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 Juction 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 mΩ@V_{GS}=10V
- New revolutionary high voltage technology
- Ultra low gate charge
- High peak current capability

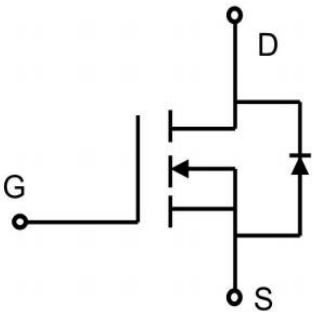
100% UIS TESTED!
100% ΔVds TESTED!

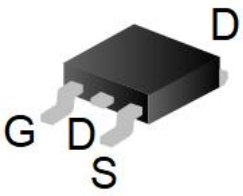
Applications

- 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℃ unless otherwise noted）

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltagee(V_{GS}=0V）		V_{DS}	650	V
Gate-Source Voltagee		V_{GS}	±20	V
Gate-Source Voltagee(V_{DS}=0V), AC(f>1HZ)		V_{GS}	±30	V
Continuous Drain Current	T_C=25℃	I_D	7	A
	T_C=100°C		4.4	
Drain Current Pulsed(Note 1)		I_{DM}	28	A
Power Dissipation（T_C=25°C）		P_D	48	W
Derate above 25°C			0.38	W/℃
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	℃
Storage Temperature Range		T_{STG}	-55 to+150	℃

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=250uA	650	--	--	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=650V， V_{GS}=0V,T_J = 25℃	--	--	1.0	uA
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=250uA	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	mΩ
Gate resistance	Rg	f=1MHz	--	4.9	--	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{DS}=100V, V_{GS}=0V, f=1MHz	--	423	--	pF
Output Capacitance	C_{0ss}		--	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=25Ω 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	VDD=520V, VGS=0 to 10V, ID=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, dIF/dt=100A/μS	--	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℃, V_{DD}=50V, V_G=10V, R_G=25ohm.
3. I_{SD}≤I_D, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DSS}, Starting T_J =25℃.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.
5. Essentially Independent of Operating Temperature Typical Characteristics.

典型特性曲线

Fig.1: Output Characteristics

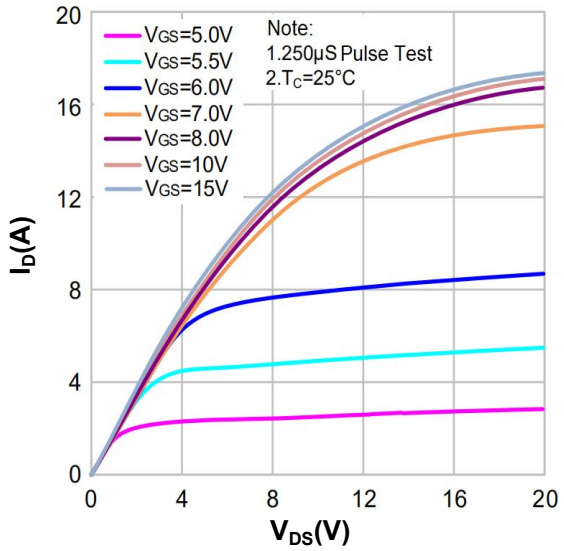


Fig.2: Typical Transfer Characteristics

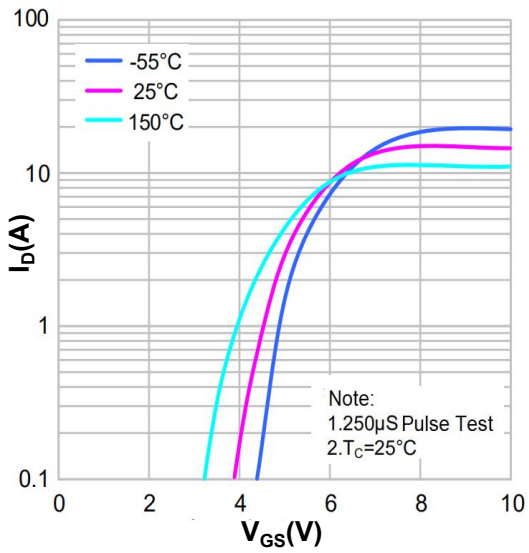


Fig.3: Typical On-resistance vs. Drain Current

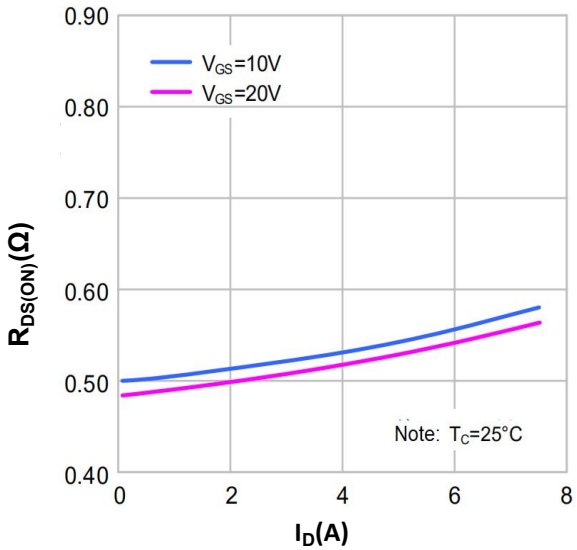


Fig.4: Typical Body Diode Forward Voltage

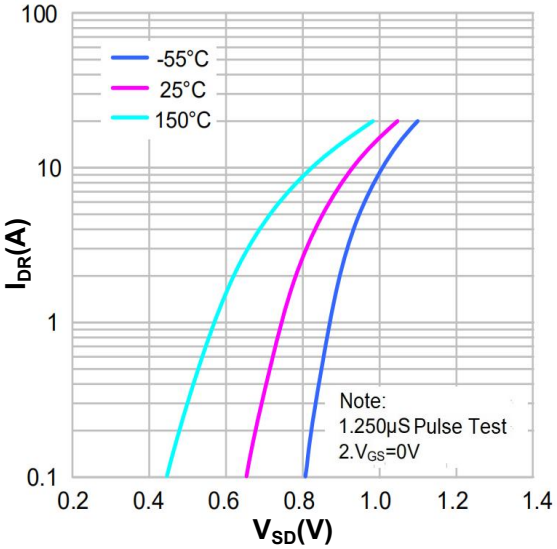


Fig.5: Typical Capacitance Characteristics

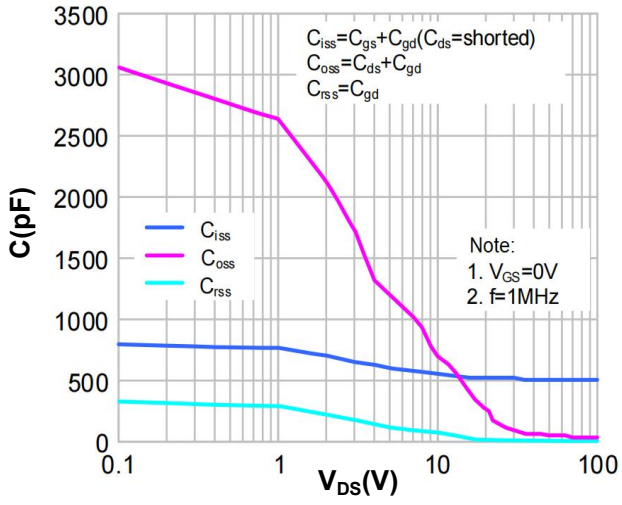
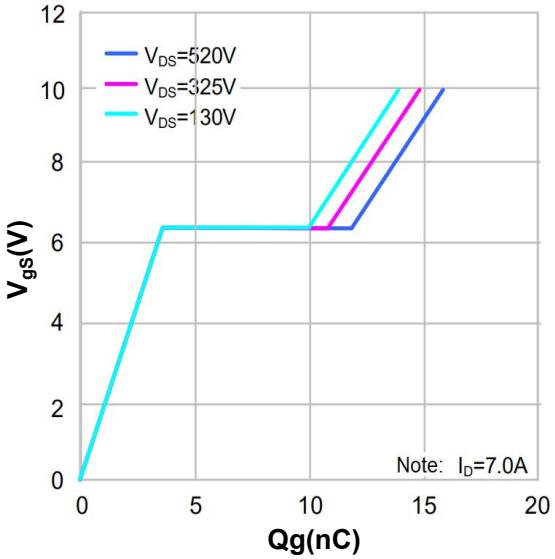


Fig.6: Typical Gate Charge Characteristics



The curve above is for reference only.

典型特性曲线

Fig.7: Nomalized Breakdown Volatge vs. Juction Temperature

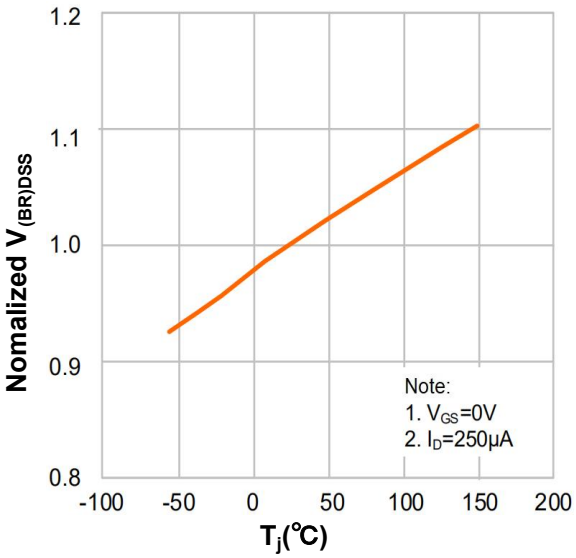


Fig.8: Nomalized on Resistance vs. Juction Temperature

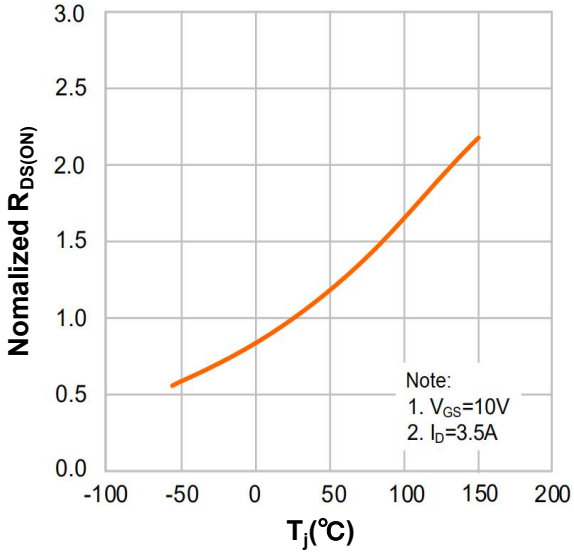
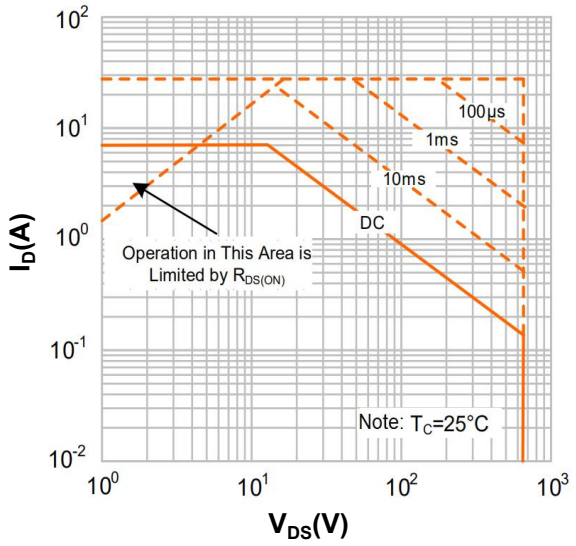


Fig.9: Maximum Safe Operating Area



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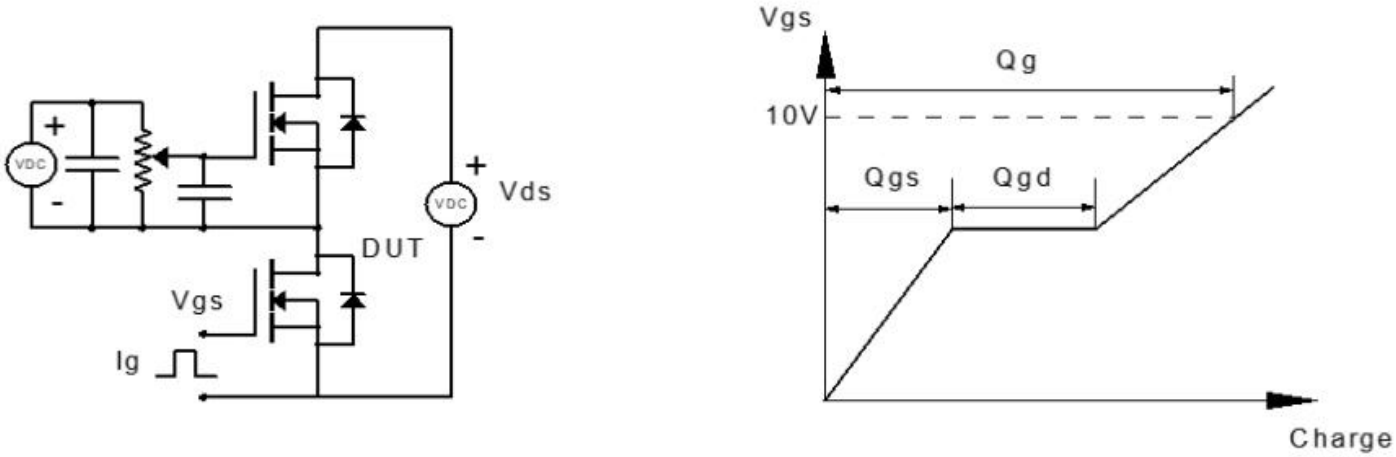
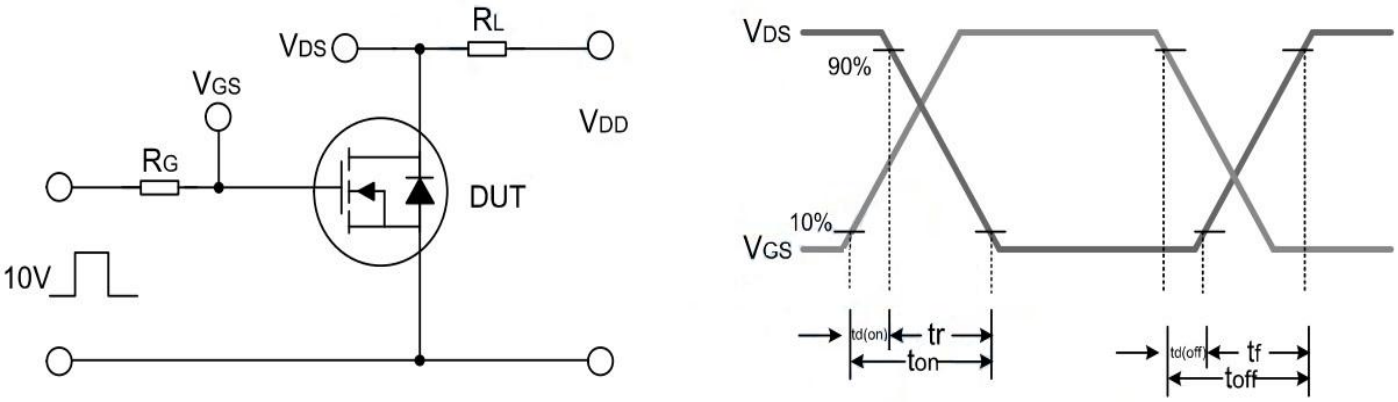
Test Circuit

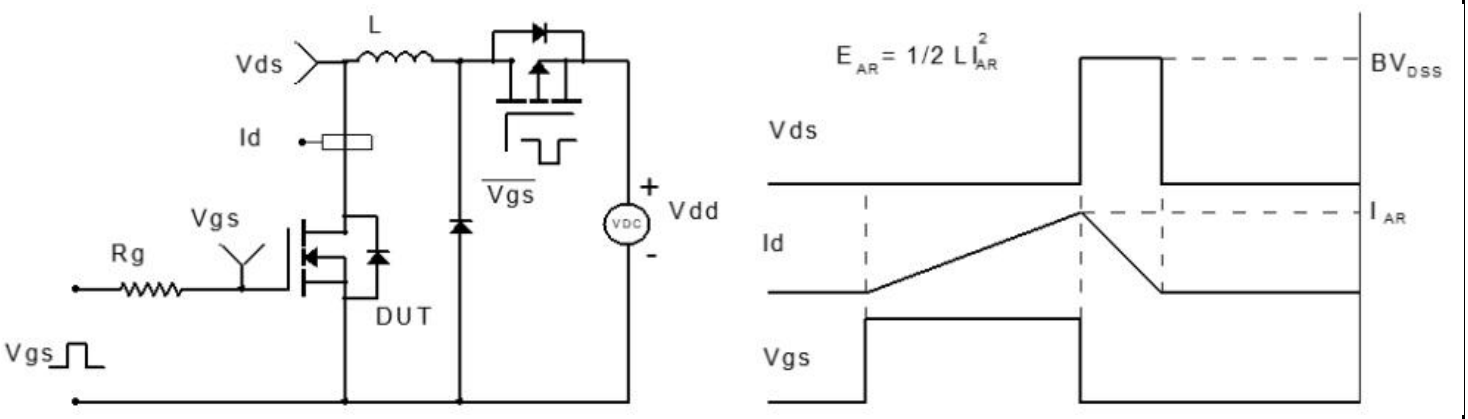
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform

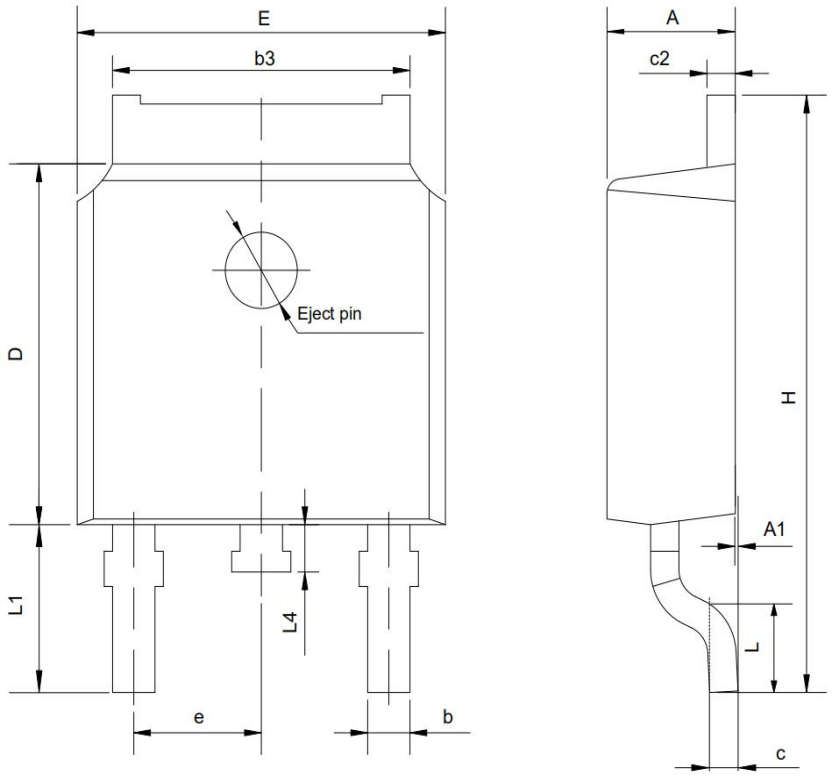


Unclamped Inductive Switching Test Circuit & Waveform



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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