



CHONGQING CLOUDCHILD TECHNOLOGY CO.,LTD  
**DFN14\*12 Plastic-Encapsulate MOSFETS**

**CCM100N6-6A** Full bridge N Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
60 V	2.8mΩ@10V	100A

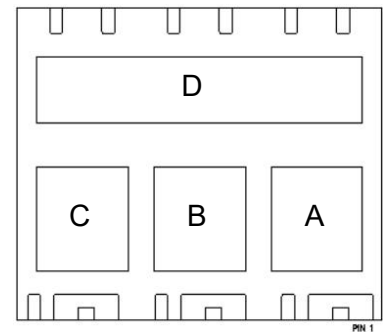


**DESCRIPTION**

The CCM100N6-6A provides excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

**FEATURE**

- Split Gate Trench Technology
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- AEC Q101 qualified



**APPLICATION**

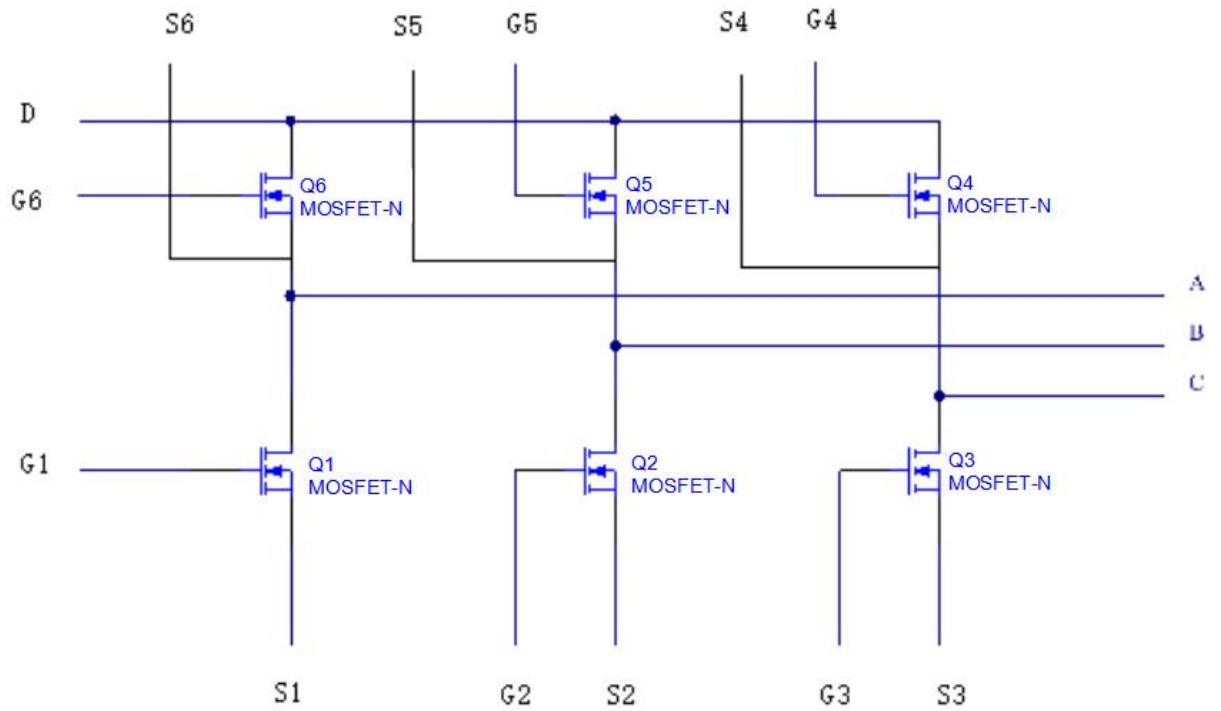
- motor control
- Full bridge module

**MARKING**



CCM100N6-6A =Part No.  
 XXXXXXXX = Code

## EQUIVALENT CIRCUIT



## Pin Definition

Number	Pin Definition	Remark	Number	Pin Definition	Remark
1	S1	Lower bridge u phase source	11	G4	Upper bridge w gate
2	S1	Lower bridge u phase source	12	S5	Upper Bridge v phase source collection
3	G1	Lower bridge u phase gate	13	G5	Upper bridge v gate
4	S2	Lower bridge v phase source	14	S6	Upper Bridge u phase source collection
5	S2	Lower bridge v phase source	15	G6	Upper bridge u gate
6	G2	Lower bridge v phase gate	PAD 1	D	DC Input
7	S3	Lower bridge w phase source	PAD 2	A	A phase output
8	S3	Lower bridge w phase source	PAD 3	B	B phase output
9	G3	Lower bridge w phase gate	PAD 4	C	C phase output
10	S4	Upper Bridge w phase source collection			

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>1</sup>	I <sub>D</sub>	100	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	400	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	225	mJ
Total Power Dissipation <sup>1</sup>	P <sub>D</sub>	83	W
Thermal Resistance from Junction to Case <sup>1</sup>	R <sub>θJC</sub>	1.8	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~ +175	°C
Soldering Temperature , for 10S(1.6mm from case)	-	260	°C

**Notes:**

1. T<sub>C</sub>=25°C Limited only by maximum temperature allowed.
2. P<sub>w</sub>≤10μs, Duty cycle≤1%.
3. EAS condition: V<sub>DD</sub>=20V, V<sub>GS</sub>=10V, I<sub>D</sub>=30A, L=0.5mH, R<sub>g</sub>=25Ω Starting T<sub>J</sub> =25°C.

# MOSFET ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise specified

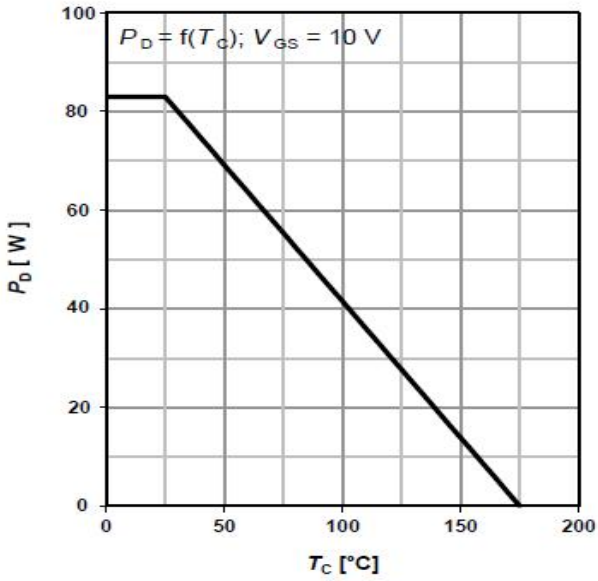
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$		0.1	1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$		2	$\pm 100$	nA
<b>On characteristics<sup>4</sup></b>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	2.5	3.0	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2.8	3.5	m $\Omega$
Forward transconductance	$g_{fs}$	$V_{DS} = 10V, I_D = 10A$		50		S
<b>Dynamic characteristics<sup>34</sup></b>						
Input capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		3800		pF
Output capacitance	$C_{oss}$			1358		
Reverse transfer capacitance	$C_{rss}$			76		
Gate resistance	$R_g$	$f = 1MHz$		2.4		$\Omega$
<b>Switching characteristics<sup>34</sup></b>						
Total gate charge	$Q_g$	$V_{GS} = 10V, V_{DD} = 48V,$ $I_D = 25A$		70		nC
Gate-source charge	$Q_{gs}$			16		
Gate-drain charge	$Q_{gd}$			21		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 45V, R_L = 1.8\Omega,$ $V_{GS} = 10V, R_G = 5\Omega$		14		ns
Turn-on rise time	$t_r$			25		
Turn-off delay time	$t_{d(off)}$			55		
Turn-off fall time	$t_f$			28		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 20A$		0.80	1.2	V
Continuous drain-source diode forward Current <sup>1</sup>	$I_S$	-			100	A
Pulsed drain-source diode forward current <sup>2</sup>	$I_{SM}$	-			400	A
Reverse recovery time	$T_{rr}$	$I_F = 20A, di/dt = 100A/us$		32		ns
Reverse recovery charge	$Q_{rr}$				36	

Note :

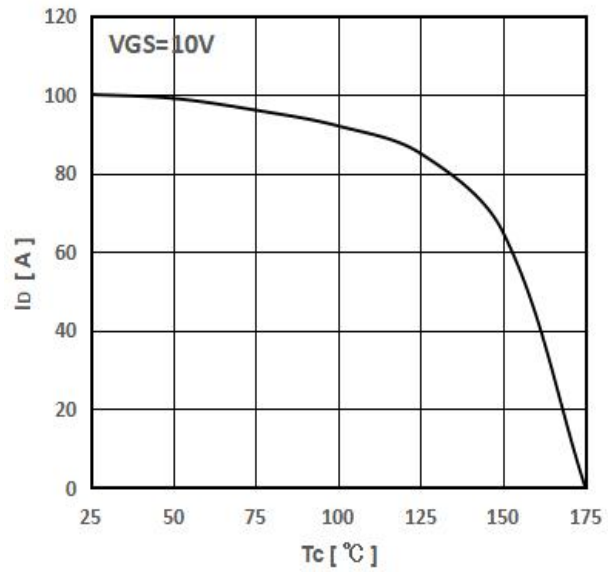
1.  $T_C = 25^\circ C$  Limited only by maximum temperature allowed.
2.  $P_W \leq 10\mu s$ , Duty cycle  $\leq 1\%$ .
3. Guaranteed by design, not subject to production.
4. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

# Typical Characteristics

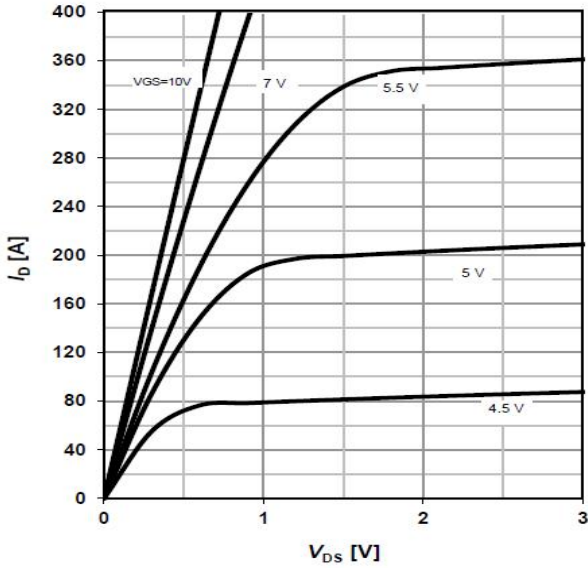
PD -- Tc



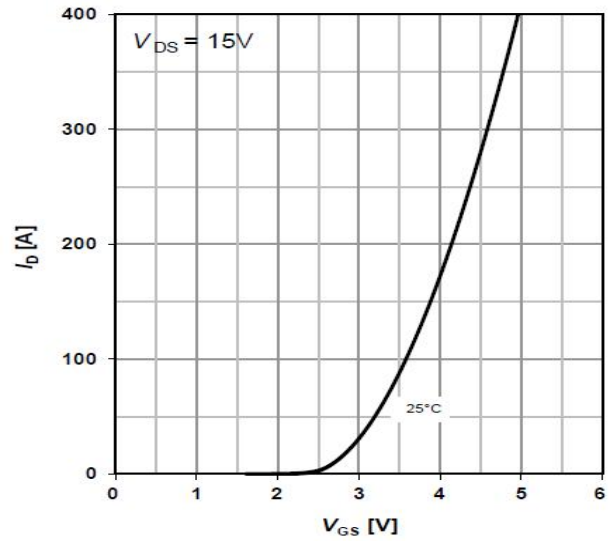
ID -- Tc



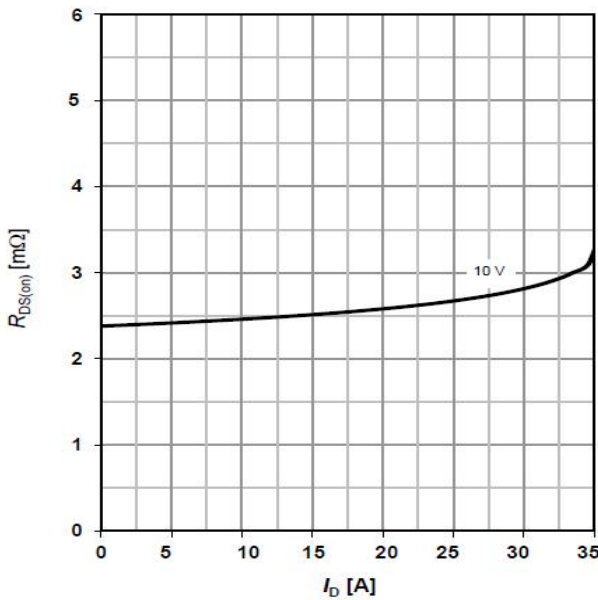
ID -- VDS



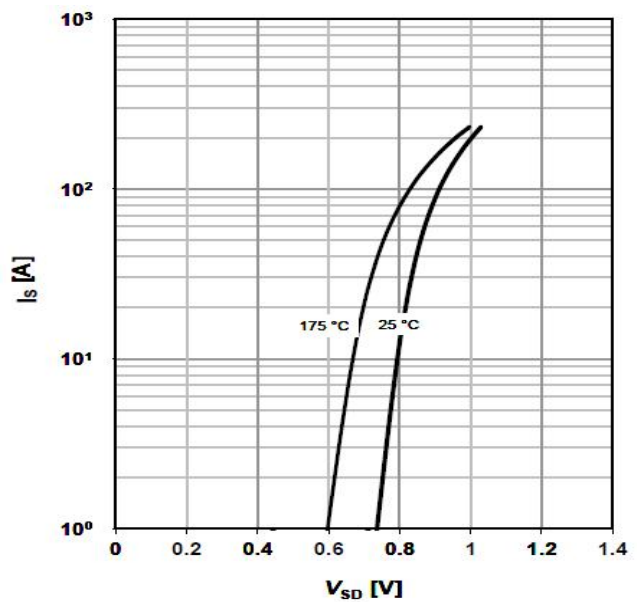
ID -- VGS



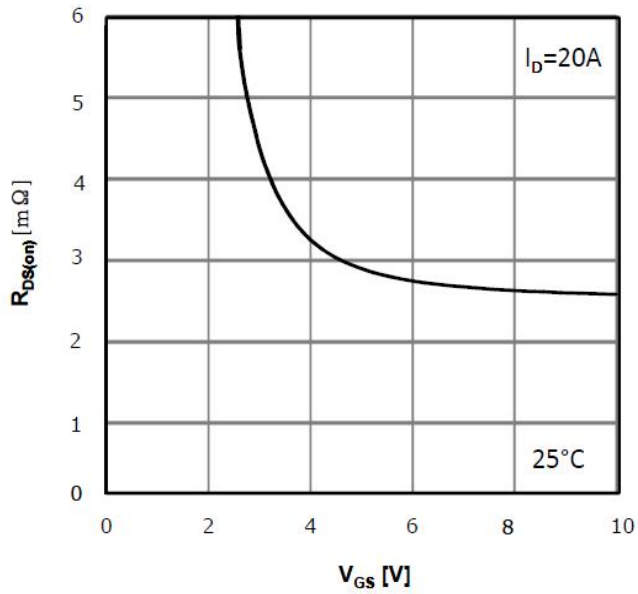
RDS(on) -- ID



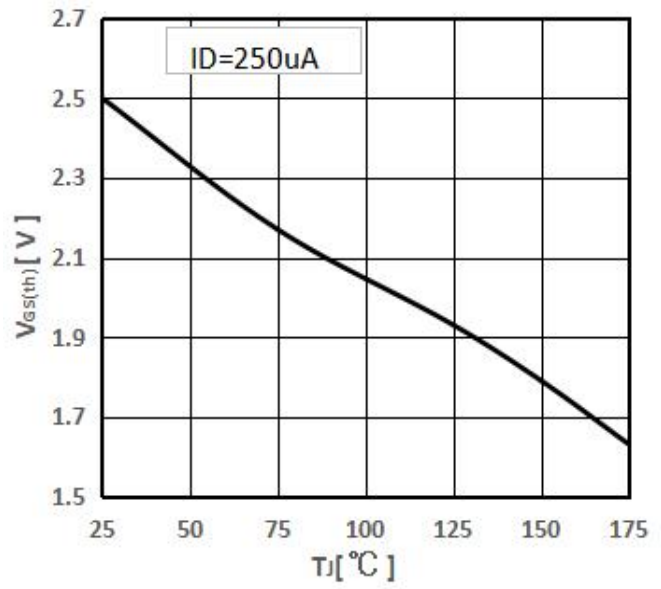
IS -- VSD



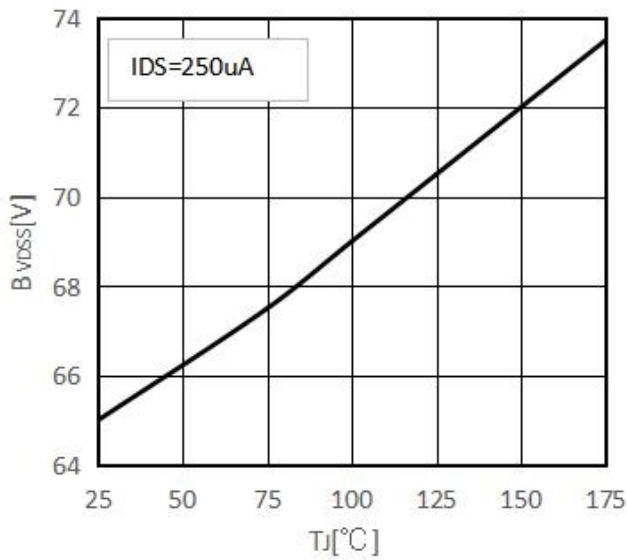
### RDS(on) -- VGS



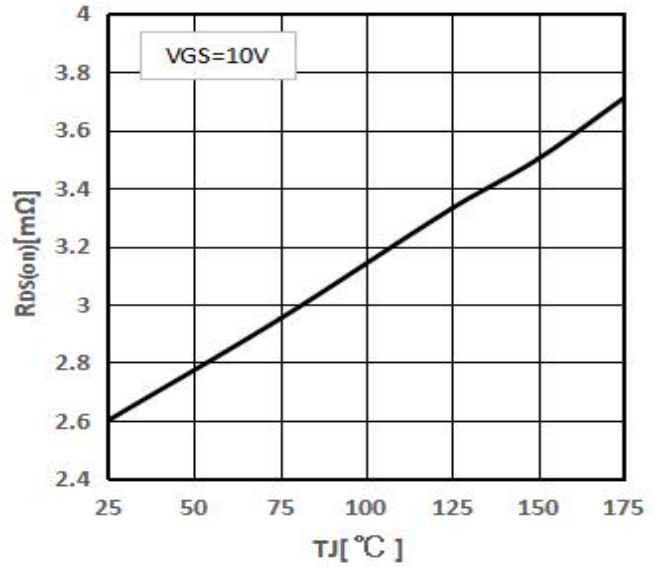
### Threshold Voltage



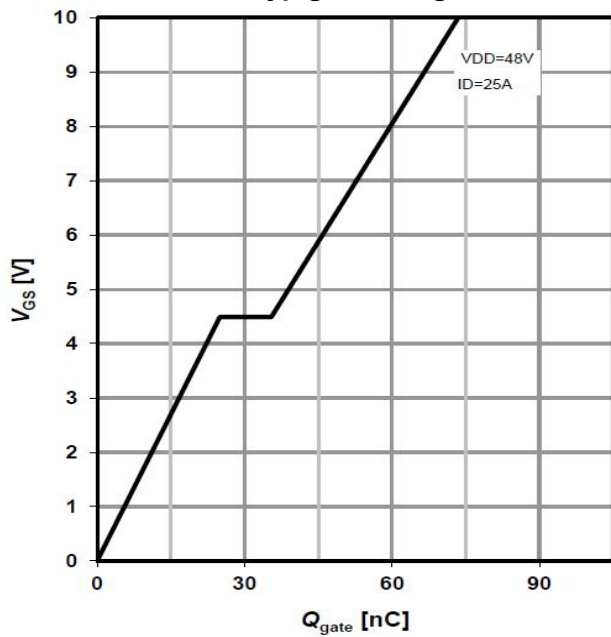
### Drain-source breakdown voltage



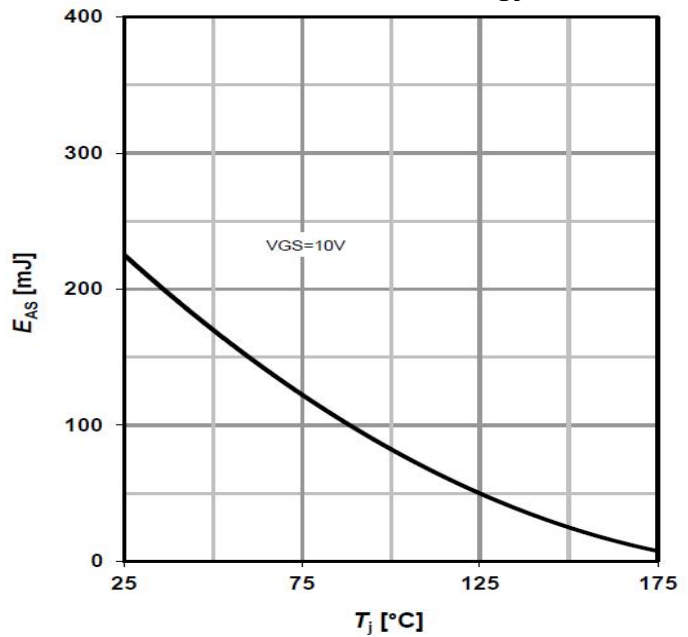
### RDS (on) -- Tj



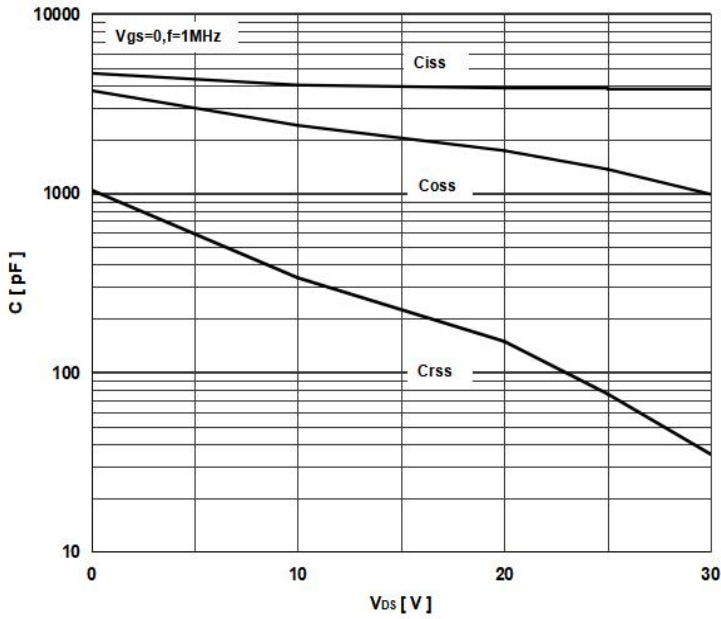
### Typ.gate charge



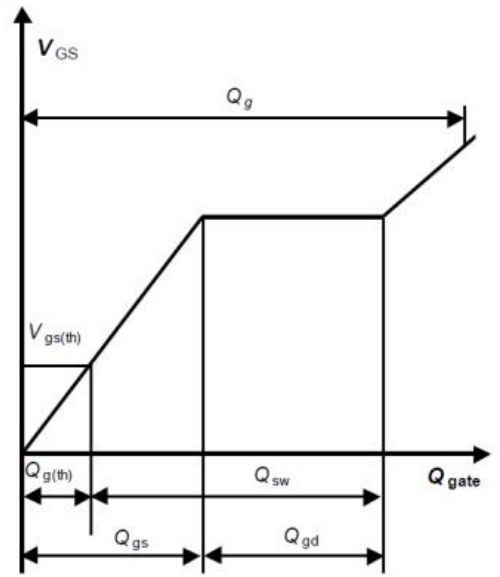
### Avalanche energy



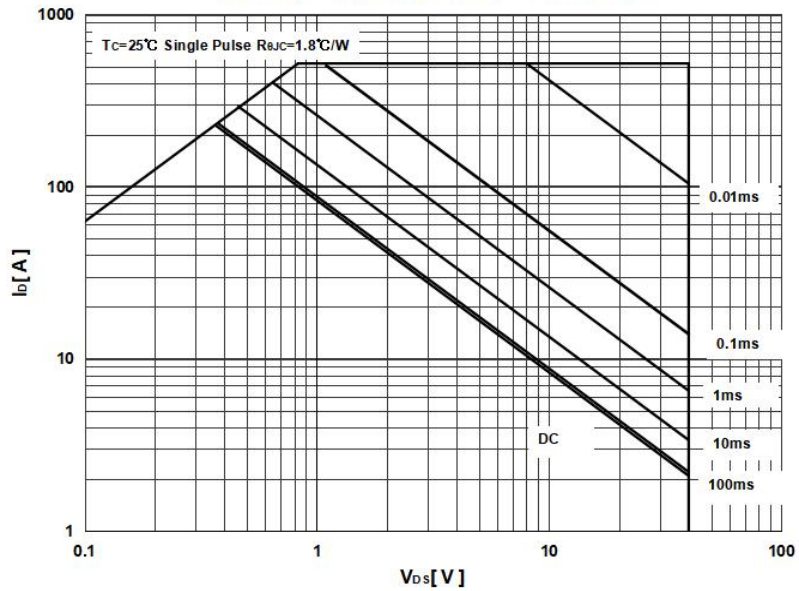
### Typ. capacitance



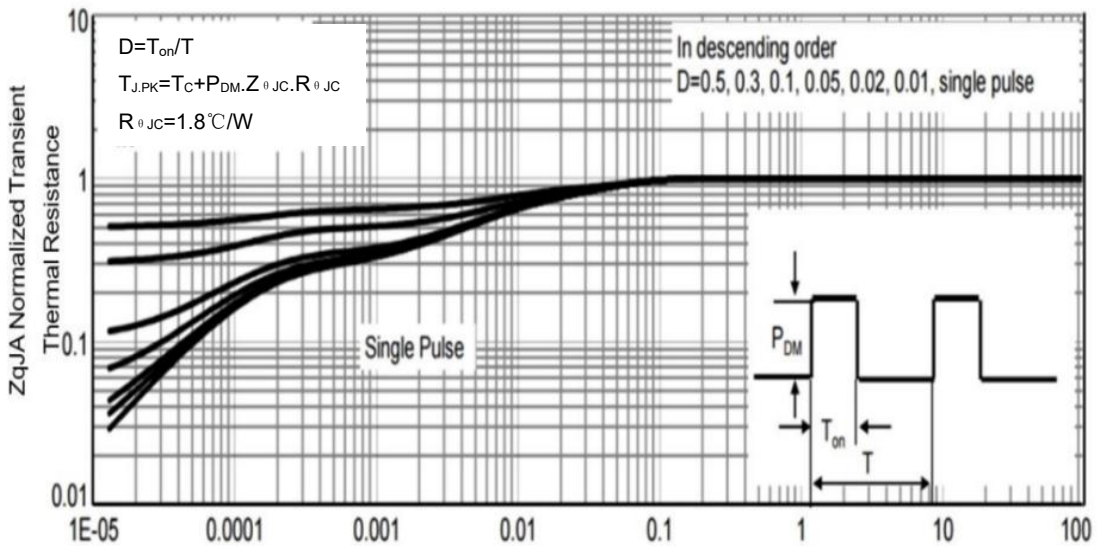
### Gate charge waveforms



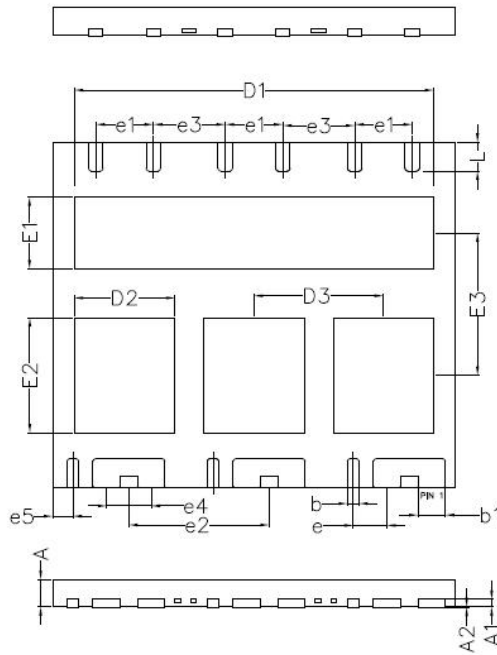
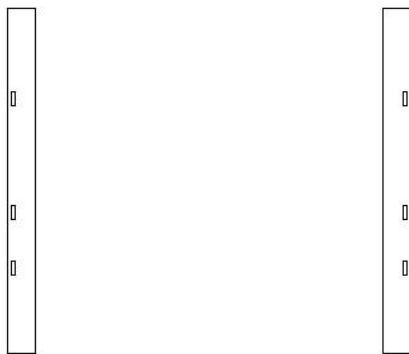
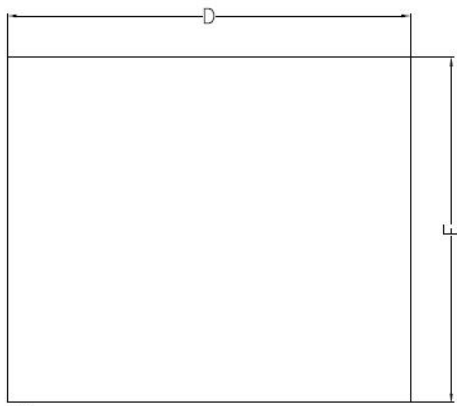
### Maximum Forward Biased Safe Operating Area



### Normalized Thermal Transient Impedance



## DFN14\*12 Package Outline Dimensions



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	0,90	0,95	1,00
A1	0,254 Ref		
A2	0,00	0,02	0,05
b	0,35	0,40	0,45
b1	0,90	0,95	1,00
D	13,90	14,00	14,10
D1	12,45	12,50	12,55
D2	3,45	3,50	3,55
D3	4,45	4,50	4,55
E	11,90	12,00	12,10
E1	2,45	2,50	2,55
E2	3,95	4,00	4,05
E3	4,90	4,95	5,00
e	1,17 BSC		
e1	2,00 BSC		
e2	4,88BSC		
e3	2,50 BSC		
e4	1,55 BSC		
e5	0,70 BSC		
L	0,95	1,00	1,05

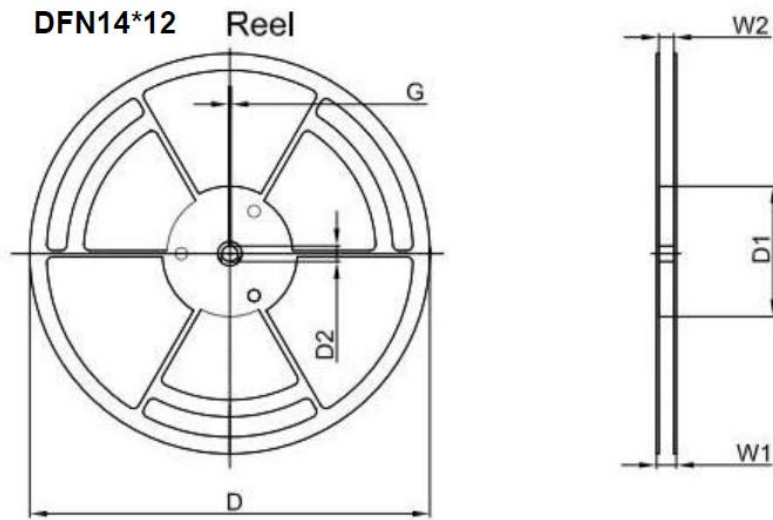
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## DFN14\*12 Tape and Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	G	W1	W2
13"D1a	Ø330.00	100.00	13.00	1.90	28.40	24.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
2,000 pcs	13 inch	4,000 pcs	340×336×29	20,000 pcs	353×346×365

Date of change	Rev #	revise content
2023/03/17	A/0	/