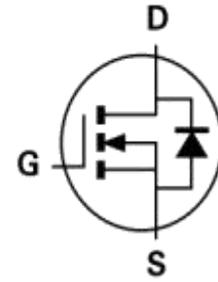


MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	650V
RDS(ON)-typ VGS=10V	165m Ω

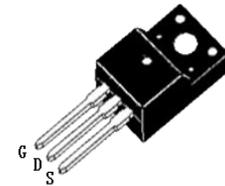


FEATURES

- High Dense Super Junction Design
- Excellent Gate Charge x RDS(ON) Product (FOM)
- Ultra Low On-Resistance
- Reliable and Rugged

APPLICATIONS

- SMPS



TO-220F

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
LC65R190F	TO-220F	LC65R190F	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
		220F	
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	20	A
Pulsed Drain Current (Note1)	I_{DM}	60	A
Power Dissipation	P_D	34	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	580	mJ
Operating Temperature Range	T_J	-50 to +150	°C
Storage Temperature Range	T_{STG}	-50 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.7	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	80	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

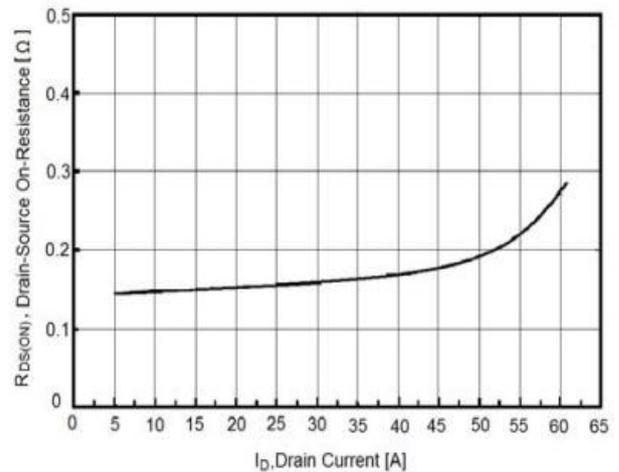
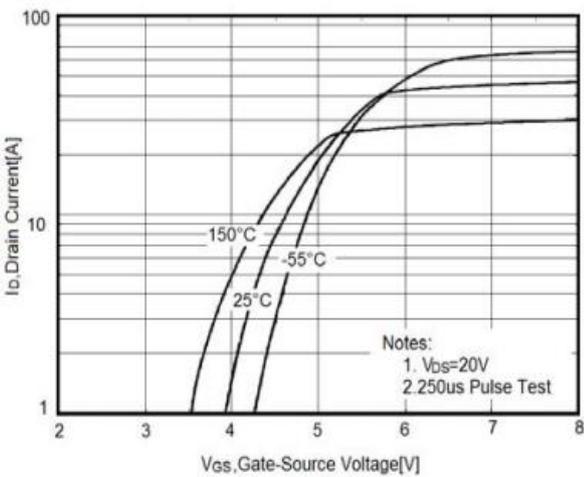
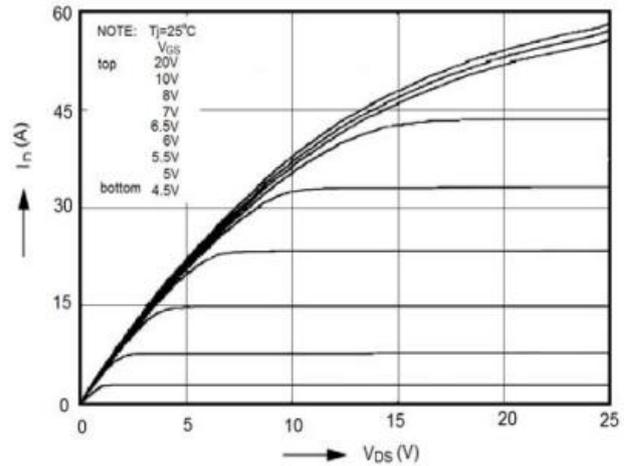
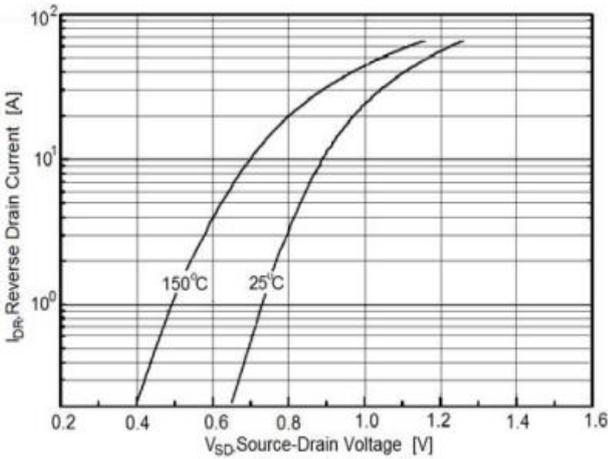
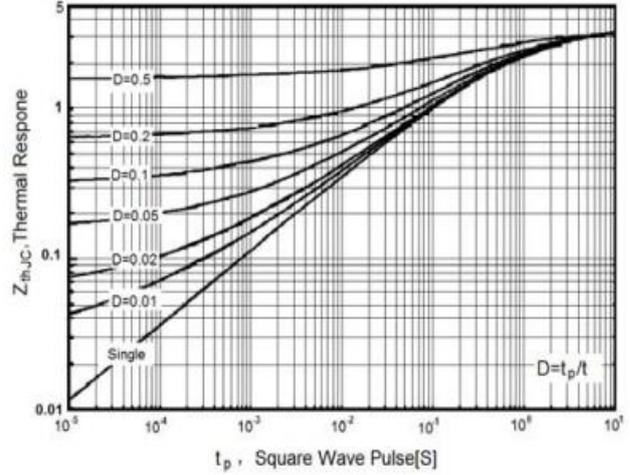
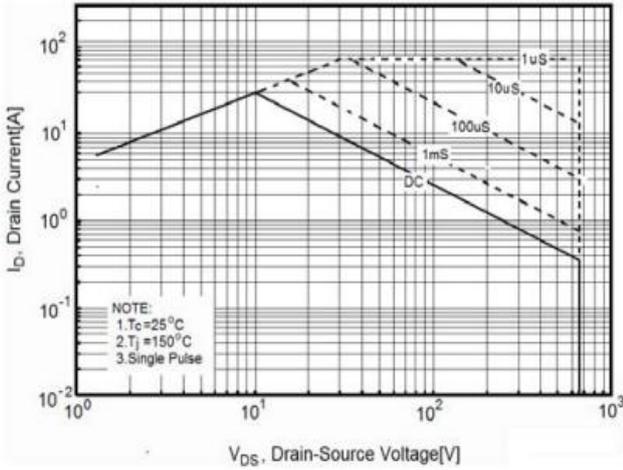
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	I_{DSS}	-	-	5	μA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	3.2	-	4.6	V
Drain-Source On-State Resistance	$V_{GS}=10V, I_D=10A$	$R_{DS(on)}$	-	165	190	mΩ
Forward Transconductance	$V_{DS} = 40V, I_D=10A$	g_{fs}	-	17	-	S
Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1.0MHz$	C_{iss}	-	1760	-	pF
Output Capacitance		C_{oss}	-	150	-	pF
Reverse Transfer Capacitance		C_{rss}	-	5.2	-	pF
Turn-on Delay Time(Note2)	$V_{DD} = 380V, I_D = 10 A, V_{GS} = 10V, R_G = 4\Omega$	$t_{d(ON)}$	-	12	-	ns
Rise Time(Note2)		t_r	-	5.5	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	60	-	ns
Fall Time(Note2)		t_f	-	4.5	-	ns
Total Gate Charge(Note2)	$V_{DS} = 480V, V_{GS} = 10V, I_D = 20A$	Q_G	-	45	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	8.6	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	18	-	nC

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

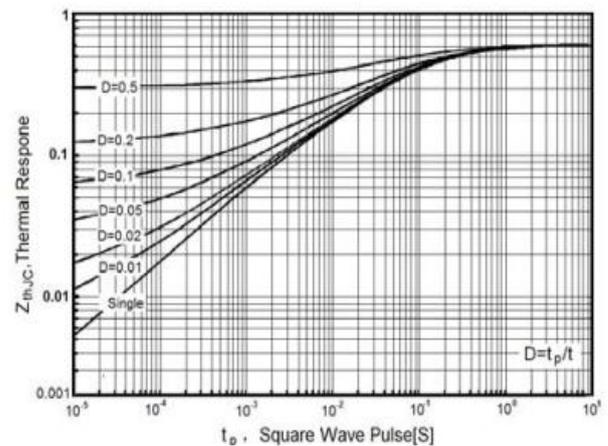
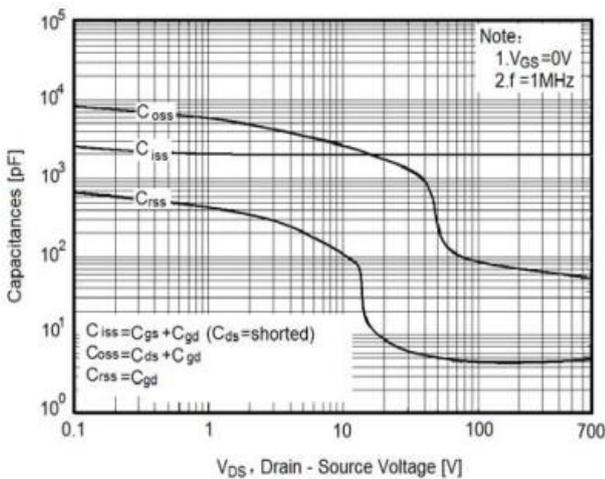
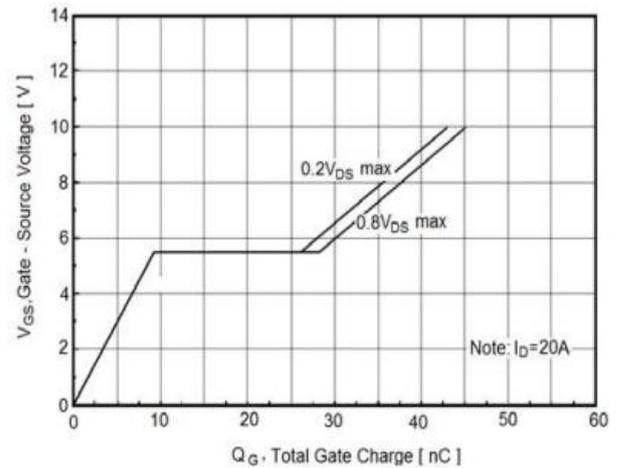
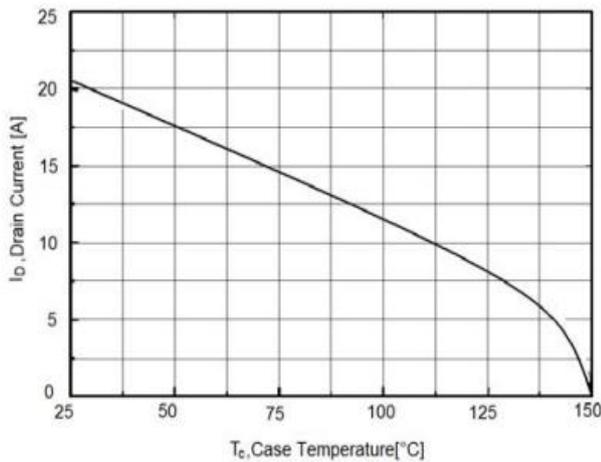
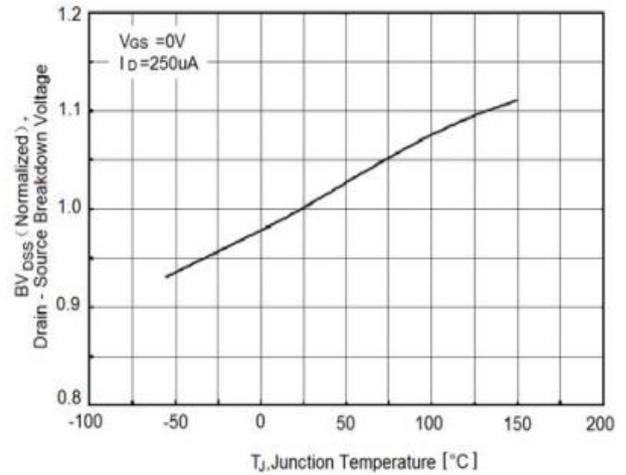
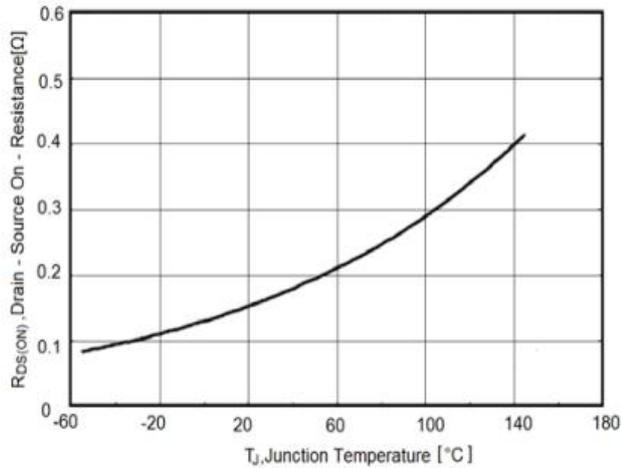
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximum Continuous Drain -Source Diode Forward Current		I_S	-	-	20	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}	-	-	60	A
Reverse recovery time	$T_J=25^\circ C, I_F=21A, di/dt=100A/\mu s$	t_{rr}	-	310	-	ns
Reverse recovery charge		Q_{rr}	-	5	-	uC
Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=20A, T_J=25^\circ C$	V_{SD}	-	-	1.3	V

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

RATINGS AND CHARACTERISTIC CURVES

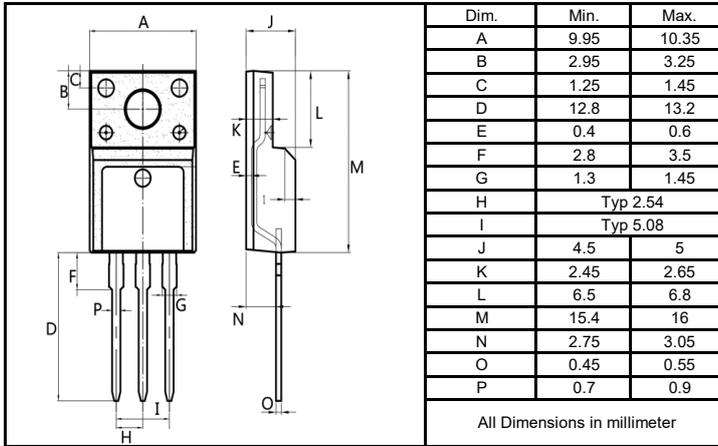


RATINGS AND CHARACTERISTIC CURVES

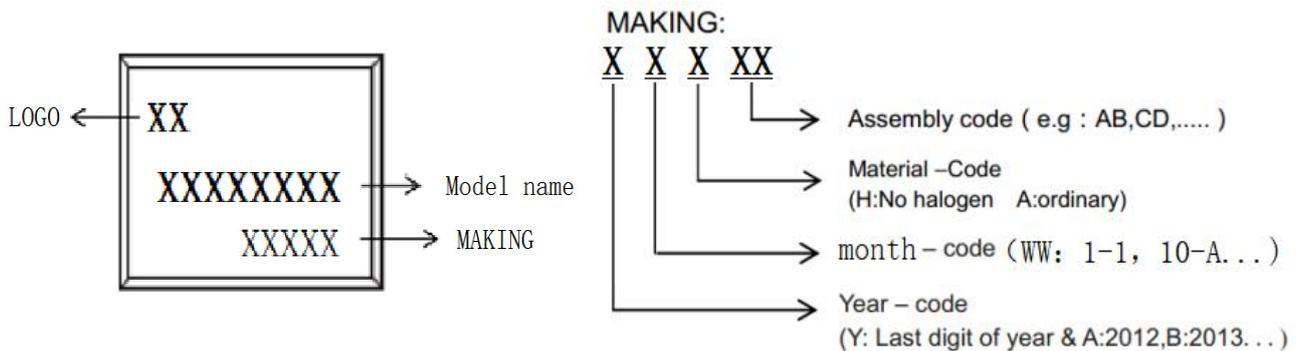


Package Outline Dimensions millimeters

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 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; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.