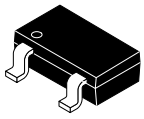
MOSFET - Power, Single N-Channel

35 V, 104 mΩ, 3 A

CPH3455

$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX	I_D MAX
35 V	104 mΩ @ 10 V	3 A
	173 mΩ @ 4.5 V	
	208 mΩ @ 4 V	



CPH3
CASE 318BA

Description

This Power MOSFET is produced using **onsemi**'s trench technology, which is specifically designed to minimize gate charge and low on resistance. This device is suitable for applications with low gate charge driving or low on resistance requirements.

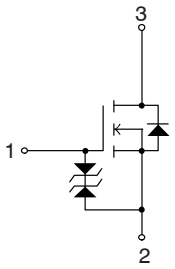
Features

- Low On−Resistance
- 4V Drive
- Pb−Free, Halogen Free and RoHS Compliance

Typical Applications

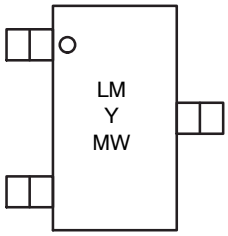
- Load Switch
- Motor Drive

ELECTRICAL CONNECTION
N−Channel



1: Gate
2: Source
3: Drain

MARKING DIAGRAM



LM = Specific Device Code
Y = Year
M = Month
W = Week

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted) (Note 1)

Parameter	Symbol	Value	Unit
Drain−to−Source Voltage	V_{DSS}	35	V
Gate−to−Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	3	A
Drain Current (Pulse) PW ≤ 10 μs, duty cycle ≤ 1%	I_{DP}	12	A
Power Dissipation When mounted on ceramic substrate (900 mm^2 x 0.8 mm)	P_D	1	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	−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.

1. This product is designed to "ESD immunity <200 V*", so please take care when handling.
   *Machine Model

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Junction−to−Ambient When mounted on ceramic substrate (900 mm^2 x 0.8 mm)	$R_{\theta JA}$	125	°C/W

ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 5 of this data sheet.

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 1 mA, V_{GS} = 0 V	35	–	–	V
Zero–Gate Voltage Drain Current	I_{DSS}	V_{DS} = 35 V, V_{GS} = 0 V	–	–	1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0 V	–		±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = 10 V, I_D = 1 mA	1.2	–	2.6	V
Forward Transconductance	g_{FS}	V_{DS} = 10 V, I_D = 1.5 A	–	1.7	–	S
Static Drain to Source On–State Resistance	$R_{DS(on)}1$	I_D = 1.5 A, V_{GS} = 10 V	–	80	104	mΩ
	$R_{DS(on)}2$	I_D = 0.75 A, V_{GS} = 4.5 V	–	123	173	mΩ
	$R_{DS(on)}3$	I_D = 0.75 A, V_{GS} = 4 V	–	148	208	mΩ
Input Capacitance	Ci_{SS}	V_{DS} = 20 V, f = 1 MHz	–	186	–	pF
Output Capacitance	Co_{SS}		–	36	–	
Reverse Transfer Capacitance	Cr_{SS}		–	22	–	
Turn–On Delay Time	$t_{d(on)}$	See specified Test Circuit	–	4.2	–	ns
Rise Time	t_r		–	4.7	–	
Turn–Off Delay Time	$t_{d(off)}$		–	15	–	
Fall Time	t_f		–	5.7	–	
Total Gate Charge	Q_g	V_{DS} = 20 V, V_{GS} = 10 V, I_D = 3 A	–	4	–	nC
Gate–to–Source Charge	Q_{gs}		–	0.9	–	
Gate to Drain “Miller” Charge	Q_{gd}		–	0.7	–	
Forward Diode Voltage	V_{SD}	I_S = 3 A, V_{GS} = 0 V	–	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.

SWITCHING TIME TEST CIRCUIT

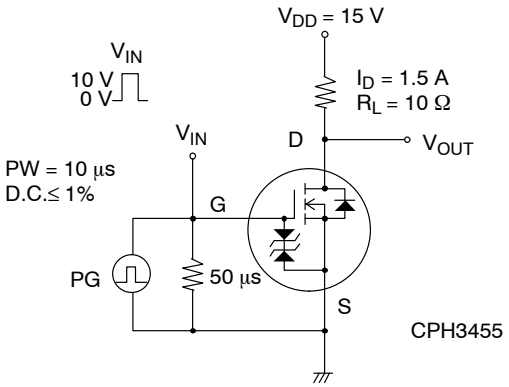

Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

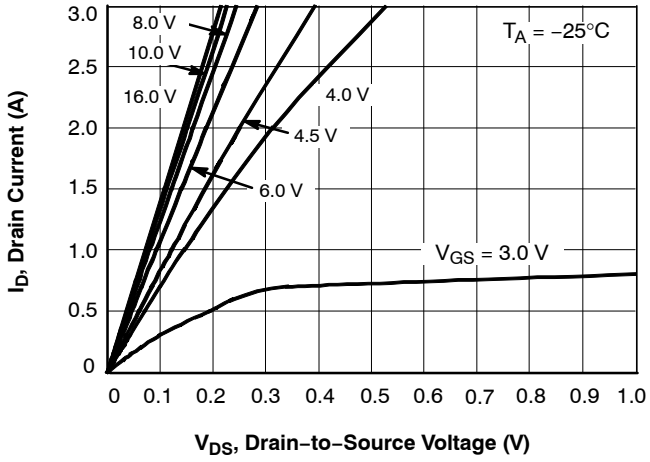

Figure 2. $I_D - V_{DS}$

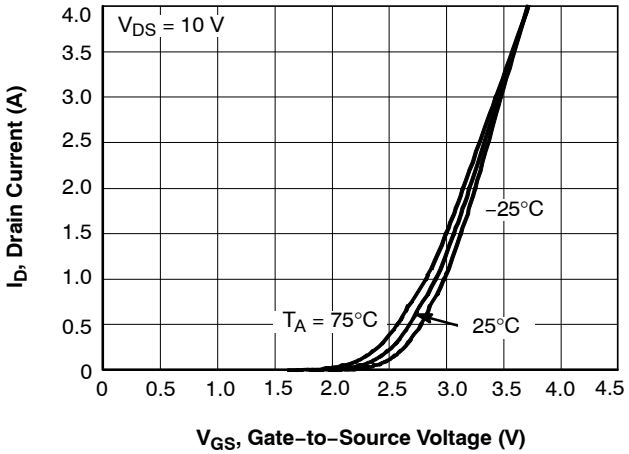

Figure 3. $I_D - V_{GS}$

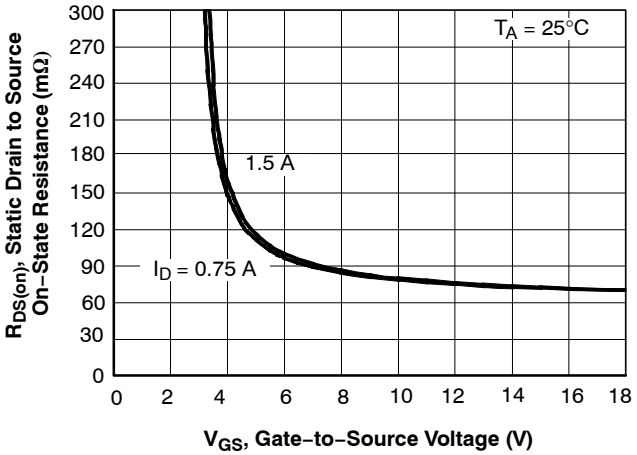

Figure 4. $R_{DS(on)} - V_{GS}$,

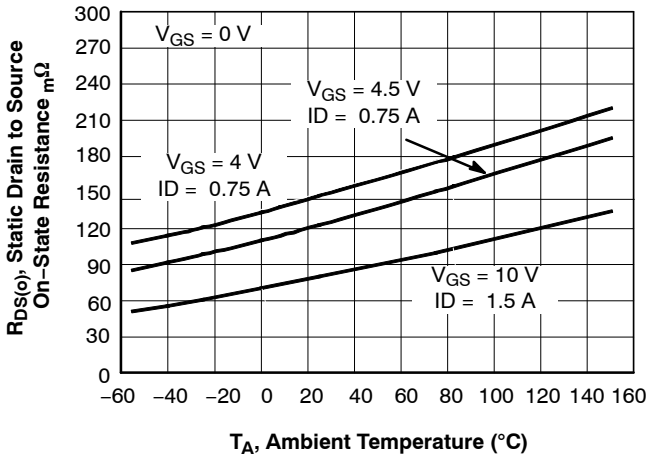

Figure 5. $R_{DS(on)} - T_A$

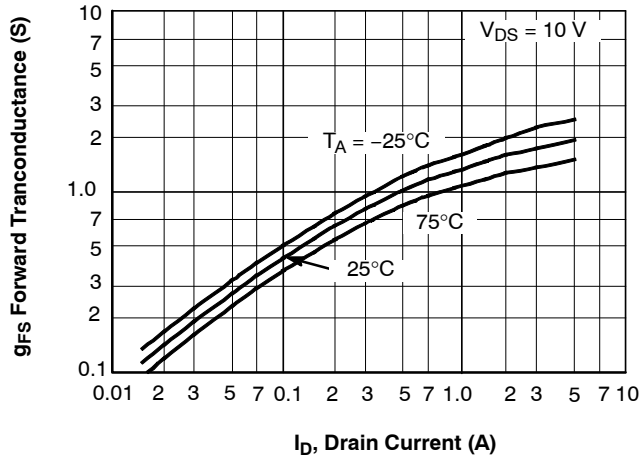

Figure 6. $g_{FS} - I_D$

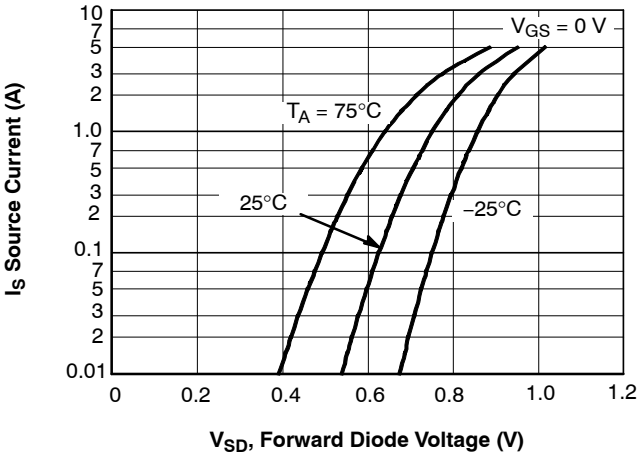

Figure 7. $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (continued)

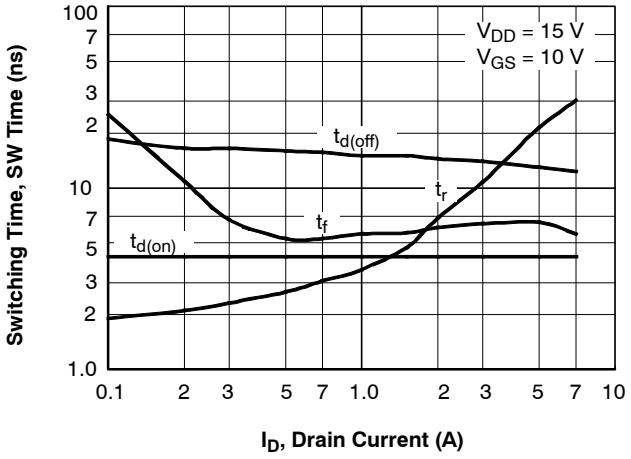

Figure 8. Time (SW) – I_D

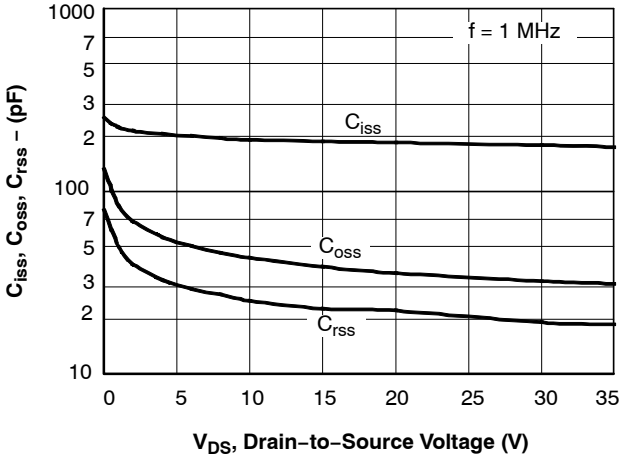

Figure 9. V_{DS} – C_{iss}, C_{oss}, C_{rss}

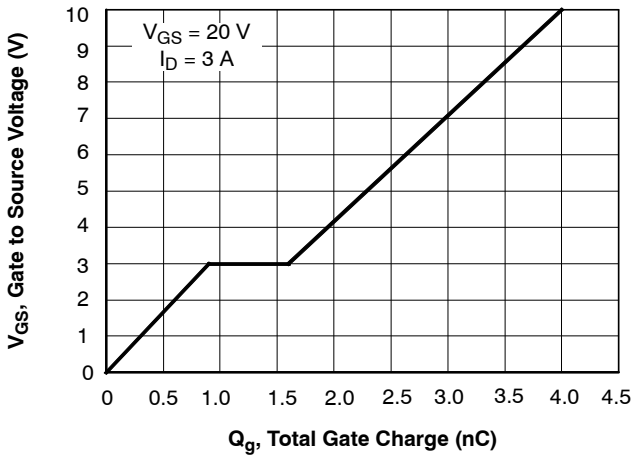

Figure 10. V_{GS} – Q_g

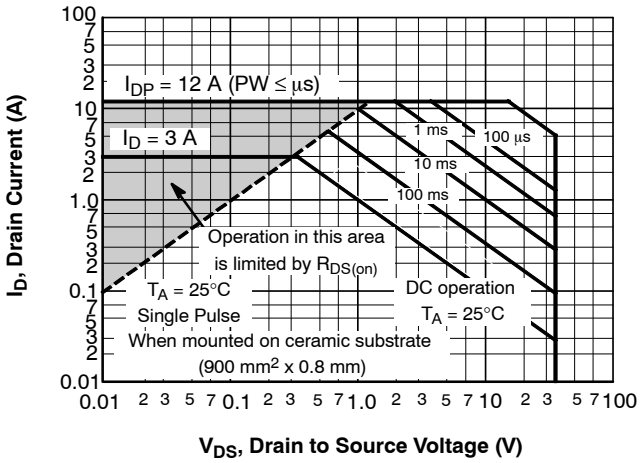

Figure 11. S O A

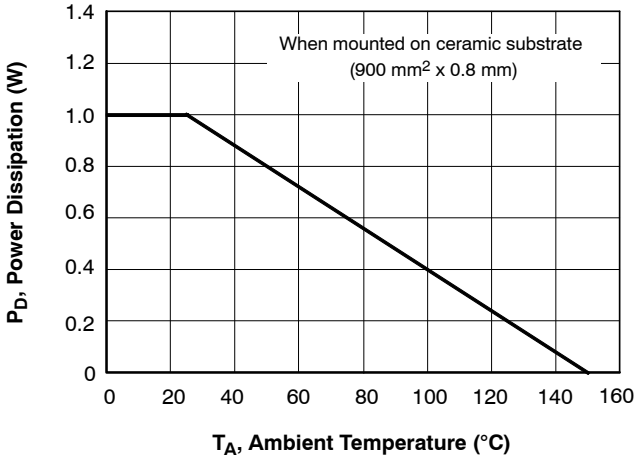

Figure 12. P_D – T_A

TYPICAL CHARACTERISTICS (continued)

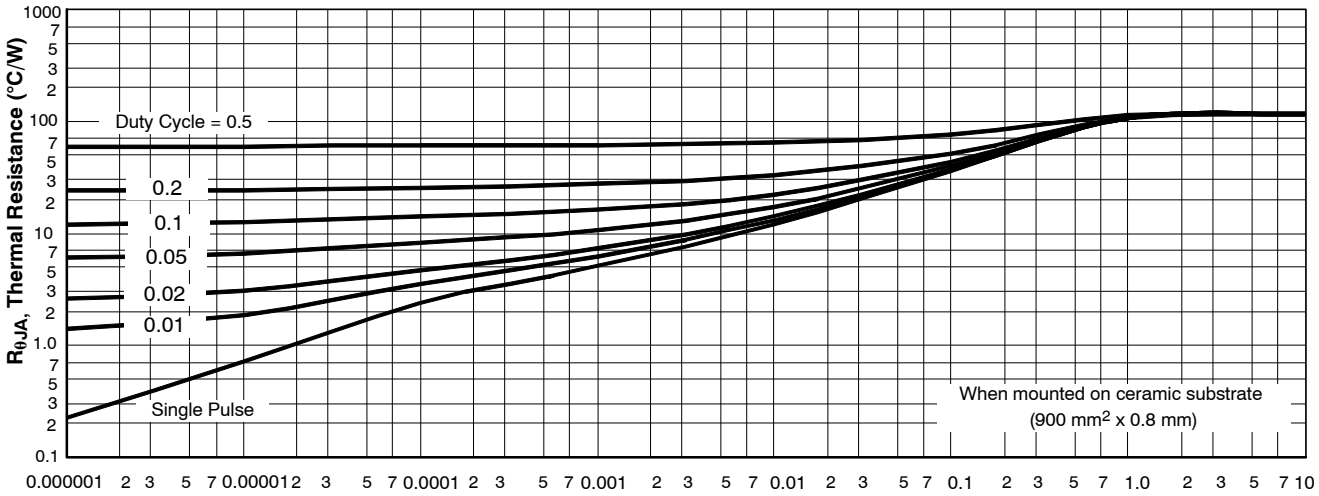

Figure 13. $R_{\theta JA}$ – Pulse Time

DEVICE ORDERING INFORMATION

Device	Marking	Package	Shipping†
CPH3455−TL−H	LM	CPH3 SC−59, SOT−23, TO−236 (Pb−Free / Halogen Free)	3000 / Tape & Reel

†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.

*Note on usage : Since the CPH3455 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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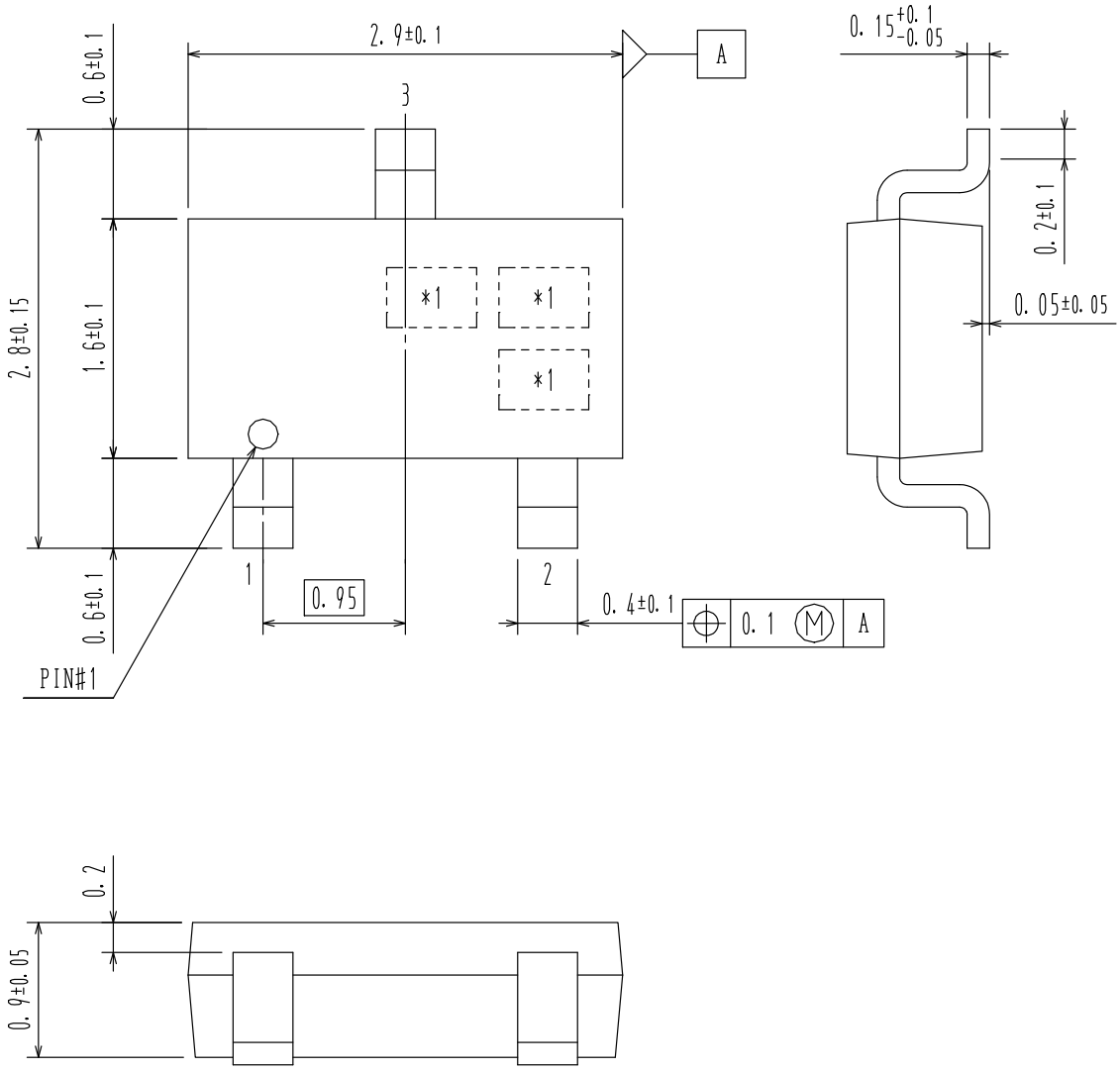

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