



DPIM 29*27 MOSFETS

CCM2M800N10S Half bridge N Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100 V	3.5mΩ@10V	200A*4

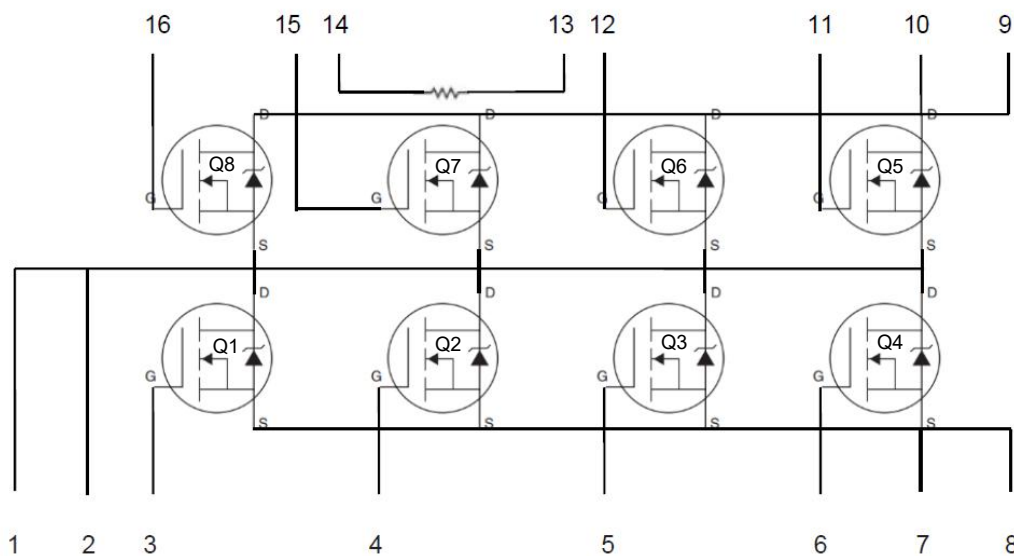
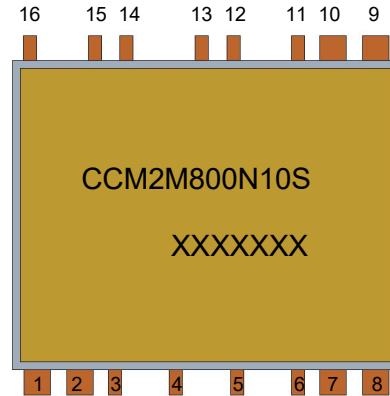
FEATURE

- Split Gate Trench Technology
- Low RDS(ON)
- Low Gate Charge
- Low Gate Resistance
- Temperature acquisition
- AEC Q101 qualified

APPLICATION

- motor control
- Half bridge module

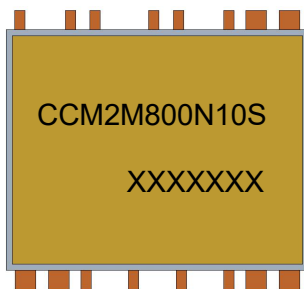
Circuit Diagram



Pin Definition

Number	Pin Definition	Remark	Number	Pin Definition	Remark
1	A	output	9	D	Upper bridge Q5/Q6/Q7/Q8 drain electrode
2	A	output	10	D	Upper bridge Q5/Q6/Q7/Q8 drain electrode
3	G1	Lower bridge Q1 gate	11	G5	Upper bridge Q5 gate
4	G2	Lower bridge Q2 gate	12	G6	Upper bridge Q6 gate
5	G3	Lower bridge Q3 gate	13	T	Temperature acquisition port
6	G4	Lower bridge Q4 gate	14	T	Temperature acquisition port
7	S	Lower bridge Q1/Q2/Q3/Q4 source collection	15	G7	Upper bridge Q7 gate
8	S	Lower bridge Q1/Q2/Q3/Q4 source electrode	16	G8	Upper bridge Q8 gate

MARKING



CCM2M800N10S =Part No.
XXXXXXX = Code.

ABSOLUTE MAXIMUM RATINGS (Ta=25C unless otherwise noted, single chip)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current ¹	I_D	200	A
Pulsed Drain Current ²	I_{DM}	800	A
Single Pulse Avalanche Energy ³	EAS	194	mJ
Total Power Dissipation ¹	P_D	341	W
Thermal Resistance from Junction to Case ¹	$R_{\theta JC}$	0.44	$^{\circ}C/W$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +175	$^{\circ}C$
Soldering Temperature , for 10S(1.6mm from case)	-	260	$^{\circ}C$

Notes:

1. $T_C=25^{\circ}C$ Limited only by maximum temperature allowed.
2. $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.
3. EAS condition: $V_{DD}=50V, V_{GS}=10V, I_{AS}=108A, L=0.033mH, R_g=25\Omega$ Starting $T_J = 25^{\circ}C$.

ATTENTION

This is an electrostatic sensitive device. Please pay attention to ESD protection during welding.
It need to turn on the ion fan and take grounding measures when contacting the product.

MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, single chip)

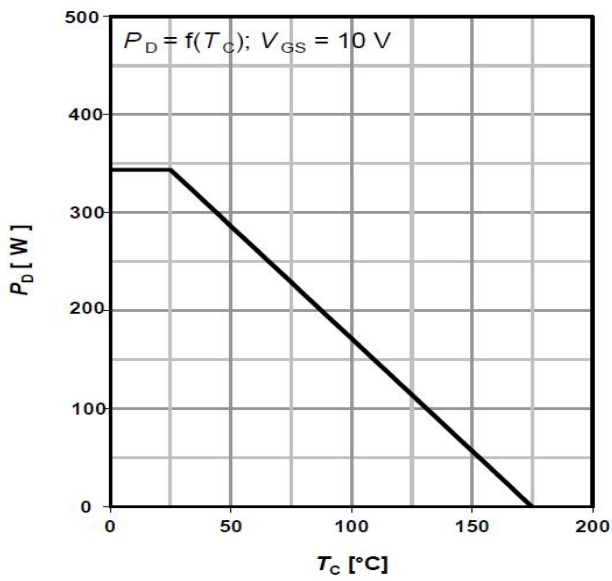
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
On characteristics⁴						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.3	3.0	4.3	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		3.5	4.5	m Ω
Forward transconductance	g_{fs}	$V_{DS} = 10V, I_D = 10A$		46		S
Dynamic characteristics³⁴						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		5850		pF
Output capacitance	C_{oss}			2378		
Reverse transfer capacitance	C_{rss}			146		
Gate resistance	R_g	$f = 1MHz$		0.8		Ω
Switching characteristics³⁴						
Total gate charge	Q_g	$V_{GS} = 10V, V_{DD} = 50V,$ $I_D = 75A$		150	210	nC
Gate-source charge	Q_{gs}			35		
Gate-drain charge	Q_{gd}			43		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 65V, I_D = 75A,$ $V_{GS} = 10V, R_G = 2.6\Omega$		25		ns
Turn-on rise time	t_r			67		
Turn-off delay time	$t_{d(off)}$			78		
Turn-off fall time	t_f			88		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = 75A$		0.82	1.3	V
Continuous drain-source diode forward Current ¹	I_S	-			180	A
Pulsed drain-source diode forward current ²	I_{SM}	-			720	A
Reverse recovery time	T_{rr}	$I_F = 10A,$ $dI/dt = 100A/\mu s,$ $V_{GS} = 0V$		85		ns
Reverse recovery charge	Q_{rr}				160	
Temperature acquisition						
Thermistor	R	25°C	9.99	10	10.01	K Ω
	B	$25/50 (^\circ\text{C})$	3346	3380	3414	K

Note :

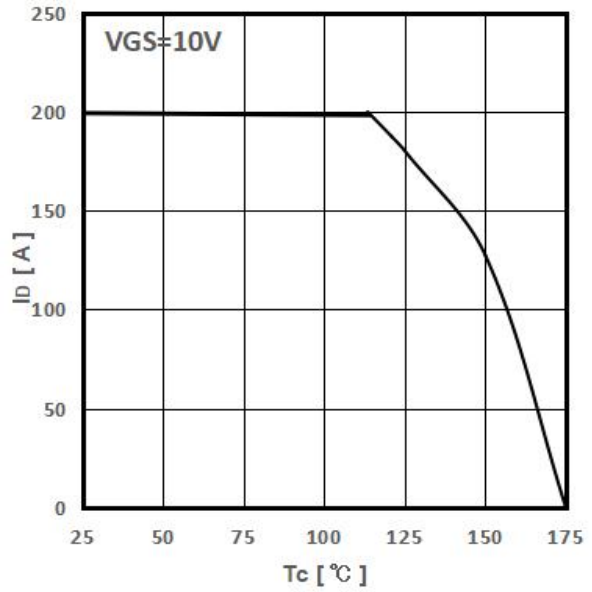
- $T_C = 25^\circ\text{C}$ Limited only by maximum temperature allowed.
- $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.
- Guaranteed by design, not subject to production.
- Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics (single chip)

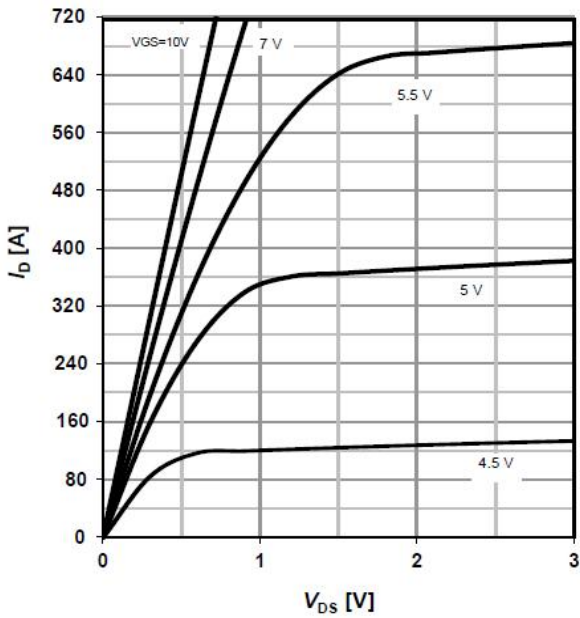
PD -- Tc



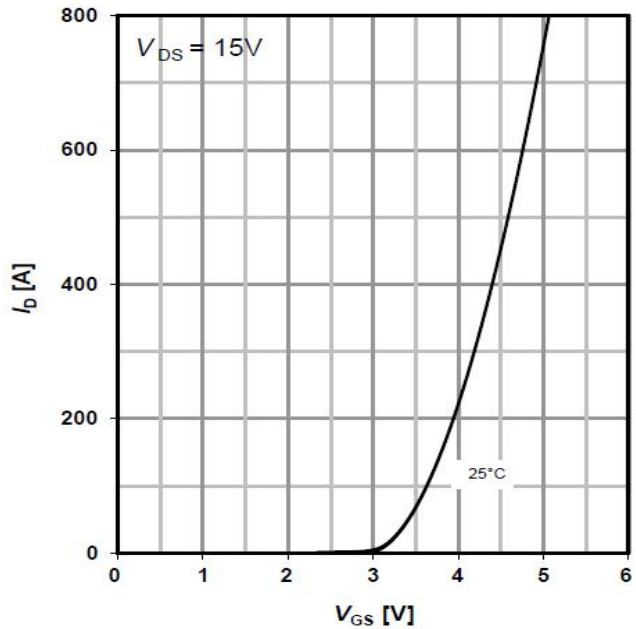
ID -- Tc



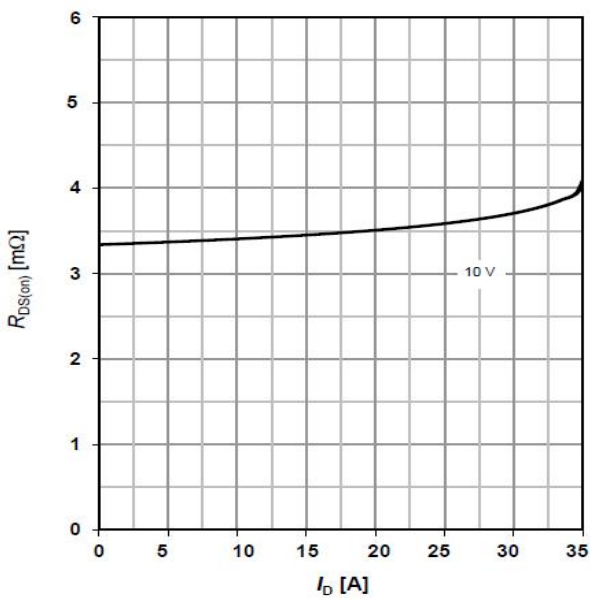
ID -- VDS



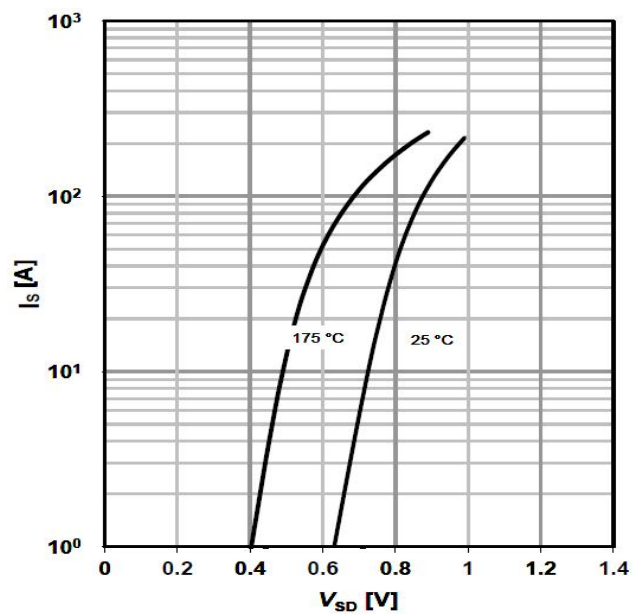
ID -- VGS



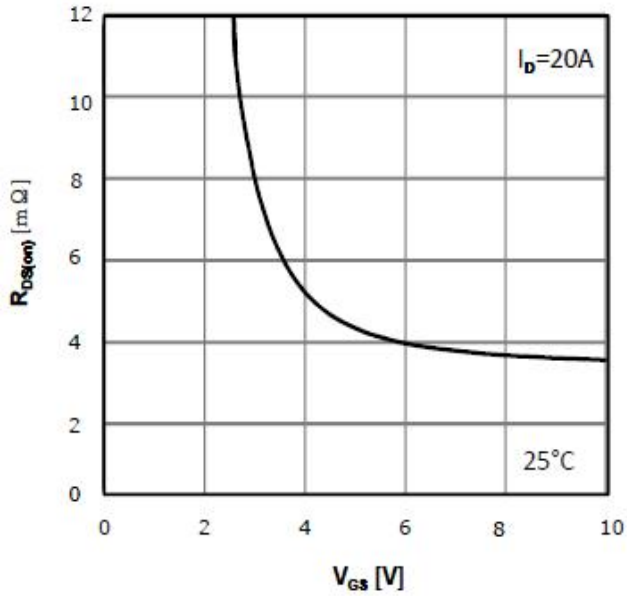
RDS(on) -- ID



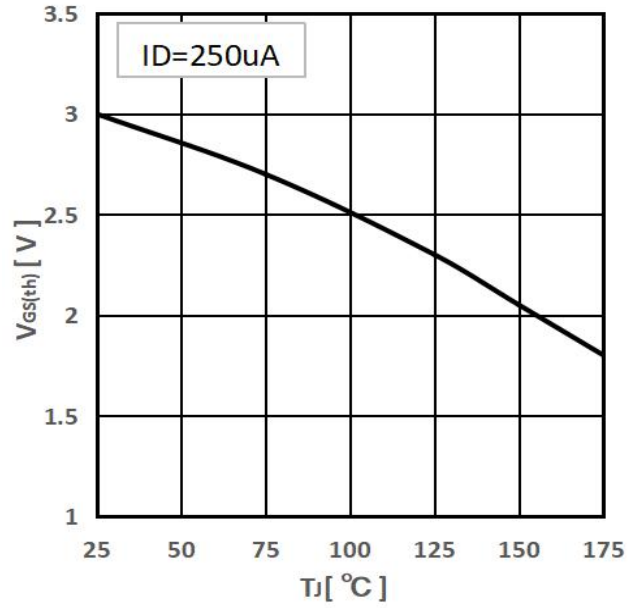
Is -- VSD



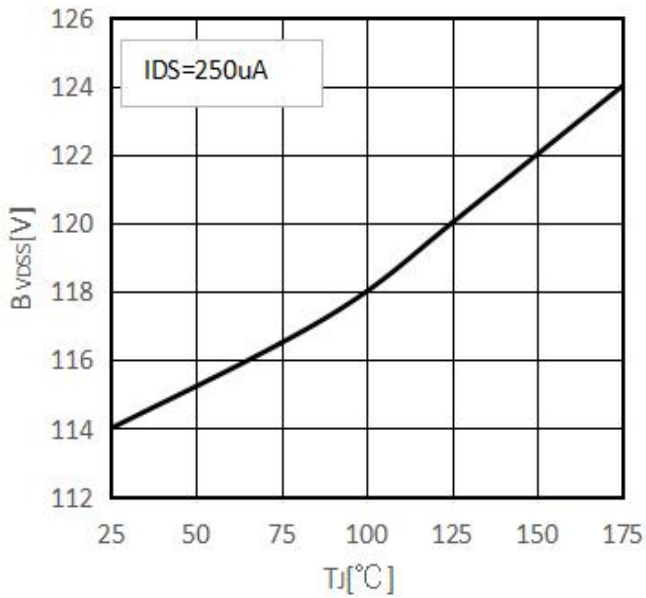
RDS(on) -- VGS



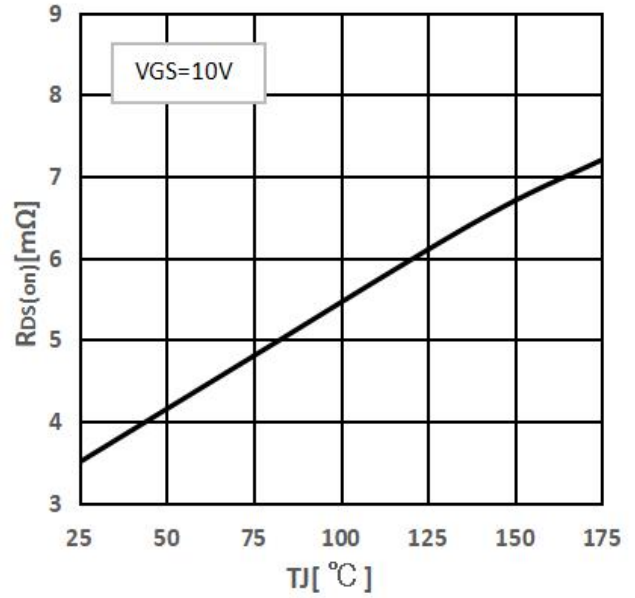
Threshold Voltage



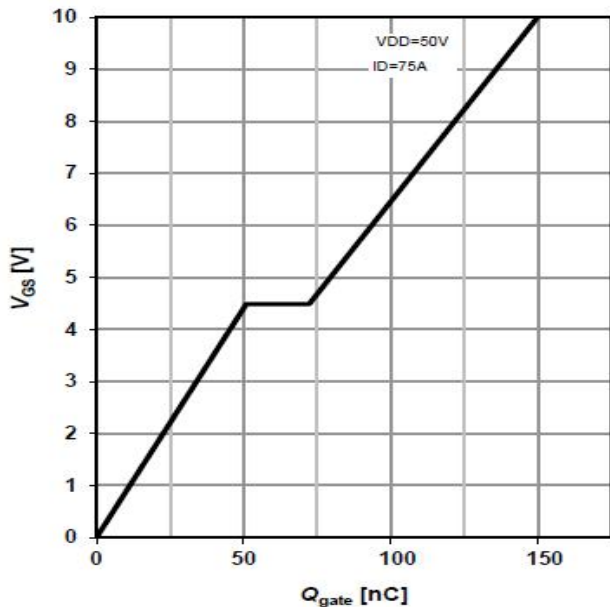
Drain-source breakdown voltage



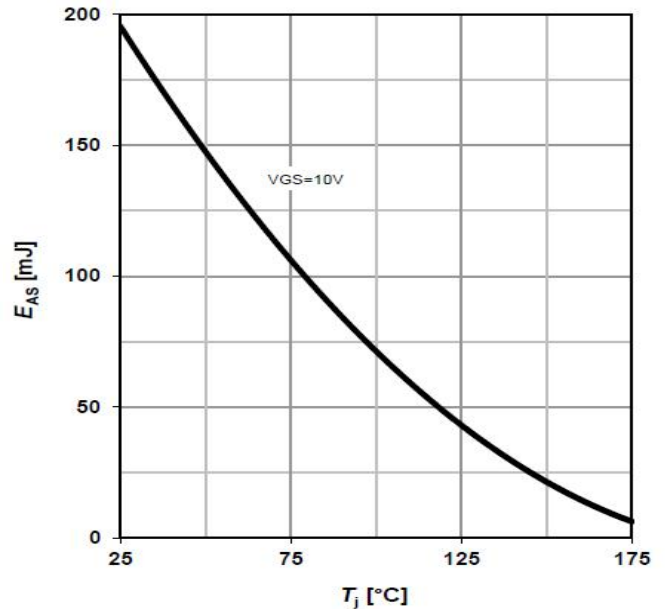
RDS (on) -- TJ



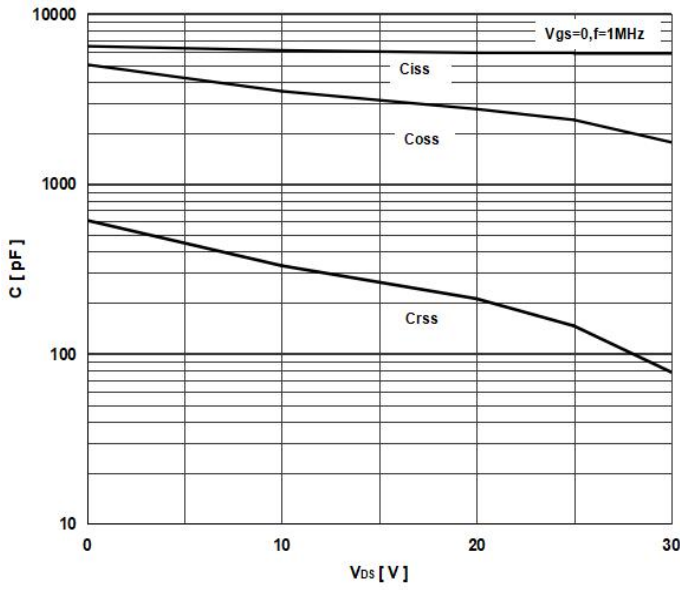
Typ.gate charge



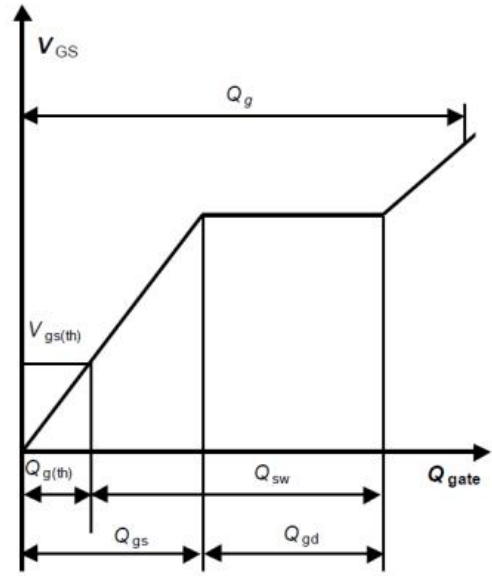
Avalanche energy



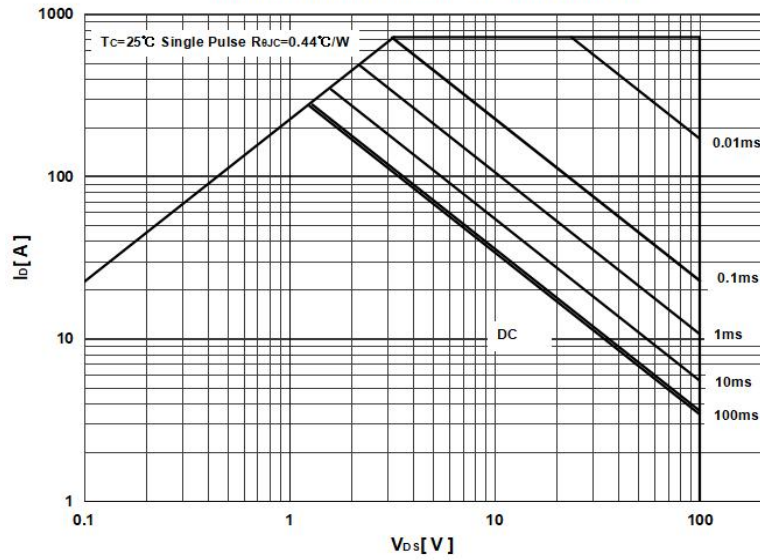
Typ. capacitance



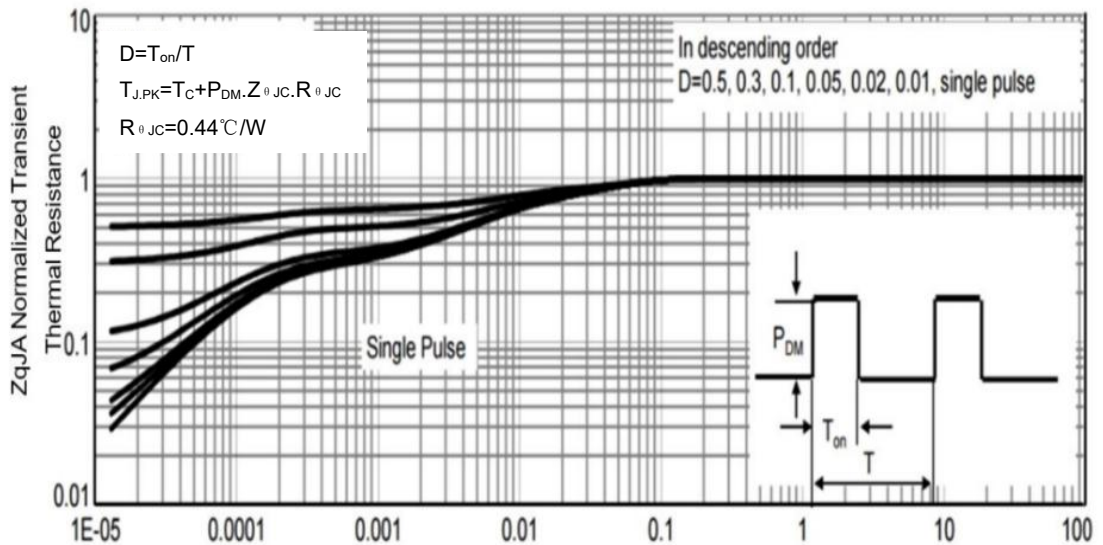
Gate charge waveforms



Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance

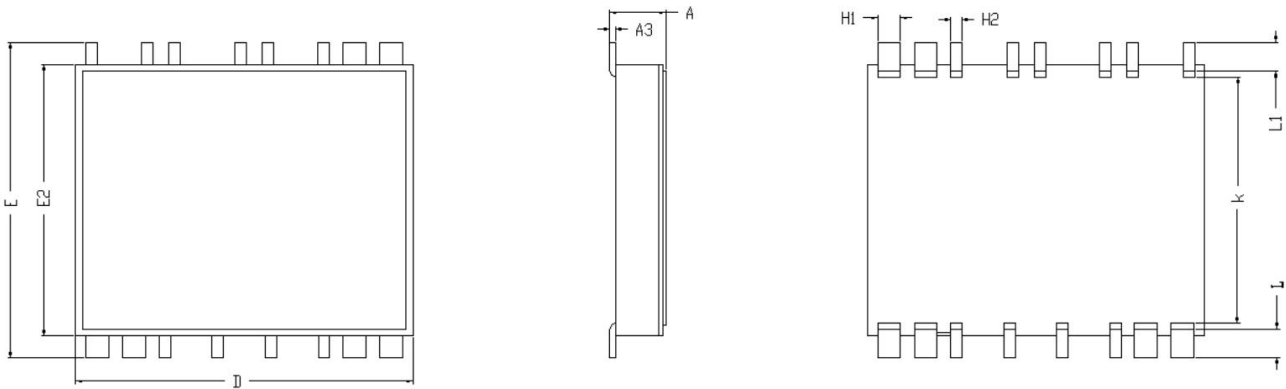


Comparison table of temperature resistance value of thermistor

温度 (°C)	最小值 (kΩ)	标准值 (kΩ)	最大值 (kΩ)	温度 (°C)	最小值 (kΩ)	标准值 (kΩ)	最大值 (kΩ)
-40	238.0	248.3	258.9	44	4.930	5.015	5.100
-39	223.6	233.1	243.0	45	4.764	4.847	4.931
-38	210.3	219.0	228.2	46	4.604	4.686	4.769
-37	197.8	205.9	214.3	47	4.450	4.531	4.612
-36	186.1	193.6	201.5	48	4.302	4.382	4.462
-35	175.2	182.2	189.5	49	4.161	4.239	4.318
-34	165.1	171.6	178.3	50	4.024	4.101	4.179
-33	155.6	161.6	167.8	51	3.893	3.969	4.046
-32	146.7	152.3	158.1	52	3.767	3.842	3.917
-31	138.4	143.6	148.9	53	3.646	3.719	3.794
-30	130.6	135.5	140.4	54	3.529	3.601	3.675
-29	123.4	127.8	132.4	55	3.417	3.488	3.560
-28	116.6	120.7	125.0	56	3.309	3.379	3.450
-27	110.2	114.0	118.0	57	3.205	3.274	3.343
-26	104.2	107.8	111.5	58	3.105	3.172	3.241
-25	98.56	101.9	105.3	59	3.008	3.075	3.142
-24	93.29	96.39	99.59	60	2.916	2.981	3.047
-23	88.34	91.22	94.19	61	2.826	2.890	2.956
-22	83.68	86.37	89.13	62	2.740	2.803	2.867
-21	79.31	81.81	84.38	63	2.657	2.719	2.782
-20	75.19	77.52	79.92	64	2.577	2.638	2.700
-19	71.32	73.49	75.72	65	2.499	2.559	2.620
-18	67.68	69.70	71.78	66	2.425	2.484	2.544
-17	64.25	66.13	68.07	67	2.353	2.411	2.470
-16	61.01	62.77	64.57	68	2.284	2.341	2.399
-15	57.97	59.61	61.29	69	2.217	2.273	2.330
-14	55.09	56.62	58.19	70	2.152	2.207	2.263
-13	52.38	53.81	55.27	71	2.090	2.144	2.199
-12	49.83	51.16	52.52	72	2.030	2.083	2.137
-11	47.41	48.65	49.92	73	1.972	2.024	2.077
-10	45.13	46.29	47.48	74	1.916	1.967	2.019
-9	42.98	44.06	45.16	75	1.861	1.912	1.963
-8	40.94	41.95	42.98	76	1.809	1.858	1.909
-7	39.01	39.96	40.92	77	1.758	1.807	1.856
-6	37.19	38.07	38.97	78	1.710	1.757	1.806
-5	35.47	36.29	37.13	79	1.662	1.709	1.757
-4	33.83	34.60	35.39	80	1.617	1.662	1.709
-3	32.29	33.01	33.74	81	1.572	1.617	1.664
-2	30.82	31.49	32.18	82	1.530	1.574	1.619
-1	29.44	30.06	30.70	83	1.488	1.532	1.576
0	28.12	28.70	29.30	84	1.448	1.491	1.535

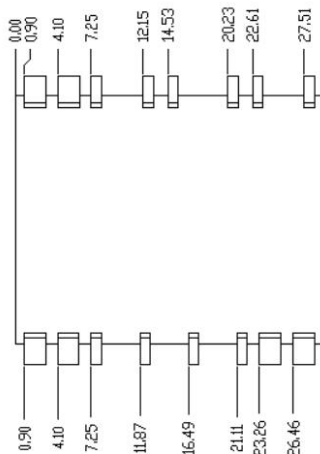
1	26.87	27.42	27.97	85	1.409	1.451	1.494
2	25.69	26.20	26.71	86	1.372	1.413	1.455
3	24.56	25.04	25.52	87	1.336	1.376	1.418
4	23.49	23.94	24.39	88	1.300	1.340	1.381
5	22.48	22.90	23.32	89	1.266	1.305	1.346
6	21.52	21.91	22.30	90	1.233	1.272	1.311
7	20.60	20.96	21.33	91	1.201	1.239	1.278
8	19.73	20.07	20.41	92	1.171	1.208	1.246
9	18.90	19.22	19.54	93	1.141	1.177	1.214
10	18.12	18.41	18.71	94	1.111	1.147	1.184
11	17.37	17.64	17.92	95	1.083	1.118	1.155
12	16.65	16.91	17.17	96	1.056	1.091	1.126
13	15.97	16.21	16.45	97	1.030	1.063	1.098
14	15.32	15.55	15.77	98	1.004	1.037	1.072
15	14.71	14.92	15.13	99	0.9790	1.012	1.046
16	14.12	14.31	14.51	100	0.9548	0.9870	1.020
17	13.56	13.74	13.92	101	0.9314	0.9630	0.9957
18	13.02	13.19	13.36	102	0.9086	0.9398	0.9719
19	12.51	12.67	12.83	103	0.8866	0.9172	0.9487
20	12.03	12.17	12.32	104	0.8651	0.8952	0.9263
21	11.56	11.70	11.83	105	0.8443	0.8739	0.9044
22	11.12	11.24	11.37	106	0.8242	0.8532	0.8832
23	10.69	10.81	10.93	107	0.8046	0.8331	0.8626
24	10.29	10.40	10.50	108	0.7855	0.8136	0.8426
25	9.900	10.00	10.10	109	0.7670	0.7947	0.8232
26	9.522	9.622	9.722	110	0.7491	0.7762	0.8043
27	9.161	9.261	9.361	111	0.7316	0.7583	0.7859
28	8.816	8.916	9.015	112	0.7147	0.7409	0.7681
29	8.487	8.585	8.684	113	0.6982	0.7240	0.7507
30	8.171	8.269	8.368	114	0.6822	0.7076	0.7338
31	7.869	7.967	8.065	115	0.6666	0.6916	0.7174
32	7.581	7.678	7.775	116	0.6515	0.6760	0.7014
33	7.304	7.400	7.497	117	0.6368	0.6609	0.6859
34	7.040	7.135	7.231	118	0.6224	0.6462	0.6708
35	6.786	6.881	6.975	119	0.6085	0.6319	0.6561
36	6.544	6.637	6.731	120	0.5950	0.6180	0.6418
37	6.311	6.403	6.496	121	0.5818	0.6044	0.6278
38	6.088	6.179	6.271	122	0.5690	0.5912	0.6143
39	5.875	5.965	6.056	123	0.5565	0.5784	0.6011
40	5.670	5.759	5.849	124	0.5444	0.5659	0.5882
41	5.473	5.561	5.650	125	0.5326	0.5537	0.5757
42	5.285	5.372	5.459				
43	5.104	5.189	5.276				

DPIM 29*27 Package Outline Dimensions



Symbol	Dimensions in millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	4.88	5.08	0.192	0.200
A3	0.45	0.55	0.018	0.022
D	29.26	29.46	1.152	1.160
E	27.32	27.52	1.076	1.083
E2	23.52	23.72	0.926	0.9341
k	21.32	21.52	0.839	0.847
L	2.45	2.55	0.096	0.100
L1	2.45	2.55	0.096	0.100
H1	1.95	2.05	0.077	0.081
H2	0.95	1.05	0.037	0.041

DPIM 29*27 Suggested Pad Layout



Attention: the direction is reversed

NOTICE

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Date of change	Rev #	revise content
2023/08/04	A/0	/