

650V N沟道增强型超结功率场效应管 **650V N-CHANNEL Super-Junction POWER MOSFET**
7A/650V

Discription

JXM65R640D This N-Channel enhancement mode power MOSFET is produced using advanced Super Junction 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, i.e., suitable for hard and soft switching topologies.

Features

- $V_{DS}=650V, I_D=7A$
- $R_{DS(on) (max.)}=640 m\Omega @ V_{GS}=10V$
- New revolutionary high voltage technology
- Ultra low gate charge
- High peak current capability

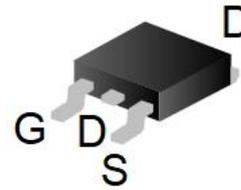
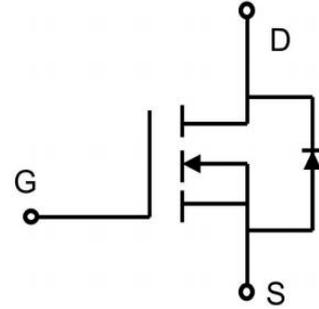
100% UIS TESTED!
100% ΔVds TESTED!

Applications

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

Note

- Products made by JUXIN semiconductor



TO-252

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
JXM65R640D	TO-252	JXM65R640D	Pb free	Tape and Reel

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	650	V
Gate-Source Voltage	V _{GS}	±20	V
Gate-Source Voltage (V _{DS} =0V), AC (f>1HZ)	V _{GS}	±30	V
Continuous Drain Current	I _D	T _C =25°C	7
		T _C =100°C	4.4
Drain Current Pulsed (Note 1)	I _{DM}	28	A
Power Dissipation (T _C =25°C) Derate above 25°C	P _D	48	W
		0.38	W/°C
Single Pulsed Avalanche Energy (Note 2)	E _{AS}	90	mJ
Reverse Diode dv/dt, V _{DS} ≤480V (Note 3)	dv/dt	15	V/ns
Drain Source Voltage Slope, V _{DS} ≤480V	dVds/dt	50	V/ns
Operation Junction Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.08	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°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}	$V_{DS}=650V, V_{GS}=0V, T_J = 25^\circ C$	--	--	1.0	μA
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

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	3.0	4.0	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$	--	600	640	m Ω
Gate resistance	Rg	f=1MHz	--	4.9	--	Ω

Dynamic Characteristics

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
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

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=325V, V_{GS}=10V, R_G=25\Omega$ $I_D=3.5A$ (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	$V_{DD}=520V, V_{GS}=0$ to 10V, $I_D=3.5A$ (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}	$I_S=7A, V_{GS}=0V$	--	0.9	1.4	V
Reverse Recovery Time	Trr	$I_S=7A, V_{GS}=0V, di/dt=100A/\mu S$	--	346	--	ns
Reverse Recovery Charge	Qrr		--	2.5	--	μC

注:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting $T_J=25^\circ C, V_{DD}=50V, V_G=10V, R_G=25\Omega$.
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 Cycle $\leq 2\%$.
5. Essentially Independent of Operating Temperature Typical Characteristics.

典型特性曲线

Fig.1: Output Characteristics

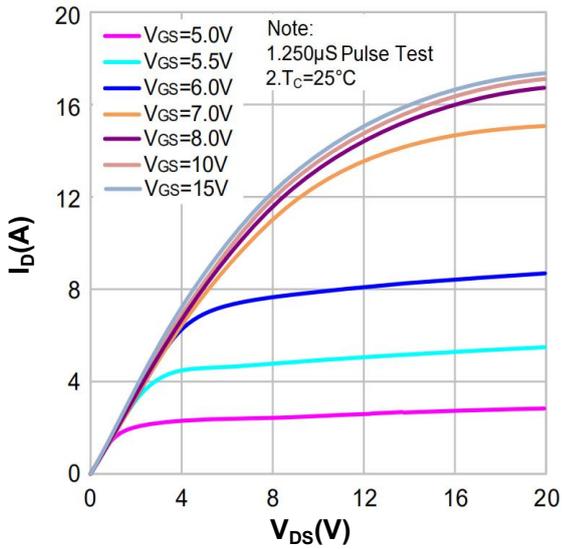


Fig.2: Typical Transfer Characteristics

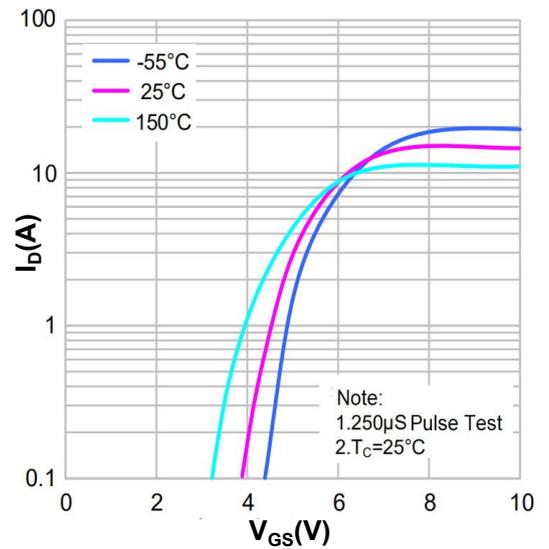


Fig.3: Typical On-resistance vs. Drain Current

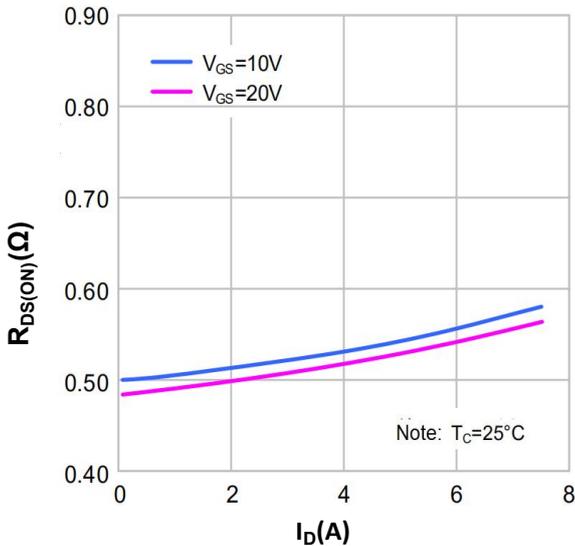


Fig.4: Typical Body Diode Forward Voltage

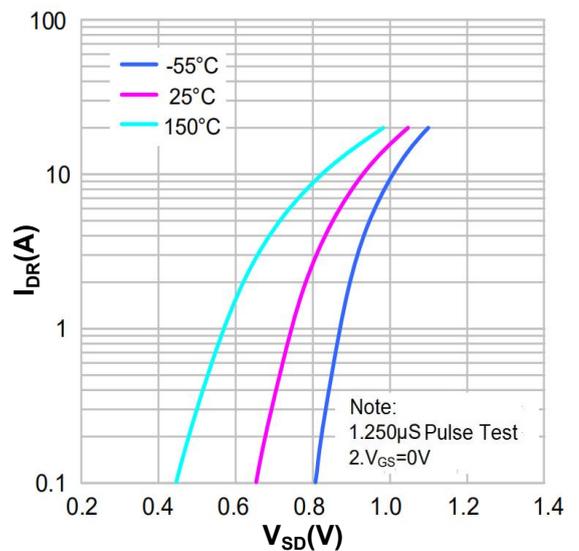


Fig.5: Typical Capacitance Characteristics

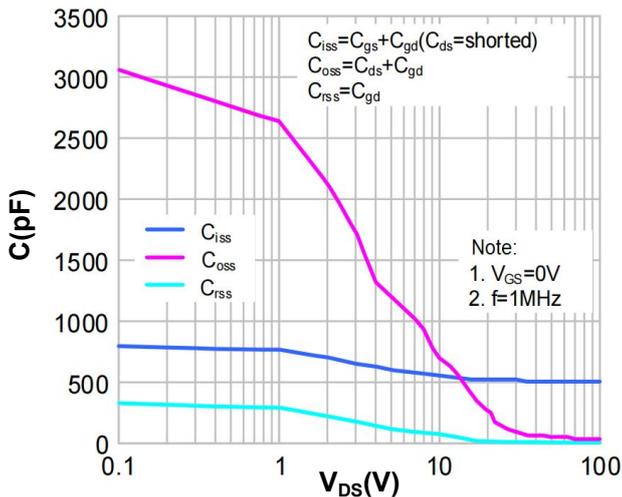
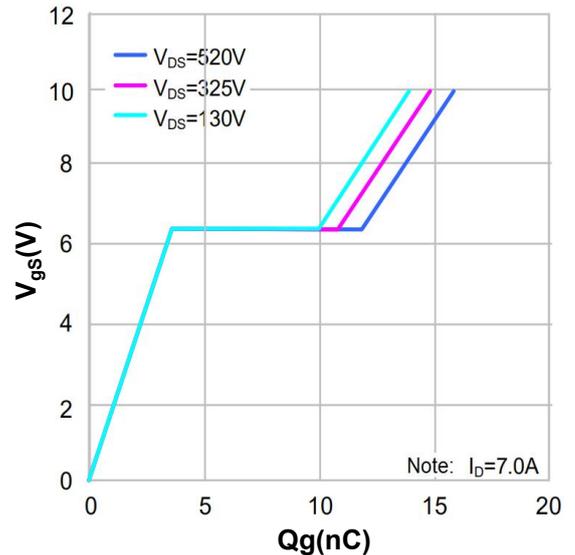


Fig.6: Typical Gate Charge Characteristics



The curve above is for reference only.

典型特性曲线

Fig.7: Normalized Breakdown Voltage vs. Junction Temperature

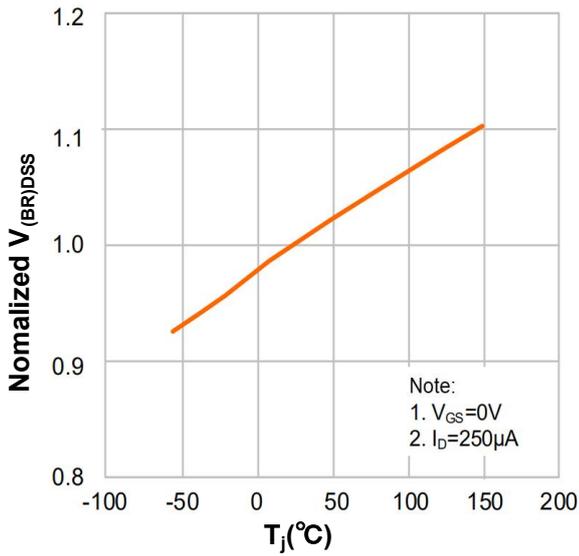


Fig.8: Normalized on Resistance vs. Junction Temperature

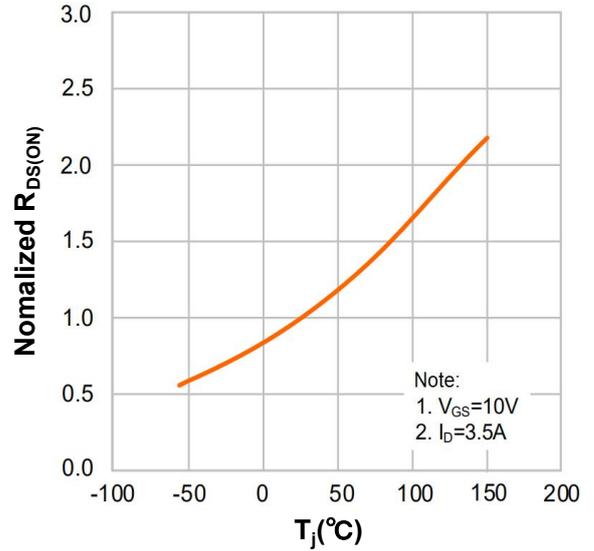
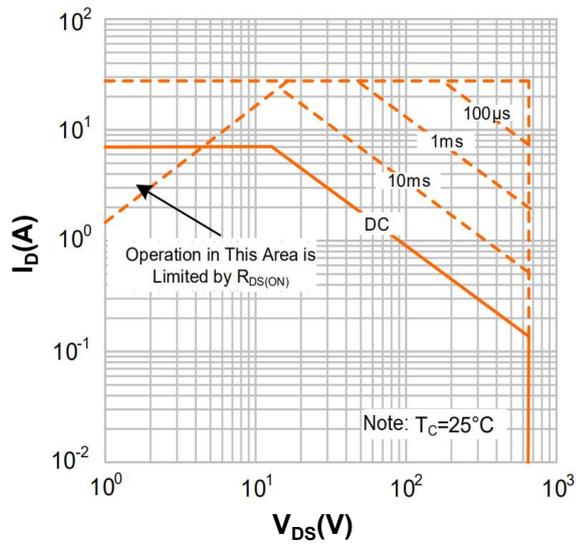


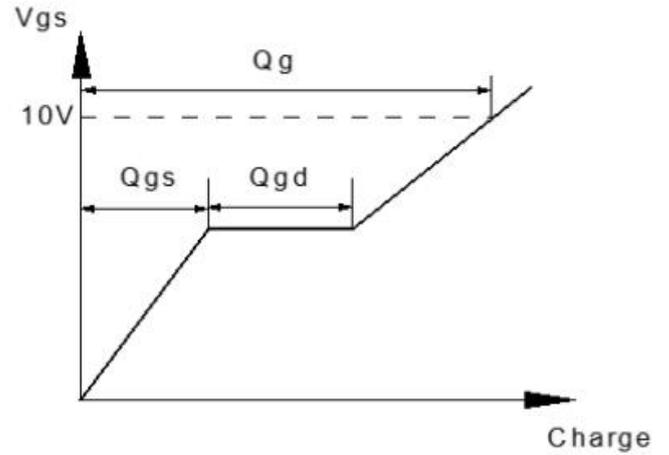
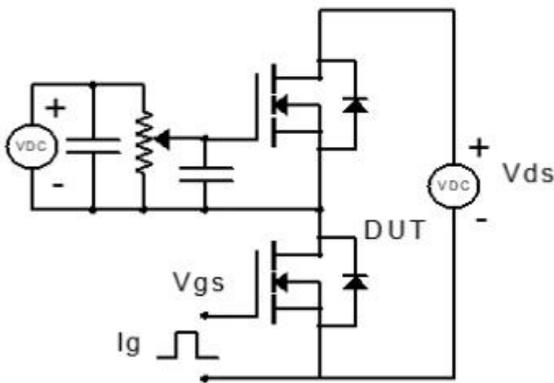
Fig.9: Maximum Safe Operating Area



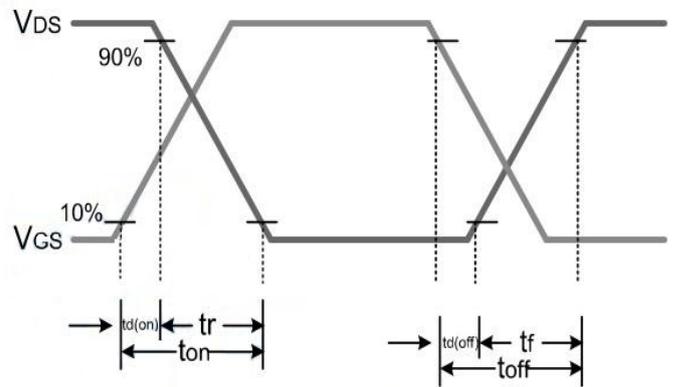
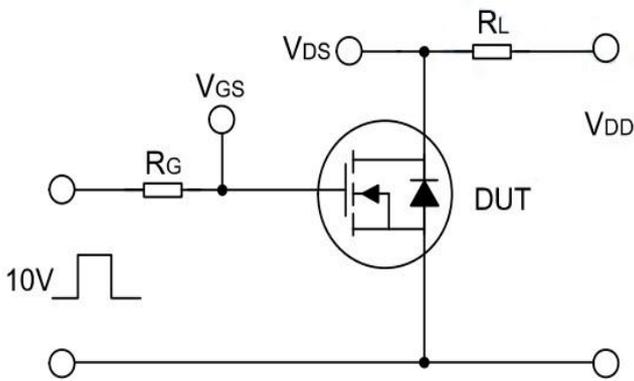
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Test Circuit

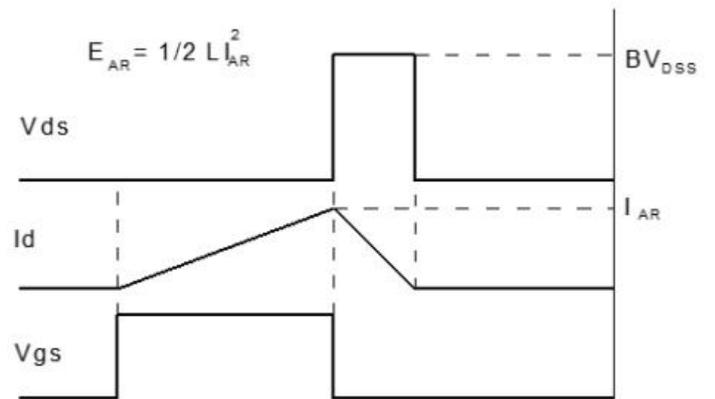
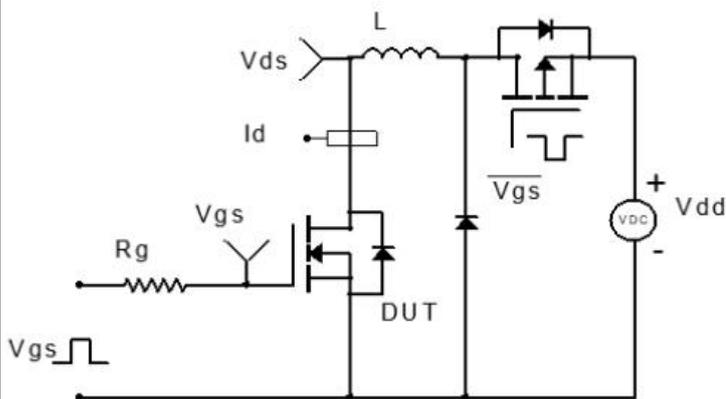
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



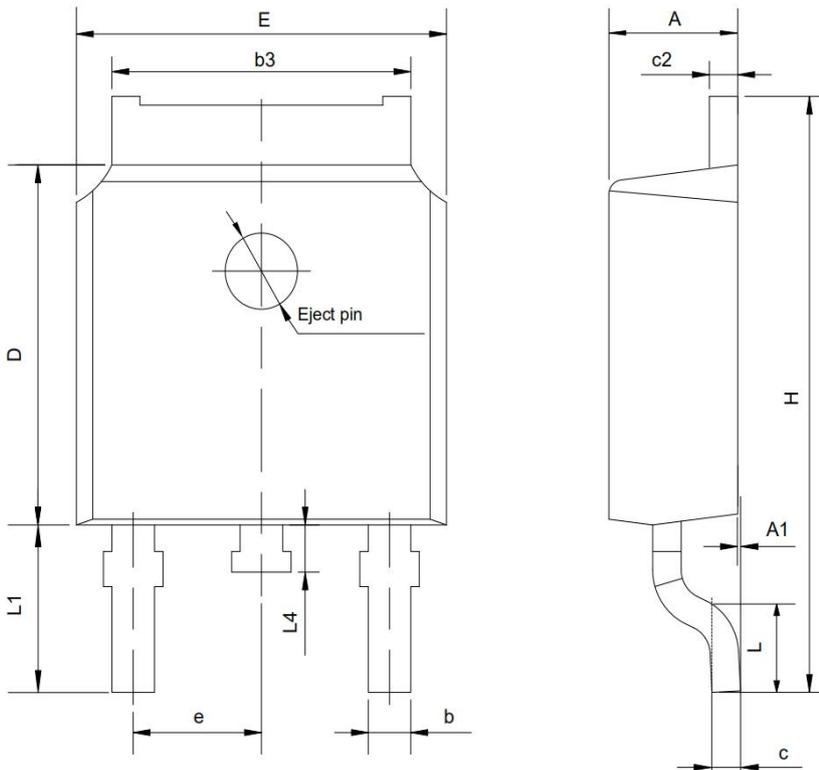
Unclamped Inductive Switching Test Circuit & Waveform



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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