

MAIN CHARACTERISTICS

I_D	12A
V_{DSS}	700V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	0.79Ω

FEATURES

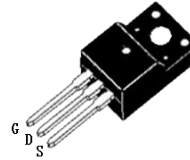
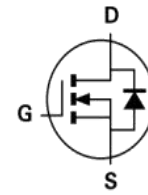
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

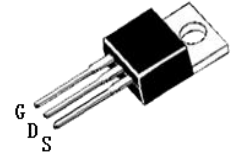
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

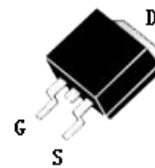
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



TO-220F



TO-220AB



TO-263

Product specification classification

Part Number	Package	Mode Name	Pack
CS12N70A1	TO-220AB	CS12N70A	Tube
CS12N70A2	TO-220F (0.5mm)	CS12N70A	Tube
CS12N70A8	TO-220F (1.3mm)	CS12N70A	Tube
CS12N70A3	TO-263	CS12N70A	Tube
CS12N70A3-R	TO-263	CS12N70A	Tape

Maximum Ratings at $T_c=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Symbol	Value		Unit
		220AB/263	220F	
Drain-Source Voltage	V_{DS}	700		V
Gate-Source Voltage	V_{GS}	± 30		V
Continue Drain Current	I_D	12		A
Pulsed Drain Current (Note1)	I_{DM}	48		A
Power Dissipation	P_D	110	42	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	580		mJ
Operating Temperature Range	T_J	150		$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150		$^{\circ}\text{C}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.1	4.2	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	62.5	$^{\circ}\text{C/W}$

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

Electrical Characteristics at $T_c=25^{\circ}\text{C}$ unless otherwise specified

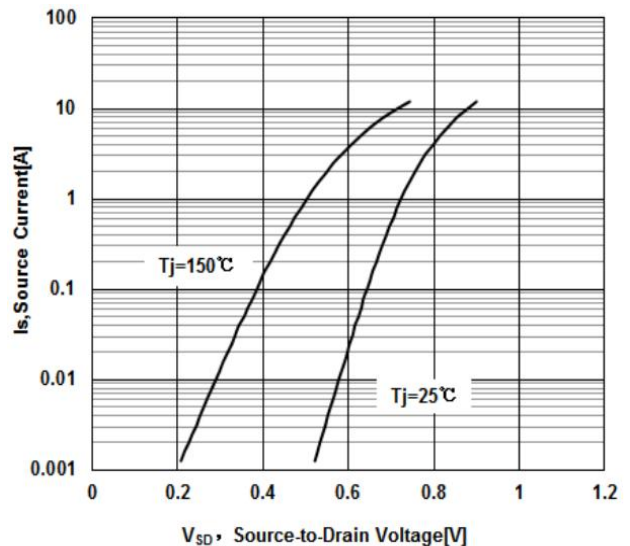
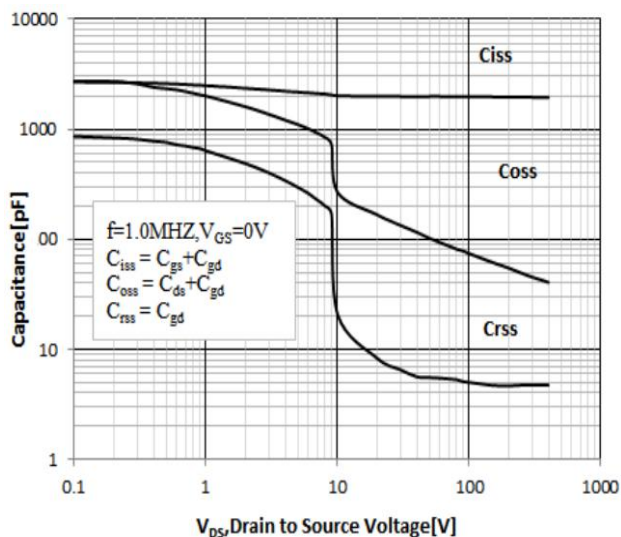
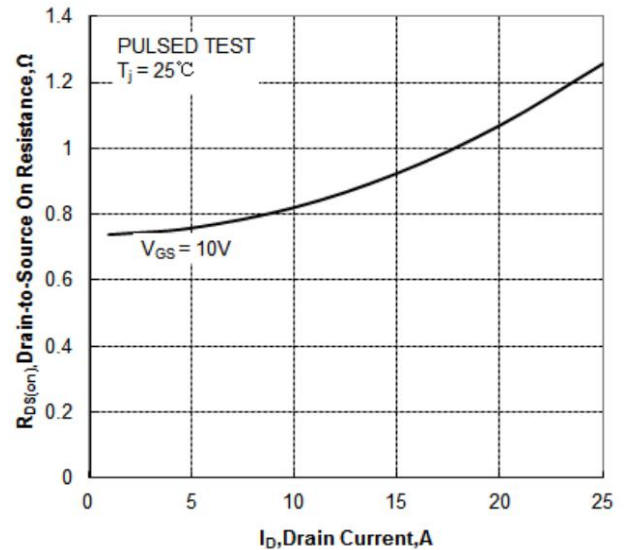
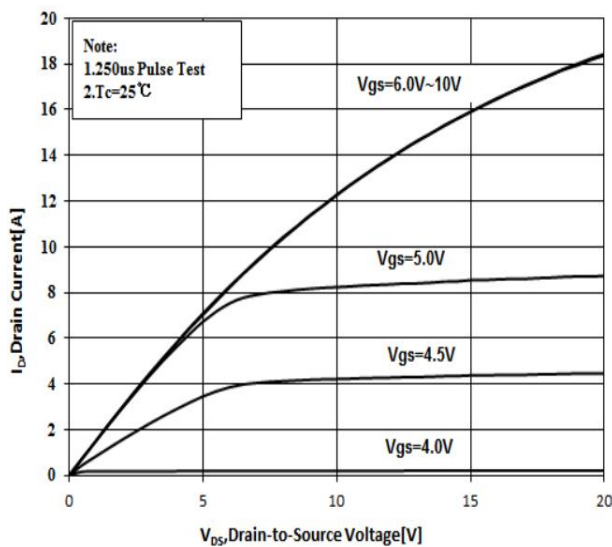
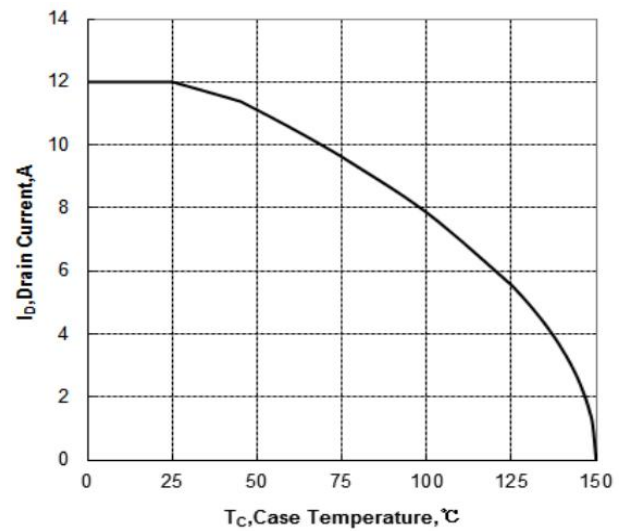
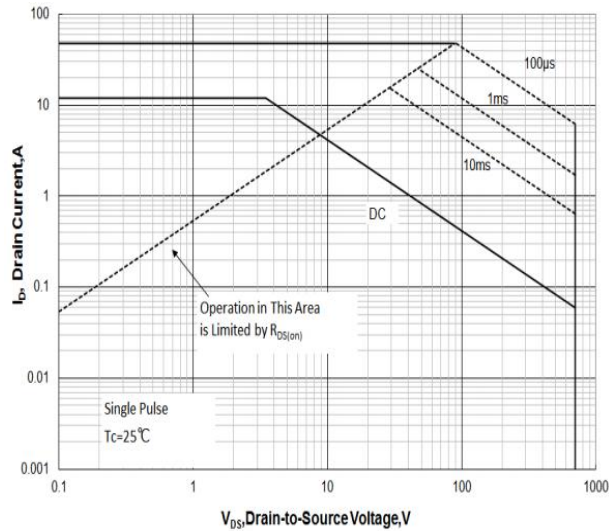
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	700	-	-	V
Drain-Source Leakage Current	$V_{DS} = 700\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	0.1	μA
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 80	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10\text{ V}, I_D = 6\text{ A}$	$R_{DS(on)}$	-	0.79	0.95	Ω
Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 6\text{ A}$	gfs	-	12	-	S
Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1.0\text{ MHz}$	C_{iss}	-	1981	-	pF
Output Capacitance		C_{oss}	-	146.9	-	pF
Reverse Transfer Capacitance		C_{rss}	-	6.9	-	pF
Turn-on Delay Time(Note2)	$I_D = 12\text{ A}, V_{DD} = 350\text{ V}, R_G = 10\Omega$	$t_{d(ON)}$	-	28	-	ns
Rise Time(Note2)		t_r	-	26	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	64	-	ns
Fall Time(Note2)		t_f	-	45	-	ns
Total Gate Charge(Note2)	$I_D = 12\text{ A}, V_{DD} = 560\text{ V}, V_{GS} = 10\text{ V}$	Q_G	-	38.6	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	9.2	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	16	-	nC

Source-Drain Diode Characteristics at $T_a=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	12	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	$I_{SD} = 12\text{ A}$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 12\text{ A}, V_{GS} = 0\text{ V},$	trr	-	536	-	ns
Reverse Recovery Charge(Note2)	$dl_F / dt = 100\text{ A}/\mu\text{s}$	Qrr	-	4693	-	μC

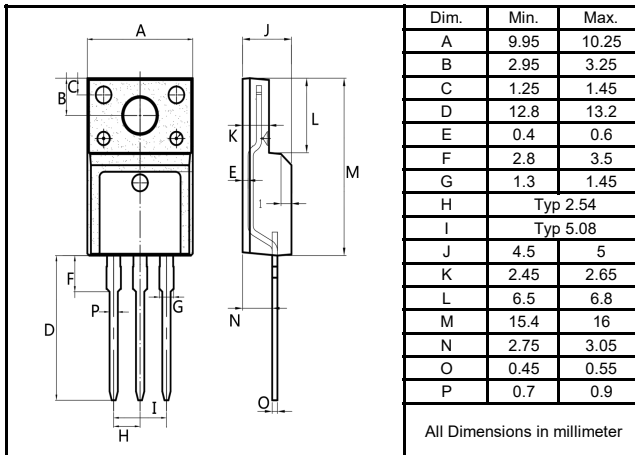
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

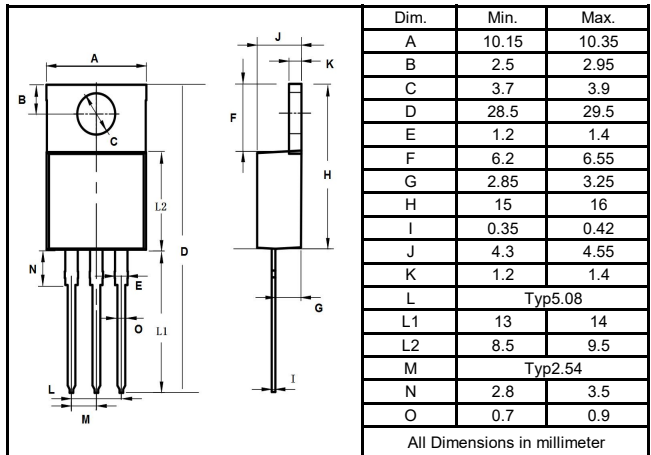


Package Outline Dimensions millimeters

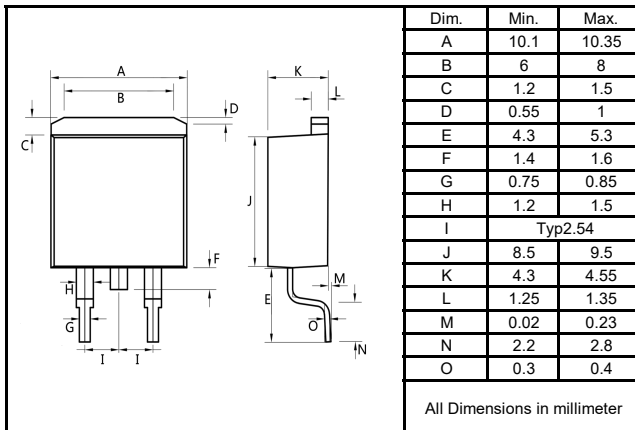
T0-220F



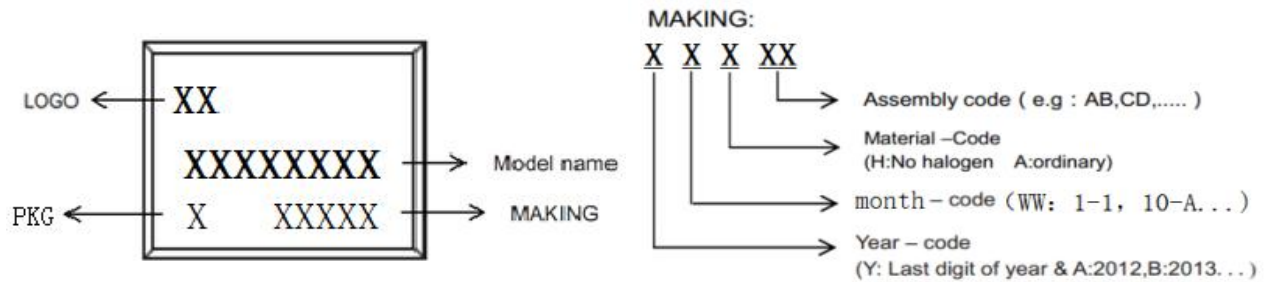
T0-220AB



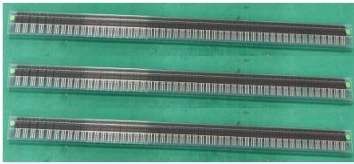
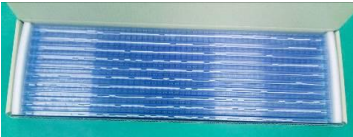
T0-263



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-263-R			
	800pcs/盘	1600pcs/盒	8000pcs/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.