

650V N沟道增强型功率场效应管

650V N-CHANNEL ENHANCEMENT MODE POWER MOSFET  
7A/650V

**Discription**

JXM7N65D This N-Channel enhancement mode power MOSFET is produced using DP MOS technology. It achieves low conduction loss and switching losses. It leads the design engineers to their power converters with high efficiency, high power density, and superior thermal behavior. Furthermore, it's universal applicable. For example, it is suitable for hard and soft switching topologies, lights, adapters, etc..

**Features**

- $V_{DS}=650V, I_D=7A$
- $R_{DS(on)}(typ.)=0.55\Omega@V_{GS}=10V$
- New revolutionary high voltage technology
- Ultra low gate charge
- High peak current capability

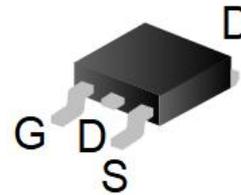
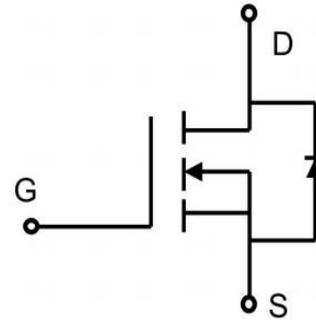
**100% UIS TESTED!**  
**100% ΔVds TESTED!**

**Applications**

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)

**Note**

- Products made by JUXIN semiconductor



TO-252

**ORDERING INFORMATION**

Part No.	Package	Marking	Material	Packing
JXM7N65D	TO-252	JXM7N65D	Pb free	Tape and Reel

**ABSOLUTE MAXIMUM RATINGS** ( $T_J=25^\circ C$  unless otherwise noted)

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	650	V
Gate-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	7.0
		$T_C=100^\circ C$	4.4
Drain Current Pulsed (Note 1)	$I_{DM}$	28	A
Power Dissipation ( $T_C=25^\circ C$ )	PD	-Derate	60
		above $25^\circ C$	0.48
Single Pulsed Avalanche Energy (Note 2)	$E_{AS}$	261	mJ
Reverse Diode dv/dt, $V_{DS}\leq 400V$ (Note 3)	dv/dt	15	V/ns
Drain Source Voltage Slope, $V_{DS}\leq 480V$	dVds/dt	50	V/ns
Operation Junction Temperature Range	$T_J$	-55 to +150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ C$

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.08	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ C/W$



**ELECTRICAL CHARACTERISTICS**

**Off Characteristics**

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V$	--	--	1.0	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=+30V, V_{DS}=0V$	--	--	100	nA
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=-30V, V_{DS}=0V$	--	--	-100	nA

**On Characteristics**

Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	--	4.0	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$	--	0.55	0.64	$\Omega$

**Dynamic Characteristics**

Input Capacitance	$C_{iss}$	$V_{DS}=100V, V_{GS}=0V, f=1MHz$	--	423	--	pF
Output Capacitance	$C_{oss}$		--	27	--	
Reverse Transfer Capacitance	$C_{rss}$		--	1.9	--	

**Switching Characteristics**

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=325V, V_{GS}=10V, R_G=24\Omega, I_D=7A$ (Note 4,5)	--	10	--	ns
Turn-on Rise Time	$t_r$		--	29	--	
Turn-off Delay Time	$t_{d(off)}$		--	44	--	
Turn-off Fall Time	$t_f$		--	26	--	
Total Gate Charge	$Q_g$	$V_{DD}=520V, V_{GS}=0 \text{ to } 10V, I_D=7A$ (Note 4,5)	--	16	--	nC
Gate-Source Charge	$Q_{gs}$		--	3.6	--	
Gate-Drain Charge	$Q_{gd}$		--	8.3	--	

**SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS**

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	$I_S$	Integral Reverse P-N Junction Diode in the MOSFET	--	--	7	A
Pulsed Source Current	$I_{SM}$		--	--	28	
Diode Forward Voltage	$V_{SD}$	$I_S=7A, V_{GS}=0V$	--	--	1.4	V
Reverse Recovery Time	$T_{rr}$	$I=7A, V_{GS}=0V, di/dt=100A/\mu S$	--	346	--	ns
Reverse Recovery Charge	$Q_{rr}$		--	2.5	--	$\mu C$

- 注:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
  2.  $E_{AS}$  condition: Starting  $T_J=25^\circ C, V_{DD}=100V, V_G=10V, R_G=25ohm, L=79mH, I_{AS}=2.4A$ .
  3.  $I_{SD} \leq I_D, di/dt \leq 200A/\mu s, V_{DD} \leq BV_{DSS},$  Starting  $T_J=25^\circ C$ .
  4. Pulse Test: Pulse Width $\leq 300\mu s,$  Duty Cycles $\leq 2\%$ .
  5. Essentially Independent of Operating Temperature Typical Characteristics.

典型特性曲线

Fig.1: Output Characteristics

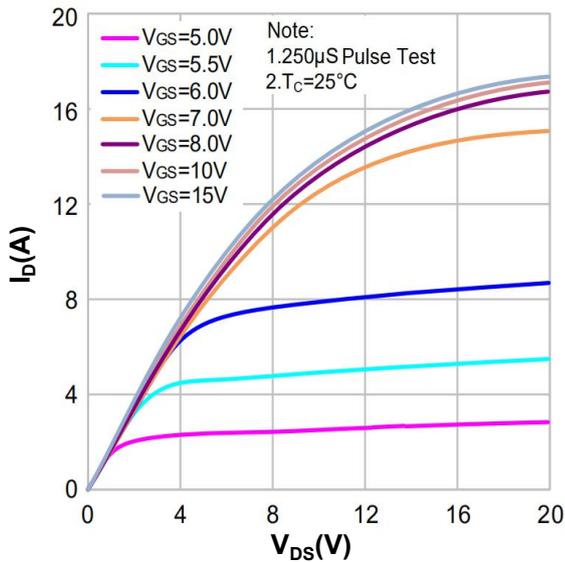


Fig.2: Typical Transfer Characteristics

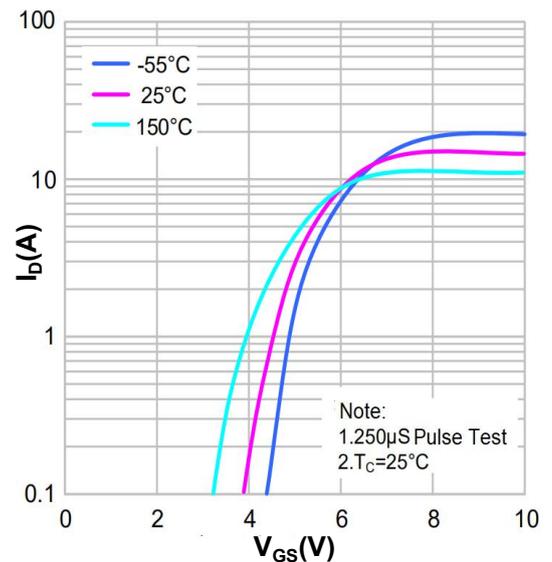


Fig.3: Typical On-resistance vs. Drain Current

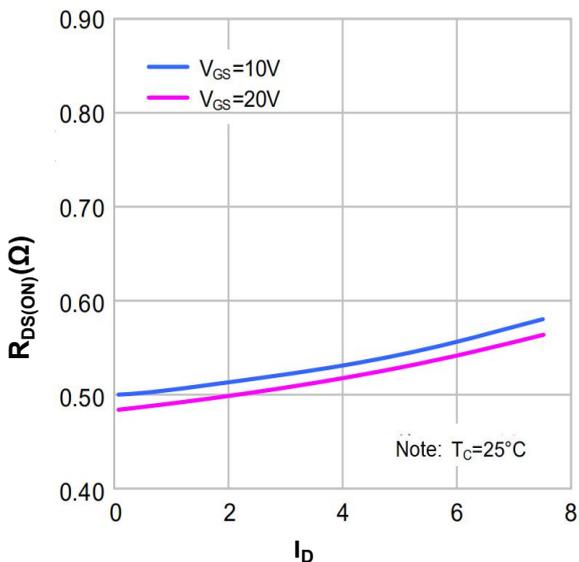


Fig.4: Typical Body Diode Forward Voltage

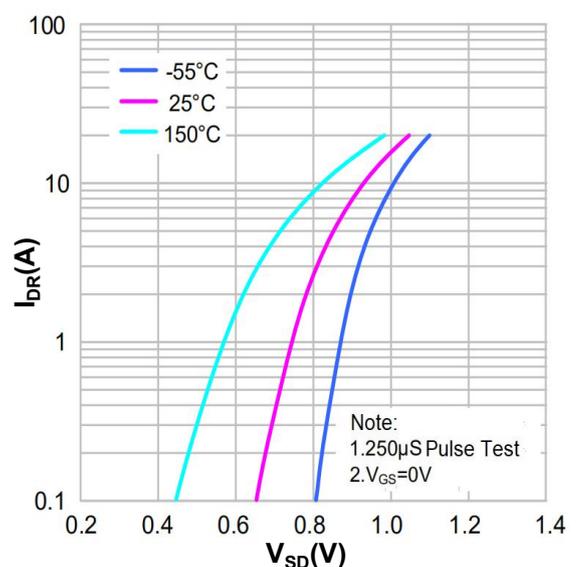


Fig.5: Typical Capacitance Characteristics

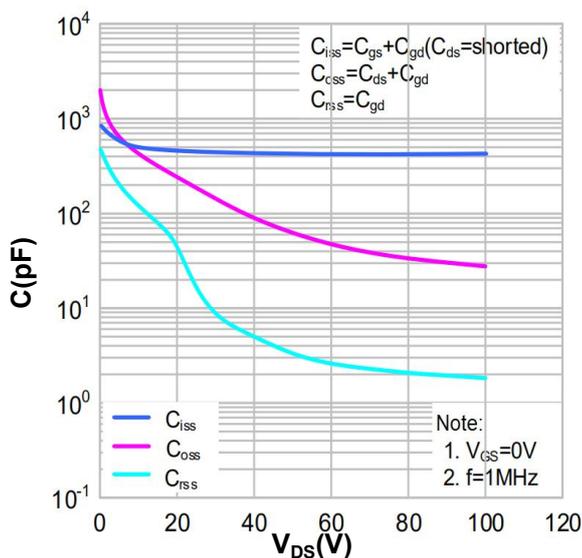
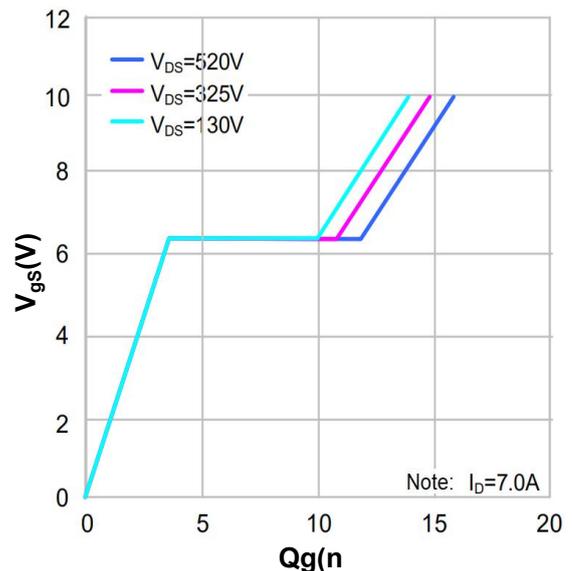


Fig.6: Typical Gate Charge Characteristics



典型特性曲线

Fig.7: Normalized Breakdown Voltage vs. Junction Temperature

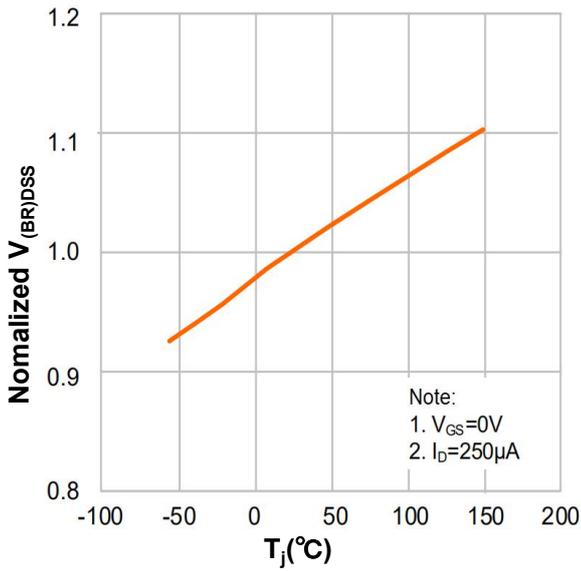


Fig.8: Normalized on Resistance vs. Junction Temperature

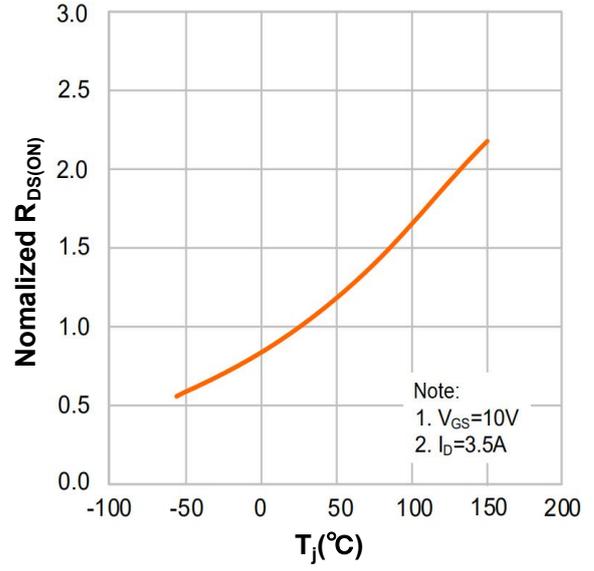
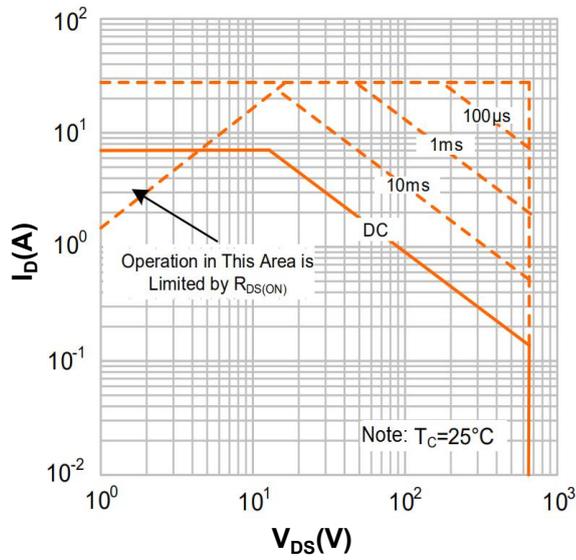
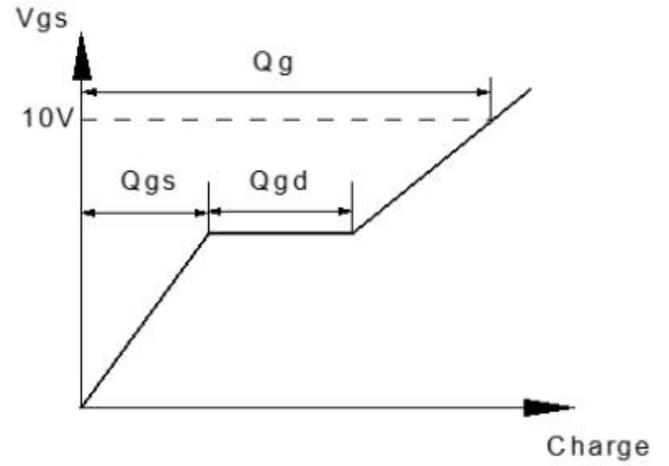
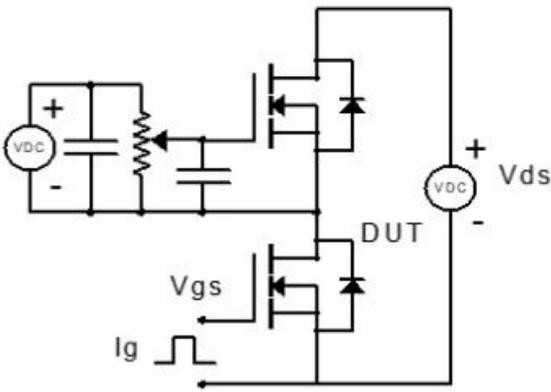


Fig.9: Maximum Safe Operating Area

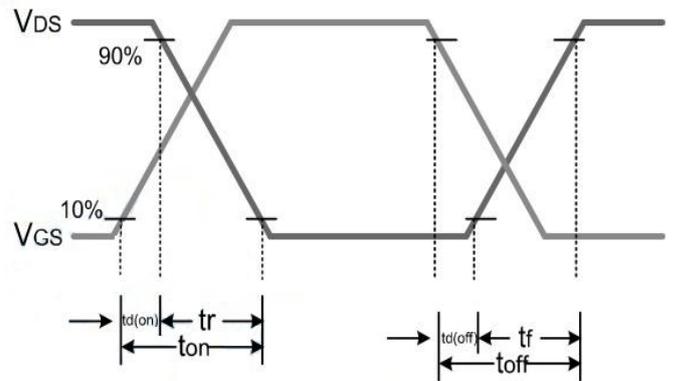
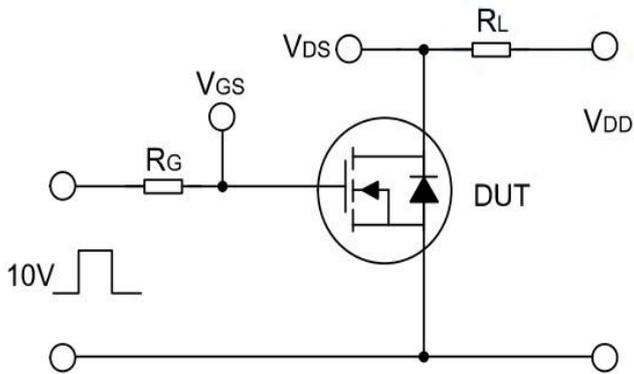


Test Circuit

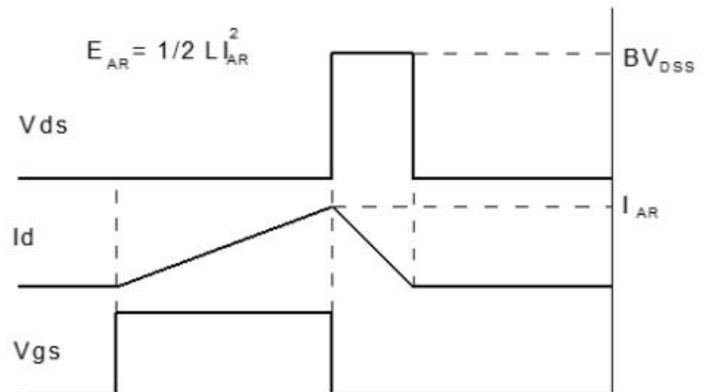
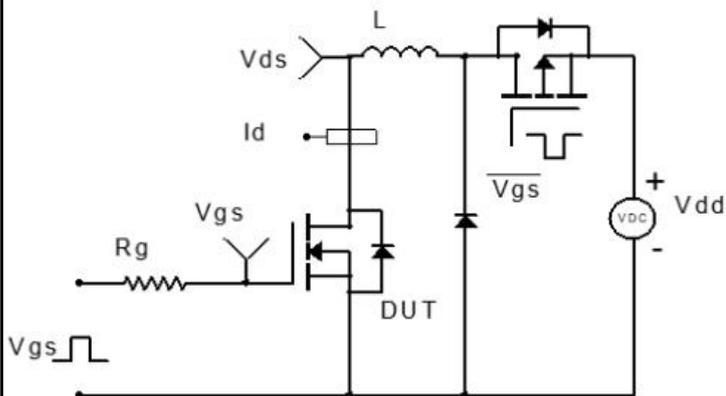
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



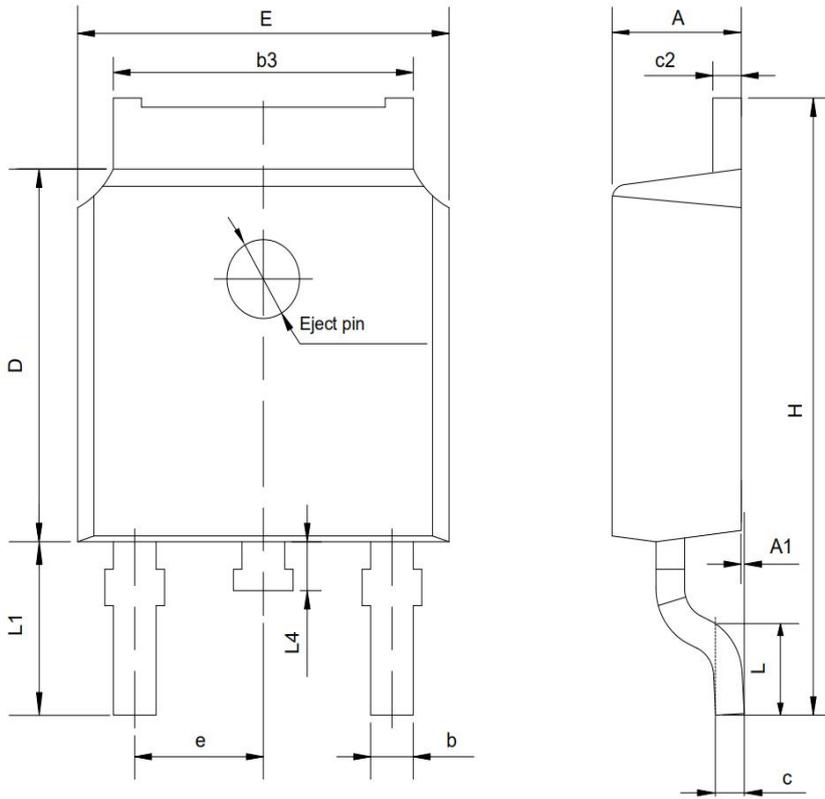
Unclamped Inductive Switching Test Circuit & Waveform



Package Dimensions of TO-252

Package Dimensions of TO-252

Unit:mm



SYMBOL	MILIMETER	
	MIN	MAX
A	2.10	2.50
A1	0.00	0.13
b	0.66	0.89
b3	5.10	5.55
c	0.40	0.65
c2	0.40	0.65
D	5.80	6.40
E	6.30	6.90
e	2.286BSC	
H	9.50	10.70
L	1.40	1.70
L1	2.70REF	
L4	0.60	1.00

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