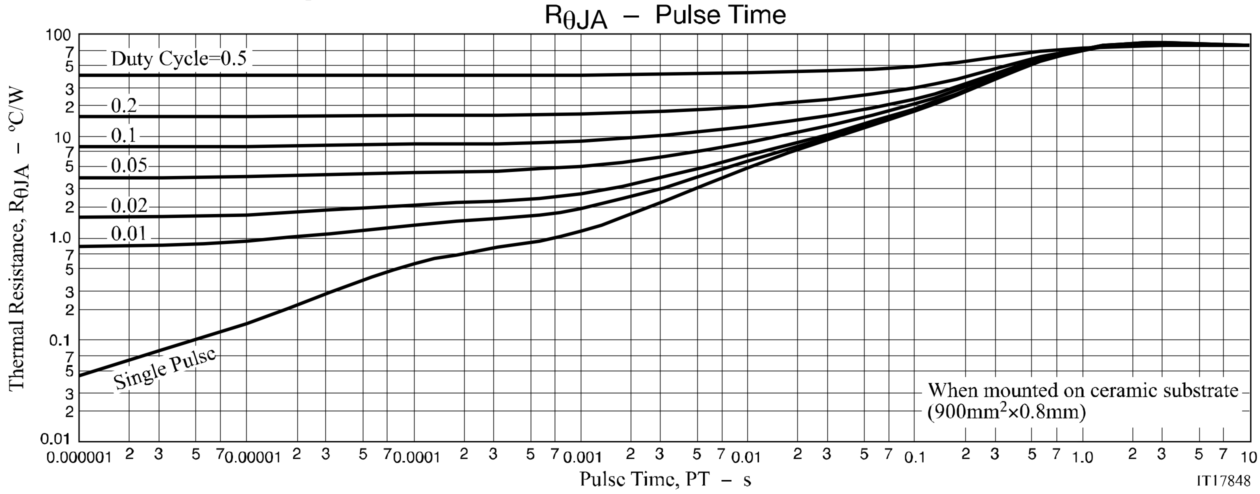


Ciss, Coss, Crss – V_{DS}


VGS – Qg
VDS=30V
ID=6A
Gate to Source Voltage, VGS – V
0
1
2
3
4
5
6
7
8
9
10
0
2
4
6
8
10
12
14
16
18
20
Total Gate Charge, Qg – nC
IT13786


S O A
IDP=24A (PW≤10μs)
ID=6A
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
0.01
2
3
5
7
0.1
2
3
5
7
1.0
2
3
5
7
10
2
3
5
0.1
1.0
10
100
Drain to Source Voltage, VDS – V
IT13787


PD – Ta
When mounted on ceramic substrate
(900mm²×0.8mm)
Power Dissipation, PD – W
0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta – °C
IT13788


RθJA – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
When mounted on ceramic substrate
(900mm²×0.8mm)
Thermal Resistance, RθJA – °C/W
0.01
0.1
1.0
10
100
0.000001
0.00001
0.0001
0.001
0.01
0.1
1.0
10
Pulse Time, PT – s
IT17848

Package Dimensions

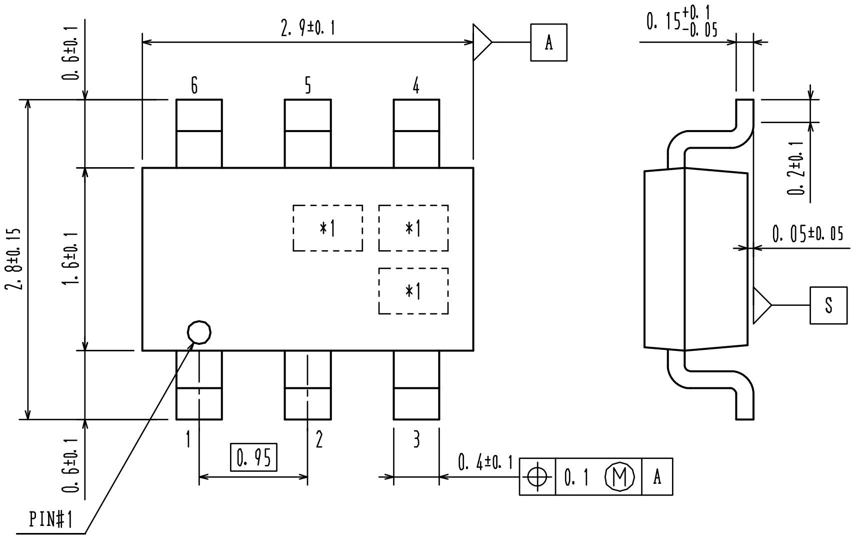
CPH6442-TL-E / CPH6442-TL-W

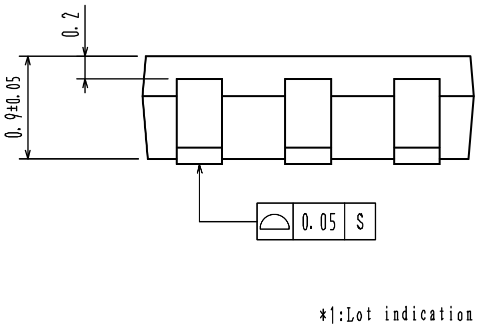
CPH6

CASE 318BD
ISSUE O

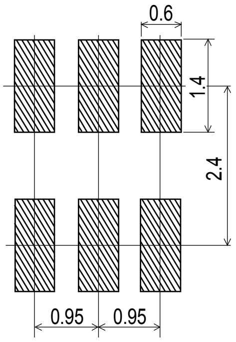
Unit : mm

1 : Drain
2 : Drain
3 : Gate
4 : Source
5 : Drain
6 : Drain





Recommended Soldering Footprint



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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