

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	500V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	0.5 Ω

FEATURES

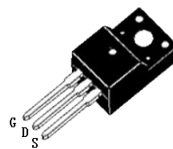
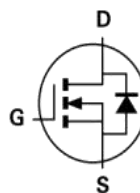
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

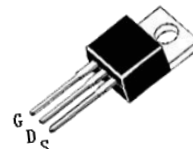
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

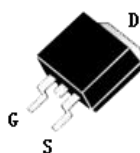
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



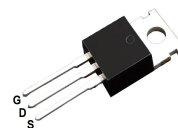
TO-220F



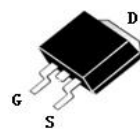
TO-220AB



TO-263



TO-220C



TO-263C

Product specification classification

Part Number	Package	Mode Name	Pack
CS10N50A2	TO-220F (0.5mm)	CS10N50A	Tube
CS10N50A1	TO-220AB	CS10N50A	Tube
CS10N50A3	TO-263	CS10N50A	Tube
CS10N50A3-R	TO-263	CS10N50A	TSpe
CS10N50AP	TO-220C	CS10N50A	TSpe
CS10N50AT	TO-263C	CS10N50A	TSpe

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value		Unit
		220F	220AB/263/220C/263C	
Drain-Source Voltage	V_{DS}	500		V
Gate-Source Voltage	V_{GS}	± 30		V
Continue Drain Current	I_D	10		A
Pulsed Drain Current (Note1)	I_{DM}	40		A
Power Dissipation	P_D	50	179	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	414		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.5	0.59	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	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}	500	-	-	V
Drain-Source Leakage Current	$V_{DS} = 500 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 6.5 \text{ A}$	$R_{DS(on)}$	-	0.5	0.6	Ω
Forward Transconductance	$V_{DS} = 15 \text{ V}, I_D = 6.5 \text{ A}$	g_{fs}	-	13	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	1645	-	pF
Output Capacitance		C_{oss}	-	150	-	pF
Reverse Transfer Capacitance		C_{rss}	-	18	-	pF
Turn-on Delay Time(Note2)	$I_D = 13 \text{ A}, V_{DD} = 250 \text{ V}, R_G = 10 \Omega$	$t_{d(ON)}$	-	26	-	ns
Rise Time(Note2)		t_r	-	40	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	92	-	ns
Fall Time(Note2)		t_f	-	42	-	ns
Total Gate Charge(Note2)	$I_D = 13 \text{ A}, V_{DD} = 250 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	33	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	9.7	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	11	-	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	-	-	10	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	40	A
Drain-Source Diode Forward Voltage	$I_{SD} = 13 \text{ A}$	V_{SD}	-	-	1.4	V
Reverse Recovery Time(Note2)	$I_{SD} = 13 \text{ A}, V_{GS} = 0 \text{ V},$	t_{rr}	-	386	-	ns
Reverse Recovery Charge(Note2)	$dl_F / dt = 100 \text{ A}/\mu\text{s}$	Q_{rr}	-	4.2	-	μC

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

Figure 1: Output Characteristics

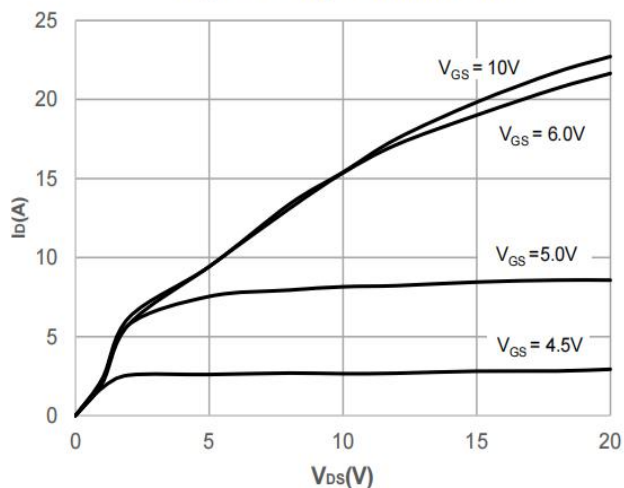


Figure 2: Typical Transfer Characteristics

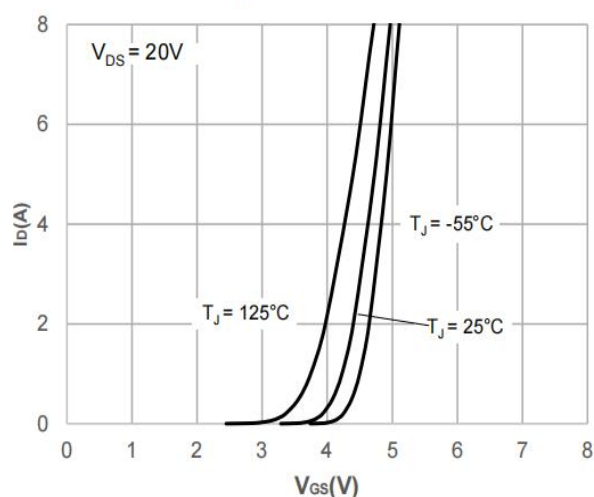


Figure 3: On-resistance vs. Drain Current

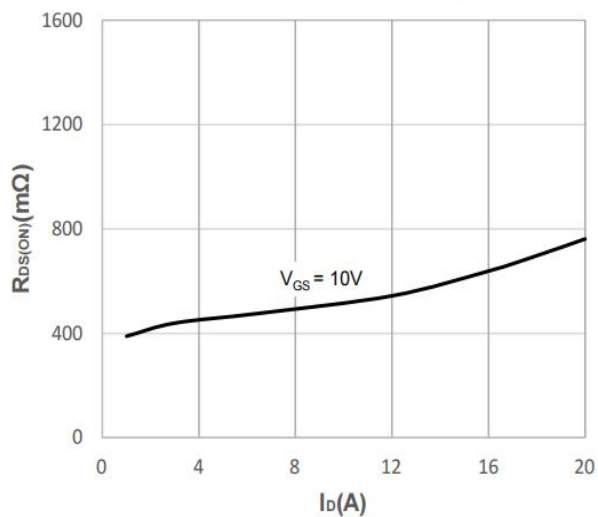


Figure 4: Body Diode Characteristics

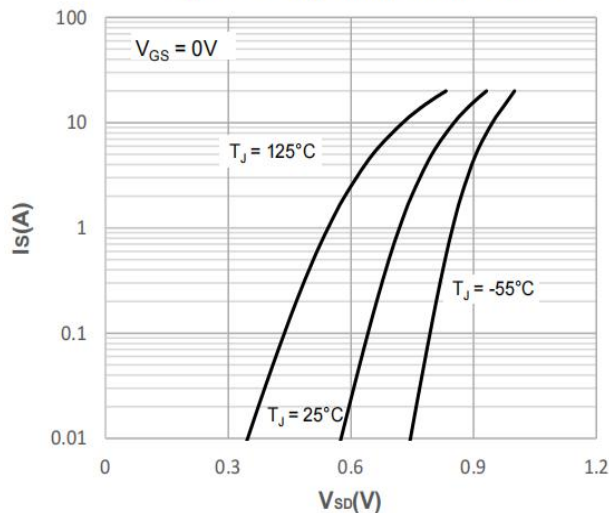


Figure 5: Gate Charge Characteristics

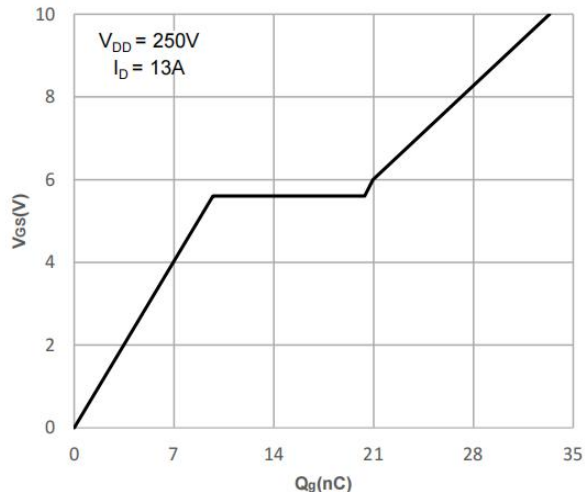
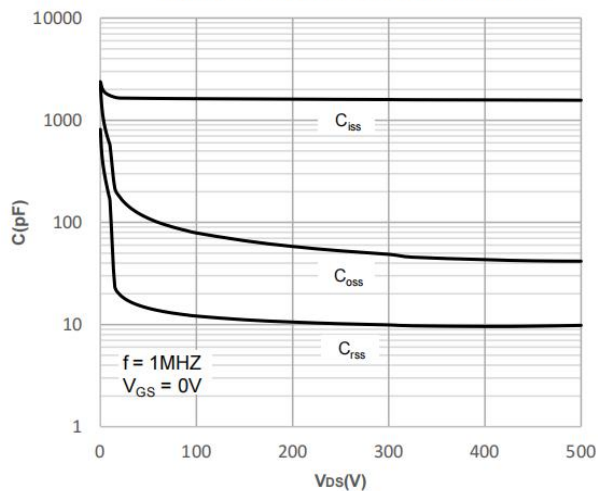


Figure 6: Capacitance Characteristics



RATINGS AND CHARACTERISTIC CURVES

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

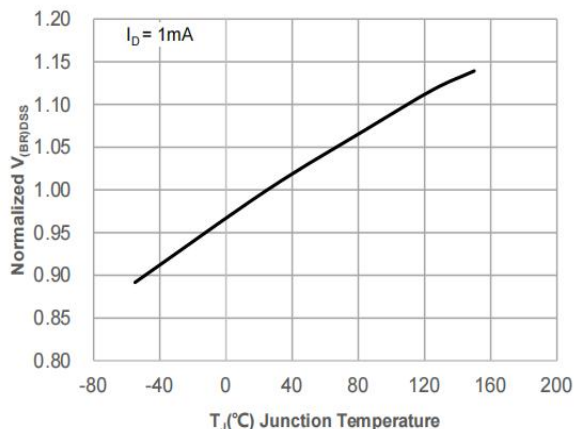


Figure 8: Normalized on Resistance vs. Junction Temperature

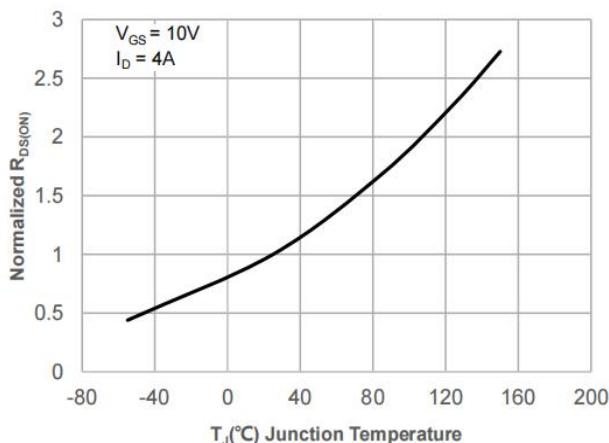


Figure 9: Maximum Safe Operating Area

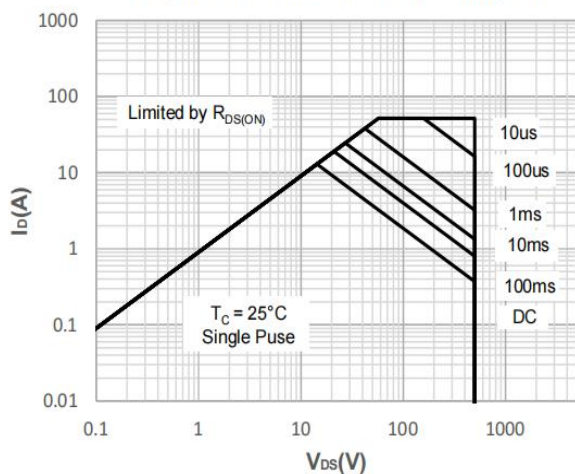


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

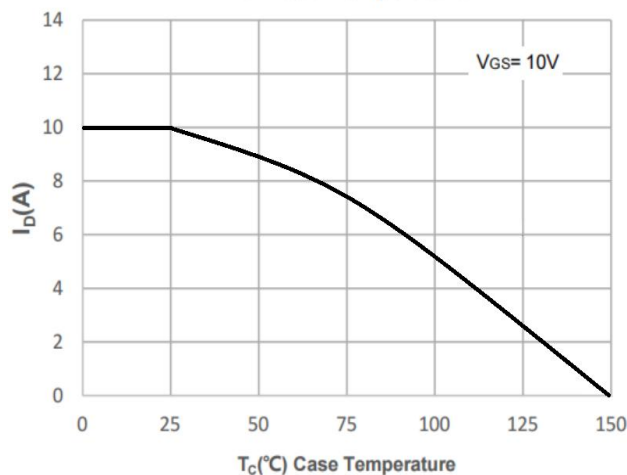


Figure 11: Normalized Maximum Transient Thermal Impedance

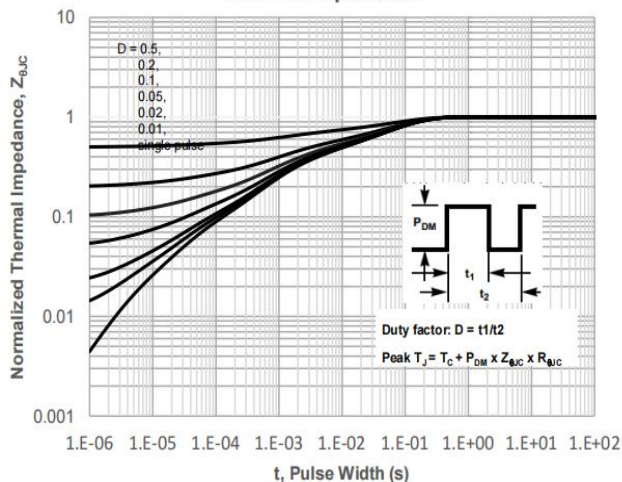
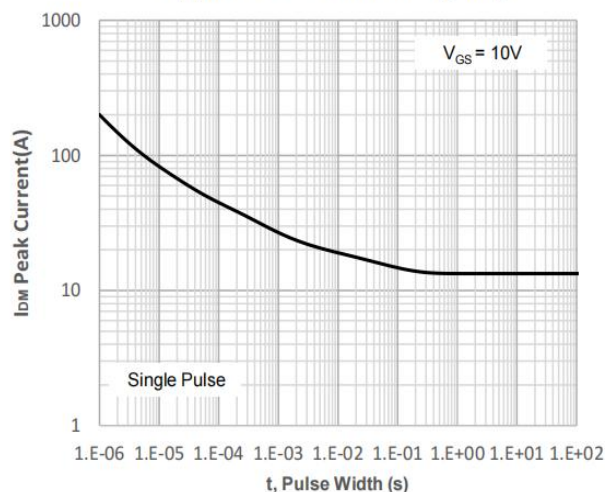
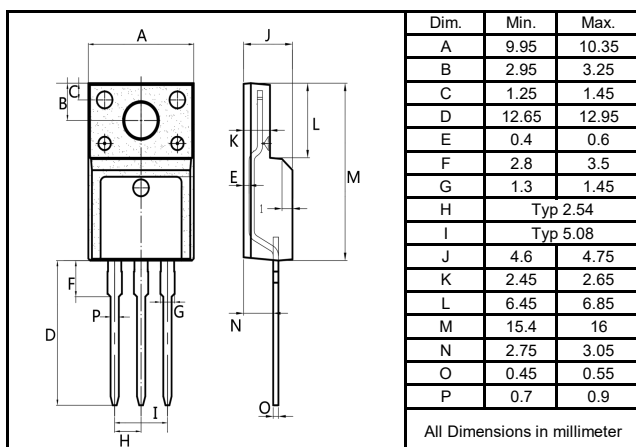


Figure 12: Peak Current Capacity

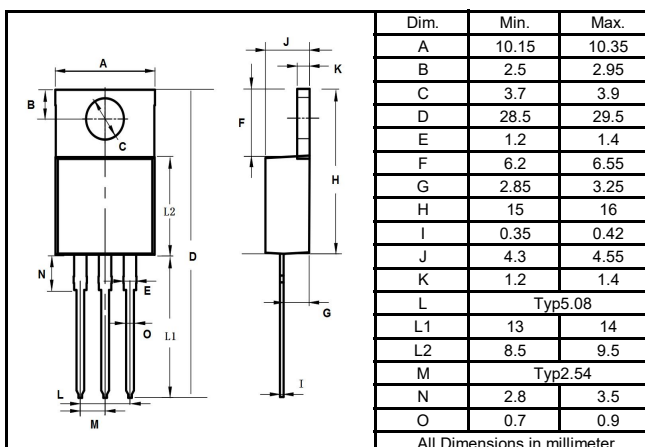


Package Outline Dimensions millimeters

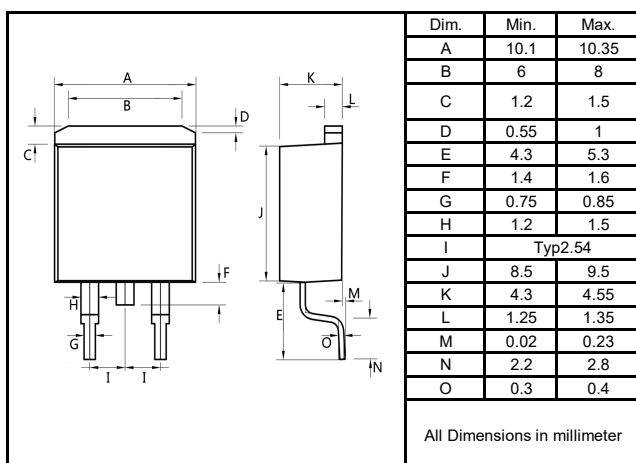
T0-220F



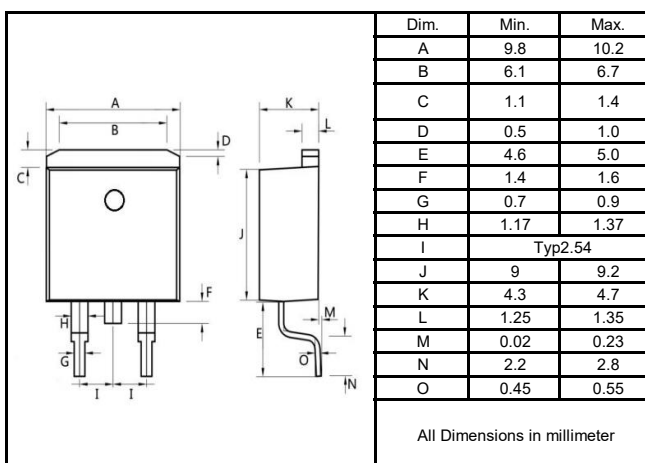
T0-220AB



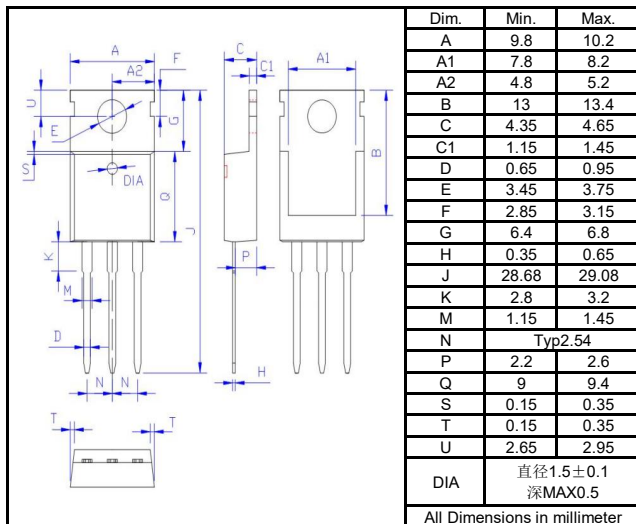
T0-263



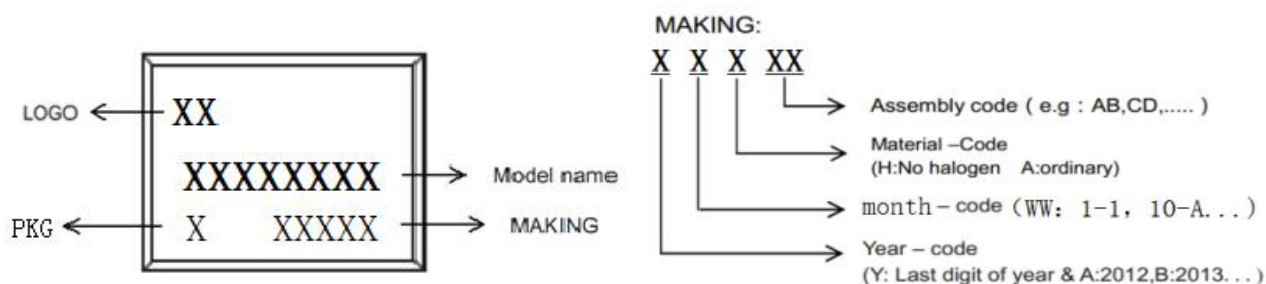
T0-263C



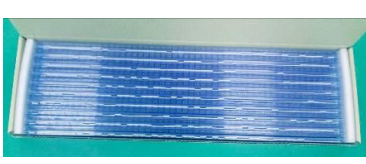
T0-220C



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F TO-220AB/C TO-263/C			
	50pcs/管	1000pcs/盒	5000pcs/箱
TO-263/C-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 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.