



20V N-Channel Trench Power MOSFET

General Description

The SJM20N036A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a wide variety of applications.

Features

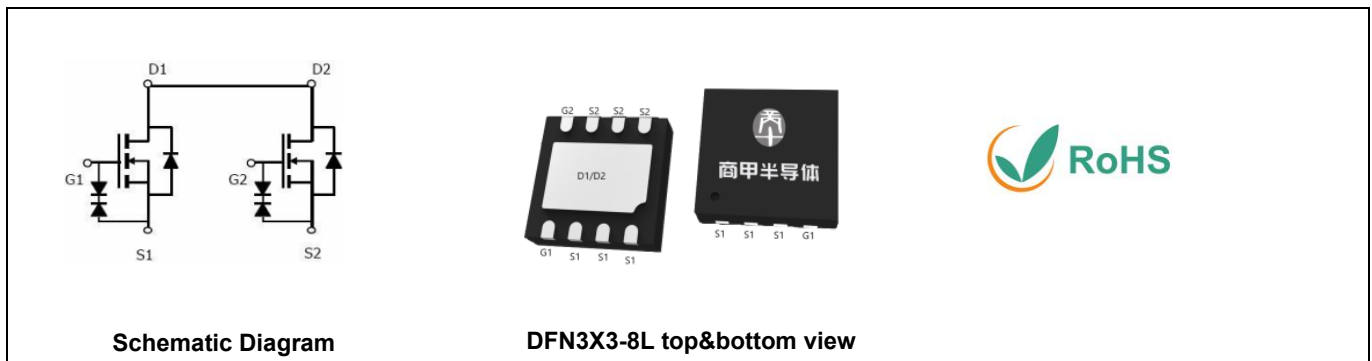
- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired
- ESD Rating: HBM 2KV

Application

- Load Switch

Key Performance Parametes

Parameter	Value	Unit
V_{DS}	20	V
$R_{DS(ON_TYP)}$	3.9	m Ω
I_D	60	A
Q_G	64	nC



Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJM20N036A	SJM20N036	DFN3X3-8L	Tape	\	\	5000 Pcs

Table 1. Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	20	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 10	V
I_D	Drain Current-Continuous($T_C=25^\circ\text{C}$)	60	A
	Drain Current-Continuous($T_C=100^\circ\text{C}$)	38	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	240	A
P_D	Maximum Power Dissipation($T_C=25^\circ\text{C}$)	25	W
	Maximum Power Dissipation($T_C=100^\circ\text{C}$)	10	W
E_{AS}	Avalanche energy (Note 2)	132	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		5	$^\circ\text{C/W}$



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Table 3. Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
B _{VDSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V T _J =25°C			1	μA
		V _{DS} =20V, V _{GS} =0V T _J =125°C			100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±10V, V _{DS} =0V			±10	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5		1	V
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =8A		50		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =8A T _J =25°C		3.9	4.9	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =2.5V, I _D =6A T _J =25°C		4.6	6.1	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1.0KHz		1790		pF
C _{oss}	Output Capacitance			235		pF
C _{rss}	Reverse Transfer Capacitance			184		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz		2.8		kΩ
Switching Parameters						
t _{d(on)}	Turn-on Delay Time	V _{GS} =4.5V, V _{DS} =10V, R _L =1.25Ω, R _{GEN} =3Ω		10		nS
t _r	Turn-on Rise Time			25		nS
t _{d(off)}	Turn-Off Delay Time			72		nS
t _f	Turn-Off Fall Time			80		nS
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =10V, I _D =8A		64		nC
Q _{gs}	Gate-Source Charge			8		nC
Q _{gd}	Gate-Drain Charge			12		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current (Body Diode)				60	A
V _{SD}	Forward on Voltage ^(Note 3)	V _{GS} =0V, I _S =8A			1.2	V
t _{rr}	Reverse Recovery Time	I _F =8A, dI/dt=100A/μs		16		ns
Q _{rr}	Reverse Recovery Charge	I _F =8A, dI/dt=100A/μs		5.5		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

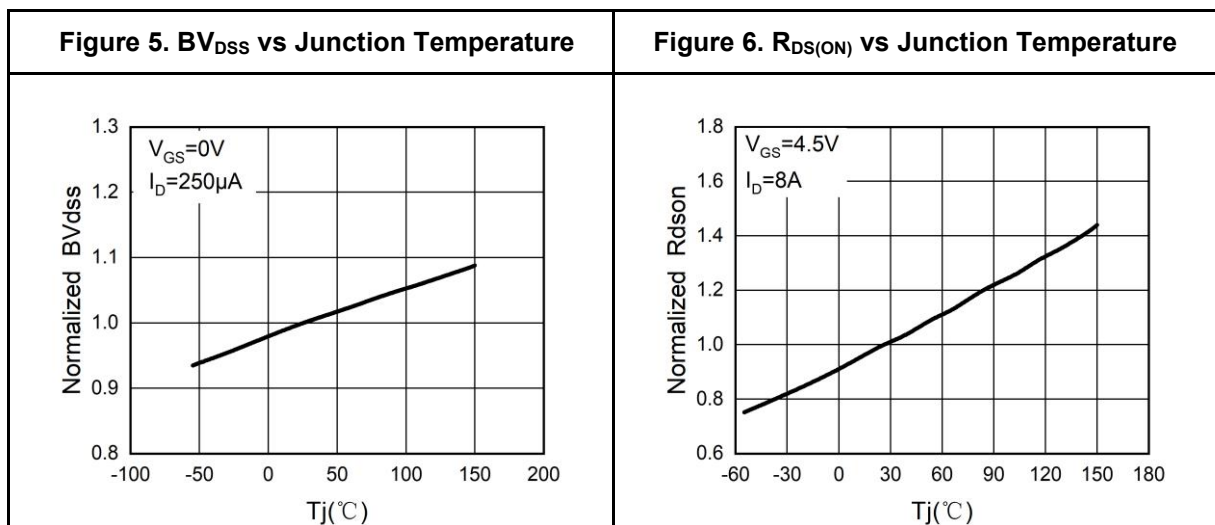
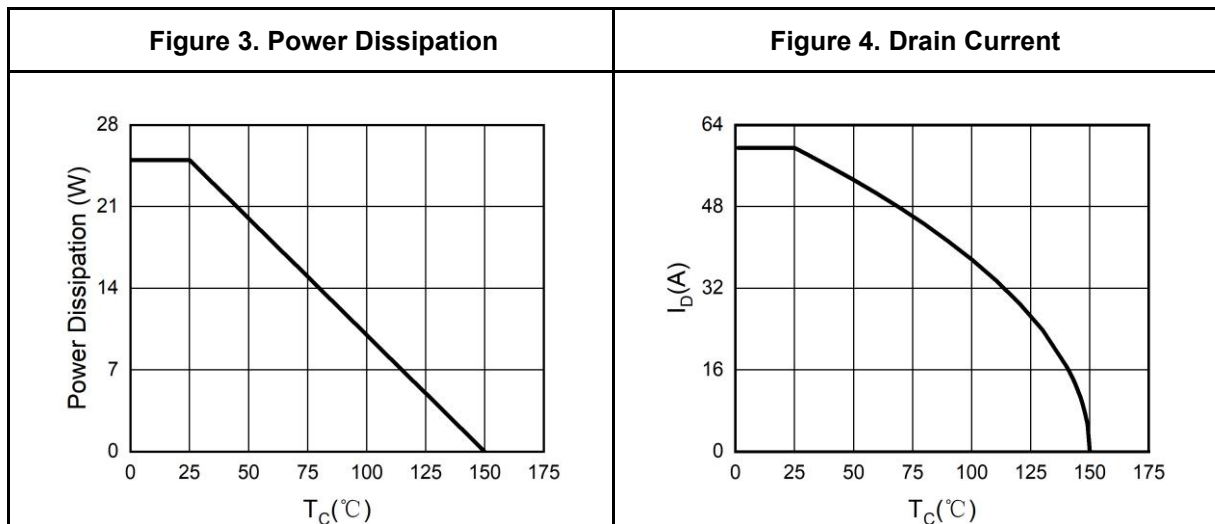
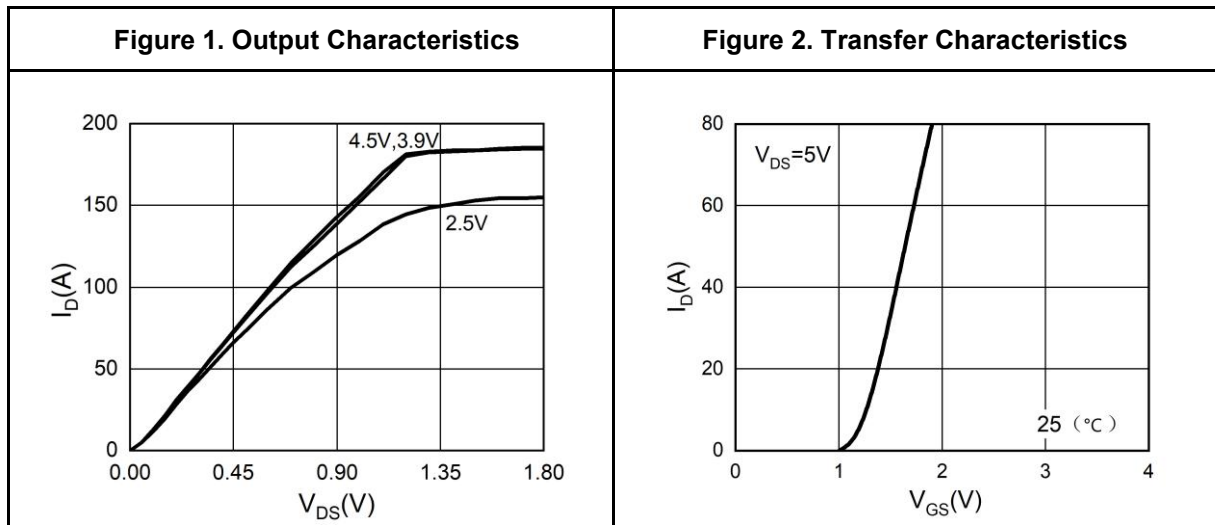
Notes 2.EAS condition: T_J=25°C, V_{DD}=10V, V_G=10V, R_g=25Ω, L=0.5mH.

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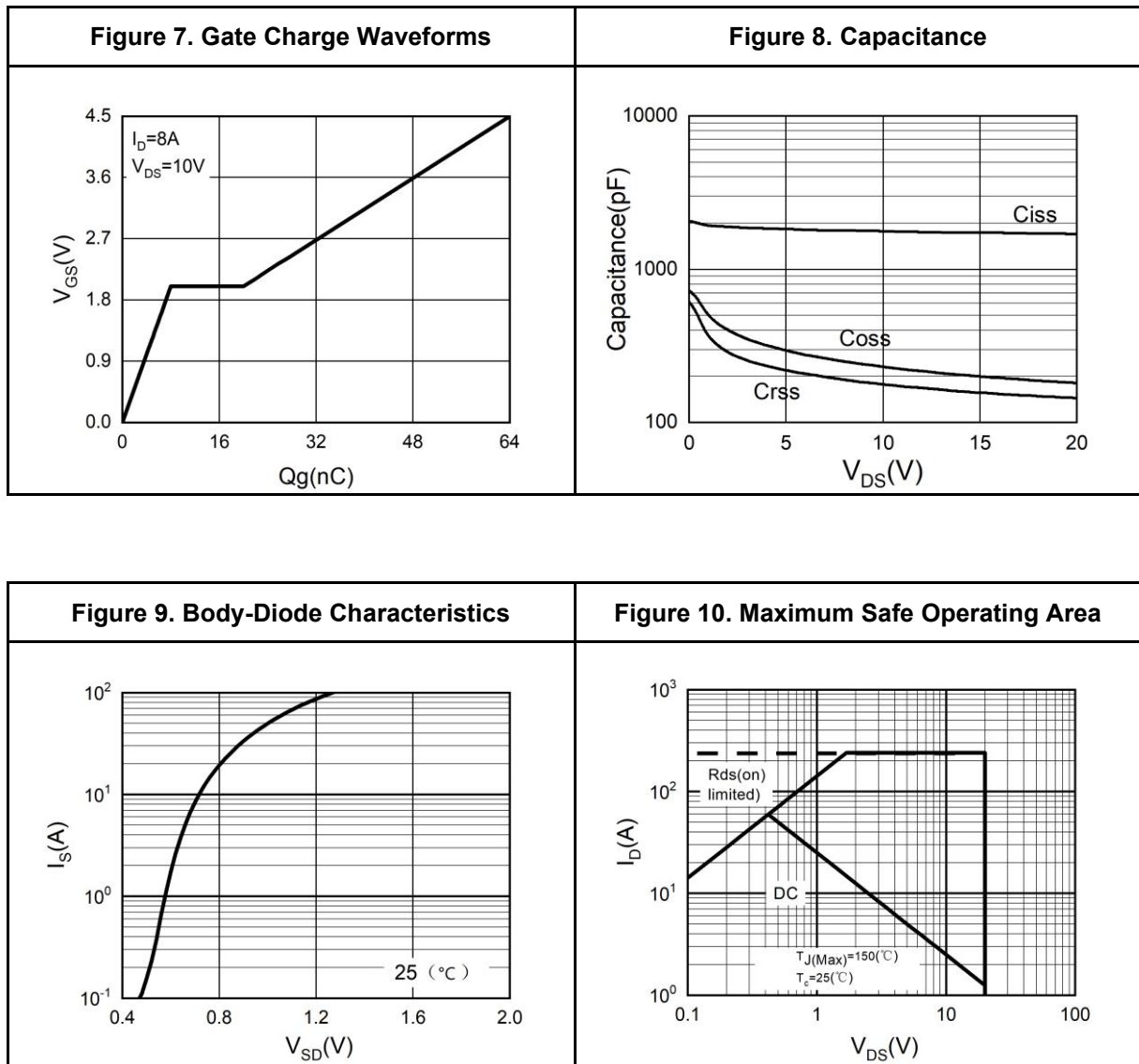
Typical Electrical And Thermal Characteristics (Curves)





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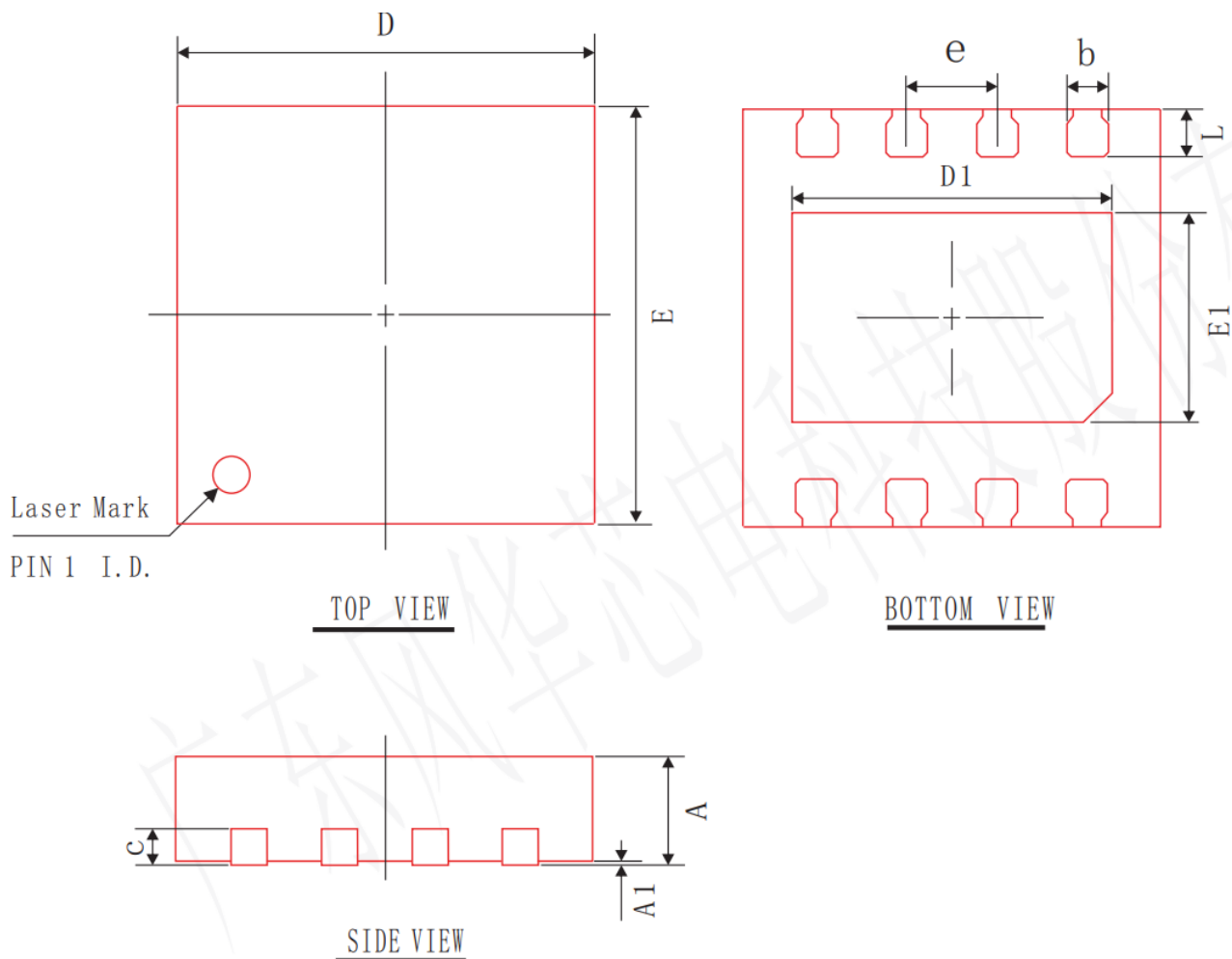
Typical Electrical And Thermal Characteristics (Curves)





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DFN3X3-8L Package Information



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
D	2.95	3.00	3.07
E	2.95	3.00	3.07
D1	2.25	2.30	2.35
E1	1.40	1.50	1.60
L	0.25	0.35	0.45
c	0.203 REF		
e	0.65 BSC		

其它厚度尺寸如下

A	0.55	0.60	0.65
A	0.50	0.55	0.60



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