



CS9N50A

N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	9A
V_{DSS}	500V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	0.68 Ω

FEATURES

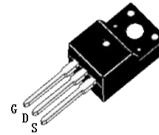
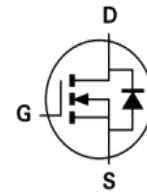
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

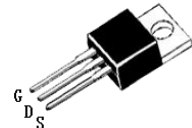
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

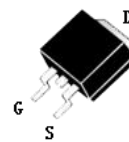
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



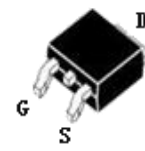
TO-220F



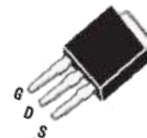
TO-220AB



TO-263



TO-252



TO-251

Product specification classification

Part Number	Package	Mode Name	Pack
CS9N50A1	TO-220AB	CS9N50A	Tube
CS9N50A2	TO-220F (0.5mm)	CS9N50A	Tube
CS9N50A3	TO-263	CS9N50A	Tube
CS9N50A3-R	TO-263	CS9N50A	Tape
CS9N50A4	TO-251	CS9N50A	Tube
CS9N50A5-R	TO-252	CS9N50A	Tape



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Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value			Unit
		220AB/263	220F	251/252	
Drain-Source Voltage	V_{DS}	500			V
Gate-Source Voltage	V_{GS}	± 30			V
Continue Drain Current	I_D	9			A
Pulsed Drain Current (Note1)	I_{DM}	32			A
Power Dissipation	P_D	100	35	100	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	440			mJ
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150			°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.25	3.57	1.25	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	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}	500	-	-	V
Drain-Source Leakage Current	$V_{DS} = 500 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 4 \text{ A}$	$R_{DS(on)}$	-	0.68	0.85	Ω
Forward Transconductance	$V_{DS} = 15 \text{ V}, I_D = 4 \text{ A}$	g_{fs}	-	7	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	891	-	pF
Output Capacitance		C_{oss}	-	110	-	pF
Reverse Transfer Capacitance		C_{rss}	-	7	-	pF
Turn-on Delay Time(Note2)	$I_D = 8 \text{ A}, V_{DD} = 250 \text{ V}, R_G = 10 \Omega$	$t_{d(ON)}$	-	18	-	ns
Rise Time(Note2)		t_r	-	20	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	44	-	ns
Fall Time(Note2)		t_f	-	15	-	ns
Total Gate Charge(Note2)	$I_D = 8 \text{ A}, V_{DD} = 400 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	22	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	9	-	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	$T_C = 25^\circ \text{C}$	I_S	-	-	9	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	32	A
Drain-Source Diode Forward Voltage	$I_{SD} = 8 \text{ A}$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	$I_S = 8 \text{ A}, T_J = 25^\circ \text{C}$	t_{rr}	-	340	-	ns
Reverse Recovery Charge(Note2)	$dI_F/dt = 100 \text{ A}/\mu\text{s}, V_{GS} = 0 \text{ V}$	Q_{rr}	-	1.7	-	μC

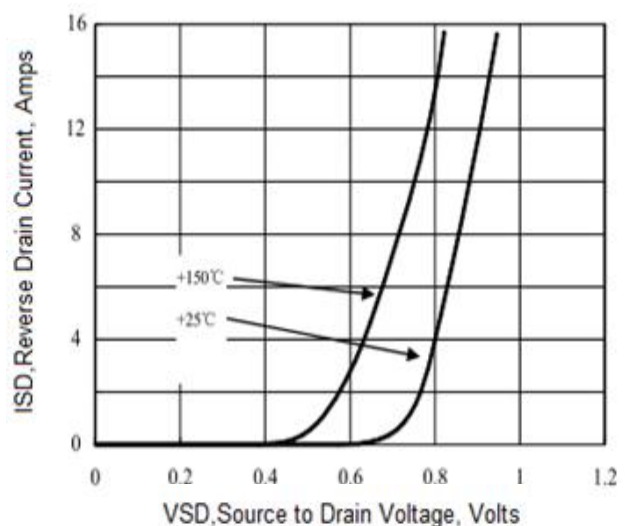
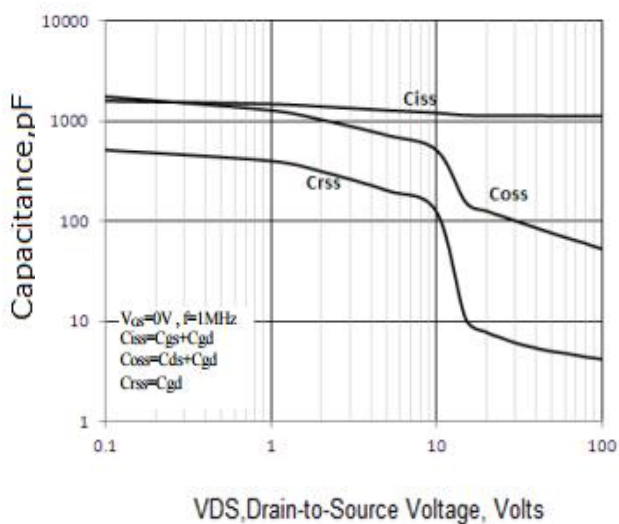
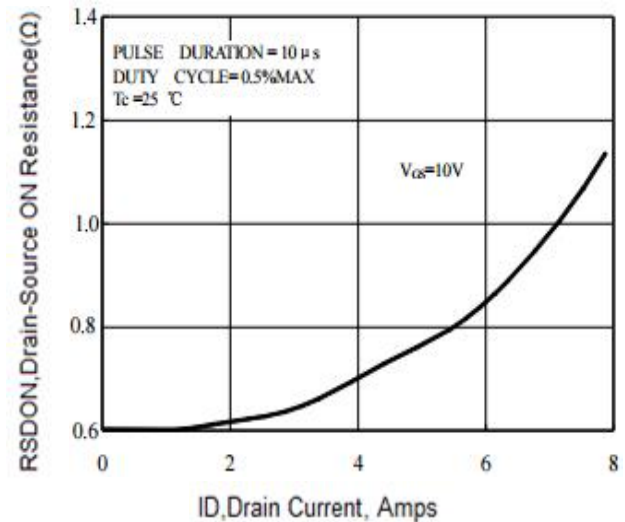
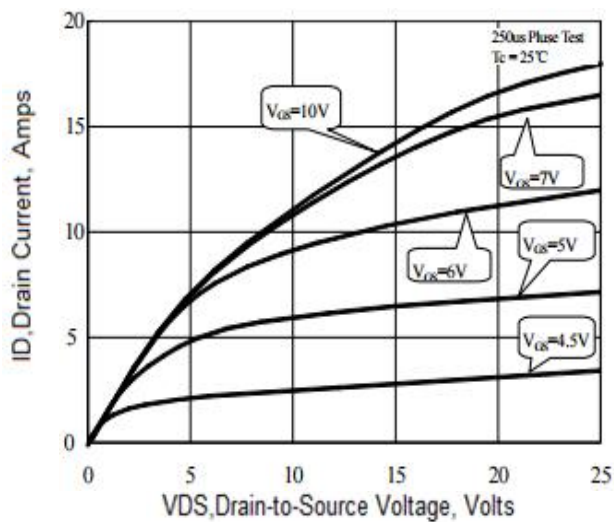
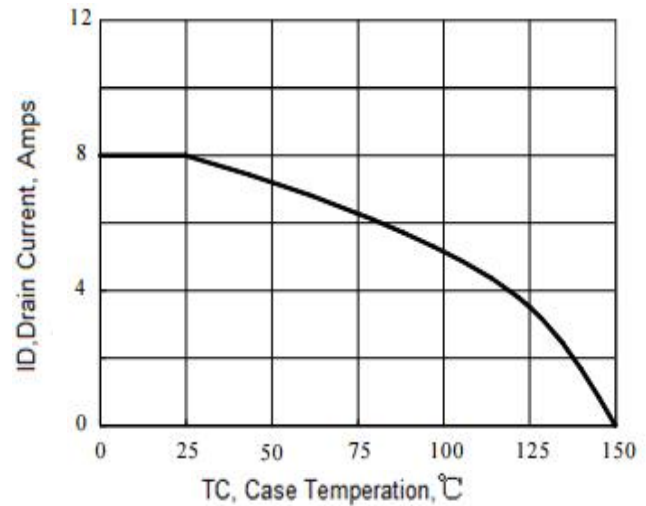
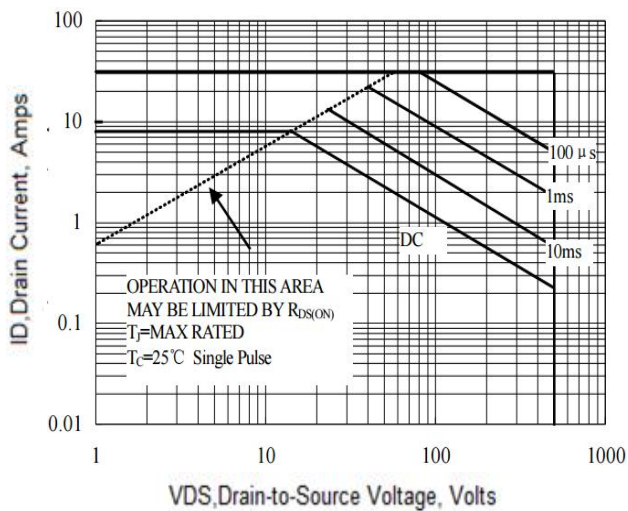
Note2:Pulse test: 300 μ s pulse width, 2 % duty cycle



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RATINGS AND CHARACTERISTIC CURVES



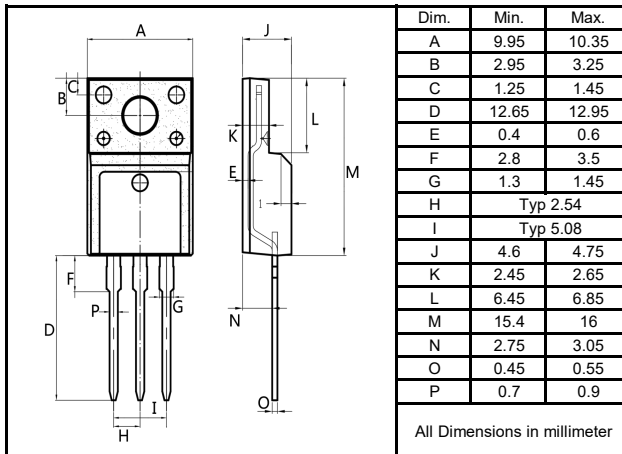


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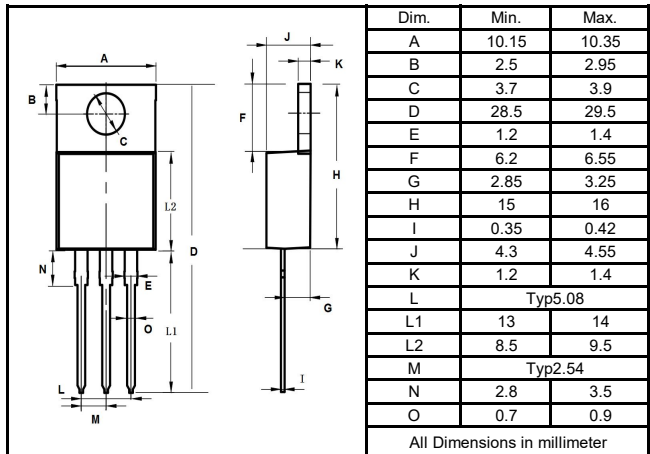
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Package Outline Dimensions millimeters

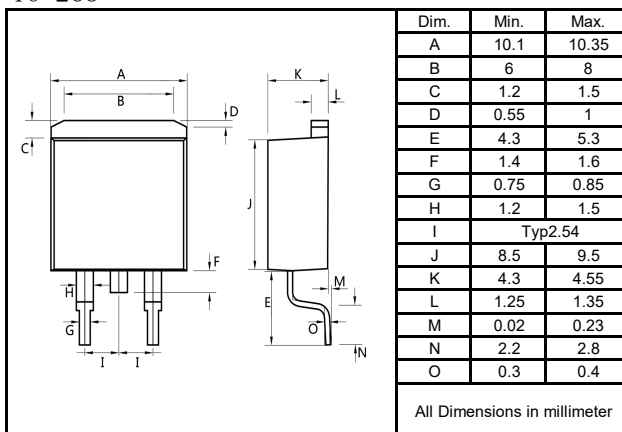
T0-220F



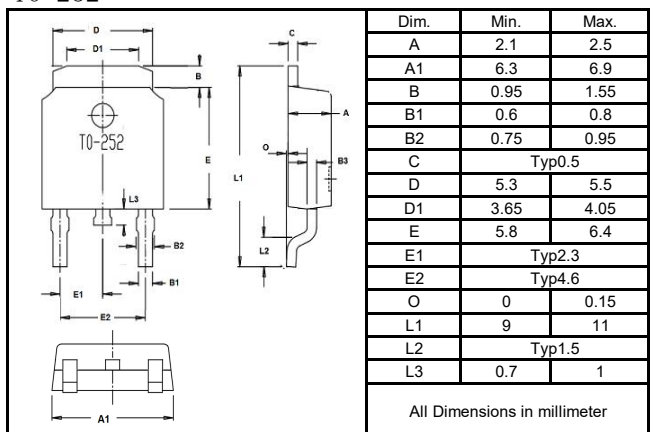
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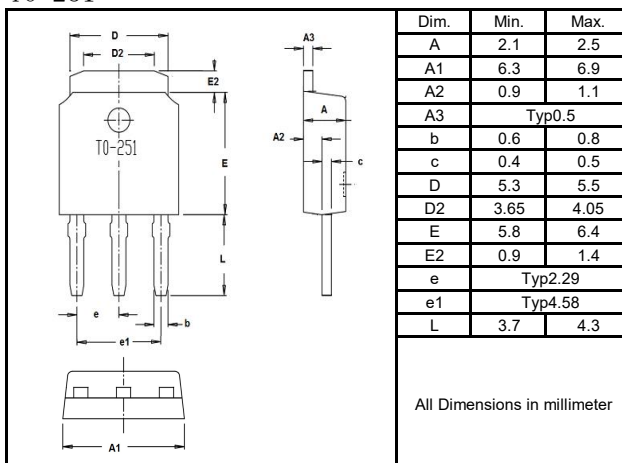
T0-263



T0-252



T0-251

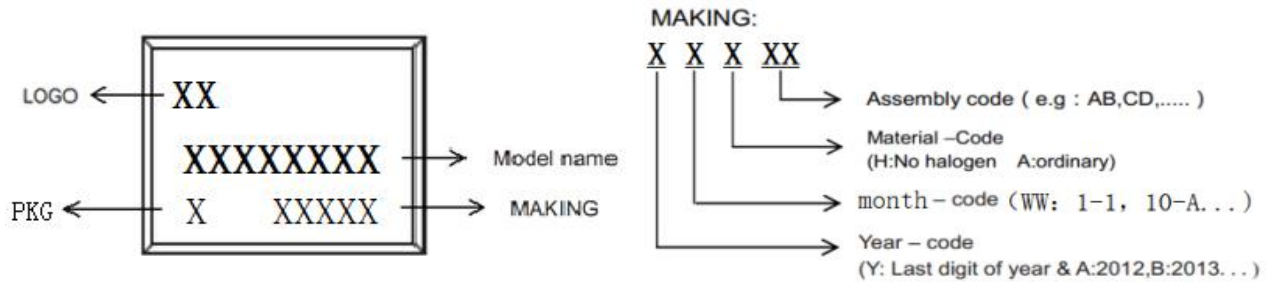




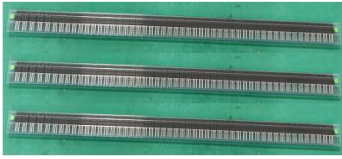
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Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F TO-220AB TO-263			
	50pcs/管	1000pcs/盒	5000pcs/箱
TO-252			
	2500pcs/盘	5000pcs/盒	25000pcs/箱
TO-263-R			
	800pcs/盘	1600pcs/盒	8000pcs/箱
TO-251			
	80pcs/管	4000pcs/盒	24000pcs/箱

Notice

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.