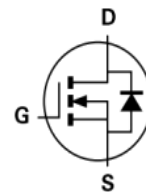


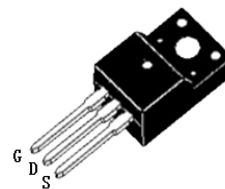
MAIN CHARACTERISTICS

I_D	120A
V_{DS}	85V
$R_{DS(on)}$ -typ (@ $V_{GS}=10V$)	4.1m Ω



FEATURES

- Ultra-low $R_{DS(on)}$
- Low Gate Charge
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant



TO-220F

APPLICATIONS

- Motor Driving in Power Tool, E-vehicle, Robotics
- Current Switching in DC/DC & AC/DC (SR) Sub-system
- Power Management in Telecom., Industrial Automation, CE

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
LG120N085AF	TO-220F	LG120N085AF	Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	85	V
Gate-Source Voltage	V_{GS}	± 20	V
Continue Drain Current	I_D	120	A
Pulsed Drain Current (Note1)	I_{DM}	465	A
Power Dissipation	P_D	208	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	500	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.6	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	°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}	85	-	-	V
Drain-Source Leakage Current	$V_{DS} = 80 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	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 (Note 3)	$V_{GS} = 10 \text{ V}, I_D = 20 \text{ A}$	$R_{DS(on)}$	-	4.1	5.0	m Ω
Forward Transconductance	$V_{DS} = 5 \text{ V}, I_D = 20 \text{ A}$	gfs	-	31	-	S
Gate Resistance	$V_{GS} = 0 \text{ V}, V_{DS} = 0 \text{ V}, f = 1 \text{ MHz}$	RG	-	1.9	-	Ω
Input Capacitance	$V_{DS} = 40 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	4010	-	pF
Output Capacitance		C_{oss}	-	1264	-	pF
Reverse Transfer Capacitance		C_{rss}	-	46	-	pF
Turn-on Delay Time(Note2)	$V_{GS} = 10 \text{ V}, V_{DS} = 40 \text{ V}$ $R_L = 2.0 \Omega, R_{GEN} = 3 \Omega$	$t_{d(ON)}$	-	17.6	-	ns
Rise Time(Note2)		t_r	-	27	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	31	-	ns
Fall Time(Note2)		t_f	-	10.8	-	ns
Total Gate Charge(Note2)	$V_{DS} = 40 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 20 \text{ A}$	Q_G	-	56	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	18.3	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	15	-	nC

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

Characteristics	Test Condition	Symbo	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	120	A
Drain-Source Diode Forward Voltage	$V_{GS} = 0 \text{ V}, I_S = 1 \text{ A}, T_J = 25^\circ\text{C}$	V_{SD}	-	0.7	1.0	V
Reverse Recovery Time(Note2)	$T_J = 25^\circ\text{C}, I_F = 20 \text{ A}$ $di / dt = 100 \text{ A}/\mu\text{s}$	trr	-	58	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	95	-	nC

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

RATINGS AND CHARACTERISTIC CURVES

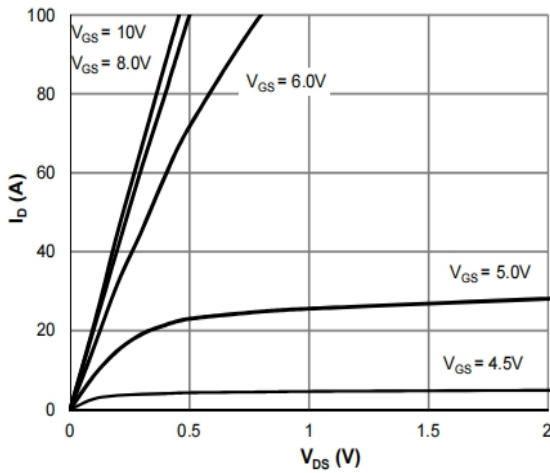


Figure 1: Saturation Characteristics

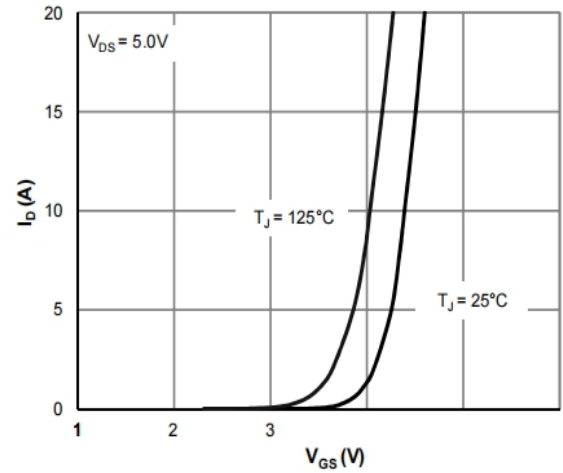


Figure 2: Transfer Characteristics

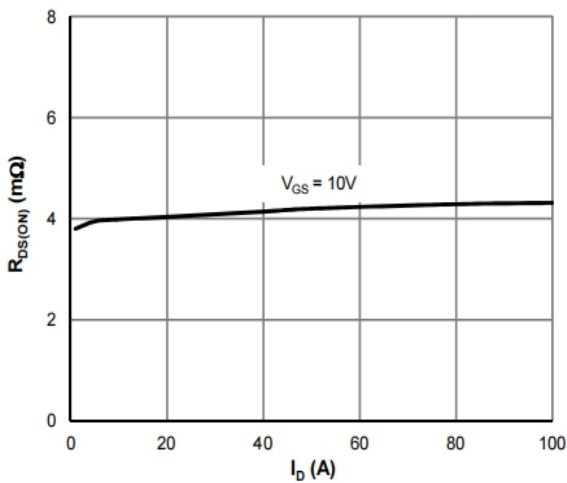


Figure 3: $R_{DS(ON)}$ vs. Drain Current

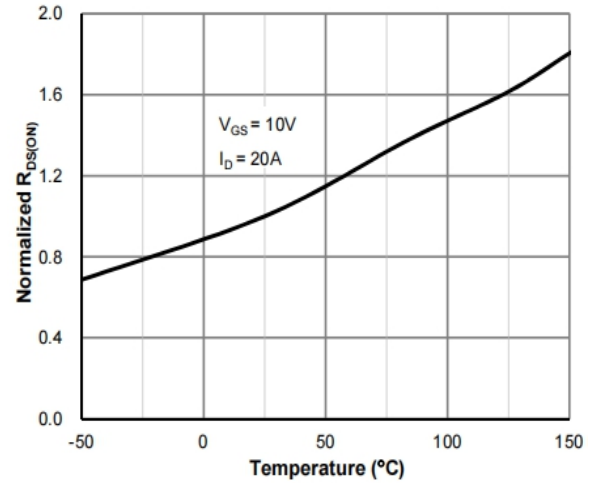


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

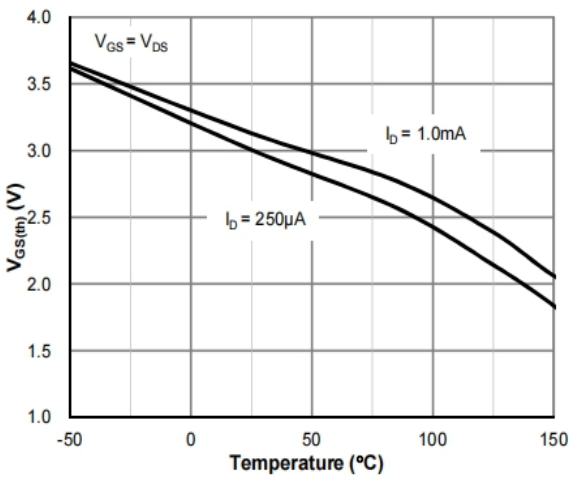


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

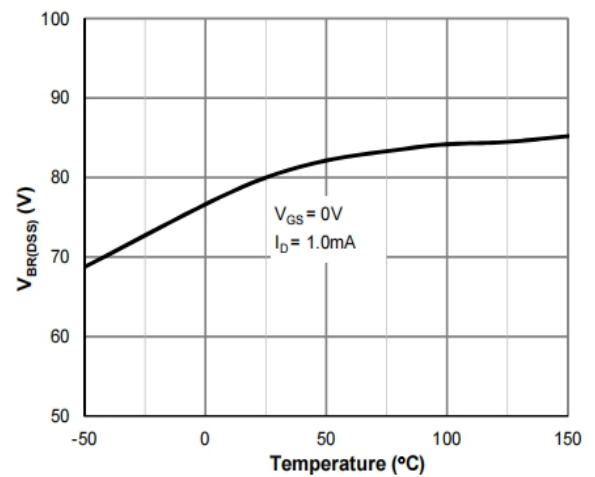


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

RATINGS AND CHARACTERISTIC CURVES

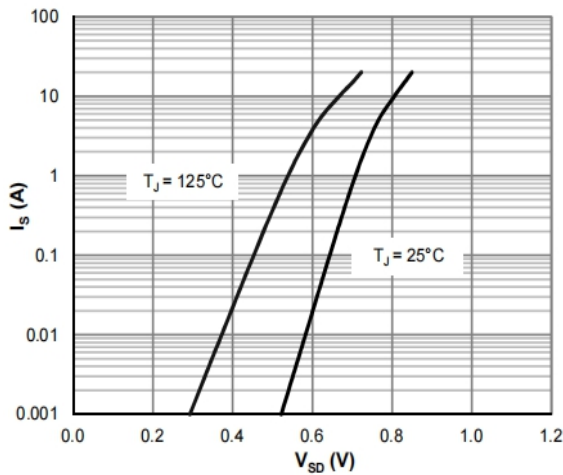


Figure 7: Body-Diode Characteristics

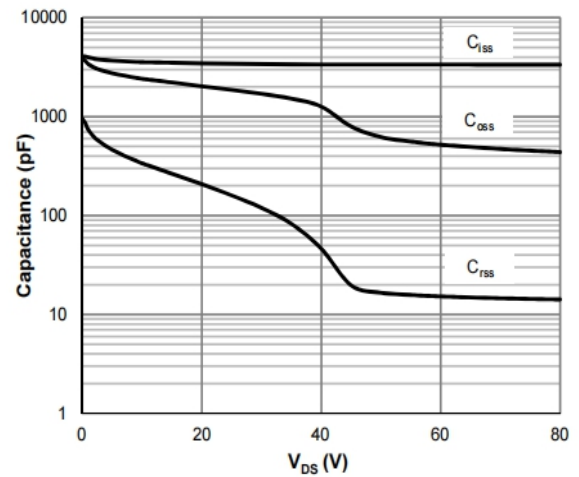


Figure 8: Capacitance Characteristics

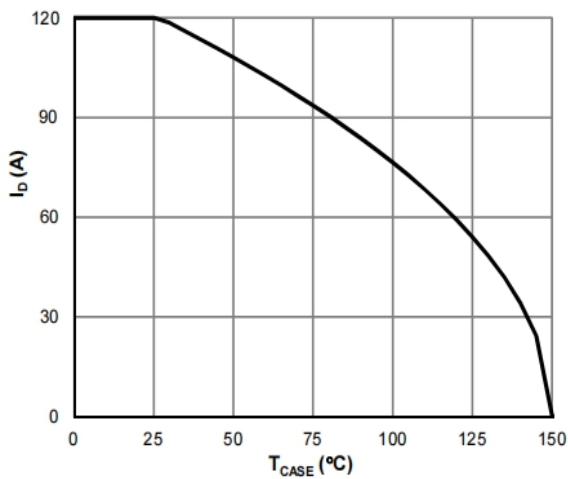


Figure 9: Current De-rating

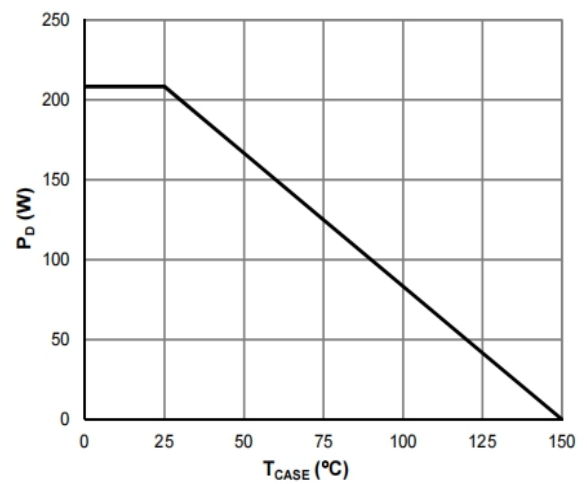


Figure 10: Power De-rating

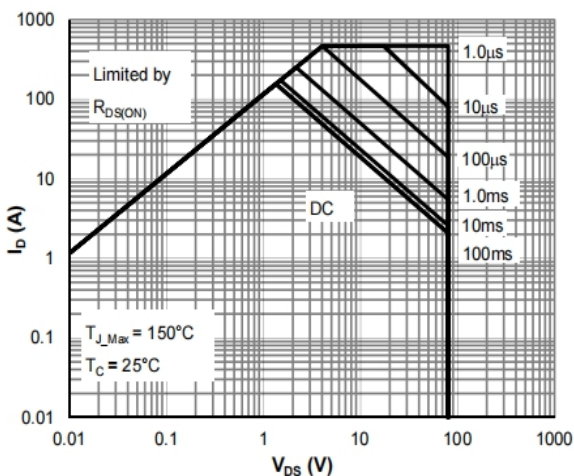


Figure 11: Maximum Safe Operating Area

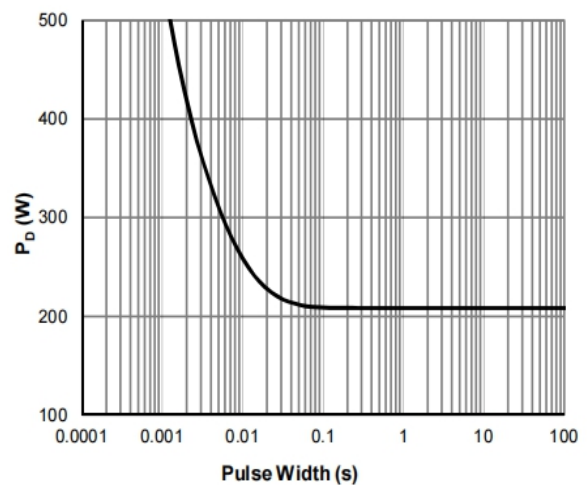
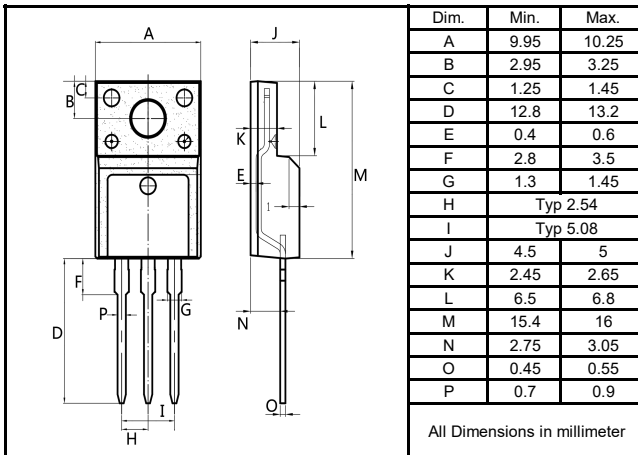


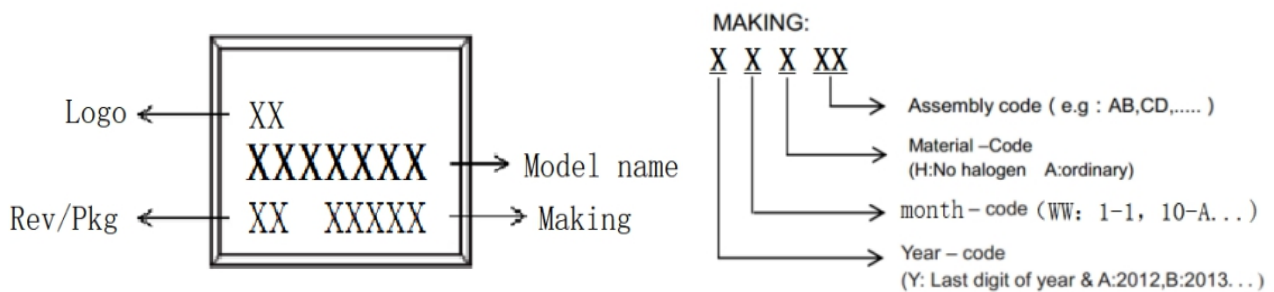
Figure 12: Single Pulse Power Rating, Junction-to-Case

Package Outline Dimensions millimeters

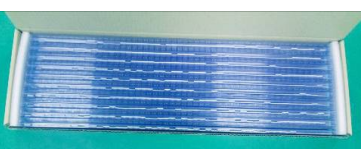
TO-220F



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 rated

poer; 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.