Ordering number : ENA2303A

PCP1402

Power MOSFET
250V, 2.4Ω, 1.2A, Single N-Channel

ON Semiconductor®

http://onsemi.com

Features

- On-resistance $R_{DS}(on)$=1.8Ω (typ)
- Input Capacitance Ciss=210pF (typ)
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Value	Unit
Drain to Source Voltage	V_{DSS}		250	V
Gate to Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		1.2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	4.8	A
Power Dissipation	P_D	Tc=25°C	3.5	W
		When mounted on ceramic substrate (600mm^2×0.8mm)	1.5	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 Case Steady State	$R_{\theta JC}$	35.7	°C /W
Junction to Ambient When mounted on ceramic substrate (600mm^2×0.8mm)	$R_{\theta JA}$	83.3	°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	250			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=250V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±30V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=1mA	2.5		3.5	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=600mA		1.2		S

Continued on next page.

ORDERING INFORMATION

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

Continued from preceding page.

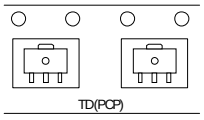
Parameter	Symbol	Conditions	Value			Unit
			min	Typ	max	
Static Drain to Source On-State Resistance	$R_{DS}(on)$	I_D=600mA, V_{GS}=10V		1.8	2.4	Ω
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		210		pF
Output Capacitance	Coss			20		pF
Reverse Transfer Capacitance	Crss			7		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		7.9		ns
Rise Time	t_r			6.7		ns
Turn-OFF Delay Time	$t_d(off)$			14.5		ns
Fall Time	t_f			30		ns
Total Gate Charge	Qg	V_{DS}=125V, V_{GS}=10V, I_D=1.2A		4.2		nC
Gate to Source Charge	Qgs			1.4		nC
Gate to Drain “Miller” Charge	Qgd			1.0		nC
Forward Diode Voltage	V_{SD}	I_S=1.2A, V_{GS}=0V		0.86	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.

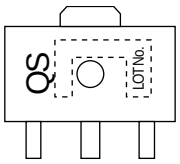
Ordering & Package Information

Device	Package	Shipping	note
PCP1402-TD-H	PCP, SC-62 SOT-89, TO-243	1,000 pcs. / reel	Pb-Free and Halogen Free

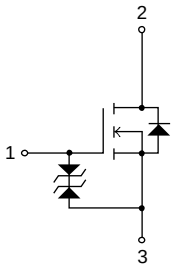
Packing Type:TD



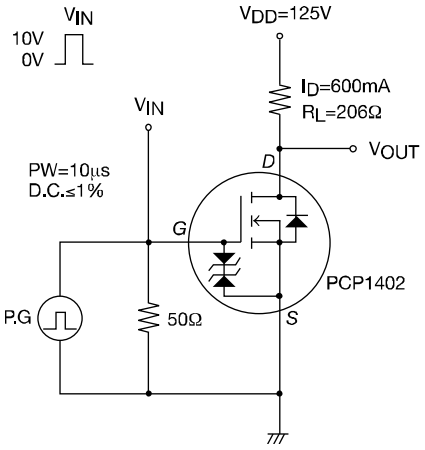
Marking

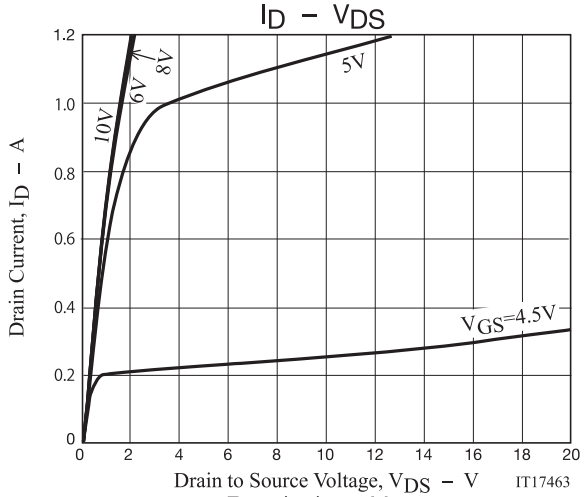


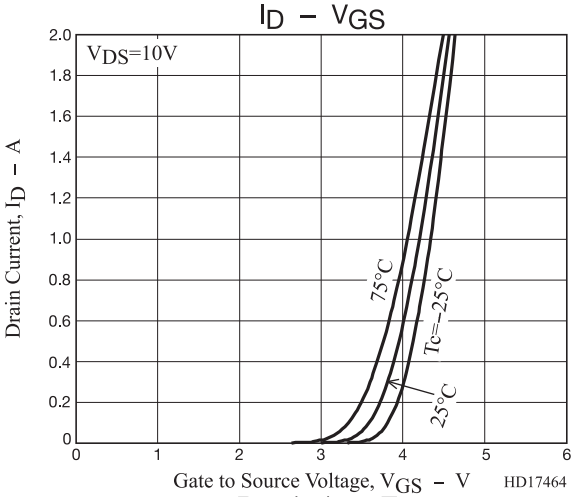
Electrical Connection

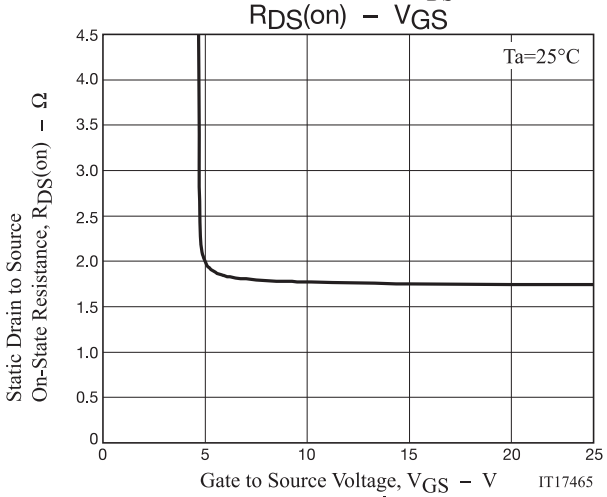


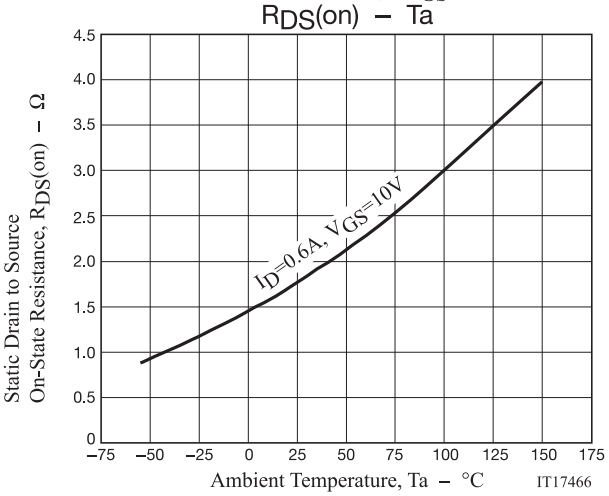
Switching Time Test Circuit

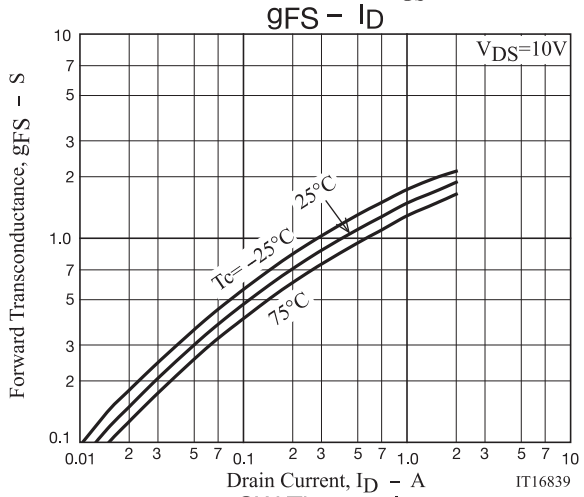


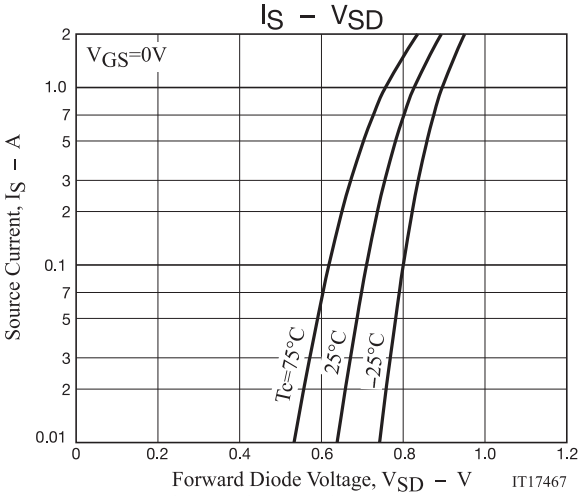

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT17463
10V
6V
4V
5V
VGS=4.5V

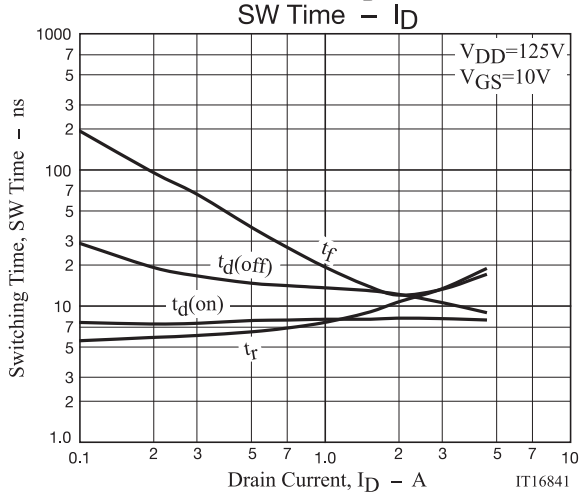

ID – VGS
VDS=10V
Drain Current, ID – A
Gate to Source Voltage, VGS – V
HD17464
75°C
Tc=–25°C
25°C

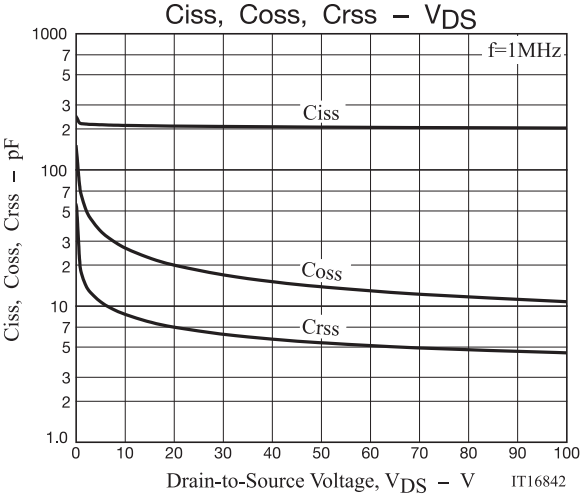

RDS(on) – VGS
Ta=25°C
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
IT17465

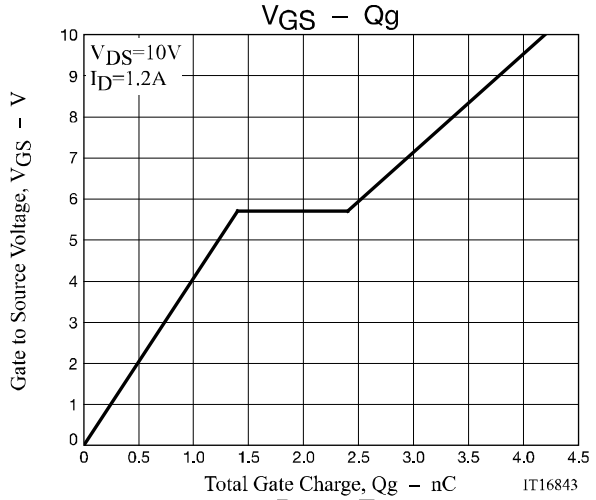

RDS(on) – Ta
ID=0.6A, VGS=10V
Static Drain to Source
On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT17466

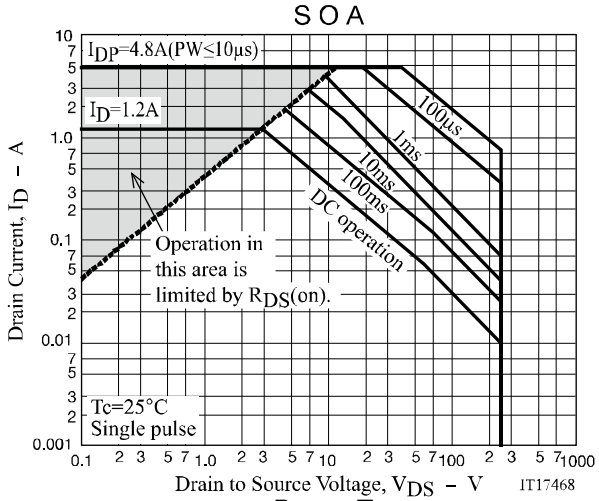

gFS – ID
VDS=10V
Forward Transconductance, gFS – S
Drain Current, ID – A
IT16839
25°C
Tc=–25°C
75°C

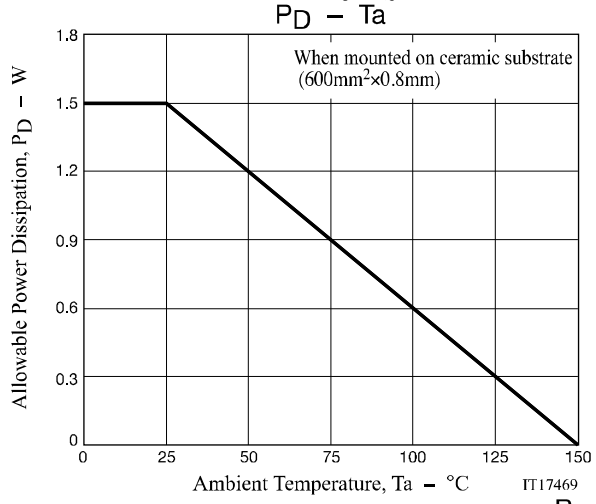

IS – VSD
VGS=0V
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT17467
Tc=75°C
25°C
–25°C

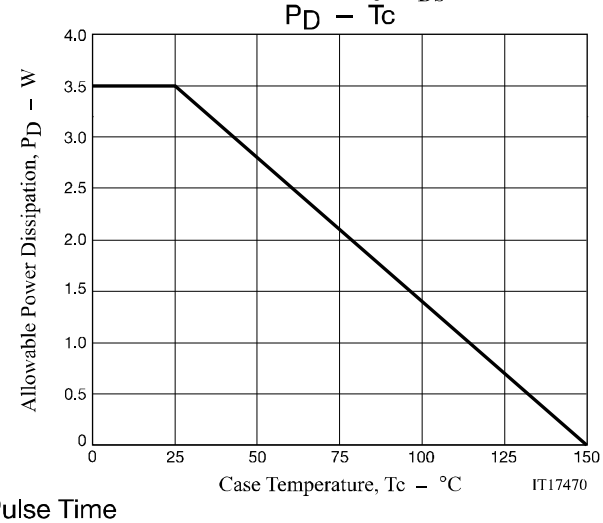

SW Time – ID
VDD=125V
VGS=10V
Switching Time, SW Time – ns
Drain Current, ID – A
IT16841
tf
td(off)
td(on)
tr

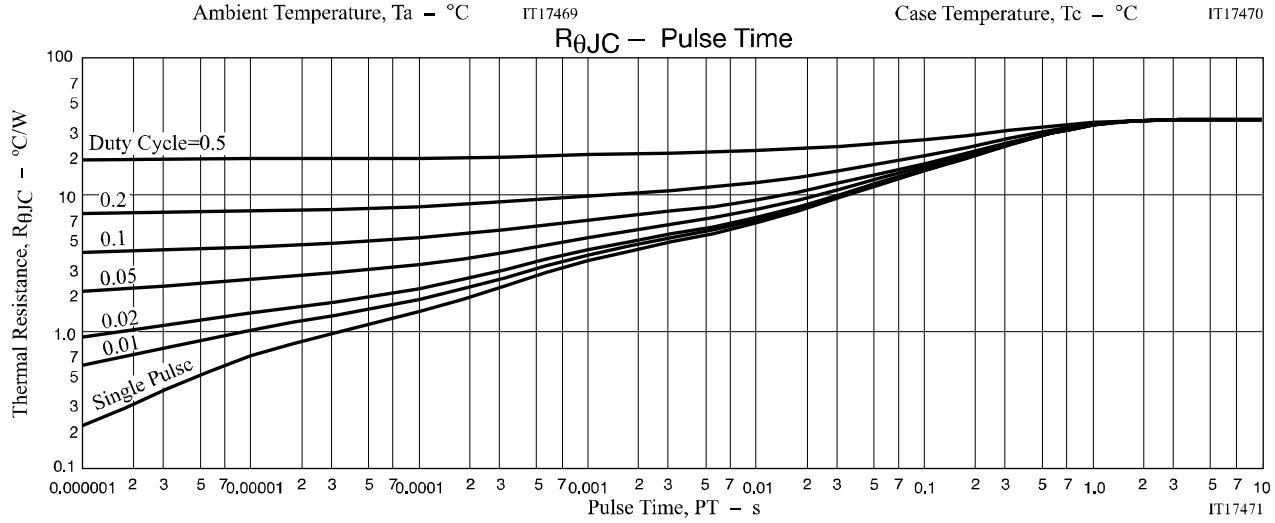

Ciss, Coss, Crss – VDS
f=1MHz
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT16842
Ciss
Coss
Crss


VGS – Qg
VDS=10V
ID=1.2A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16843


S O A
IDP=4.8A(PW≤10μs)
ID=1.2A
100μs
1ms
10ms
100ms
DC operation
Operation in
this area is
limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT17468


PD – Ta
When mounted on ceramic substrate
(600mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT17469


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
IT17470


RθJC – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Thermal Resistance, RθJC – °C/W
Pulse Time, PT – s
IT17471

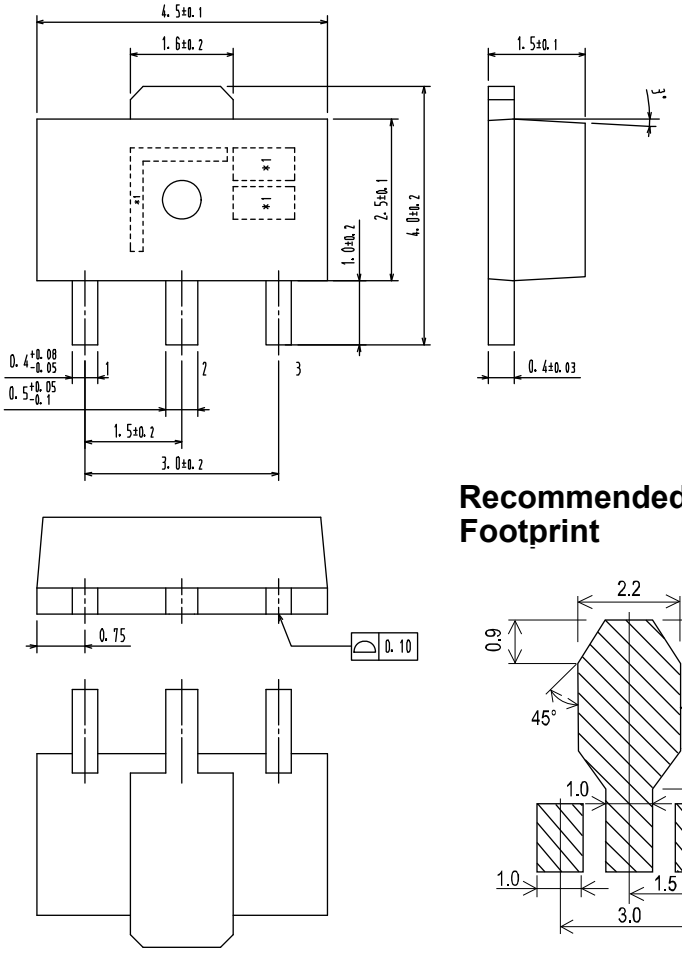
Package Dimensions

PCP1402-TD-H

SOT-89/PCP-2

CASE 419AW
ISSUE O
unit : mm

1: Gate
2: Drain
3: Source



Recommended Soldering Footprint

Note on usage : Since the PCP1402 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

Mouser Electronics

Authorized Distributor

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PCP1402-TD-H