

MAIN CHARACTERISTICS

I_D	5A
V_{DSS}	500V
$R_{DSON-typ}$ (@VGS=10V Tc=25°C)	1.33Ω

FEATURES

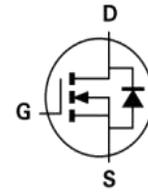
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

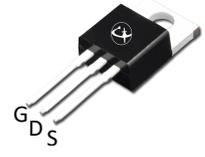
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

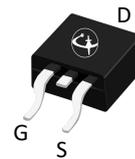
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



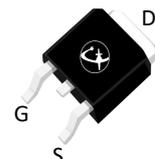
TO-220F



TO-220AB



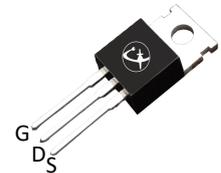
TO-263



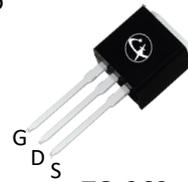
TO-252



TO-251



TO-220C



TO-262

Product specification classification

Part Number	Package	Mode Name	Pack
CS5N50A2	TO-220F (0.5mm)	CS5N50A	Tube
CS5N50A1	TO-220AB	CS5N50A	Tube
CS5N50A3	TO-263	CS5N50A	Tube
CS5N50A3-R	TO-263	CS5N50A	Tape
CS5N50A5-R	TO-252	CS5N50A	Tape
CS5N50A4	TO-251	CS5N50A	Tube
CS5N50AP	TO-220C	CS5N50A	Tube
CS5N50A0	TO-262	CS5N50A	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value			Unit
		220AB/263 220C/262	220F	251/252	
Drain-Source Voltage	V_{DS}	500			V
Gate-Source Voltage	V_{GS}	±30			V
Continue Drain Current	I_D	5			A
Pulsed Drain Current (Note1)	I_{DM}	20			A
Power Dissipation	P_D	75	30	75	W
Single Pulse Avalanche Energy	E_{AS}	200			mJ
Operating Temperature Range	T_J	150			°C
Storage Temperature Range	T_{STG}	-55 to +150			°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.67	4.17	1.67	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	100	62.5	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

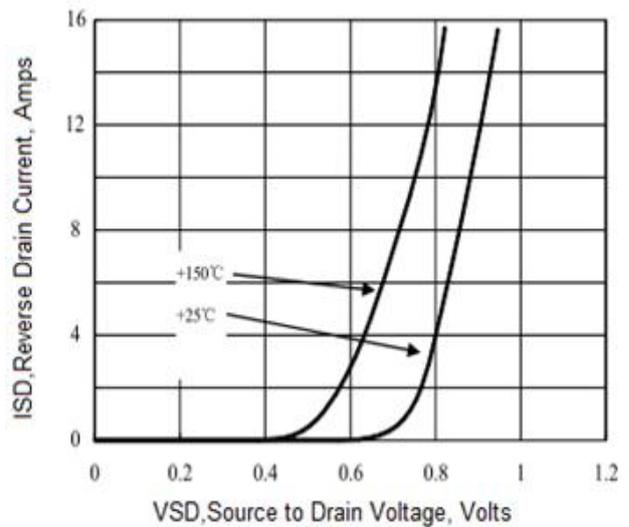
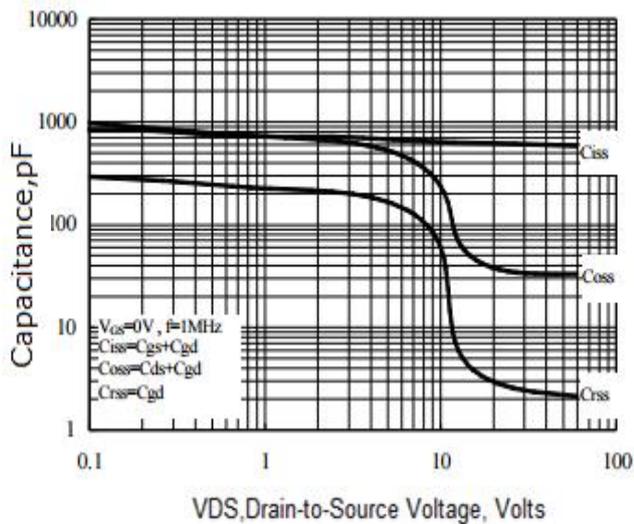
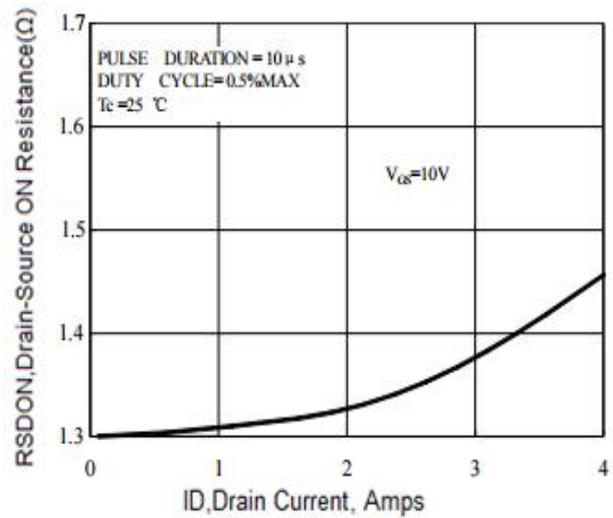
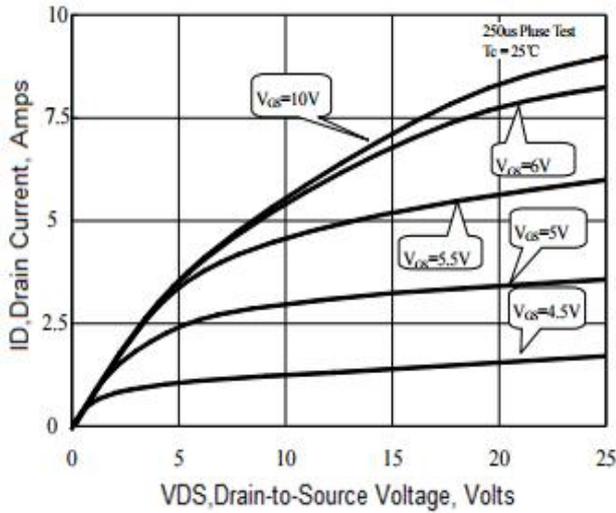
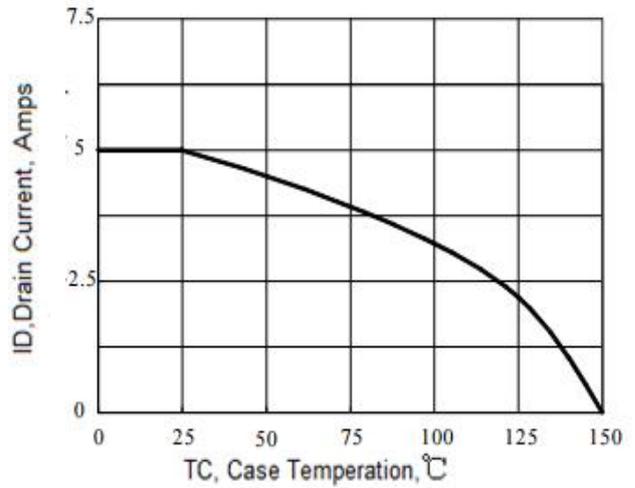
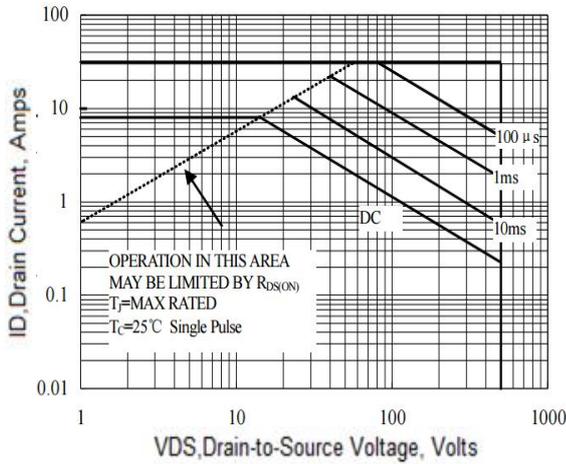
Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	BV_{DSS}	500	-	-	V
Drain-Source Leakage Current	$V_{DS} = 500 V, V_{GS} = 0 V$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 2.5 A$	$R_{DS(on)}$	-	1.33	1.55	Ω
Forward Transconductance	$V_{DS} = 15 V, I_D = 2.5 A$	gfs	-	4	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V,$ $f = 1 MHz$	C_{iss}	-	640	-	pF
Output Capacitance		C_{oss}	-	63	-	pF
Reverse Transfer Capacitance		C_{rss}	-	5.5	-	pF
Turn-on Delay Time(Note2)	$I_D = 5 A, V_{DD} = 250V,$ $R_G = 10 \Omega$	$t_{d(ON)}$	-	9	-	ns
Rise Time(Note2)		t_r	-	11	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	29	-	ns
Fall Time(Note2)		t_f	-	16	-	ns
Total Gate Charge(Note2)	$I_D = 5 A, V_{DD} = 400 V,$ $V_{GS} = 10 V$	Q_G	-	14.5	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	3.5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	7	-	nC

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

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	5	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	20	A
Drain-Source Diode Forward Voltage	$I_{SD} = 5 A$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	$I_{SD} = 5 A, V_{GS} = 0 V,$ $di_F / dt = 100 A/\mu s$	trr	-	391	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	1.7	-	μC

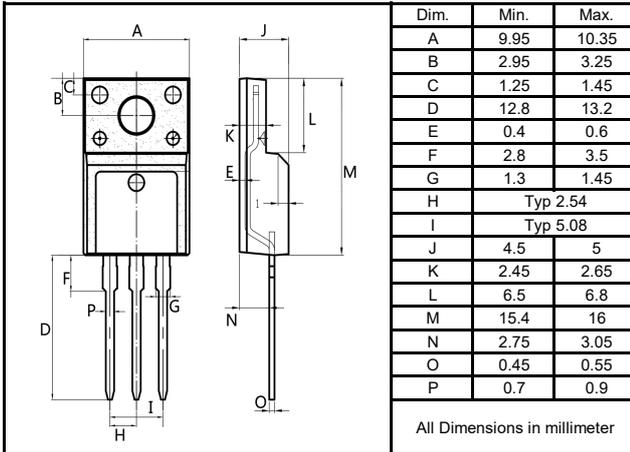
Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

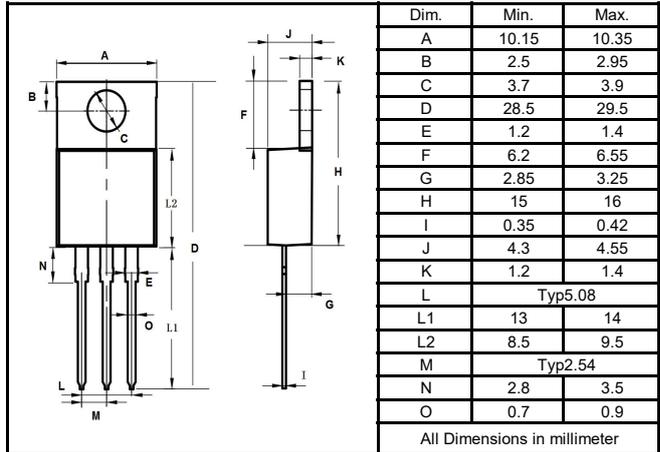


Package Outline Dimensions millimeters

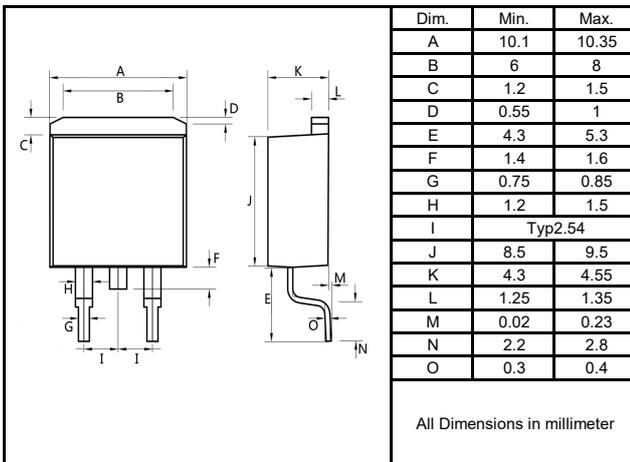
T0-220F



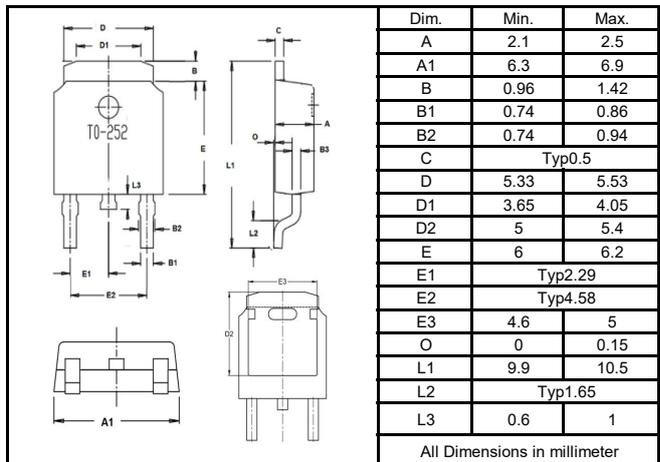
T0-220AB



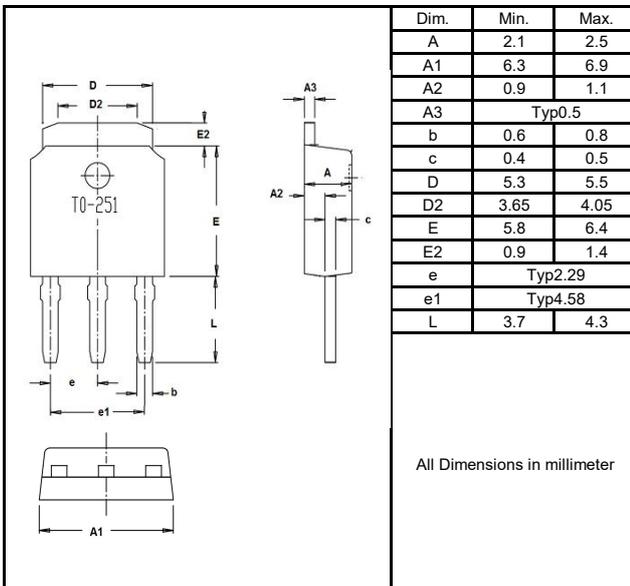
T0-263



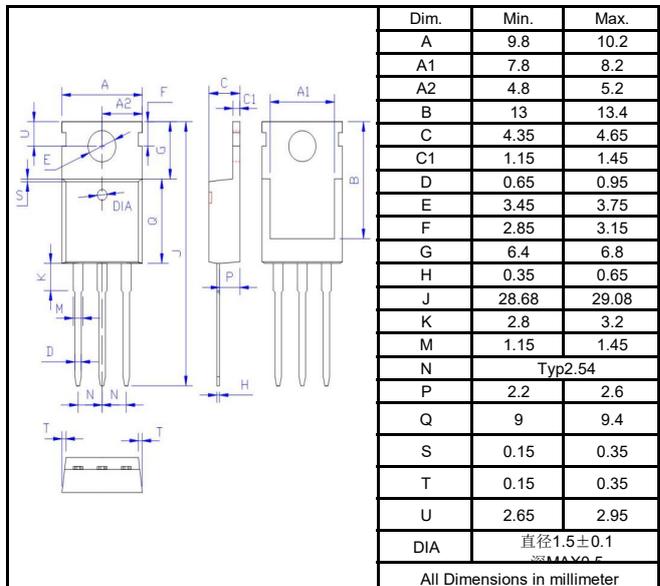
T0-252



T0-251

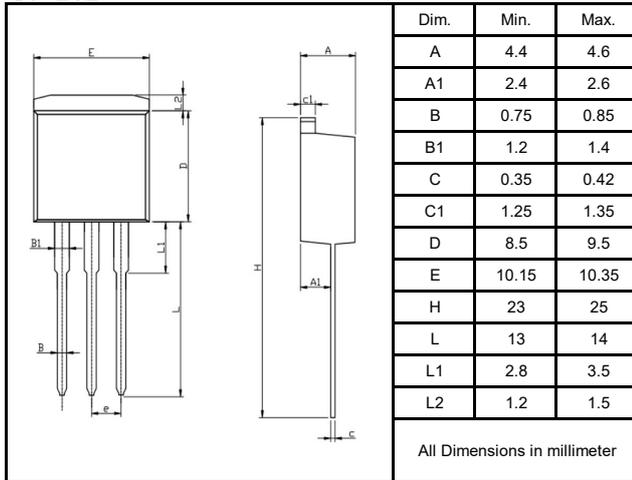


T0-220C

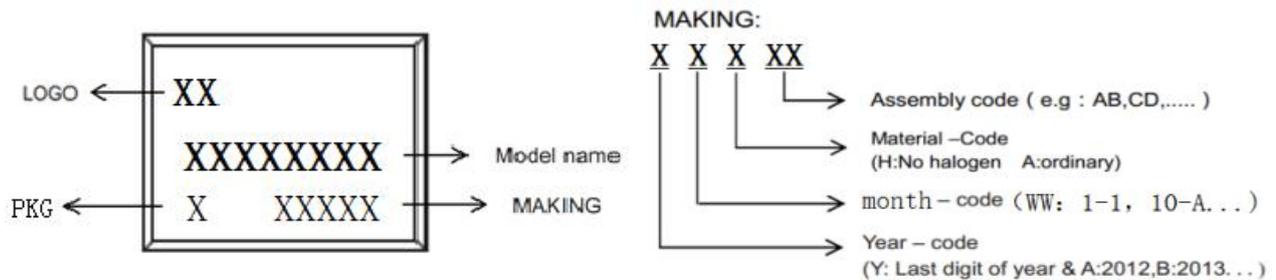


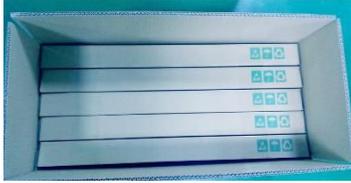
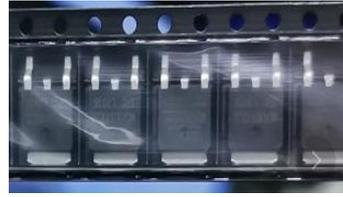
Package Outline Dimensions millimeters

T0-262



Marking on the body



packing instruction			
PKG	Minimal Package	Mini Box	Box
TO-220F TO-220AB TO-263 TO-220C TO-262			
	50pcs/pdpe	1000pcs/box	5000pcs/box
TO-252			
	2500pcs/disk	5000pcs/disk	25000pcs/box
TO-263-R			
	800pcs/disk	1600pcs/disk	8000pcs/box
TO-251			
	80pcs/pdpe	4000pcs/box	24000pcs/box



CS5N50A

N-Channel Enhancement Mode Power MOSFET

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.

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Revision History

Rev	Changes	Date
1.0	First version	2025-8-4