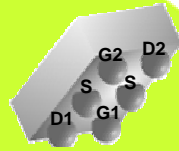


# P-Channel – Dual Common Source CICLON NexFET™ Power MOSFETs CSD75301W1015

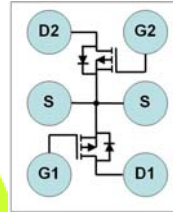


## Features

- Dual P-ch MOSFETs
- Common Source Configuration
- Small Footprint – 1.0 x 1.5 mm
- Low Profile – 0.65mm
- Ultra Low Qg and Qgd
- Pb Free
- RoHS Compliant
- Halogen Free



CSP 1.0 x 1.5 mm Wafer  
Level Package



Top View

## Product Summary (Per Device)

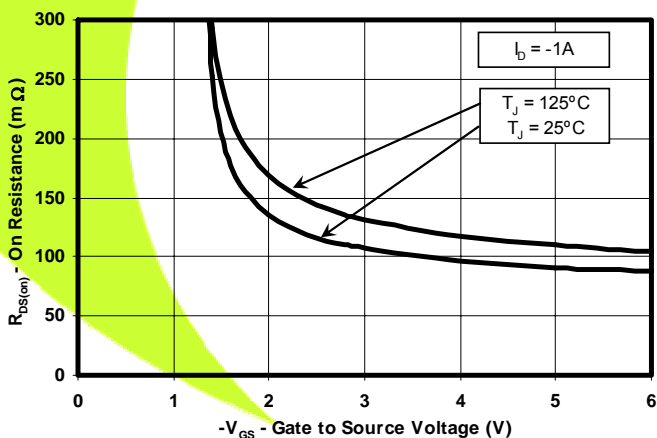
$V_{DS}$	-20	V
$Q_g$	1.5	nC
$Q_{gd}$	0.3	nC
$R_{DS(on)}$	$V_{GS} = -1.8V$	150 m $\Omega$
	$V_{GS} = -2.5V$	105 m $\Omega$
	$V_{GS} = -4.5V$	80 m $\Omega$
$V_{th}$	-0.7	V

## Maximum Values (Per Device at $T_A=25^\circ C$ unless otherwise stated)

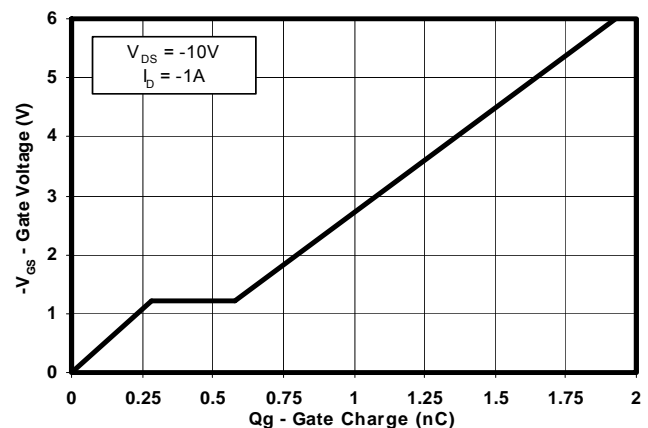
Symbol	Parameter	Value	Units
$V_{DS}$	Drain to Source Voltage	-20	V
$V_{GS}$	Gate to Source Voltage	$\pm 8$	V
$I_D$	Continuous Drain Current, $T_A = 25^\circ C^{1,2}$	-1.2	A
$I_{DM}$	Pulsed Drain Current, $T_A = 25^\circ C^{1,2,3}$	-17.5	A
$P_D$	Power Dissipation <sup>1,2</sup>	0.8	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ C$

1. Per device, both devices in conduction.
2.  $R_{thJA} = 74^\circ C/W$  on max Cu (2 oz.) on 0.060" thick FR4 PCB.
3. Pulse width  $\leq 300 \mu s$ , duty cycle  $\leq 2\%$

## $R_{DS(ON)}$ vs. $V_{GS}$



## Gate Charge



## Ordering Information

Type	Package	Package Media	Qty	Ship
CSD75301W1015	1.0 X 1.5 Wafer Level Package	7 inch reel	3000	Tape and Reel

P-Channel – Dual Common Source  
**CICLON** NexFET™ Power MOSFETs  
**CSD75301W1015**



**Electrical Characteristics** (Per Device,  $T_A = 25^\circ\text{C}$  unless otherwise stated)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain to Source Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-20	—	—	V
$I_{DSS}$	Drain to Source Leakage Current	$V_{GS} = 0V, V_{DS} = -16V$	—	—	-1	$\mu A$
$I_{GSS}$	Gate to Source Leakage Current	$V_{DS} = 0V, V_{GS} = -8V$	—	—	-100	nA
$V_{GS(th)}$	Gate to Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Drain to Source On Resistance	$V_{GS} = -1.8V, I_D = -1A$	—	150	190	m $\Omega$
		$V_{GS} = -2.5V, I_D = -1A$	—	105	135	m $\Omega$
		$V_{GS} = -4.5V, I_D = -1A$	—	80	100	m $\Omega$
$g_{fs}$	Transconductance	$V_{DS} = -10V, I_D = -1A$	—	5.2	—	S
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V, V_{DS} = -10V$ $f = 1MHz$	—	150	195	pF
$C_{OSS}$	Output Capacitance		—	67	87	pF
$C_{RSS}$	Reverse Transfer Capacitance		—	24	31	pF
$R_g$	Series Gate Resistance		—	1.1	—	$\Omega$
$Q_g$	Gate Charge Total (-4.5V)	$V_{DS} = -10V, I_D = -1A$	—	1.5	2.1	nC
$Q_{gd}$	Gate Charge Gate to Drain		—	0.30	—	nC
$Q_{gs}$	Gate Charge Gate to Source		—	0.28	—	nC
$Q_{g(th)}$	Gate Charge at $V_{th}$		—	0.12	—	nC
$Q_{OSS}$	Output Charge	$V_{DS} = -9.5V, V_{GS} = 0V$	—	1.1	—	nC
$t_{d(on)}$	Turn On Delay Time	$V_{DS} = -10V$ $V_{GS} = -4.5V, I_D = -1A$ $R_G = 30\Omega$	—	3.0	—	ns
$t_r$	Rise Time		—	1.7	—	ns
$t_{d(off)}$	Turn Off Delay Time		—	38	—	ns
$t_f$	Fall Time		—	16	—	ns
<b>Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_S = -1A, V_{GS} = 0V$	—	-0.81	-1.0	V
$Q_{rr}$	Reverse Recovery Charge	$V_{dd} = -9.5V, I_F = -1A,$ $di/dt = 200A/\mu s$	—	2.0	—	nC
$t_{rr}$	Reverse Recovery Time	$V_{dd} = -9.5V, I_F = -1A,$ $di/dt = 200A/\mu s$	—	7.5	—	ns

# P-Channel – Dual Common Source CICLON NexFET™ Power MOSFETs CSD75301W1015

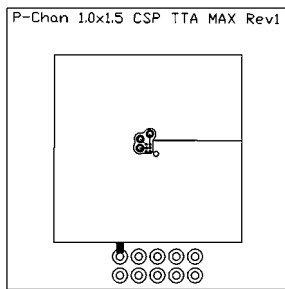


## Thermal Characteristics (T<sub>A</sub> = 25°C unless otherwise stated)

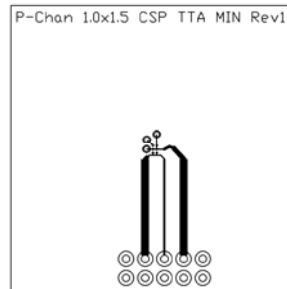
Symbol	Parameter	Min	Typ	Max	Units
<b>Thermal Characteristics</b>					
R <sub>θJA</sub>	Thermal Resistance Junction to Ambient <sup>4,6</sup>	—	—	136	°C/W
R <sub>θJA</sub>	Thermal Resistance Junction to Ambient <sup>5,6</sup>	—	—	93	°C/W

Notes:

- Device mounted on FR4 material with Minimum Cu mounting area.
- Device mounted on FR4 Material with 1in<sup>2</sup> of 2 oz. Cu.
- Measured with both devices biased in a parallel condition.



Max R<sub>θJA</sub> = 93 °C/W when mounted on 1in<sup>2</sup> of 2 oz. Cu.



Max R<sub>θJA</sub> = 136 °C/W when mounted on min pad area of 2 oz. Cu.

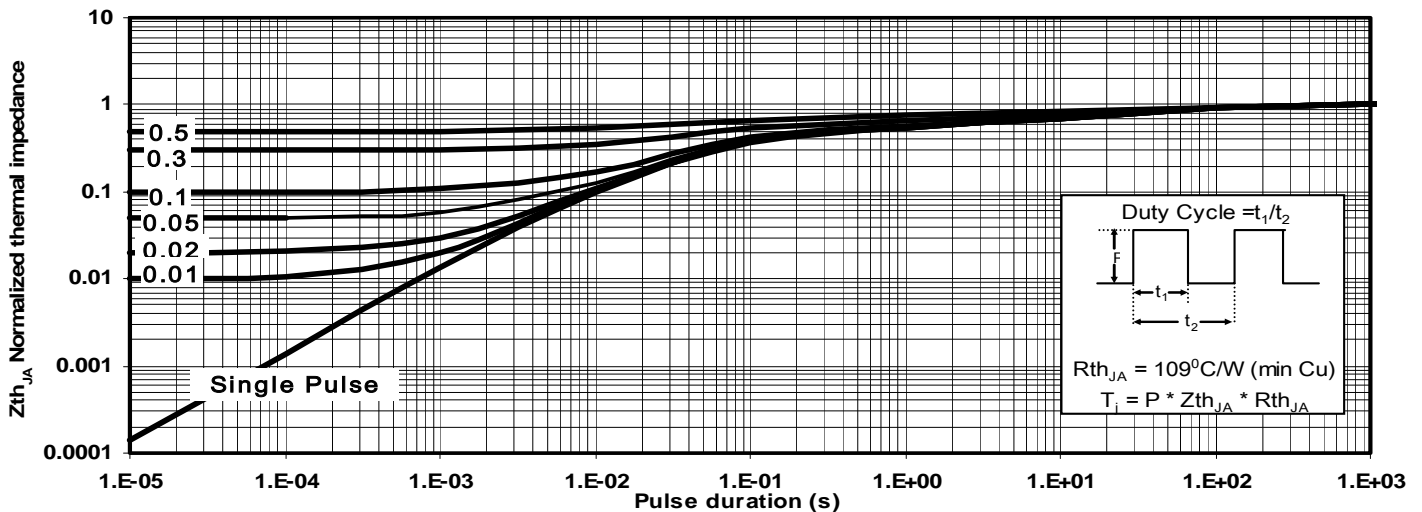


Figure 1: Transient Thermal Impedance

# P-Channel – Dual Common Source CICLON NexFET™ Power MOSFETs CSD75301W1015



Typical MOSFET Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

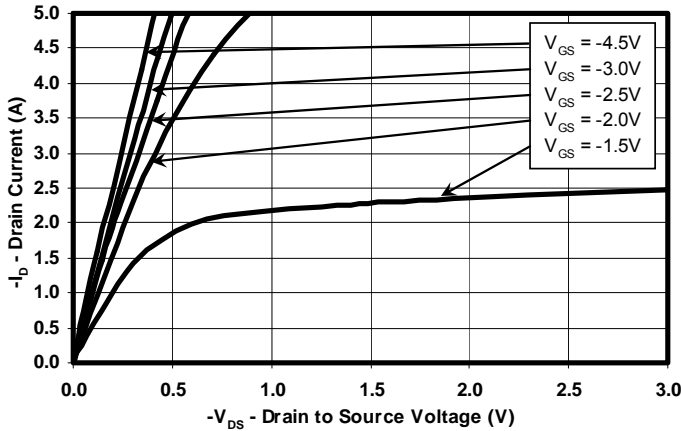


Figure 2: Saturation Characteristics

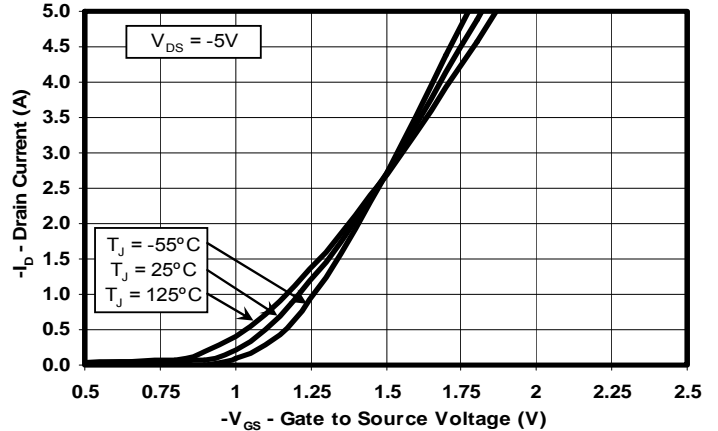


Figure 3: Transfer Characteristics

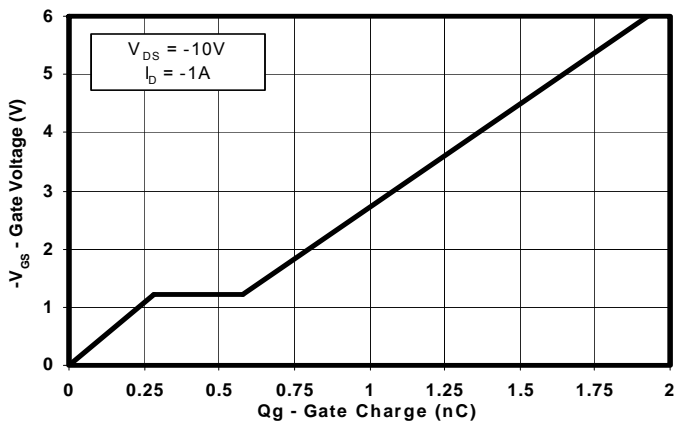


Figure 4: Gate Charge

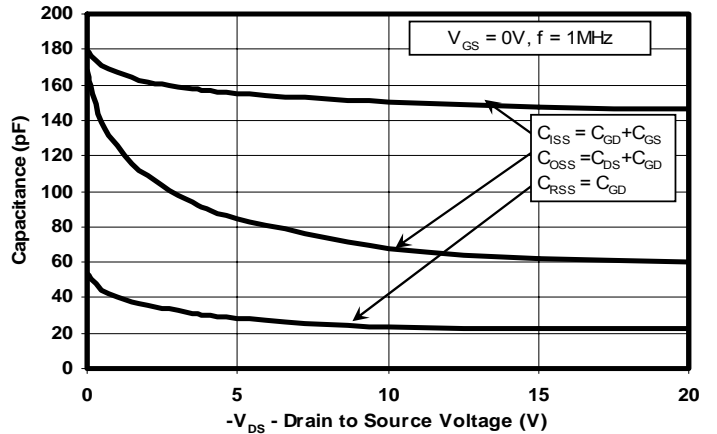


Figure 5: Capacitance

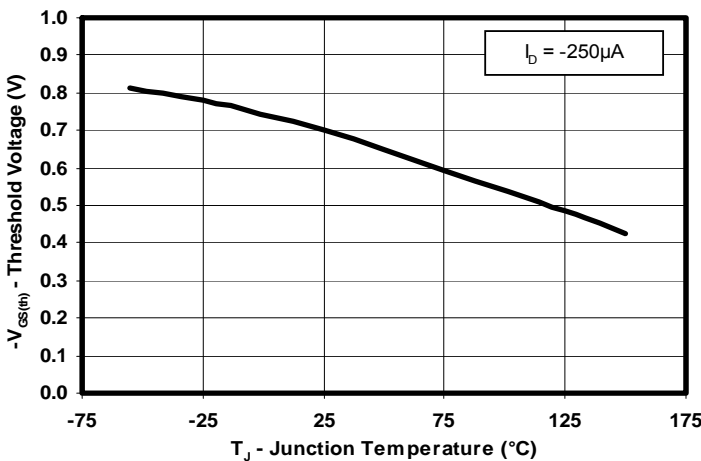


Figure 6: Threshold Voltage vs. Temperature

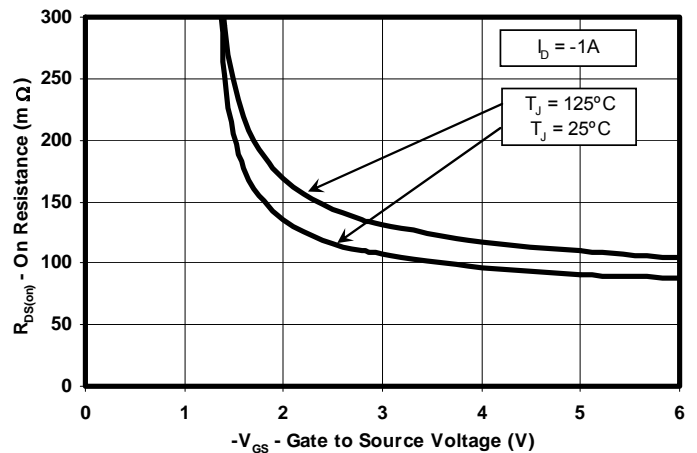


Figure 7: On Resistance vs. Gate Voltage

# P-Channel – Dual Common Source CICLON NexFET™ Power MOSFETs CSD75301W1015



## Typical MOSFET Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise stated)

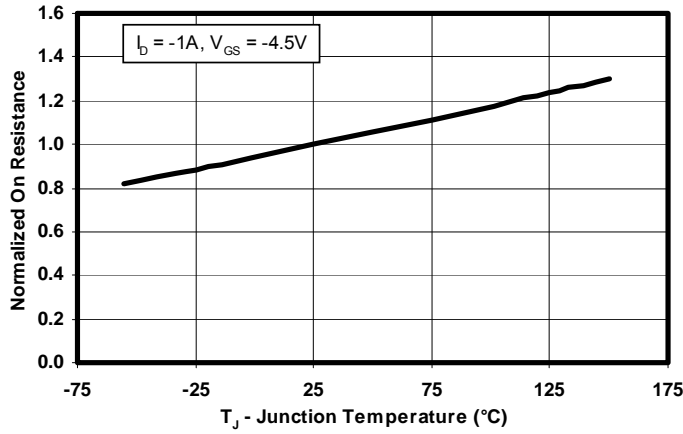


Figure 8: On Resistance vs. Temperature

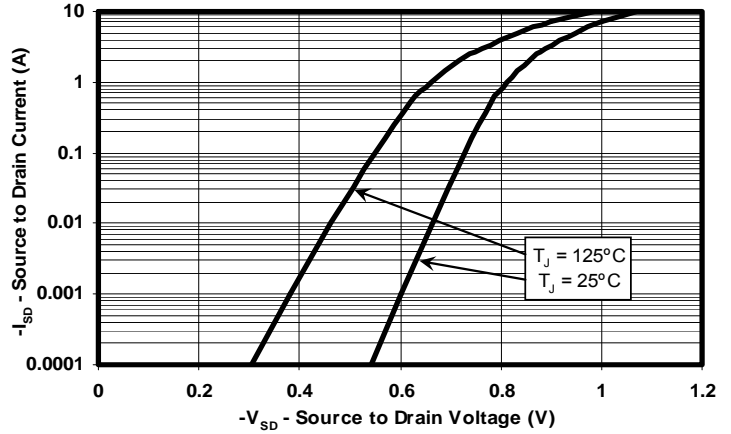


Figure 9: Typical Diode Forward Voltage

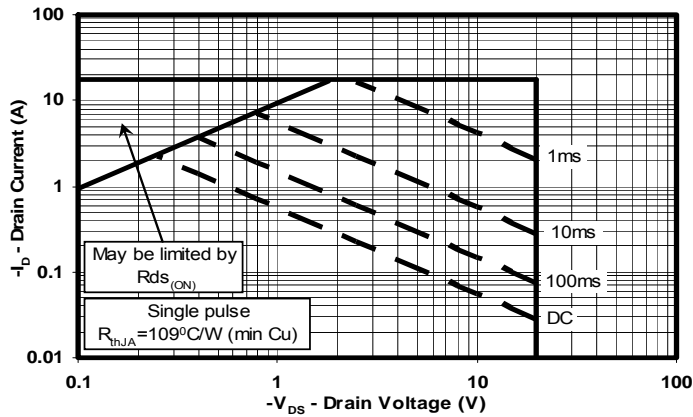


Figure 10: Maximum Safe Operating Area

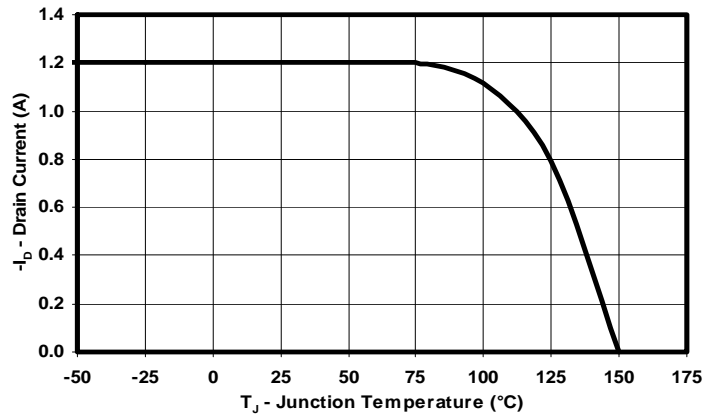
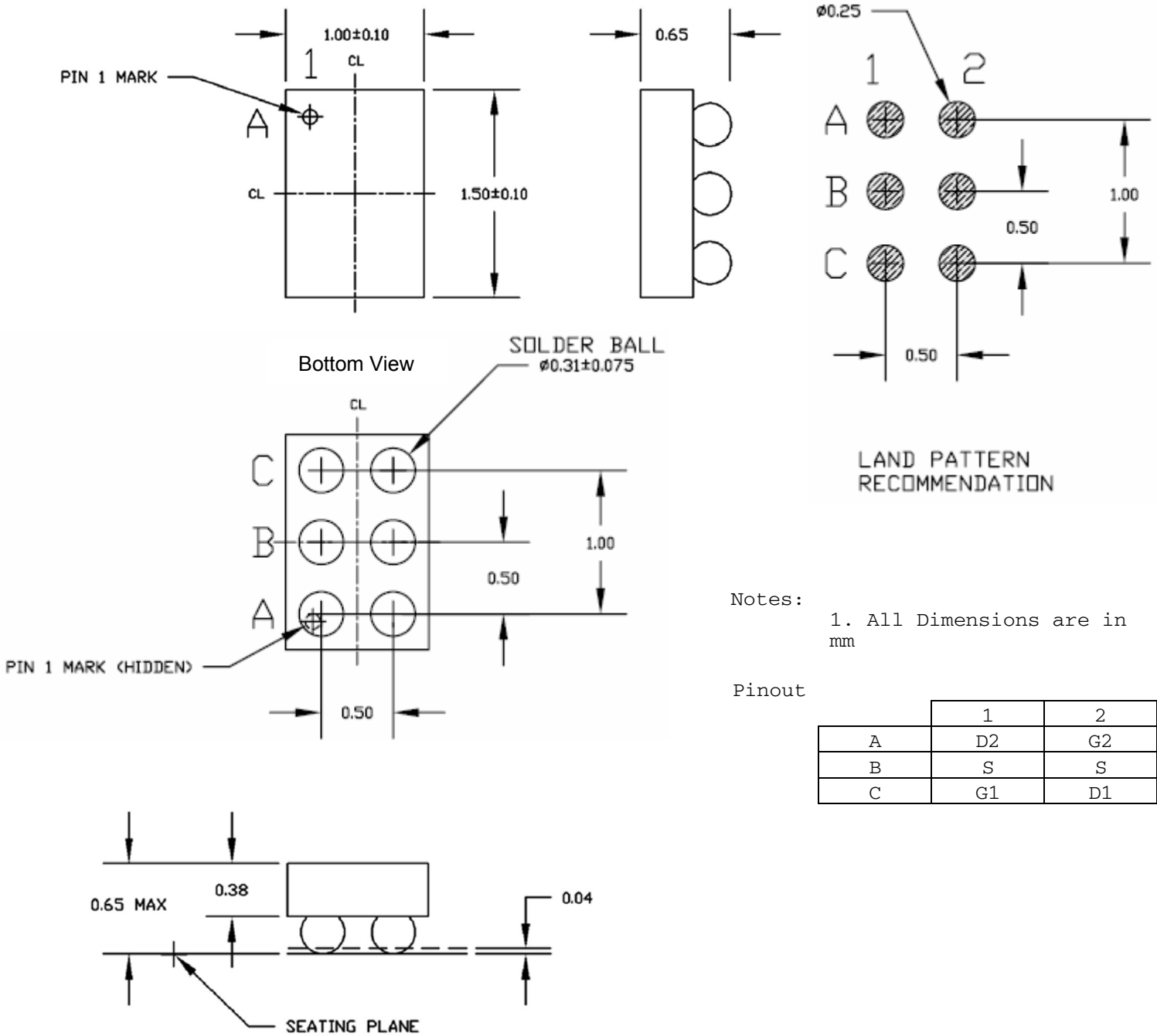


Figure 11: Maximum Drain Current vs. Temperature

P-Channel – Dual Common Source  
**CICLON** NexFET™ Power MOSFETs  
**CSD75301W1015**



**CSD75301W1015 Package Dimensions**



Notes:

1. All Dimensions are in mm

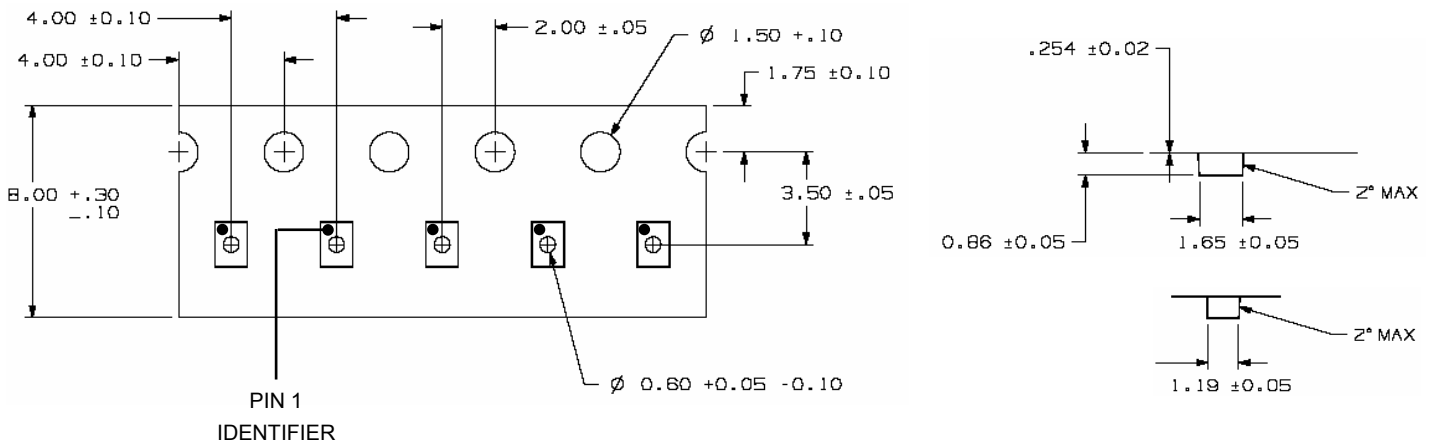
Pinout

	1	2
A	D2	G2
B	S	S
C	G1	D1

P-Channel – Dual Common Source  
**CICLON** NexFET™ Power MOSFETs  
**CSD75301W1015**



**Tape and Reel Information**



**Package Marking Information**

Location:

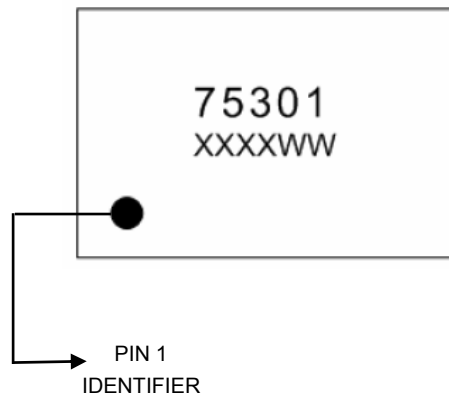
1st Line

Product Code = 75301 (Fixed Text)

2<sup>nd</sup> Line

XXXXWW = Last 4 digits of lot number

(XXXX); Wafer number (WW)



P-Channel – Dual Common Source  
**CICLON** NexFET™ Power MOSFETs  
CSD75301W1015



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