

30V N沟道增强型功率场效应管

30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

90A/30V

Discription

JXT90N03D This N-Channel enhancement mode power MOSFET is produced using advanced trench technology to provide high performance in on state resistance, switching performance and reliability Low RDS(ON), low gate charge can be offering superior benefit in the application.

Features

- $V_{DS}=30V, I_D=90A$
- $R_{DS(on) (MAX)}=4.5m\Omega@V_{GS}=10V$
- $R_{DS(on) (MAX)}=6.5m\Omega@V_{GS}=4.5V$

100% UIS TESTED!
100% ΔV_{ds} TESTED!

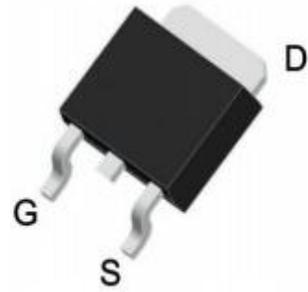
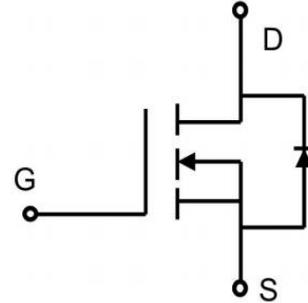


Applications

- Load Switch
- SPWM Application
- Power Management

Note

- Products made by JUXIN semiconductor



TO-252(DPAK)

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
JXT90N03D	TO-252(DPAK)	JXT90N03D	Pb free	Tape and Reel

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

Characteristics	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$T_C=25^\circ C \quad V_{GS}=10V$	90	A
	$T_C=100^\circ C \quad V_{GS}=10V$	50	
Drain Current Pulsed(Note 1)	I_{DM}	375	A
Power Dissipation (T _C =25°C) -Derate above 25°C	P_D	50	W
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	100	mJ
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	$R_{\theta JC}$	2.5	°C/W

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition:Starting $T_J=25^\circ C, V_{DD}=20V, V_G=10V, L=0.5mH$.



ELECTRICAL CHARACTERISTICS

Off Characteristics

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	--	--	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	--	--	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+20V, V_{DS}=0V$	--	--	100	nA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=-20V, V_{DS}=0V$	--	--	-100	nA

On Characteristics

Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	--	2.5	V
Static Drain- Source On State Resistance (Note3)	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	--	3.8	4.5	$m\Omega$
		$V_{GS}=4.5V, I_D=20A$		5.7	6.5	

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	--	1950	--	pF
Output Capacitance	C_{oss}		--	320	--	
Reverse Transfer Capacitance	C_{rss}		--	240	--	

Switching Characteristics

Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V, R_G=3\Omega$ $I_D=30A$ (NOTE1, 3)	--	8	--	ns
Turn-on Rise Time	t_r		--	15	--	
Turn-off Delay Time	$t_{d(off)}$		--	33	--	
Turn-off Fall Time	t_f		--	10	--	
Total Gate Charge	Q_g	$V_{DD}=30V, V_{GS}=10V,$ $I_D=30A$ (NOTE1, 3)	--	35	--	nC
Gate-Source Charge	Q_{gs}		--	6.6	--	
Gate-Drain Charge	Q_{gd}		--	7	--	

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	--	--	90	A
Pulsed Source Current	I_{SM}		--	--	375	
Diode Forward Voltage	V_{SD}	$I_S=30A, V_{GS}=0V$	--	0.8	1.1	V
Reverse Recovery Time	T_{rr}	$I=20A, V_{GS}=0V, dI_F/dt=100A/\mu S$ (NOTE1, 3)	--	16	--	ns
Reverse Recovery Charge	Q_{rr}		--	5	--	nC

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting $T_J=25^\circ C, V_{DD}=20V, V_G=10V, L=0.5mH$.
3. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

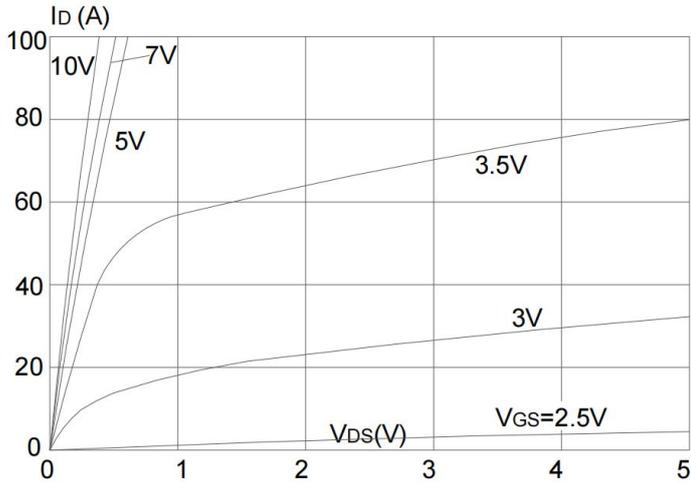


Figure 2: Typical Transfer Characteristics

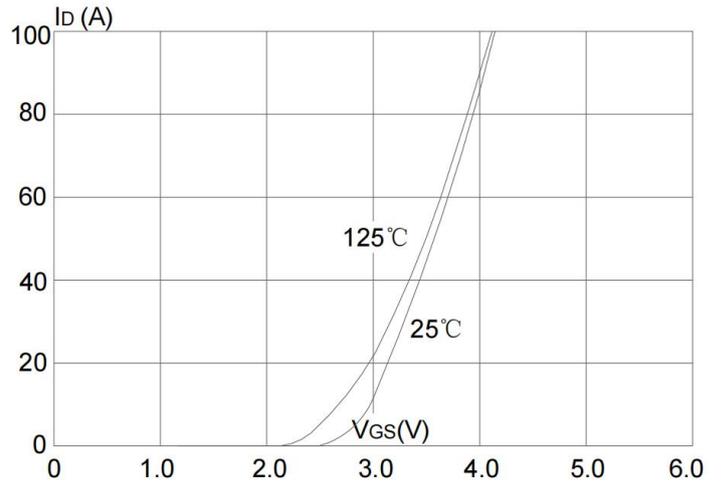


Figure 3: On-resistance vs. Drain Current

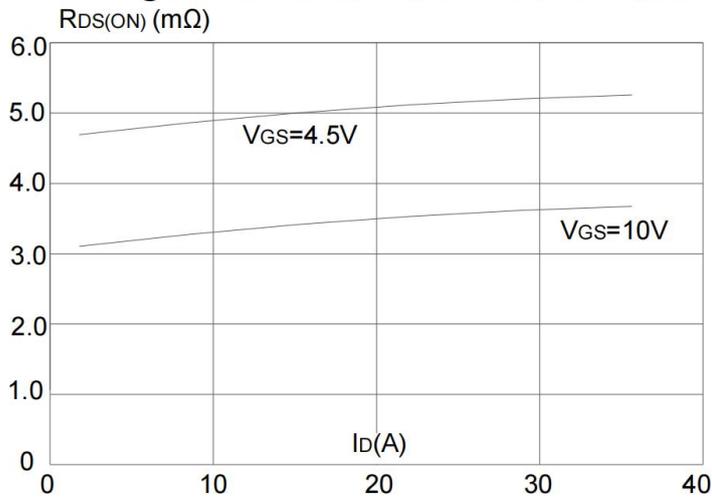


Figure 4: Body Diode Characteristics

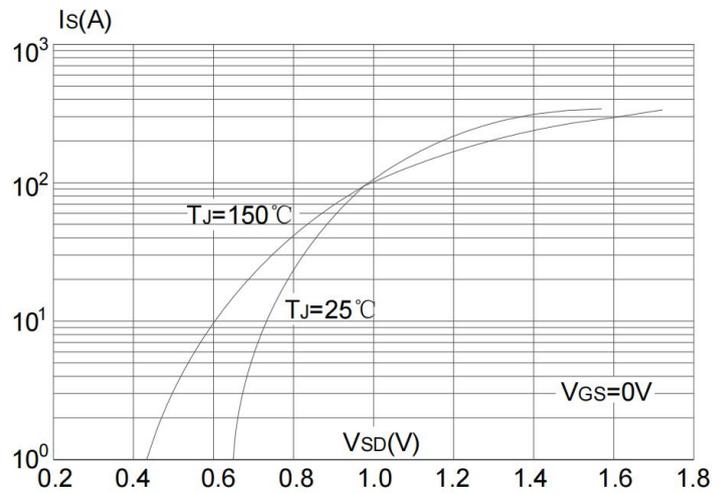


Figure 5: Gate Charge Characteristics

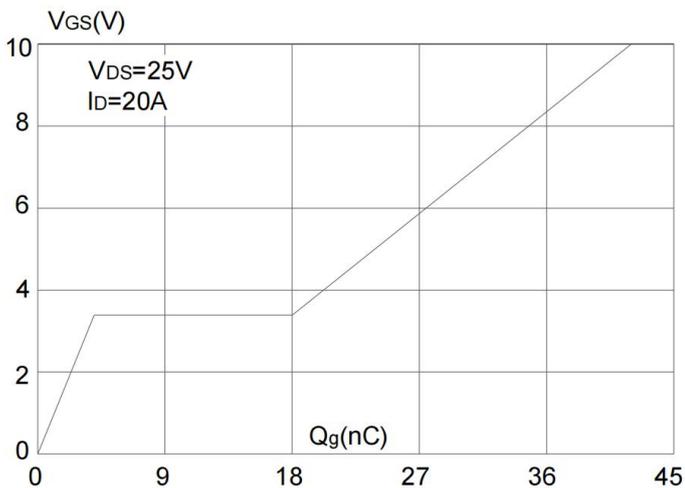
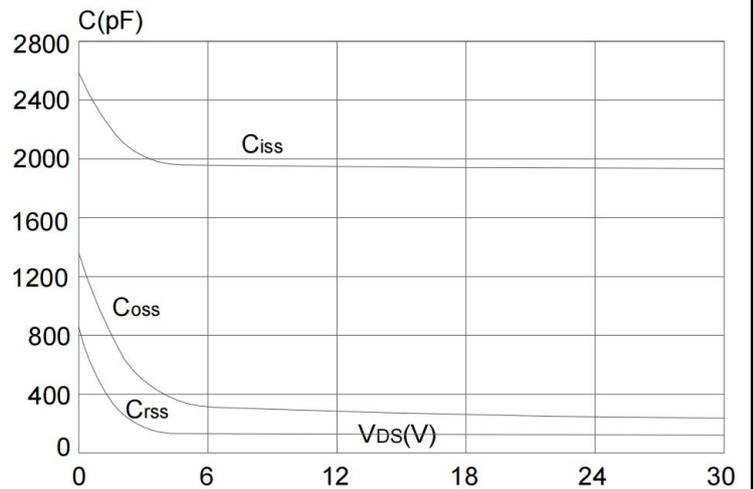


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

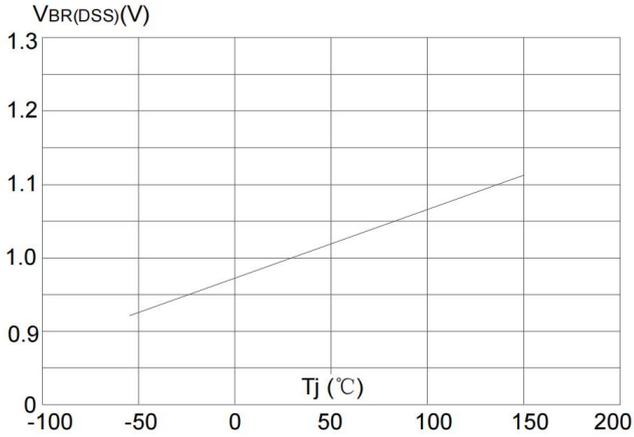


Figure 8: Normalized on Resistance vs. Junction Temperature

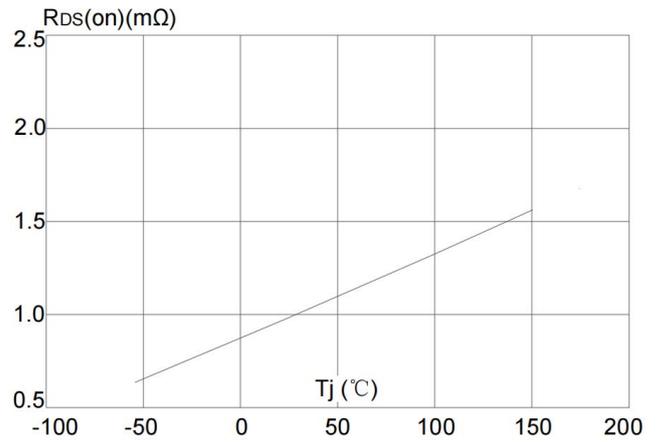


Figure 9: Maximum Safe Operating Area

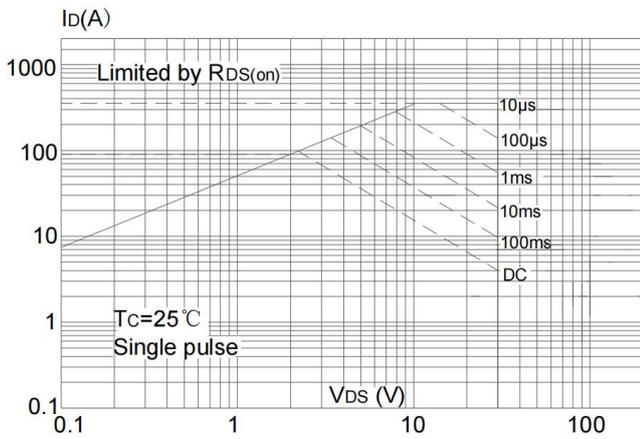
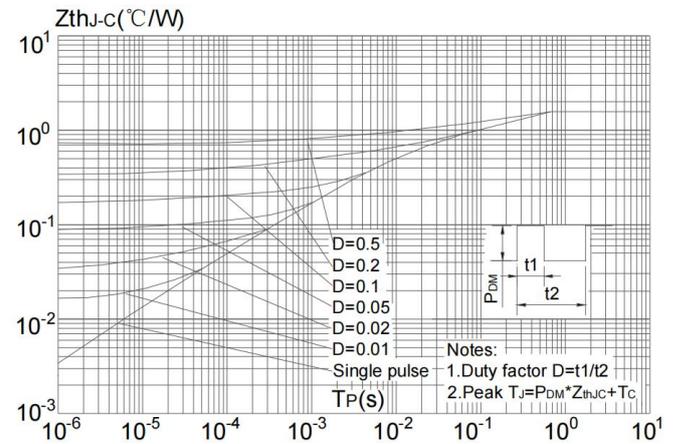


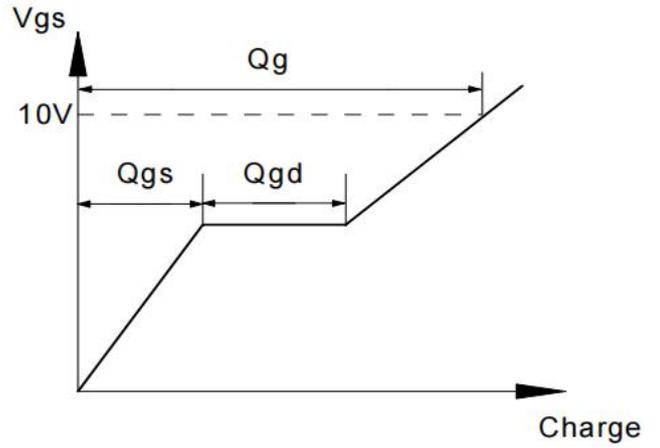
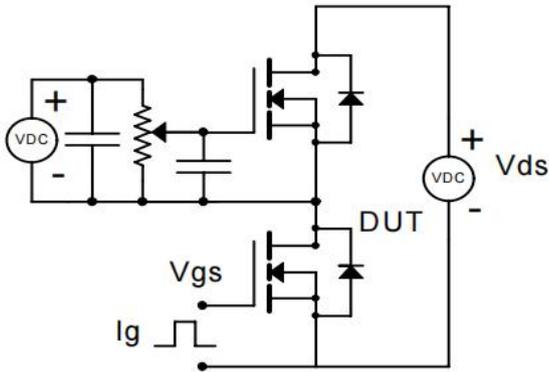
Figure 10: Maximum Effective Transient Thermal Impedance, Junction-to-Case



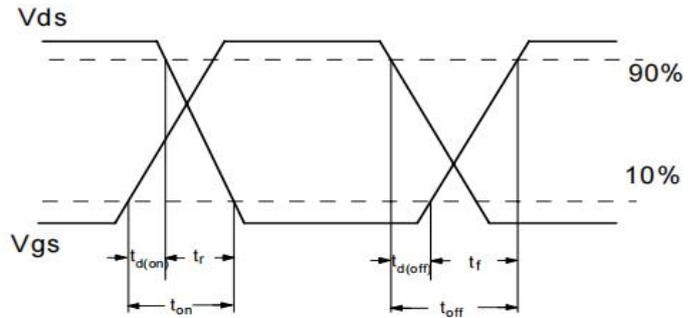
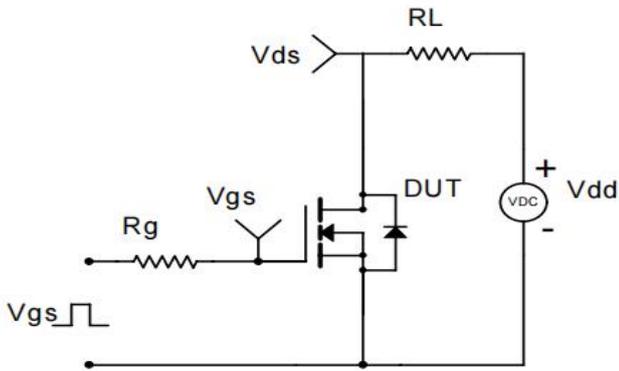
The curve above is for reference only.

Test Circuit

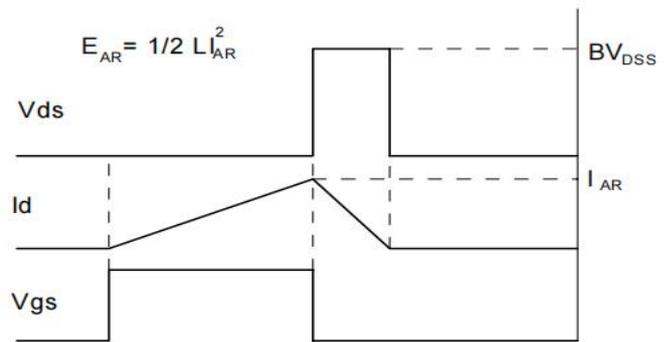
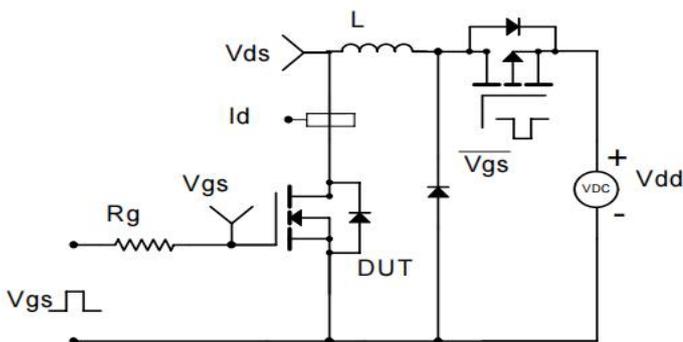
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



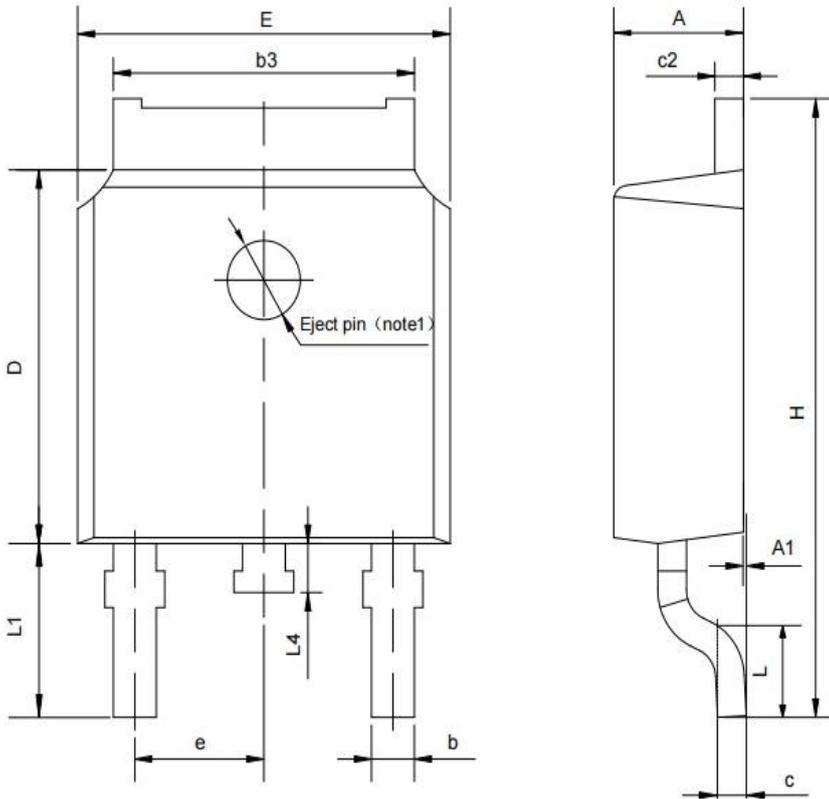
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Package Dimensions of TO-252

Package Dimensions of TO-252

Unit:mm



SYMBOL	MILIMETER	
	MIN	MAX
A	2.10	2.50
A1	0.00	0.15
b	0.60	0.91
b3	5.00	5.64
c	0.40	0.65
c2	0.40	0.65
D	5.80	6.40
E	6.30	6.90
e	2.286BSC	
H	9.40	10.70
L	1.38	1.78
L1	2.70REF	
L4	0.60	1.20

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