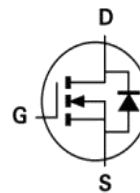


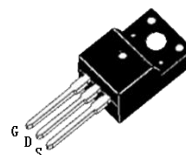
MAIN CHARACTERISTICS

I_D	4A
V_{DSS}	900V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	3.29Ω



FEATURES

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



TO-220F

APPLICATIONS

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

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

Product specification classification

Part Number	Package	Mode Name	Pack
CS4N90A2	TO-220F (0.5mm)	CS4N90A	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
		220F	
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current	I_D	4	A
Pulsed Drain Current (Note1)	I_{DM}	16	A
Power Dissipation	P_D	47	W
Single Pulse Avalanche Energy	E_{AS}	550	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.66	°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}	910	960	-	V
Drain-Source Leakage Current	$V_{DS} = 900 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	200	nA
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	-	5	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 2 \text{ A}$	$R_{DS(on)}$	-	3.29	4.5	Ω
Forward Transconductance	$V_{DS} = 50 \text{ V}, I_D = 2 \text{ A}$	g_{fs}	-	2.5	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	1100	-	pF
Output Capacitance		C_{oss}	-	90	-	pF
Reverse Transfer Capacitance		C_{rss}	-	15	-	pF
Turn-on Delay Time(Note2)	$I_D = 4 \text{ A}, V_{DD} = 450 \text{ V}, V_{GS} = 10 \text{ V}, R_G = 25 \Omega$	$t_{d(ON)}$	-	32	-	ns
Rise Time(Note2)		t_r	-	26	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	130	-	ns
Fall Time(Note2)		t_f	-	28	-	ns
Total Gate Charge(Note2)	$I_D = 4 \text{ A}, V_{DD} = 720 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	30	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	13	-	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	-	-	4	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	16	A
Drain-Source Diode Forward Voltage	$I_{SD} = 4 \text{ A}$	V_{SD}	-	0.85	1.4	V
Reverse Recovery Time(Note2)	$I_{SD} = 4 \text{ A}, V_{GS} = 0 \text{ V},$	t_{rr}	-	450	-	ns
Reverse Recovery Charge(Note2)	$di_F / dt = 100 \text{ A}/\mu\text{s}$	Q_{rr}	-	3.5	-	μC

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

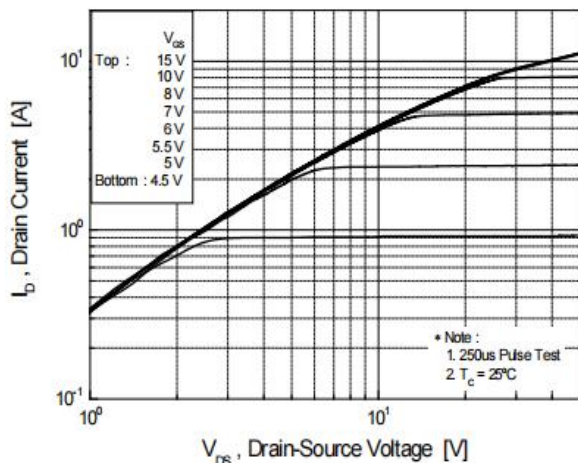


Figure 1. On Region Characteristics

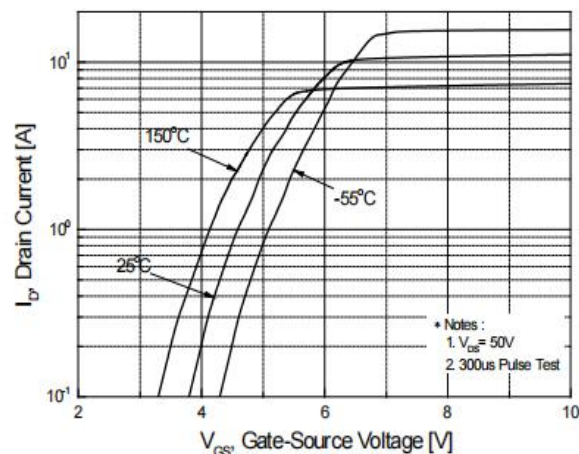


Figure 2. Transfer Characteristics

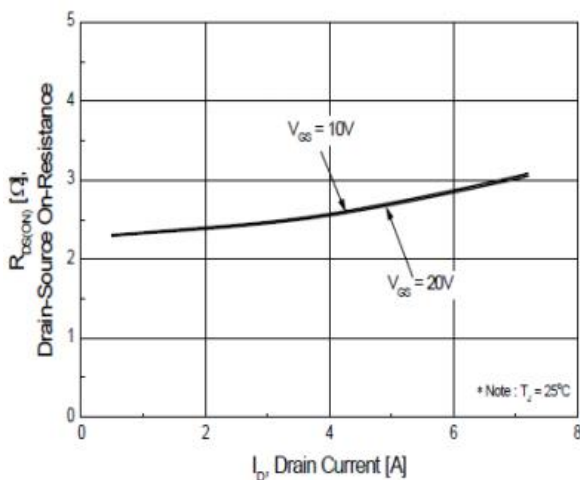


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

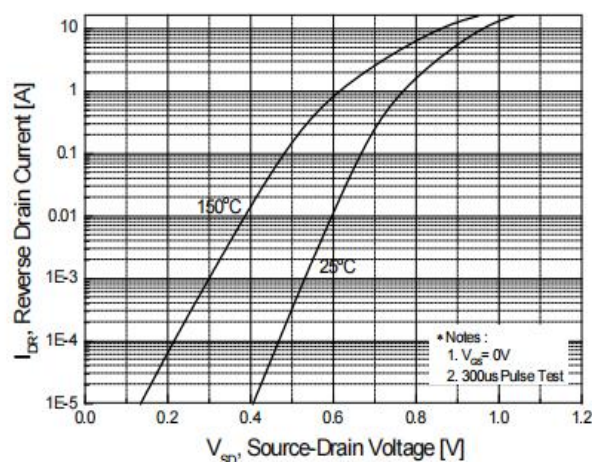


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

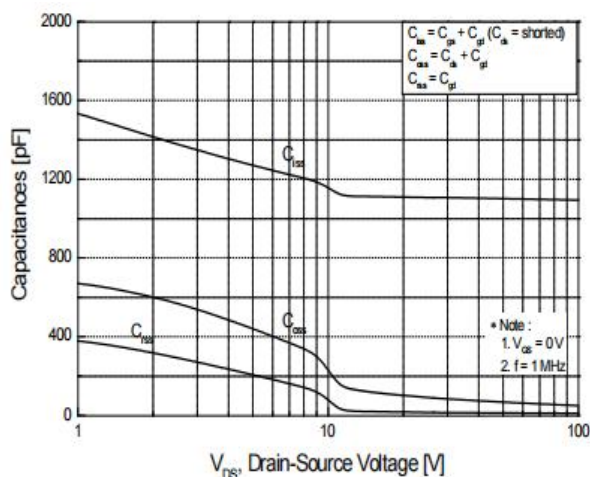


Figure 5. Capacitance Characteristics

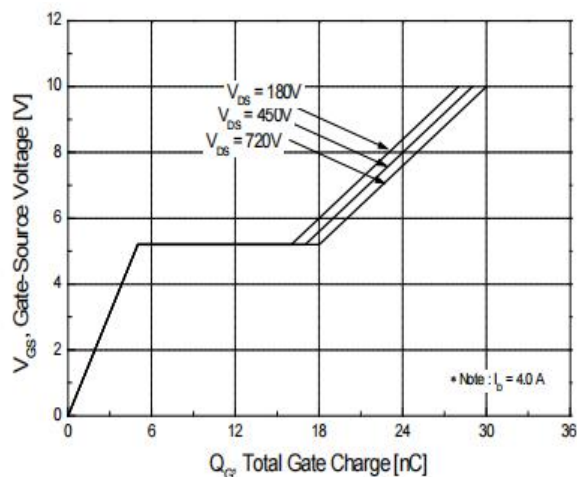


Figure 6. Gate Charge Characteristics

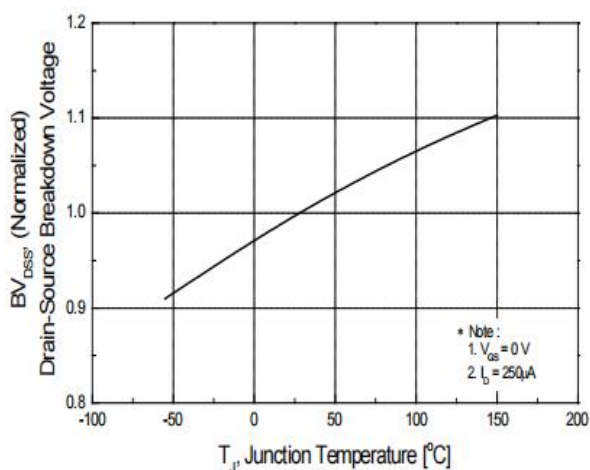


Figure 7. Breakdown Voltage Variation vs Temperature

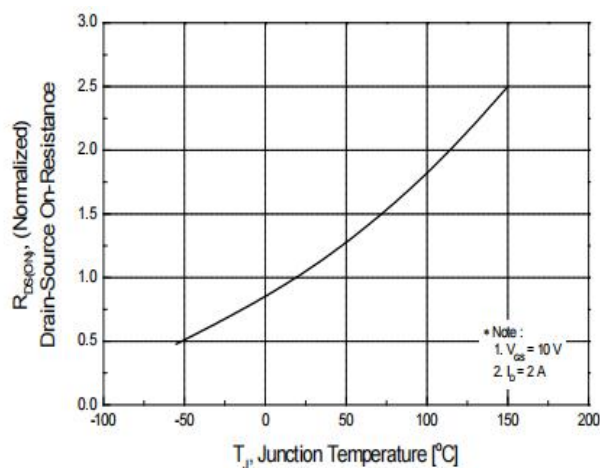


Figure 8. On-Resistance Variation vs Temperature

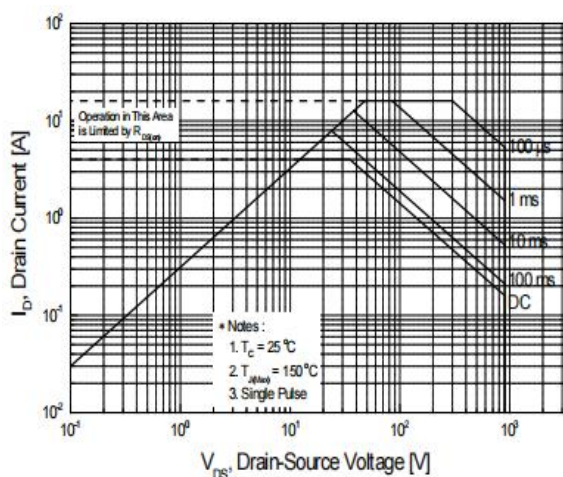


Figure 9-1. Maximum Safe Operating Area for TO-220

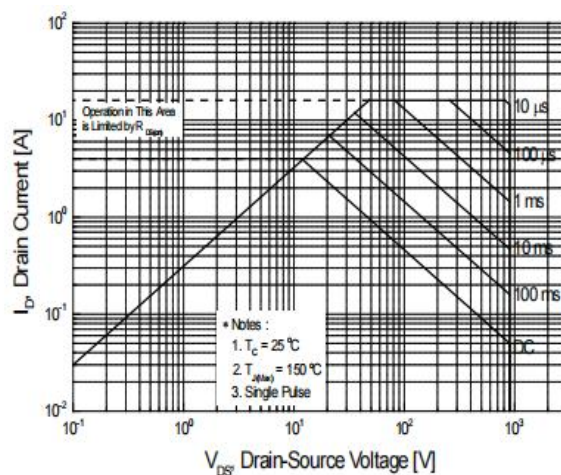


Figure 9-2. Maximum Safe Operating Area for TO-220F

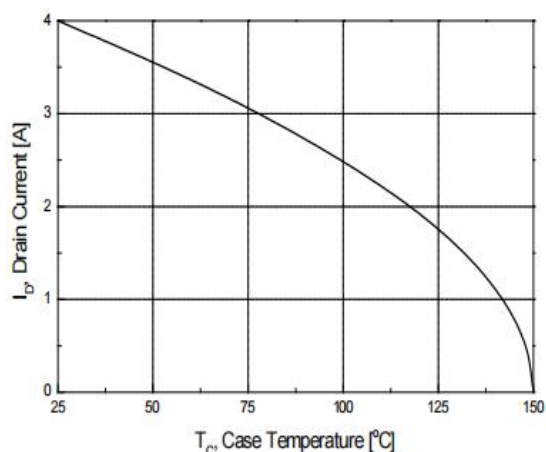
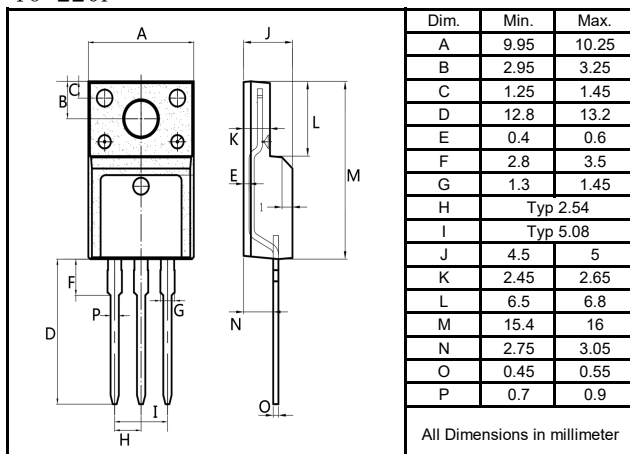


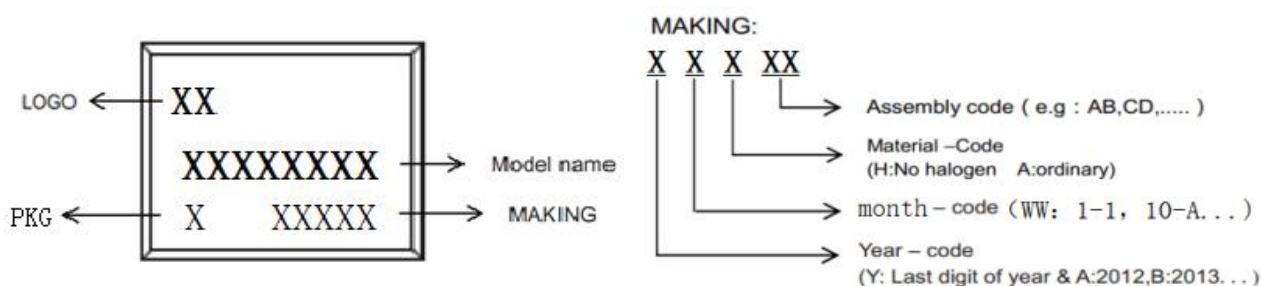
Figure 10. Maximum Drain Current vs Case Temperature

Package Outline Dimensions millimeters

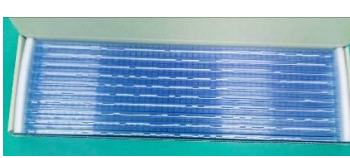
TO-220F



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F			
	50pcs/管	1000pcs/盒	5000pcs/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 poer exceeding normal ratedpoer; 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 documentpoer; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.