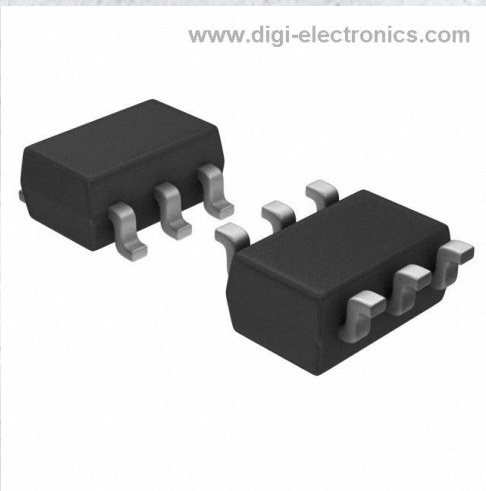
CPH6347-TL-W Datasheet



DiGi Electronics Part Number	CPH6347-TL-W-DG
Manufacturer	onsemi
Manufacturer Product Number	CPH6347-TL-W
Description	MOSFET P-CH 20V 6A 6CPH
Detailed Description	P-Channel 20 V 6A (Ta) 1.6W (Ta) Surface Mount 6-CPH

https://www.DiGi-Electronics.com

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
CPH6347-TL-W	onsemi
Series:	Product Status:
-	Obsolete
FET Type:	Technology:
P-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
20 V	6A (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
1.8V, 4.5V	39mOhm @ 3A, 4.5V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
1.4V @ 1mA	10.5 nC @ 4.5 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±12V	860 pF @ 10 V
FET Feature:	Power Dissipation (Max):
-	1.6W (Ta)
Operating Temperature:	Mounting Type:
150°C (TJ)	Surface Mount
Supplier Device Package:	Package / Case:
6-CPH	SOT-23-6 Thin, TSOT-23-6
Base Product Number:	
CPH6347	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

CPH6347

Power MOSFET
–20V, 39mΩ, –6A, Single P-Channel

ON Semiconductor®

www.onsemi.com

V_{DSS}	R_{DS}(on) Max	I_D Max
–20V	39mΩ@ –4.5V	–6A
	66mΩ@ –2.5V	
	102mΩ@ –1.8V	

Features

- Low Gate Drive Voltage
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS Compliance

Specifications

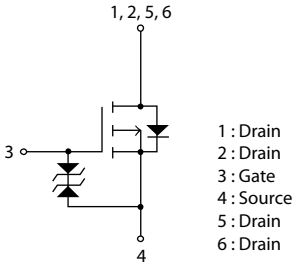
Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DSS}	–20	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current (DC)	I_D	–6	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	I_{DP}	–24	A
Power Dissipation When mounted on ceramic substrate (900mm^2 × 0.8mm)	P_D	1.6	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	–55 to +150	°C

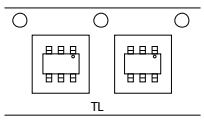
Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm^2 × 0.8mm)	$R_{\theta JA}$	78.1	°C/W

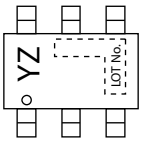
Electrical Connection
P-Channel



Packing Type : TL



Marking



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.

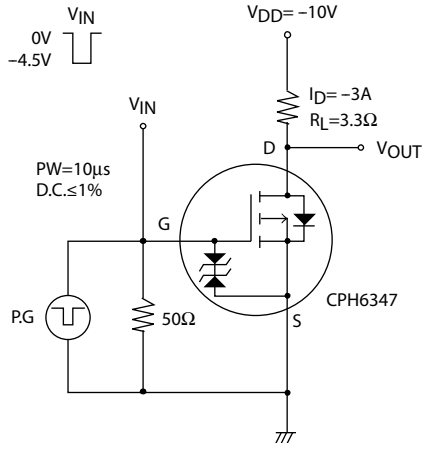
ORDERING INFORMATION
See detailed ordering and shipping information on page 5 of this data sheet.

Electrical Characteristics at Ta = 25°C

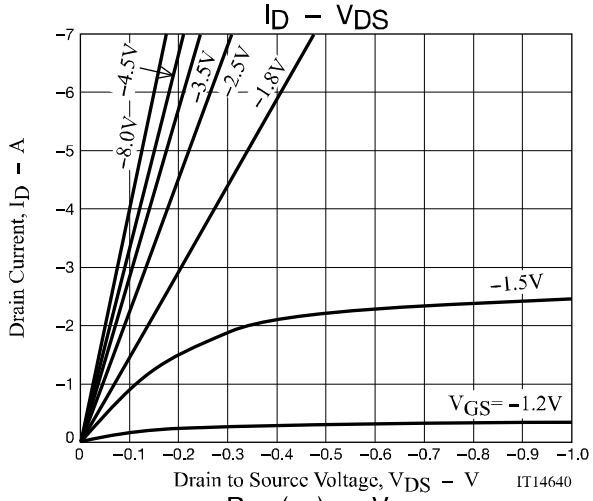
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=–1mA, V_{GS}=0V	–20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–20V, V_{GS}=0V			–1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=–10V, I_D=–1mA	–0.4		–1.4	V
Forward Transconductance	g_{FS}	V_{DS}=–10V, I_D=–3A	4.3	7.3		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=–3A, V_{GS}=–4.5V		30	39	mΩ
	$R_{DS}(on)2$	I_D=–1.5A, V_{GS}=–2.5V		44	66	mΩ
	$R_{DS}(on)3$	I_D=–0.6A, V_{GS}=–1.8V		68	102	mΩ
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		860		pF
Output Capacitance	Coss			170		pF
Reverse Transfer Capacitance	Crss			130		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		10		ns
Rise Time	t_r			48		ns
Turn-OFF Delay Time	$t_d(off)$			100		ns
Fall Time	t_f			78		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–6A		10.5		nC
Gate to Source Charge	Qgs			2.0		nC
Gate to Drain “Miller” Charge	Qgd			3.0		nC
Forward Diode Voltage	V_{SD}	I_S=–6A, V_{GS}=0V		–0.82	–1.5	V

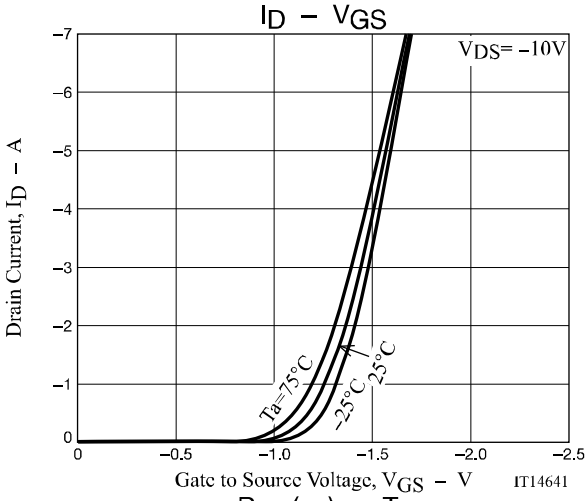
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

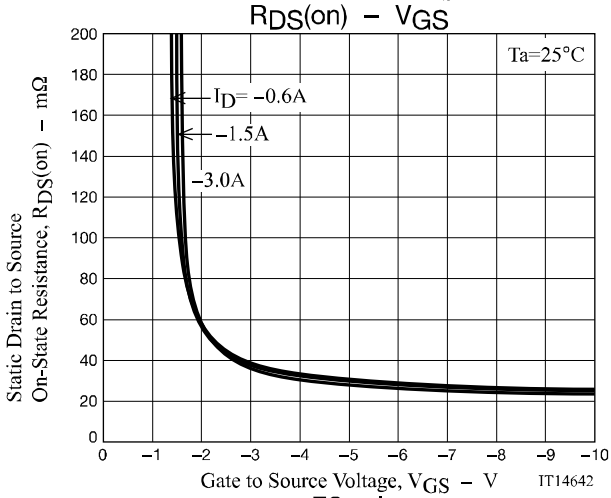
Switching Time Test Circuit

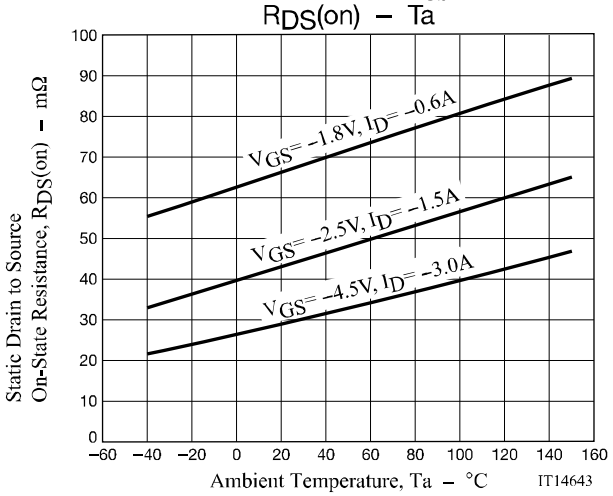


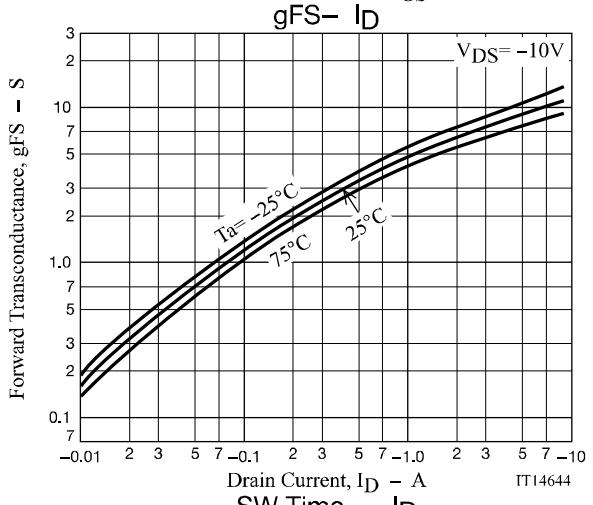
CPH6347

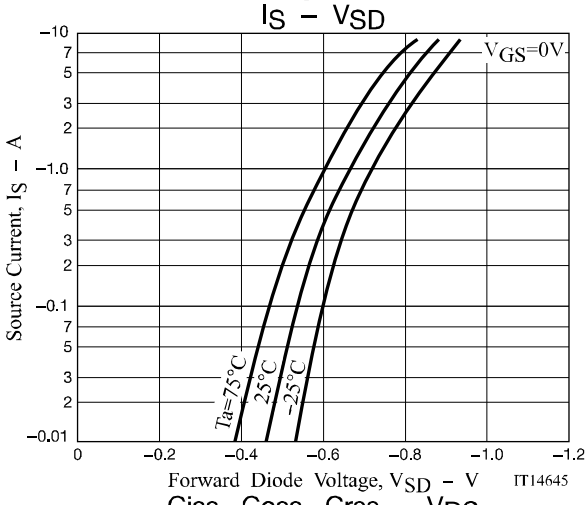

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT14640
–8.0V
–4.5V
–3.5V
–2.5V
–1.8V
–1.5V
VGS= –1.2V

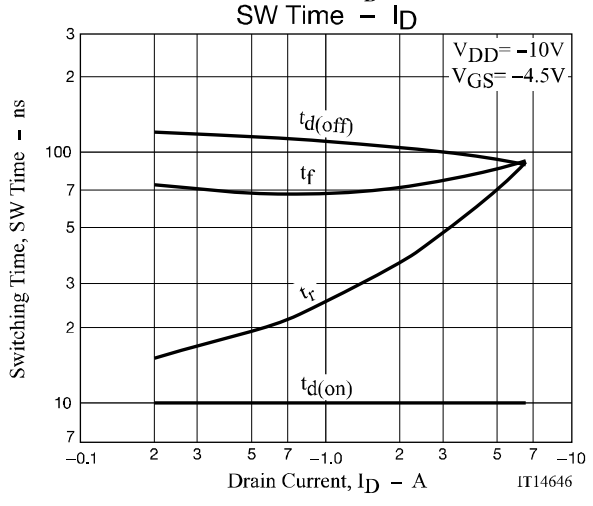

ID – VGS
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT14641
VDS= –10V
Ta=75°C
25°C
–25°C

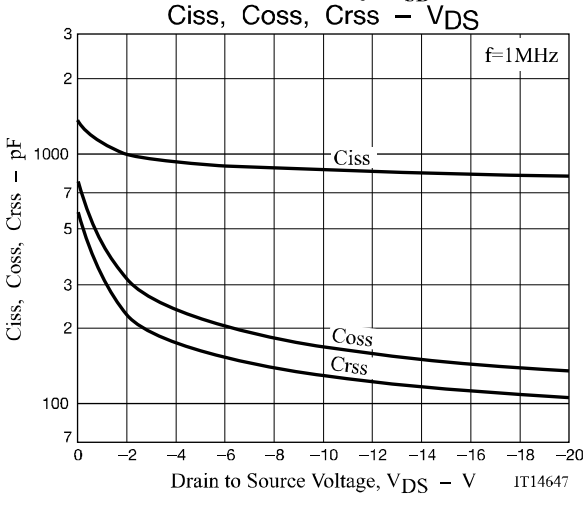

RDS(on) – VGS
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT14642
Ta=25°C
ID= –0.6A
–1.5A
–3.0A


RDS(on) – Ta
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT14643
VGS= –1.8V, ID= –0.6A
VGS= –2.5V, ID= –1.5A
VGS= –4.5V, ID= –3.0A

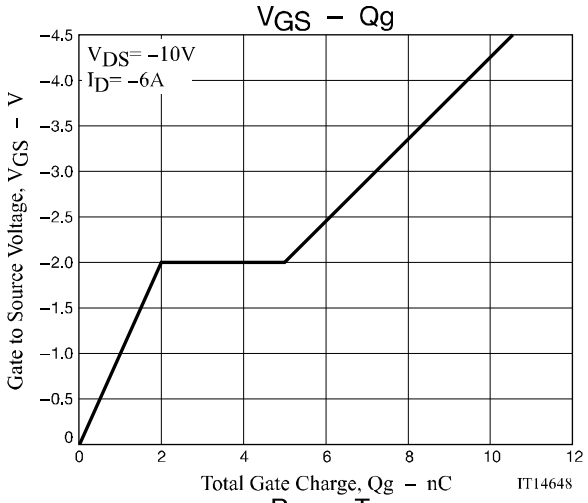

gFS– ID
Forward Transconductance, gFS – S
Drain Current, ID – A
IT14644
VDS= –10V
Ta= –25°C
75°C
25°C

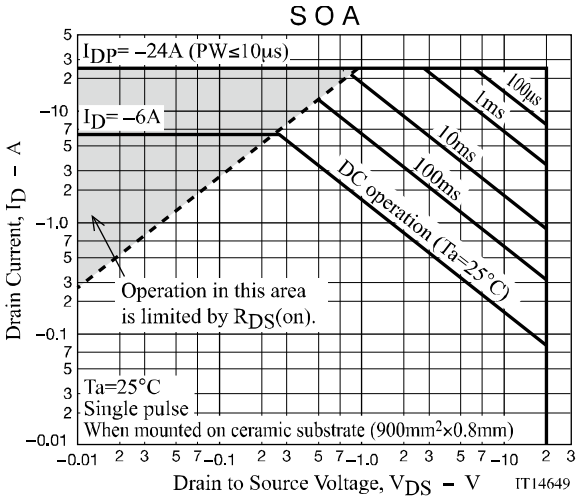

IS – VSD
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT14645
VGS=0V
Ta=75°C
25°C
–25°C

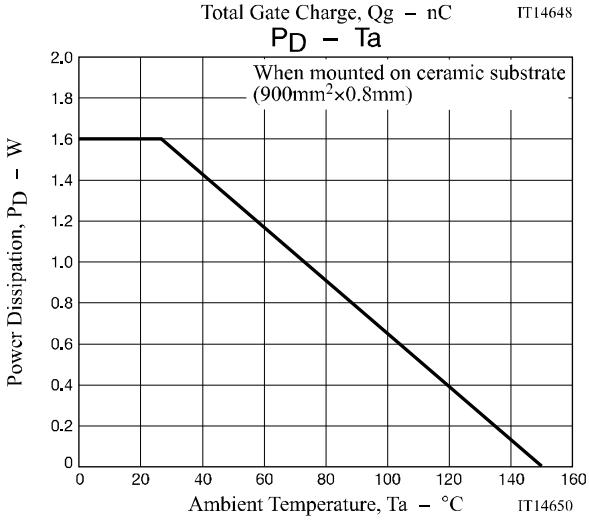

SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT14646
VDD= –10V
VGS= –4.5V
td(off)
tf
tr
td(on)

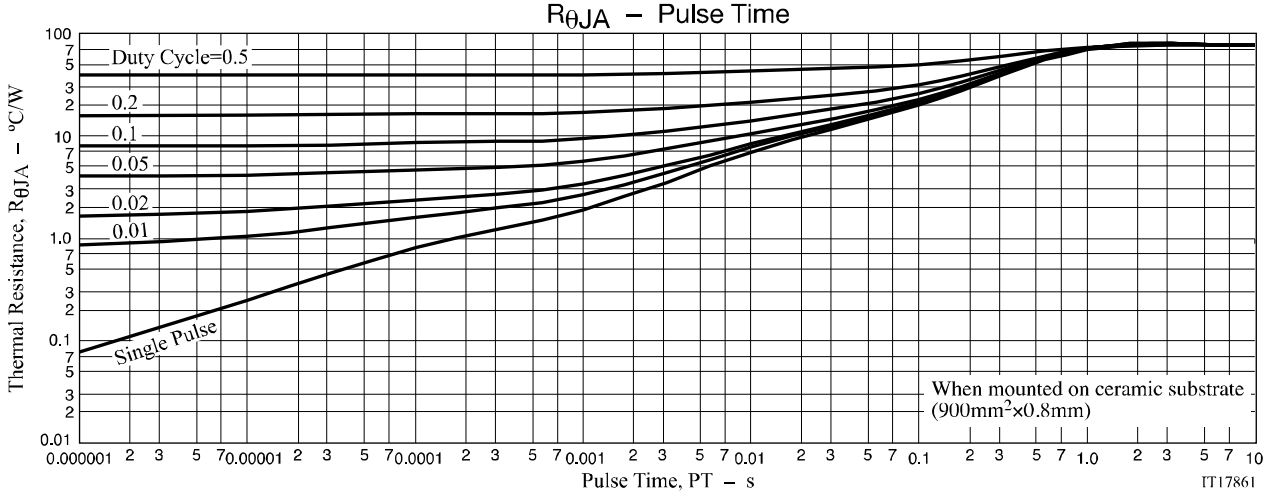

Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT14647
f=1MHz
Ciss
Coss
Crss

CPH6347


VGS – Qg
VDS= –10V
ID= –6A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT14648


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
Drain to Source Voltage, VDS – V
IT14649


PD – Ta
When mounted on ceramic substrate
(900mm²×0.8mm)
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT14650


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
Pulse Time, PT – s
IT17861

CPH6347

Package Dimensions

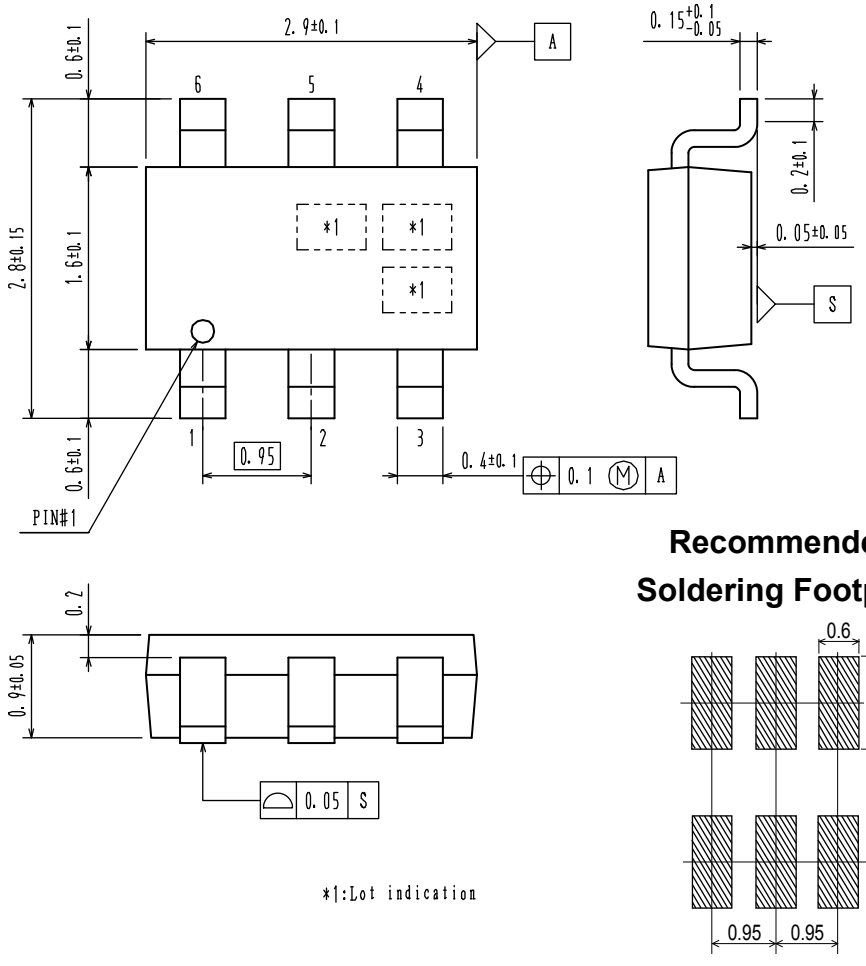
CPH6347-TL-H / CPH6347-TL-W

CPH6

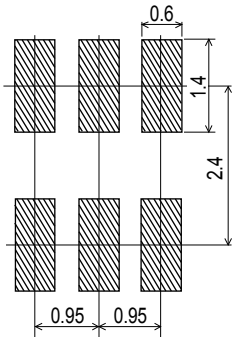
CASE 318BD
ISSUE O

Unit : mm

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



Recommended Soldering Footprint



ORDERING INFORMATION

Device	Package	Shipping	Note
CPH6347-TL-H	CPH6 SC-74,SOT-26,SOT-457	3,000 pcs. / Tape & Reel	Pb-Free and Halogen Free
CPH6347-TL-W			

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

Note on usage : Since the CPH6347 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

OUR CERTIFICATE

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