CHONGQING CLOUDCHILD TECHNOLOGY CO., LTD

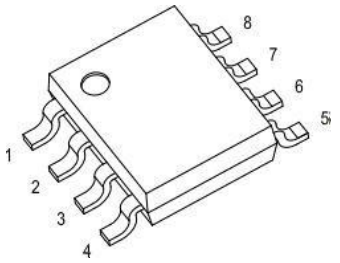
SOP8 Plastic-Encapsulate MOSFETS

CCM090N04LQA 40V N-Channel MOSFET

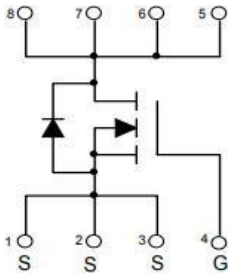
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	7.0mΩ@10V	25A
	9.0mΩ@4.5V	

SOP8



Schematic diagram



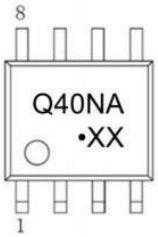
Feature

- High density cell design for ultra low $R_{DS(ON)}$
- Excellent package for good heat dissipation
- AEC Q101 Qualified

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

MARKING:



Q40NA = Device Code

XX = Date Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_c = 25℃	I_D	25	A
	T_c = 100℃		17.5	A
Pulsed Drain Current		I_{DM}	100	A
Single Pulsed Avalanche Energy		E_{AS}*	100	mJ
Power Dissipation	T_c = 25℃	P_D	3.6	W
Thermal Resistance from Junction to Ambient[1]		$R_{\theta JA}$	41	℃/W
Junction Temperature		T_J	175	℃
Storage Temperature		T_{STG}	-55~ +175	℃

*E_{AS} Test Condition V_{DD} = 25V, V_{GS} = 10V, L = 0.5mH, I_{AS} = 20A Starting T_J = 25℃.

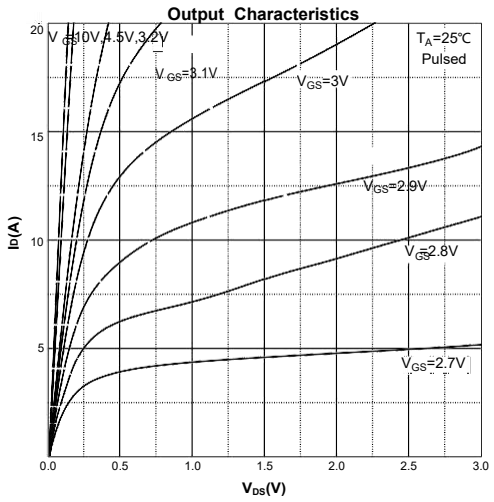
MOSFET ELECTRICAL CHARACTERISTICS(T_A = 25℃ unless otherwise noted)

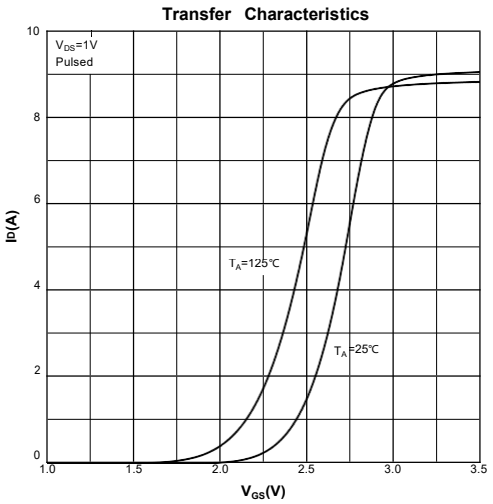
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 40V, V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.5	V
Drainsource onresistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A		7	9	mΩ
		V_{GS} = 4.5V, I_D = 10A		9	13.5	
Forward transconductance	g_{FS}	V_{DS} = 10V, I_D = 10A		13		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		2775		pF
Output Capacitance	C_{oss}			195		
Reverse Transfer Capacitance	C_{rss}			165		
Gate resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.72		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 20V, V_{GS} = 10V, I_D = 10A		20		nC
GateSource Charge	Q_{gs}			3.5		
GateDrain Charge	Q_{gd}			5		
Turnon delay time	$t_{d(on)}$	V_{DD} = 15V, R_G = 3Ω,V_{GS} = 10V, R_L = 3Ω		12		ns
Turnon rise time	t_r			3		
Turnoff delay time	$t_{d(off)}$			50		
Turnoff fall time	t_f			5		
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V , I_S = 10A			1.2	V

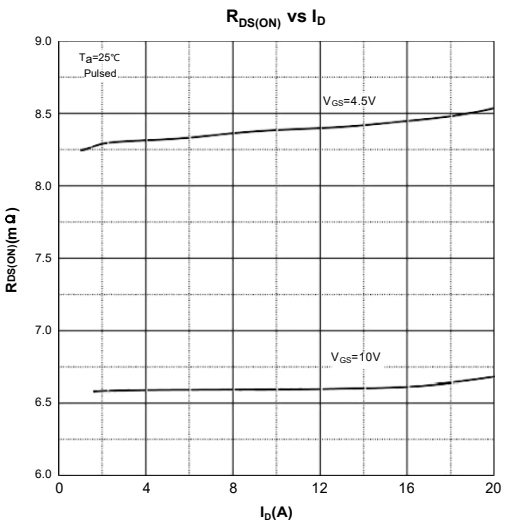
Notes :

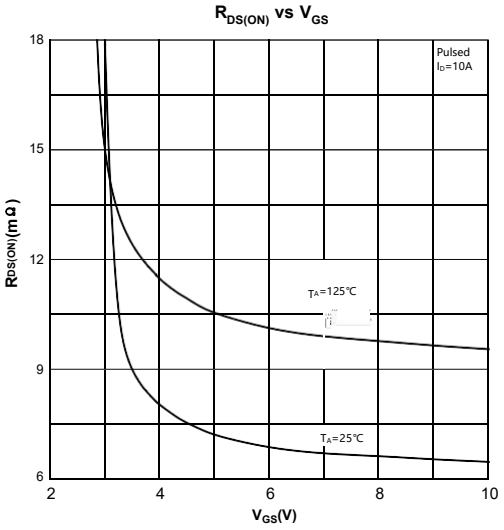
1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A =25°C.

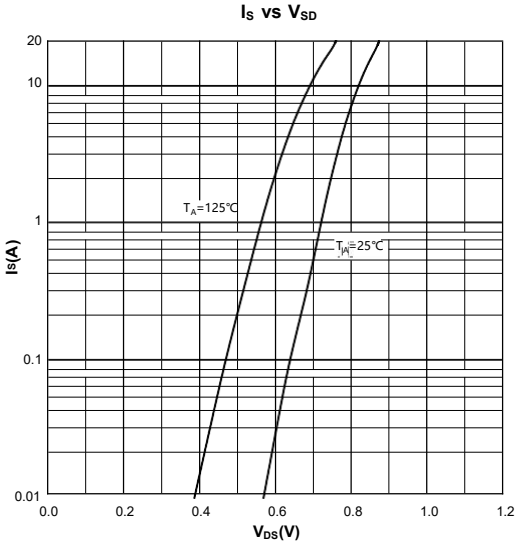
Typical Characteristics

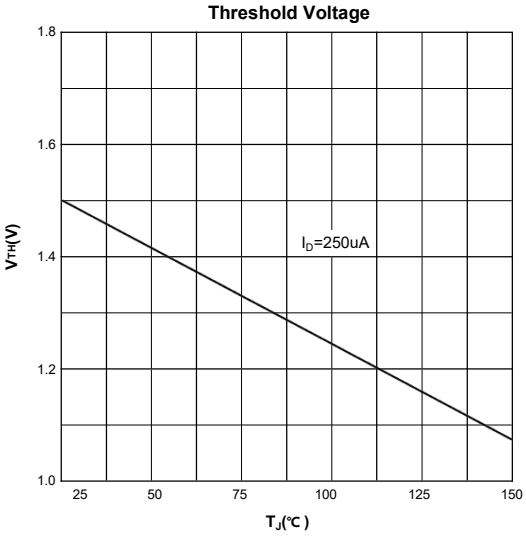




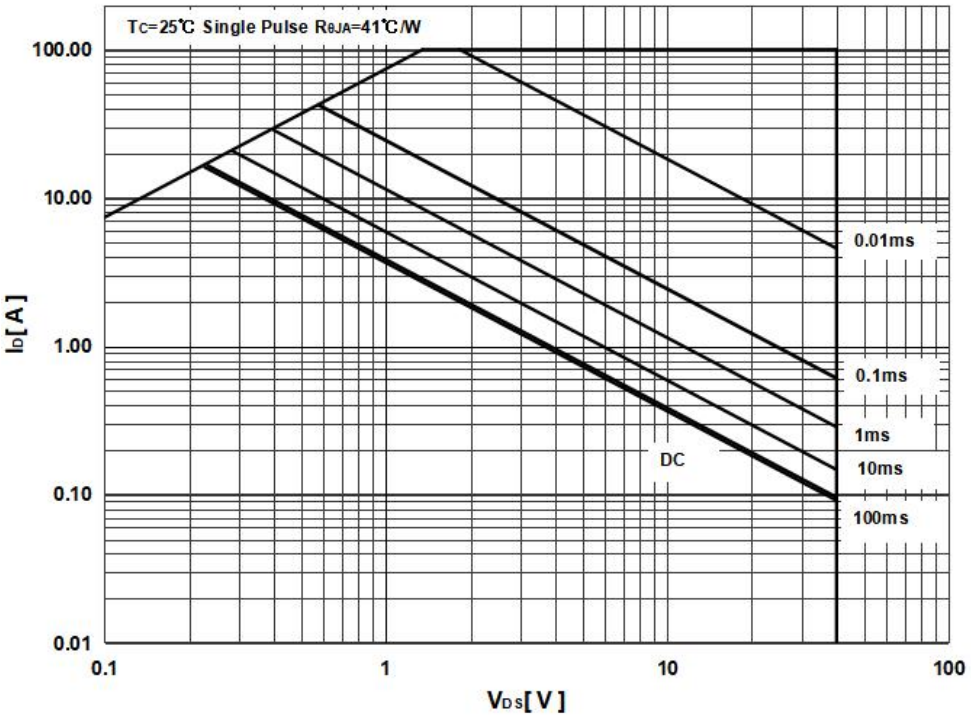




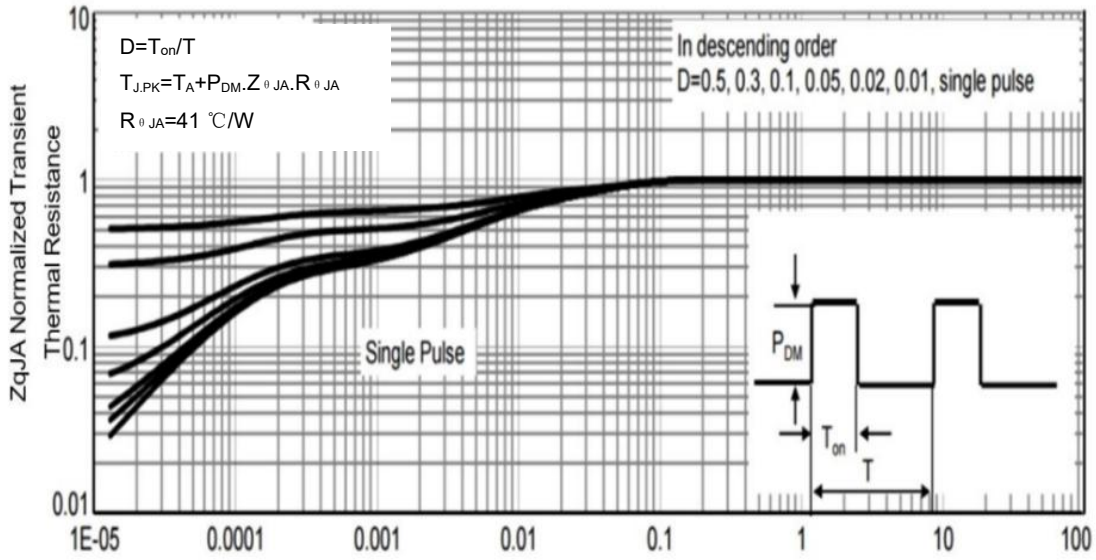




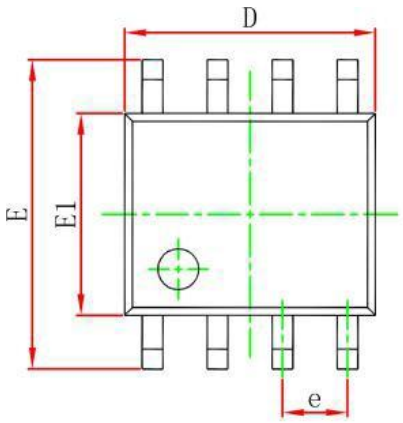
Maximum Forward Biased Safe Operating Area

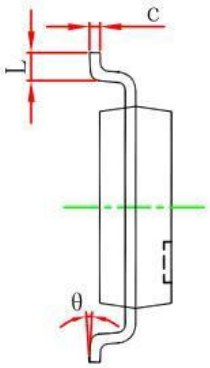


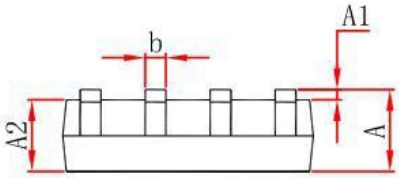
Normalized Thermal Transient Impedance



SOP8 Package Outline Dimensions







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

NOTICE

Cloudchild reserve the right to make modifications, enhancements, improvements, crrections or other changes without further notice to any product herein. Cloudchild does not assume any liability arising out of the application or use of any product described herein.

ChongQing Cloudchild Technology Co., Ltd. (short for Cloudchild) exerts the greatest possible effort to ensure high quality and reliability. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing Cloudchild products, to comply with the standards of safety in making a safe design for the entire system, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue. In developing your designs, please ensure that Cloudchild products are used within specified operating ranges as set forth in the most recent Cloudchild products specifications.

Date of change	Rev #	revise content
2023/2/24	A/0	/