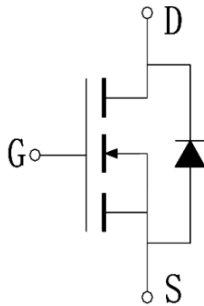




JX2090K

N-Channel Enhancement Mode MOSFET

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
20V	3.0m Ω @ 7.4V	90A
	3.3m Ω @ 4.5V	
	4.5m Ω @ 2.5V	



Schematic Diagram

1.Features

- ◆ 20V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆ $V_{GS} \pm 12V$

2.Applications

- ◆ Power Switching Application
- ◆ Load Switching



TO-252
Pin Description

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
JX2090K	JX2090K	TO-252	2,500	25,000

4.Absolute Max Ratings at $T_a=25^\circ C$ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	± 12	V
Drain Current (DC)	I_D	90	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	243	A
Total Dissipation	P_D	83	W
Avalanche Energy, Single Pulsed	E_{AS}	240	mJ
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



5. Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$

Note 2: When mounted on 1 inch square copper board $t \leq 10\text{sec}$ The value in any given application depends on the user's specific board design.

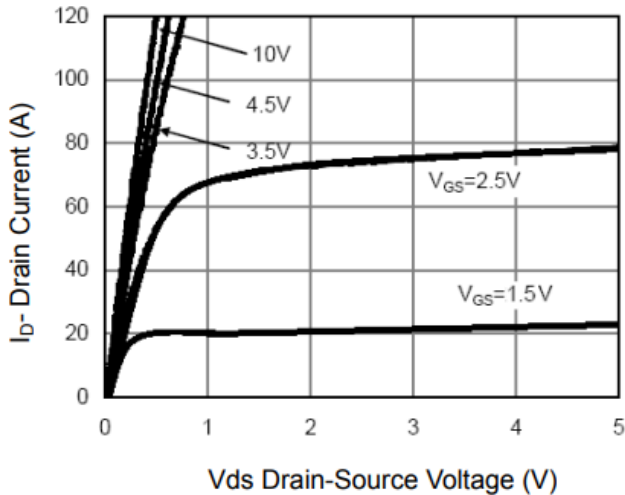
6. Electrical Characteristics at $T_a=25^{\circ}\text{C}$ (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	20	24		V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$			100	nA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu\text{A}$	0.5	0.85	1.2	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 30\text{A}, V_{GS} = 7.4\text{V}$	-	3.0	3.3	m Ω
		$I_D = 20\text{A}, V_{GS} = 4.5\text{V}$	-	3.3	3.5	m Ω
		$I_D = 10\text{A}, V_{GS} = 2.5\text{V}$	-	4.5	6.0	m Ω
Forward Transconductance	G_{FS}	$I_D = 20\text{A}, V_{DS} = 5\text{V}$	20			S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V},$ $V_{DS}=10\text{V},$ Frequency=1.0MHz		2016		pF
Output Capacitance	C_{oss}			391		pF
Reverse Transfer Capacitance	C_{rss}			130		pF
Turn-ON Delay Time	$t_{d(on)}$	$V_{DD} = 10\text{V}, I_D = 20\text{A},$ $V_{GS} = 10\text{V},$ $R_{GEN} = 2.7\Omega$		6		ns
Rise Time	t_r			4		ns
Turn-OFF Delay Time	$t_{d(off)}$			31		ns
Fall Time	t_f			5		ns
Total Gate Charge	Q_g	$V_{DS} = 10\text{V},$		15		nC
	Q_{gs}	$V_{GS} = 4.5\text{V},$		3		nC
	Q_{gd}	$I_D = 20\text{A}$		4		nC
Diode Forward Voltage	V_{FSD}	$I_S = 20\text{A}, V_{GS} = 0$	0.5	0.8	1.2	V

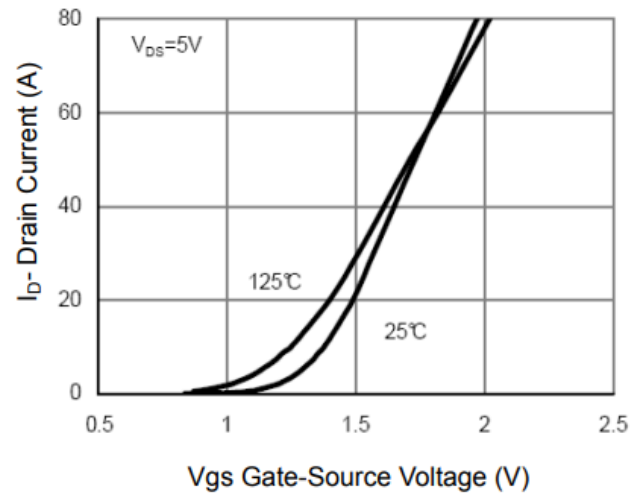
Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



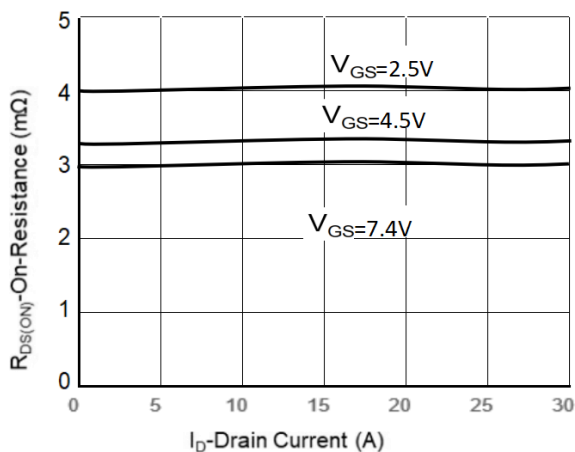
7. Typical electrical and thermal characteristics



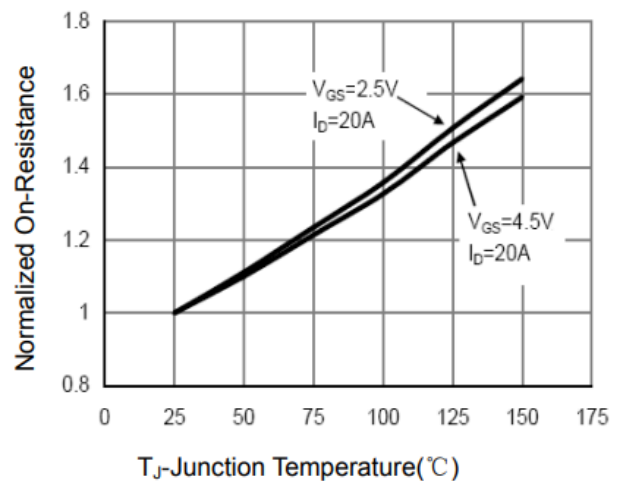
Output Characteristics



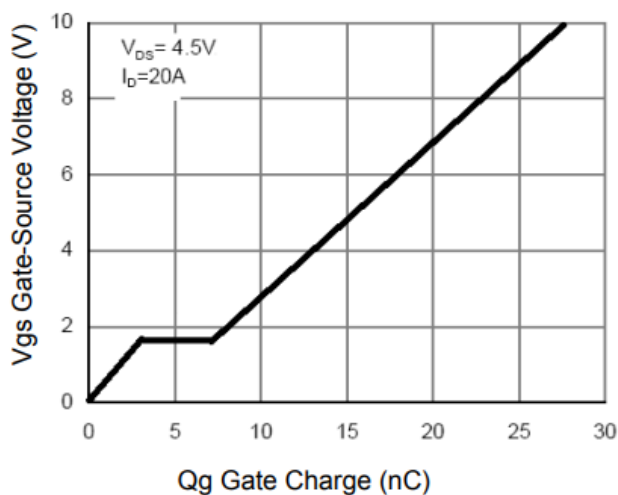
Transfer Characteristics



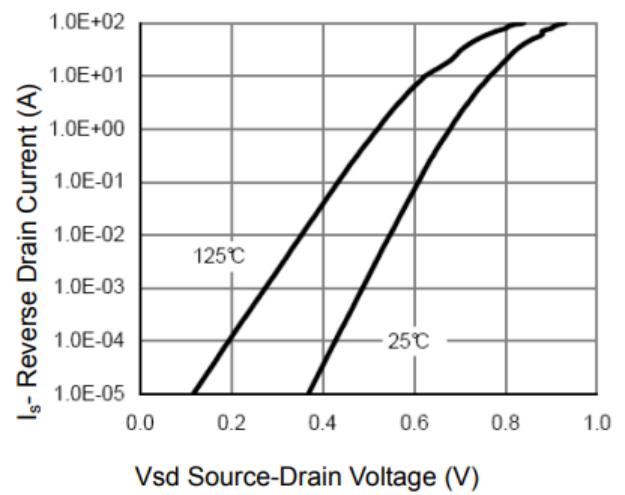
Rdson-Drain Current



Rdson-Junction Temperature

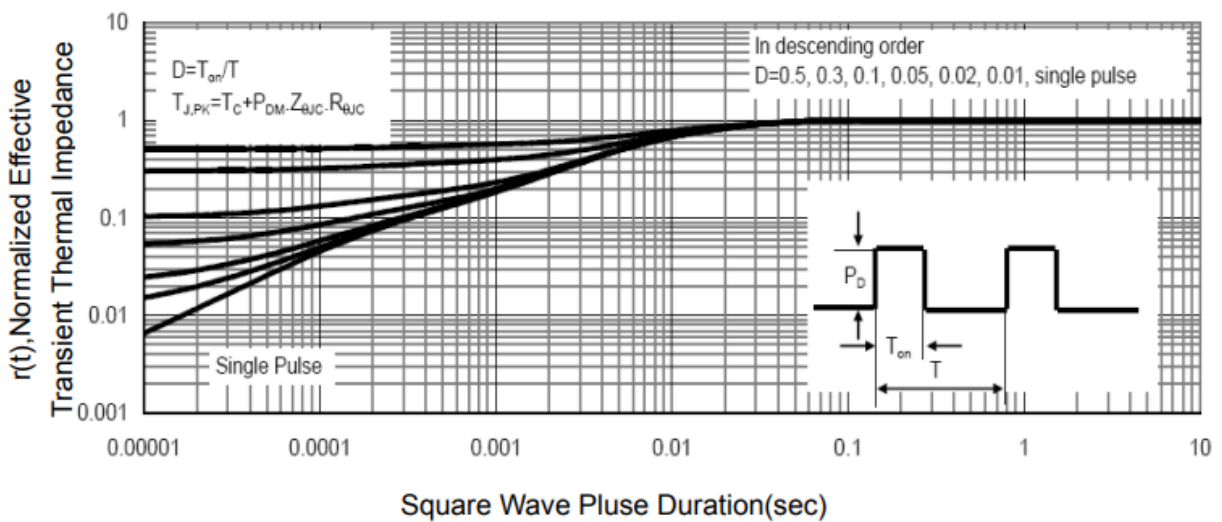
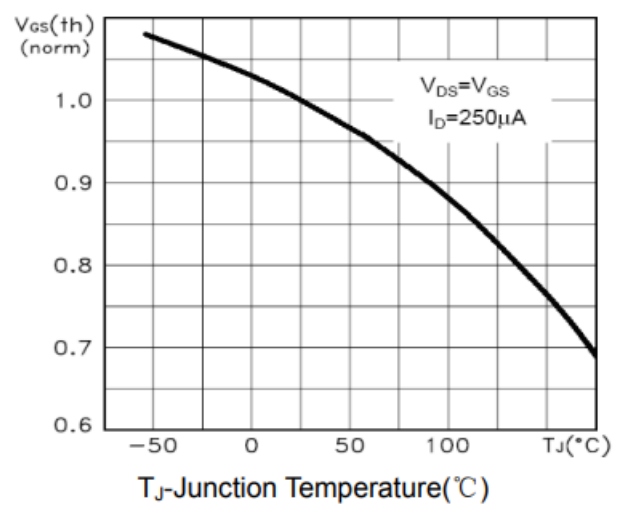
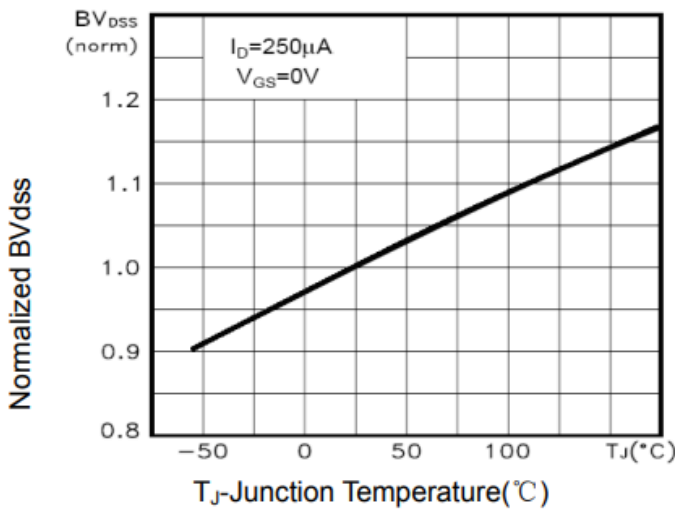
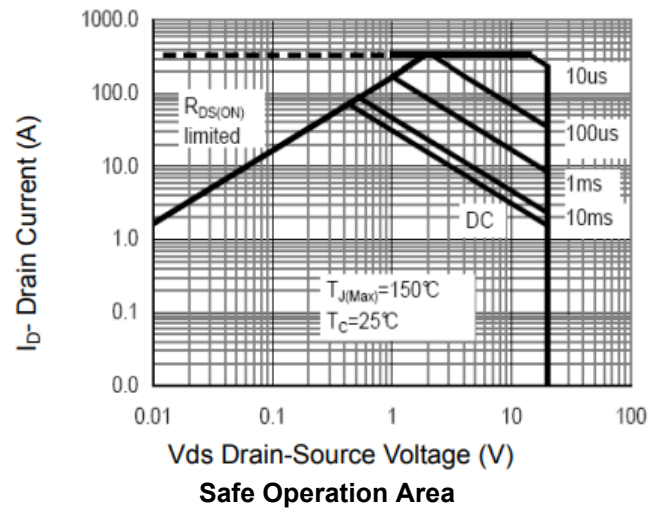
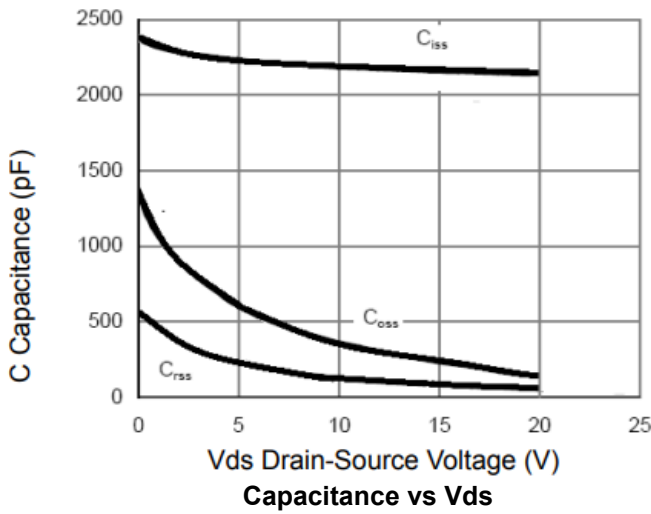


Gate Charge



Source-Drain Diode Forward





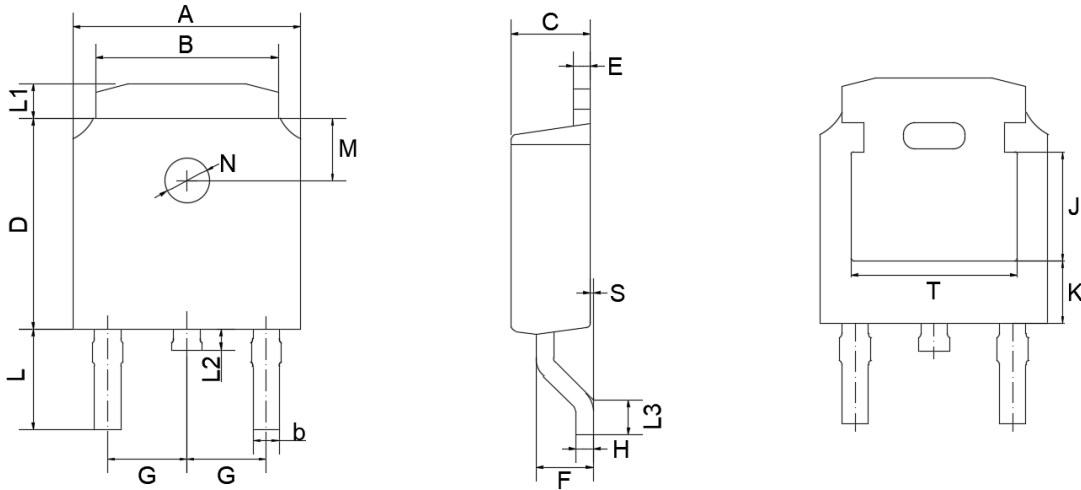


JX2090K

N-Channel Enhancement Mode MOSFET

8 Package Dimensions

TO-252(D-PAK) Package Outline Dimensions



TO-252(D-PAK) mechanical data

UNIT		A	B	b	C	D	E	F	G	H	L	L1	L2	L3	S	M	N	J	K	T
mm	max	6.7	5.5	0.86	2.5	6.3	0.6	1.8	2.29 TYPICAL	0.55	3.1	1.4	1.0	1.75	0.1	1.8 TYPICAL	1.3 TYPICAL	3.16	1.80	4.83
	min	6.3	5.1	0.66	2.1	5.9	0.4	1.3		0.45	2.7	0.8	0.6	1.40	0.0			ref.	ref.	ref.
mil	max	264	217	33	98	248	24	71	90 TYPICAL	22	122	55	39	69	4	71 TYPICAL	51 TYPICAL	124	71	190
	min	248	201	26	83	232	16	51		18	106	31	24	55	0			ref.	ref.	ref.

