100V N-Channel Power MOSFET

DESCRIPTION

The JRM08N10uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Application

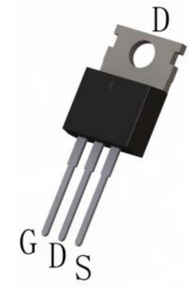
- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply

KEY CHARACTERISTICS

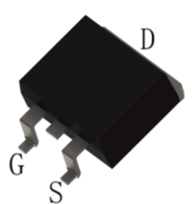
- V_{DS} = 100V,I_D = 110A
  $R_{DS(ON)}$ < 8mΩ @ V_{GS}=10V
- Special process technology for high ESD capability
- High density cell design for lower Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

100% UIS TESTED!

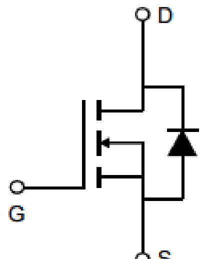
100% DVDS TESTED!



TO-220 Top View



TO-263 Top View



Schematic diagram

Package Marking And Ordering Information

Device Marking	Ordering Codes	Package	Product Code	Packing
M08N10	JRM08N10-P	TO-220	JRM08N10	Tube
M08N10	JRM08N10-B	TO-263	JRM08N10	Reel

Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	110	A
Drain Current-Pulsed (Note 1)	I_{DM}	440	A
Maximum Power Dissipation(Tc=25℃)	P_D	211	W
Single pulse avalanche energy(Note 2)	E_{AS}	1100	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.71	℃/W

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Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,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	2	3	4	V
Drain-Source On-State Resistance(Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=55A	-	7.5	8	mΩ
Forward Transconductance	g_{FS}	V_{DS}=25V,I_D=57A	90	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1.0MHz	-	6550	-	pF
Output Capacitance	C_{oss}		-	370	-	pF
Reverse Transfer Capacitance	C_{rss}		-	340	-	pF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V, ID=40A, V_{GS}=10V,R_{GEN}=3Ω	-	25	-	nS
Turn-on Rise Time	t_r		-	24	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	90	-	nS
Turn-Off Fall Time	t_f			40	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=30A V_{GS}=10V	-	162	-	nC
Gate-Source Charge	Q_{gs}		-	30	-	nC
Gate-Drain Charge	Q_{gd}		-	65	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=40A	-	-	1.2	V

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. E_{AS} condition :T_j=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

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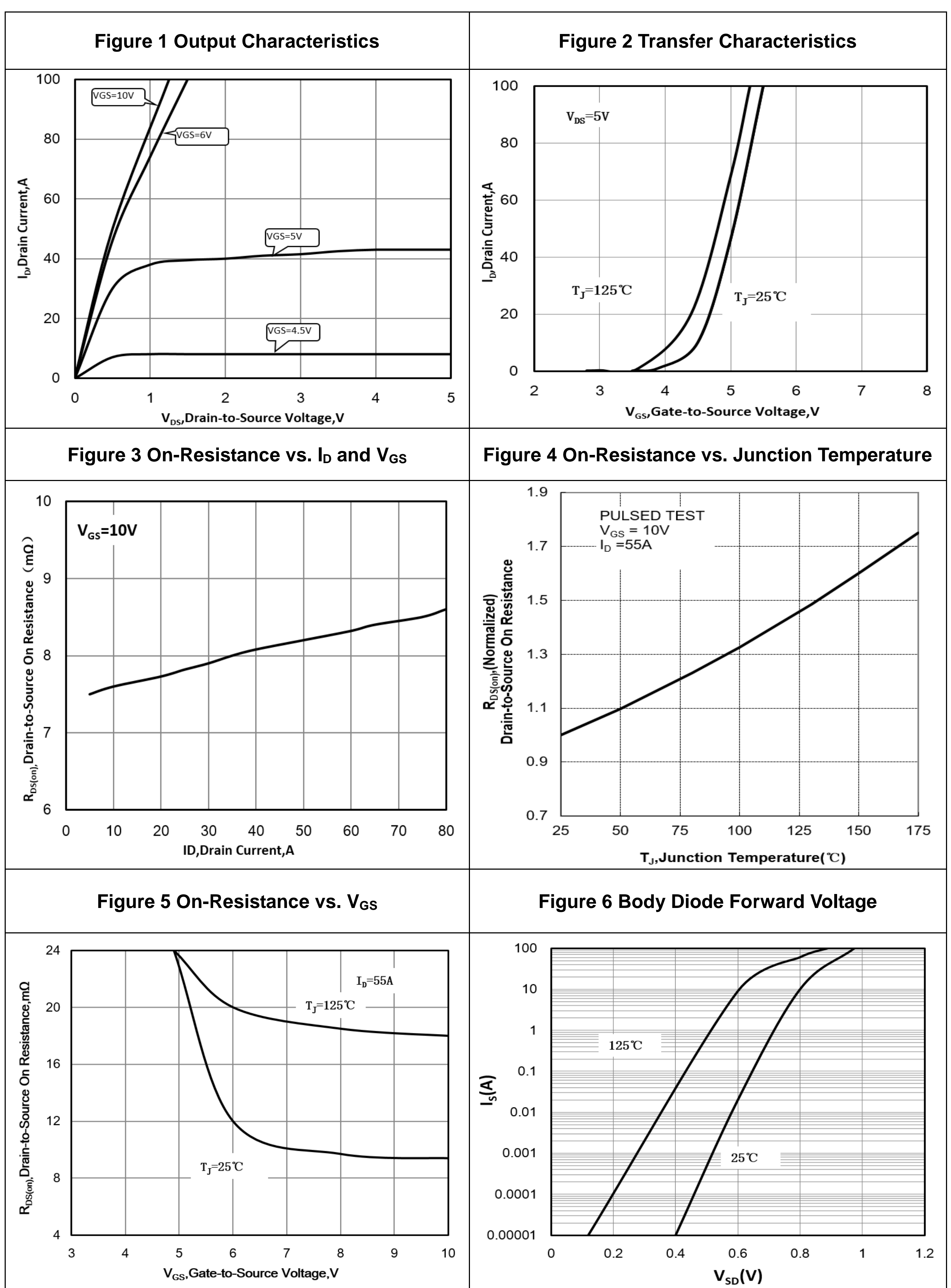
Characteristics Curves



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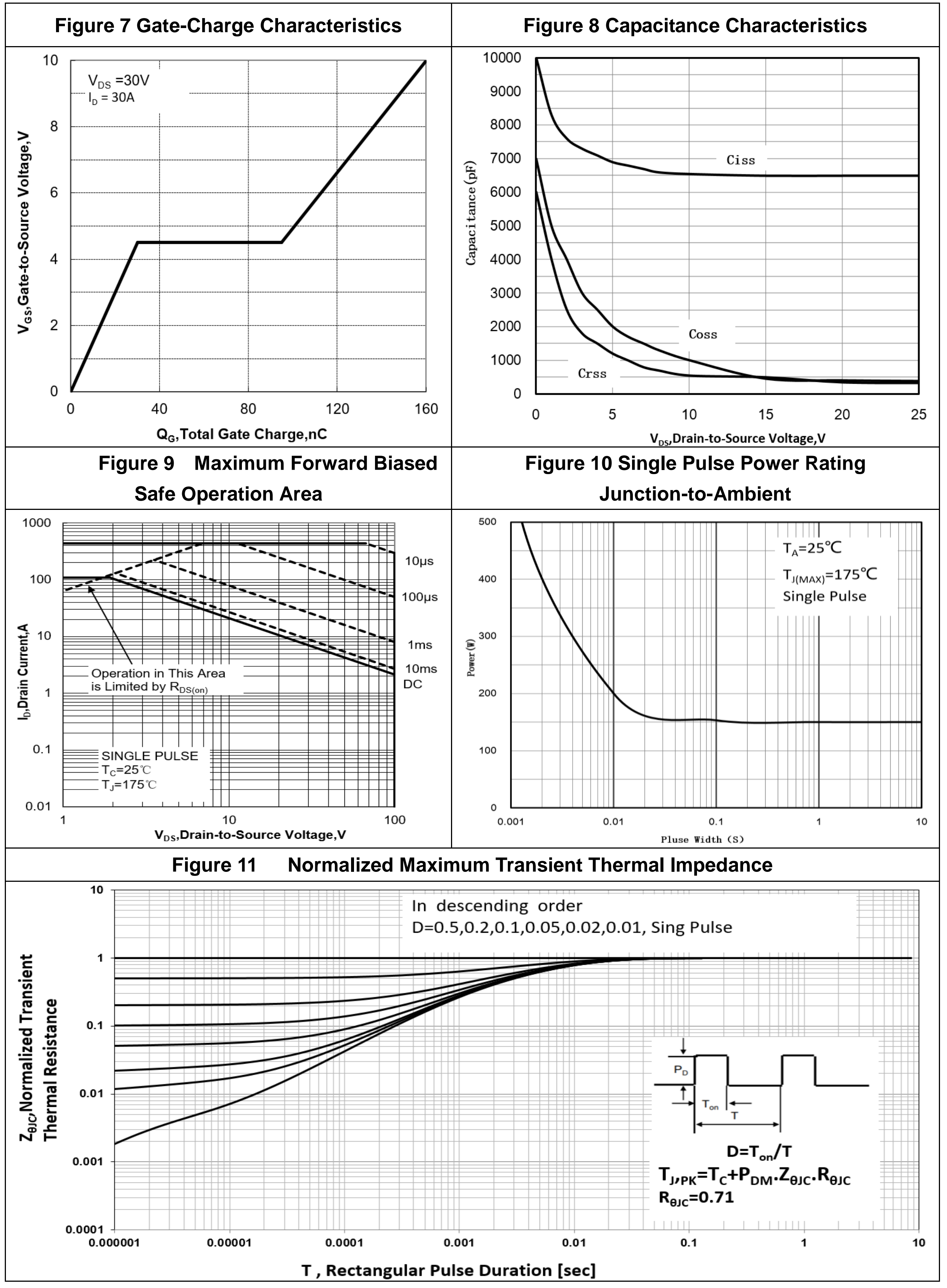

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Test Circuit and Waveform

Gate Charge Test Circuit	Gate Charge Test Waveform
Resistive Switching Test Circuit	Resistive Switching Test Waveforms
Unclamped Inductive Switching (UIS) Test Circuit	Unclamped Inductive Switching (UIS) Test Waveforms
Diode Recovery Test Circuit	Diode Recovery Test Waveforms

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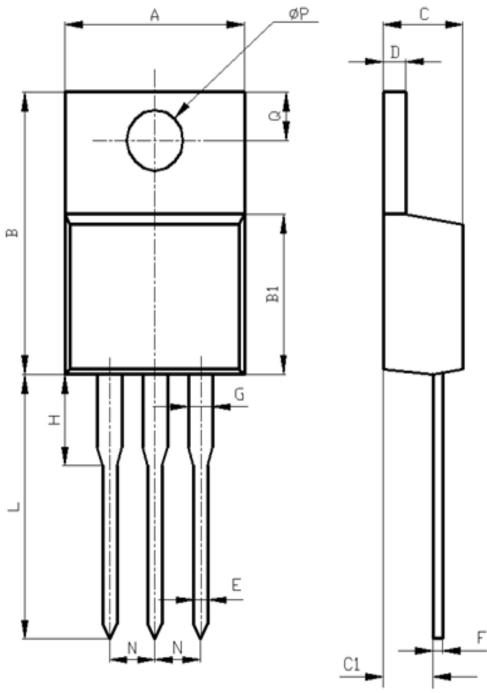
Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
ΦP	3.50	3.90

TO-220 Package

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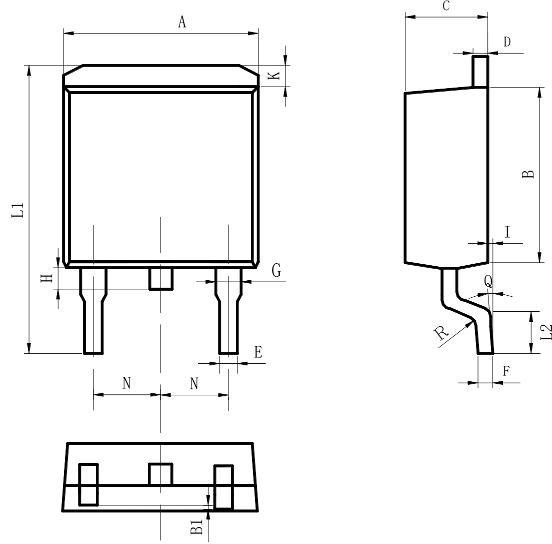

Items	Values(mm)	
	MIN	MAX
A	9.80	10.40
B	8.90	9.50
B1	0	0.10
C	4.40	4.80
D	1.16	1.37
E	0.70	0.95
F	0.30	0.60
G	1.07	1.47
H	1.30	1.80
K	0.95	1.37
L1	14.50	16.50
L2	1.60	2.30
I	0	0.2
Q	0°	8°
R	0.4	
N	2.39	2.69

TO-263 Package

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NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shanghai Jerrett reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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