

MAIN CHARACTERISTICS

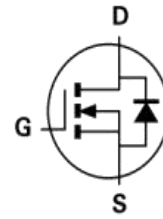
I_D	9A
V_{DS}	900V
$R_{os(on)-Typ@ V_{gs}=10V}$	0.92Ω

FEATURES

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

APPLICATIONS

- HIGH EFFICIENCY SWITCH
- Motor driven
- Ammeter
- UPS power



Product specification classification

Part Number	Package	Mode Name	Pack
CS9N90A8	TO-220F	CS9N90A8	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current Tc=25°C	I_D	9	A
Continue Drain Current Tc=100°C		5.8	A
Pulsed Drain Current (Note1)	I_{DM}	36	A
Power Dissipation	P_D	60	W
Derating Factor above 25°C		0.48	W/°C
Single Pulse Avalanche Energy	E_{AS}	900	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.08	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Electrical Characteristics at Tc=25°C unless otherwise specified

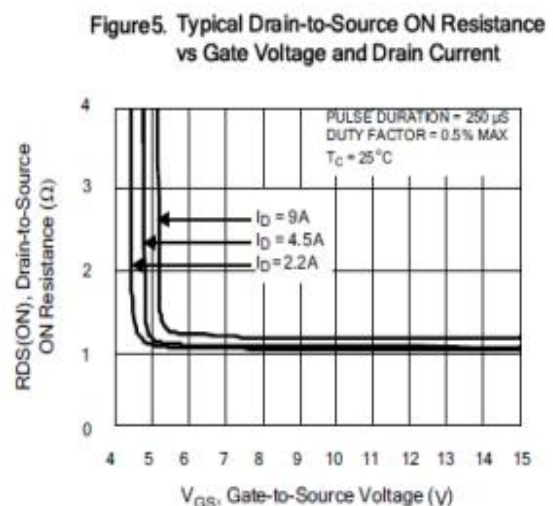
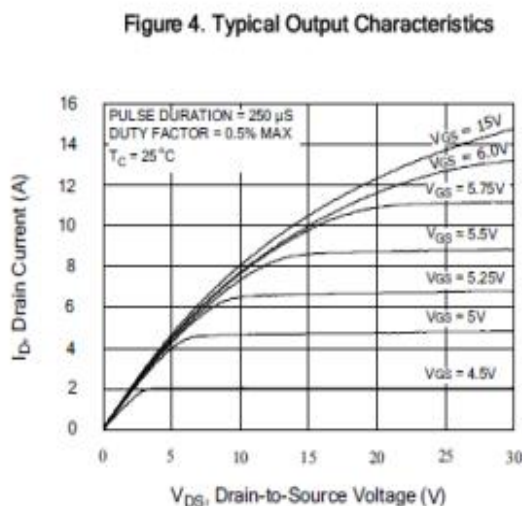
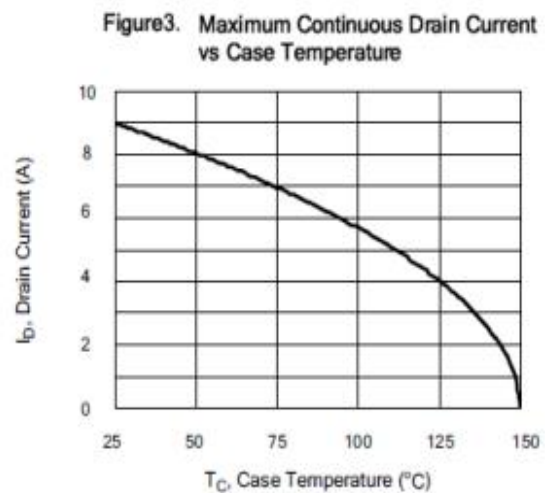
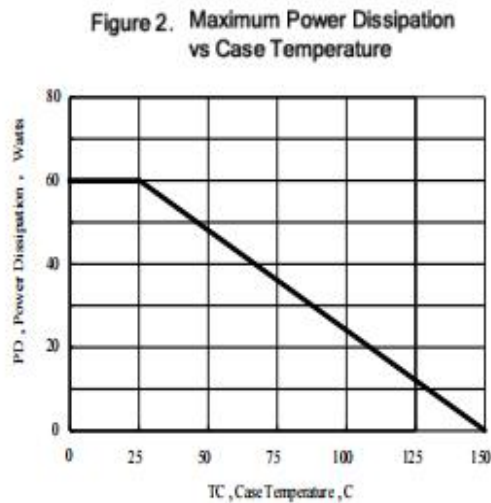
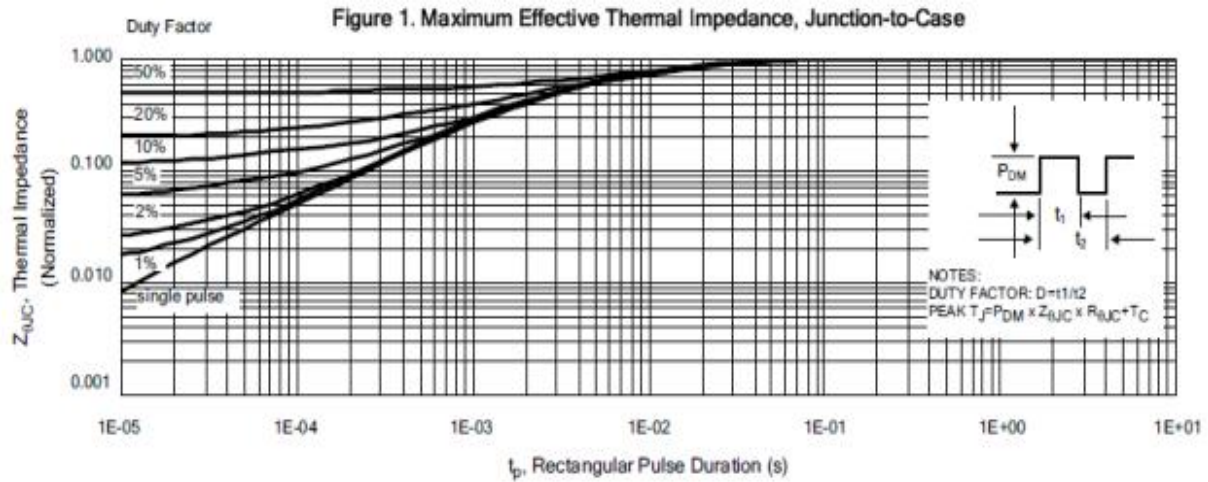
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	900	975	-	V
Drain-Source Leakage Current	$V_{DS} = 900 \text{ V}, V_{GS} = 0 \text{ V}, T_a = 25^\circ\text{C}$	I_{DSS}	-	-	1	μA
	$V_{DS} = 720 \text{ V}, V_{GS} = 0 \text{ V}, T_a = 125^\circ\text{C}$		-	-	250	μA
Gate Leakage Current	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	3	3.8	5	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 4.5 \text{ A}$	$R_{DS(on)}$	-	0.92	1.1	Ω
Forward Transconductance	$V_{DS} = 15 \text{ V}, I_D = 4.5 \text{ A}$	g_{fs}	-	10	-	S
Gate resistance	$f = 1.0\text{MHz}$	R_g	-	2	-	Ω
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	2712	-	pF
Output Capacitance		C_{oss}	-	208	-	pF
Reverse Transfer Capacitance		C_{rss}	-	17	-	pF
Turn-on Delay Time(Note2)	$I_D = 9\text{A}, V_{DD} = 450 \text{ V}, R_G = 25 \Omega$	$t_{d(ON)}$	-	13	-	ns
Rise Time(Note2)		t_r	-	7	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	67	-	ns
Fall Time(Note2)		t_f	-	24	-	ns
Total Gate Charge(Note2)	$I_D = 9\text{A}, V_{DD} = 450 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	62	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	10	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	21	-	nC

Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	9	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	35	A
Drain-Source Diode Forward Voltage	$I_{SD} = 9A, V_{GS} = 0 V,$	V_{SD}	-	-	1.2	V
Reverse Recovery Time(Note2)	$I_{SD} = 9A, V_{GS} = 0 V,$ $dI_F / dt = 100 A/\mu s$	t_{rr}	-	309	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	1908	-	μC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES



RATINGS AND CHARACTERISTIC CURVES

Figure 6. Maximum Peak Current Capability

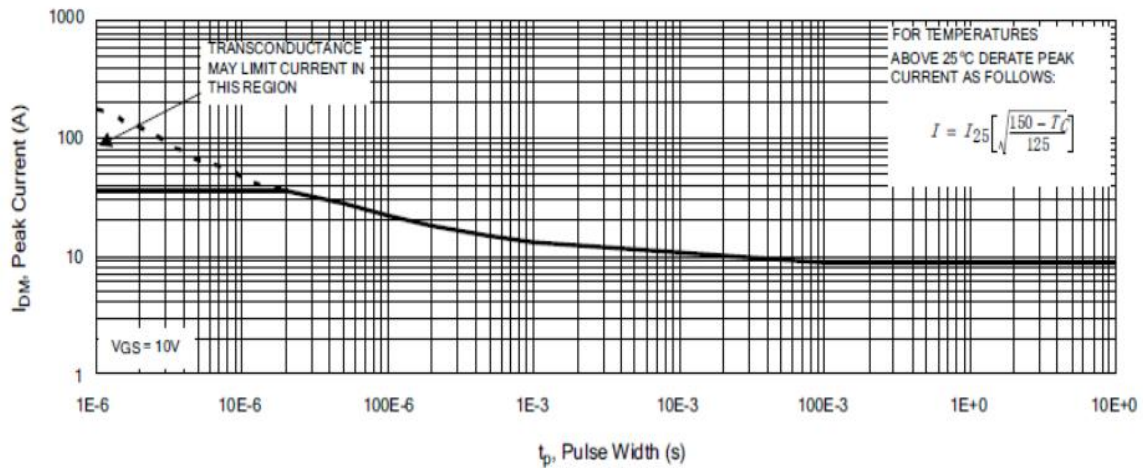


Figure 7. Typical Transfer Characteristics

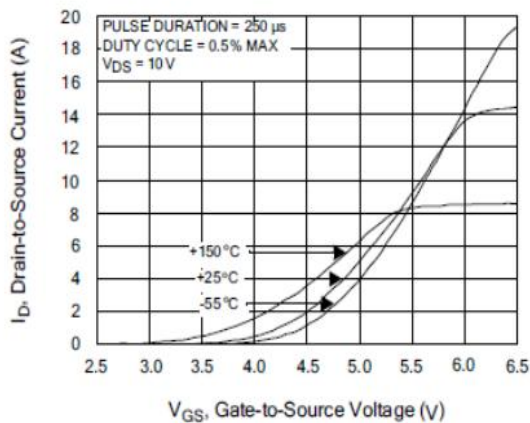
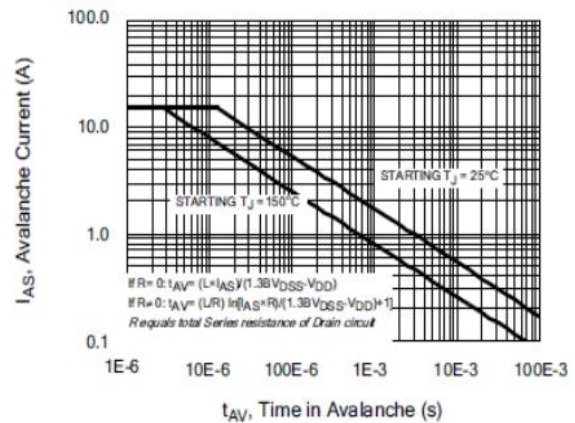


Figure 8. Unclamped Inductive Switching Capability



RATINGS AND CHARACTERISTIC CURVES

Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

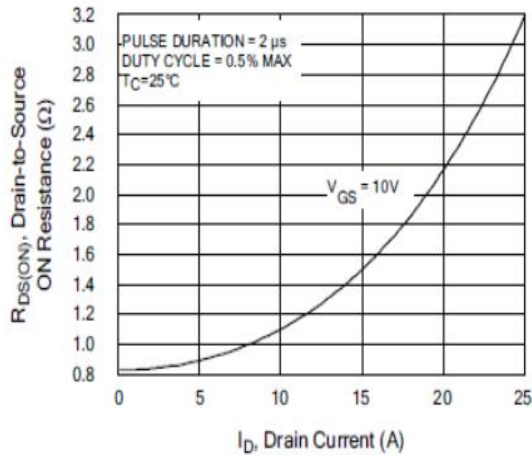


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

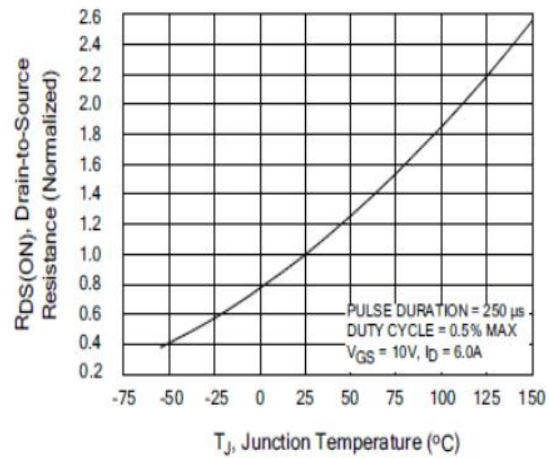


Figure 11. Typical Breakdown Voltage vs Junction Temperature

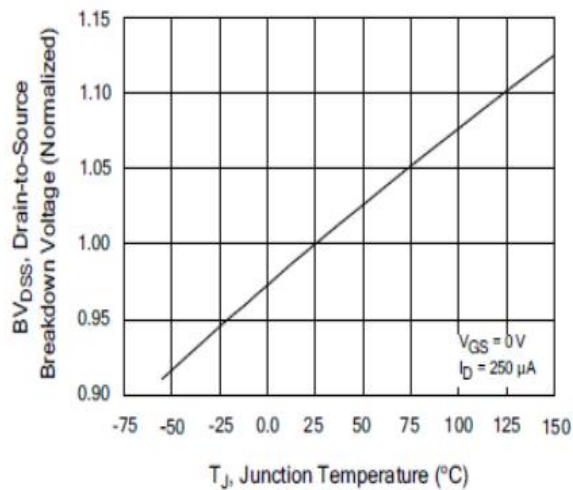
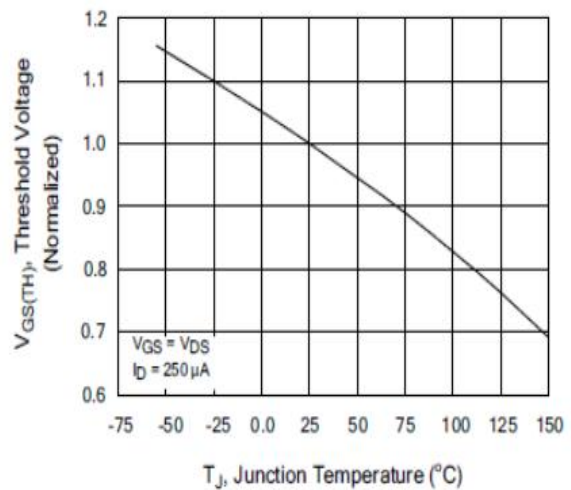


Figure 12. Typical Threshold Voltage vs Junction Temperature



RATINGS AND CHARACTERISTIC CURVES

Figure 13. Maximum Forward Bias Safe Operating Area

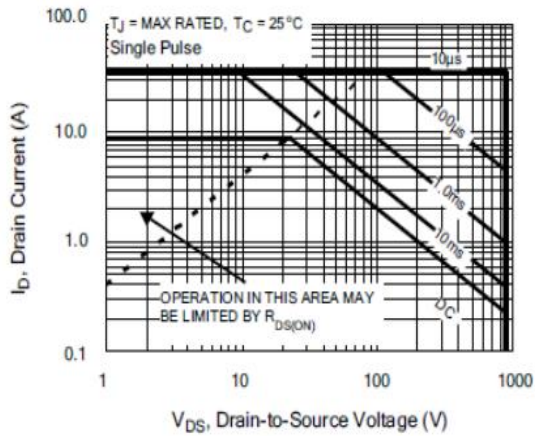


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

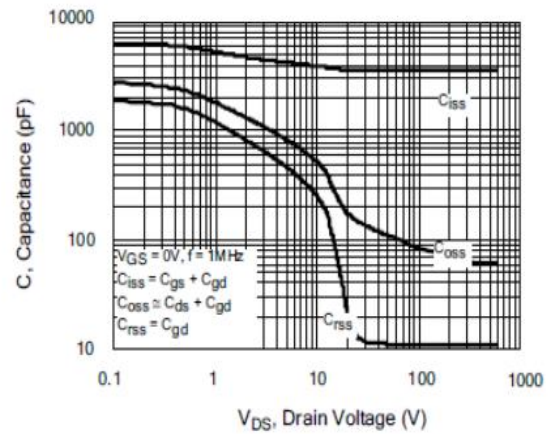


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

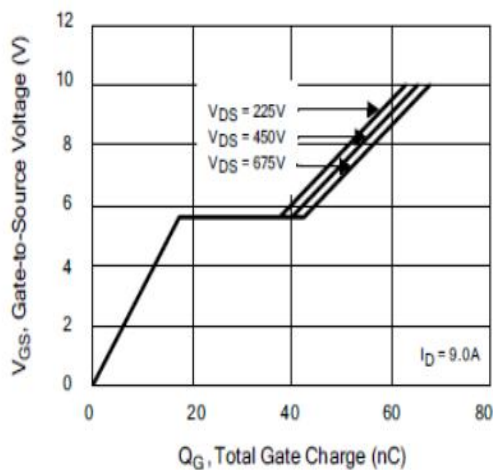
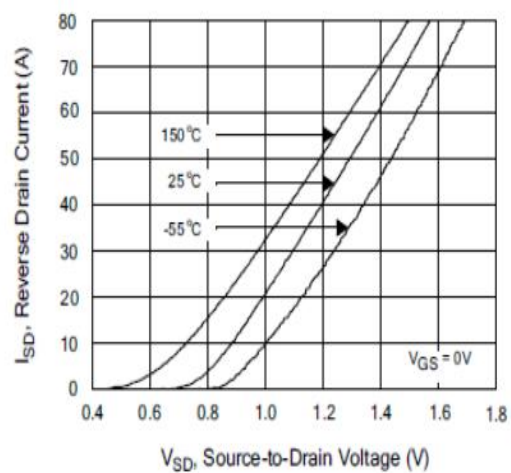
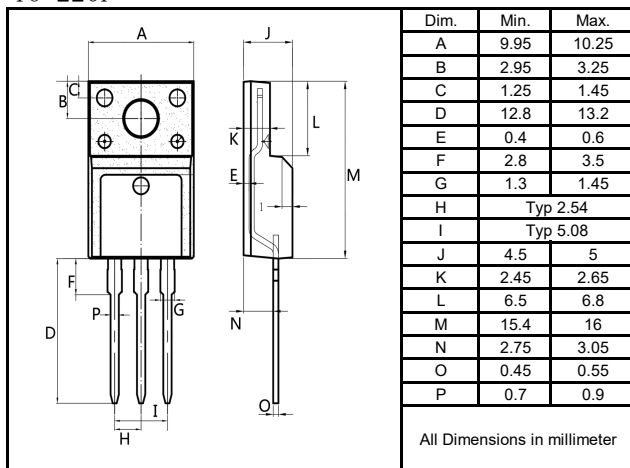


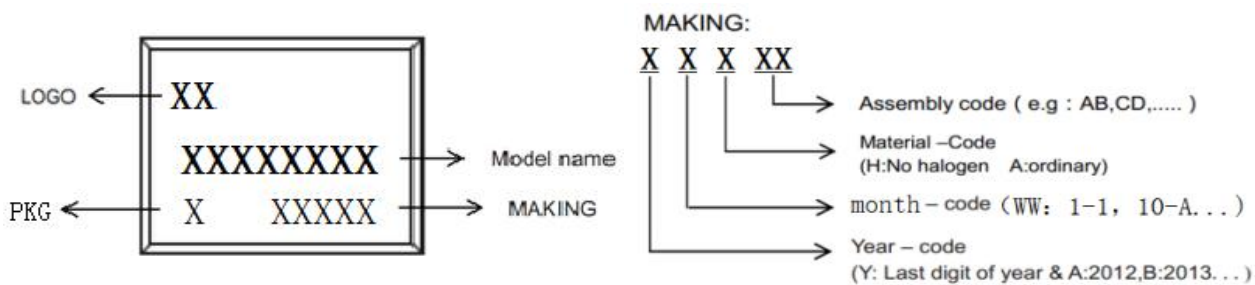
Figure 16. Typical Body Diode Transfer Characteristics



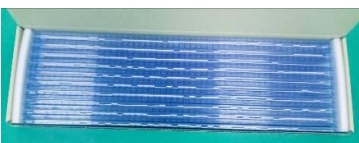
TO-220F



Marking on the body



packing instruction

PKG	Minimal Package	Mini Box	Box
TO-220F			
	50pcs/pdpe	1000pcs/box	5000pcs/box

Notice



CS9N90A8

N-Channel Enhancement Mode Power MOSFET

All product, product specifications and data are subject to change without notice to improve. The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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Revision History		
Rev	Changes	Date
1.0	First version	2026-1-3