



## 30V N-Channel Trench Power MOSFET

### General Description

The SJM30N060 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.

### Features

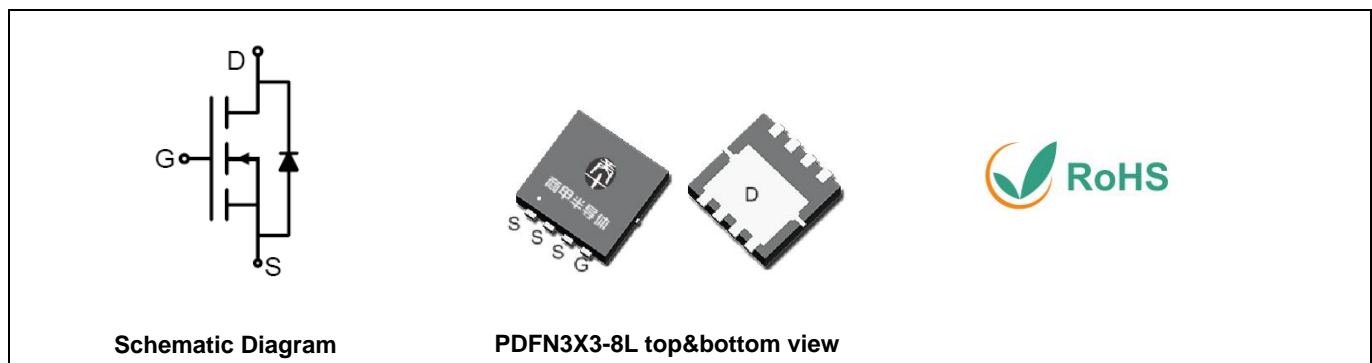
- Low Gate Charge
- High Power and current handling capability
- Lead free product is acquired

### Application

- PWM Applications
- Load Switch
- Power Management

### Key Performance Parametes

Parameter	Value	Unit
$V_{DS}$	30	V
$R_{DS(ON\_TYP)}$	6	m $\Omega$
$I_D$	50	A
$Q_G$	21.6	nC



### Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
SJM30N060	SJM30N060	PDFN3X3-8L	Tape	\	\	5000 Pcs

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

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage ( $V_{GS}=0\text{V}$ )	30	V
$V_{GS}$	Gate-Source Voltage ( $V_{DS}=0\text{V}$ )	$\pm 20$	V
$I_D$	Drain Current-Continuous( $T_C=25^{\circ}\text{C}$ )	50	A
	Drain Current-Continuous( $T_C=100^{\circ}\text{C}$ )	32	A
$I_{DM}$ (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	200	A
$P_D$	Maximum Power Dissipation( $T_C=25^{\circ}\text{C}$ )	30	W
	Maximum Power Dissipation( $T_C=100^{\circ}\text{C}$ )	12	W
$E_{AS}$	Avalanche energy (Note 2)	72	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		4.2	$^{\circ}\text{C/W}$



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**Table 3. Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =250μA	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V T <sub>J</sub> =25℃			1	μA
		V <sub>DS</sub> =30V, V <sub>GS</sub> =0V T <sub>J</sub> =125℃			100	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1		2.5	V
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =20A		25		S
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =20A T <sub>J</sub> =25℃		6	7.5	mΩ
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A T <sub>J</sub> =25℃		9.2	12.2	mΩ
Dynamic Characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHz		1062		pF
C <sub>oss</sub>	Output Capacitance			130		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			114		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1.0MHz		1.53		Ω
Switching Parameters						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =0.75Ω, R <sub>GEN</sub> =3Ω		6.4		nS
t <sub>r</sub>	Turn-on Rise Time			346		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			19.4		nS
t <sub>f</sub>	Turn-Off Fall Time			9.8		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =20A		21.2		nC
Q <sub>gs</sub>	Gate-Source Charge			2.32		nC
Q <sub>gd</sub>	Gate-Drain Charge			4.24		nC
Source-Drain Diode Characteristics						
I <sub>SD</sub>	Source-Drain Current (Body Diode)				50	A
V <sub>SD</sub>	Forward on Voltage (Note 3)	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =20A, dI/dt=500A/μs		20		ns
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>F</sub> =20A, dI/dt=500A/μs		11		nC

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

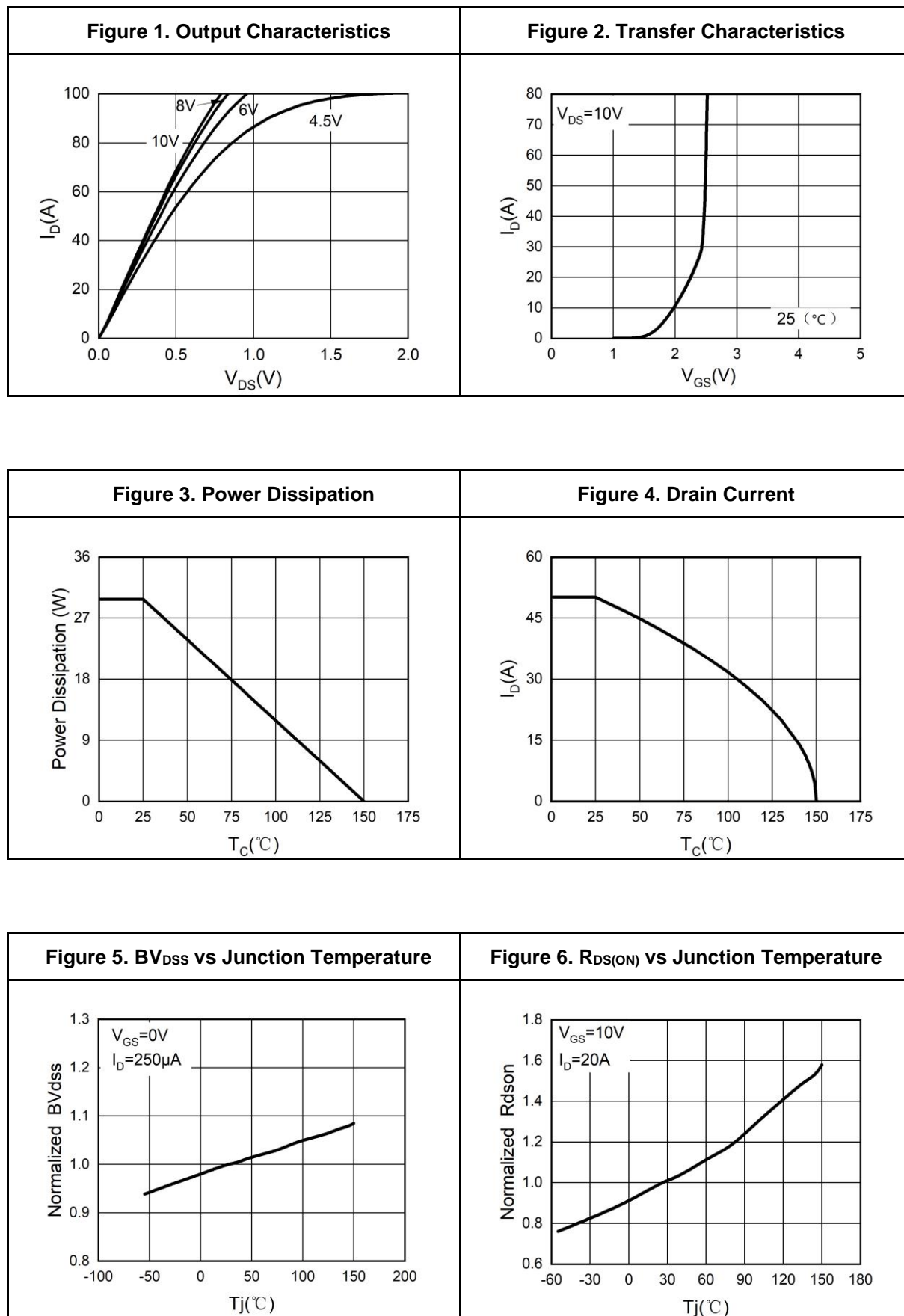
Notes 2.EAS condition:  $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_G=10V, R_g=25\Omega, L=0.5\text{mH}$ .

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.



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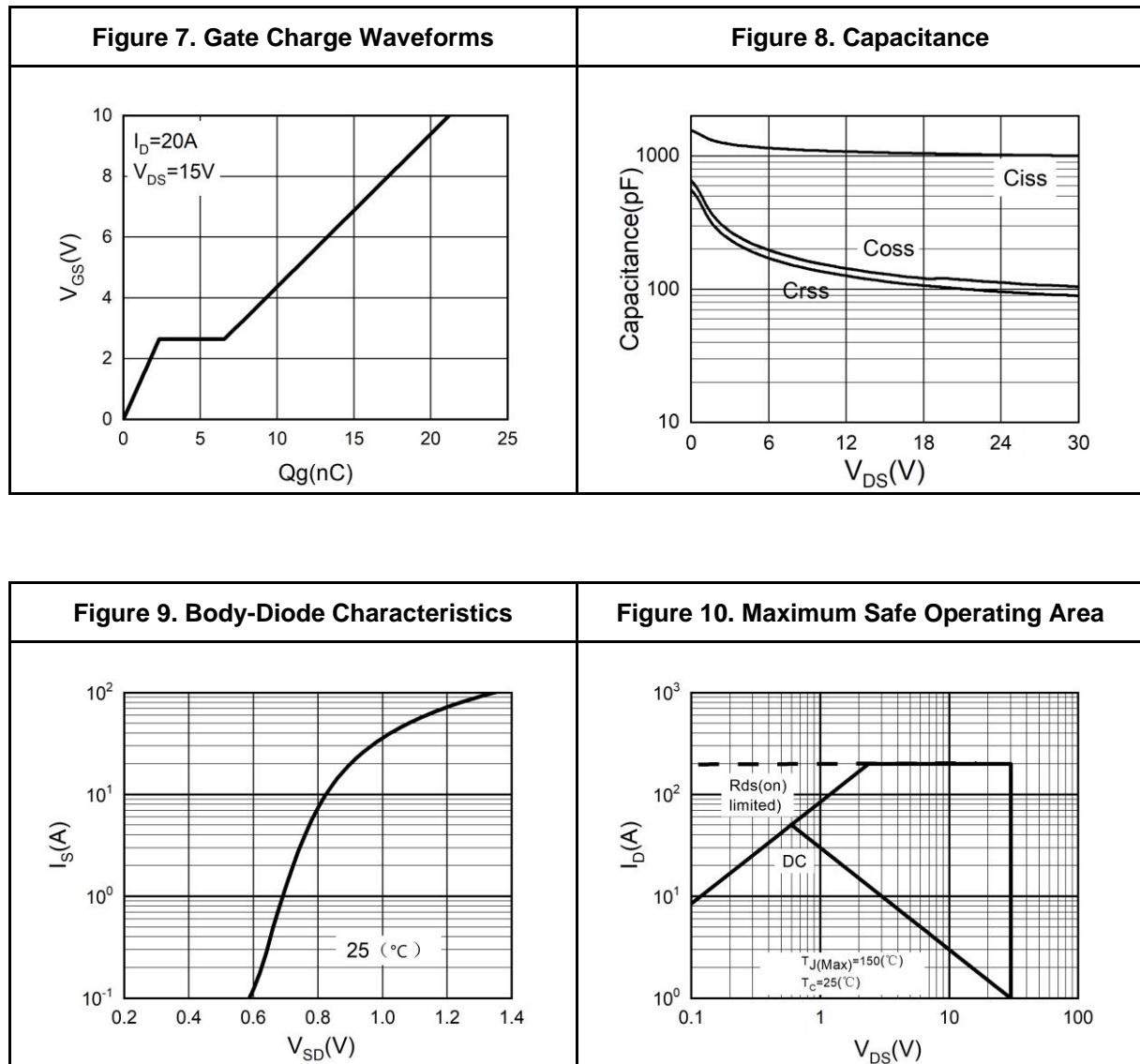
### Typical Electrical And Thermal Characteristics (Curves)





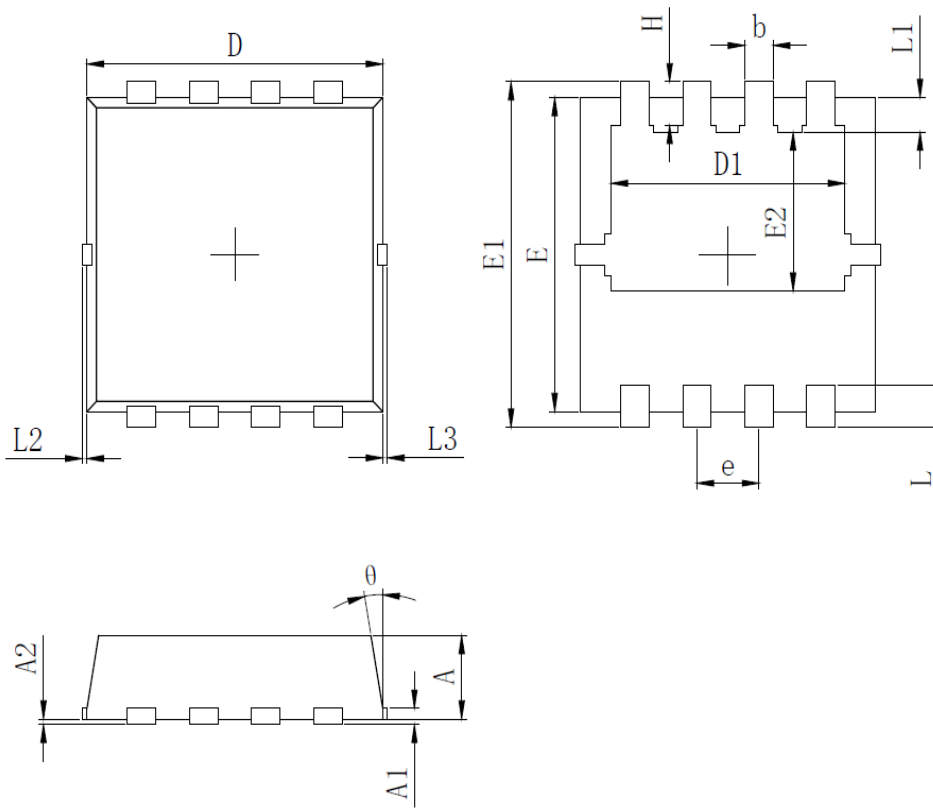
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### Typical Electrical And Thermal Characteristics (Curves)





PDFN3X3-8L Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0~0.100		
L3	0~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°



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