

MAIN CHARACTERISTICS

I_D	20A
V_{DSS}	650V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	0.38 Ω

FEATURES

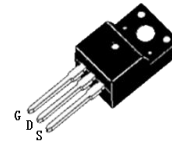
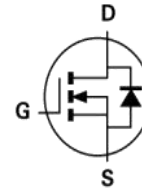
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

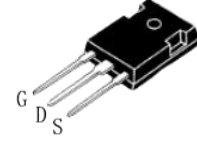
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

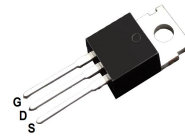
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



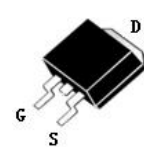
TO-220F



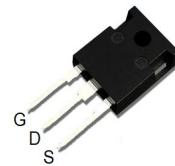
TO-247



TO-220C



TO-263C



TO-247S

Product specification classification

Part Number	Package	Mode Name	Pack
CS20N65A8	TO-220F (1.3mm)	CS20N65A	Tube
CS20N65A6	TO-247	CS20N65A	Tube
CS20N65AP	TO-220C	CS20N65A	Tube
CS20N65AT	TO-263C	CS20N65A	Tube
CS20N65A7	TO-247S	CS20N65A	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value		Unit
		220F	247/220C/263C/247S	
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}	80		A
Power Dissipation	P_D	45	250	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	700		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.78	0.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	40	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

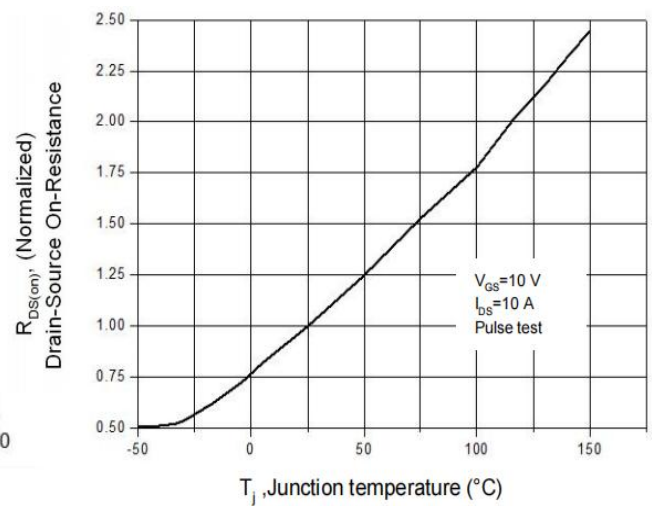
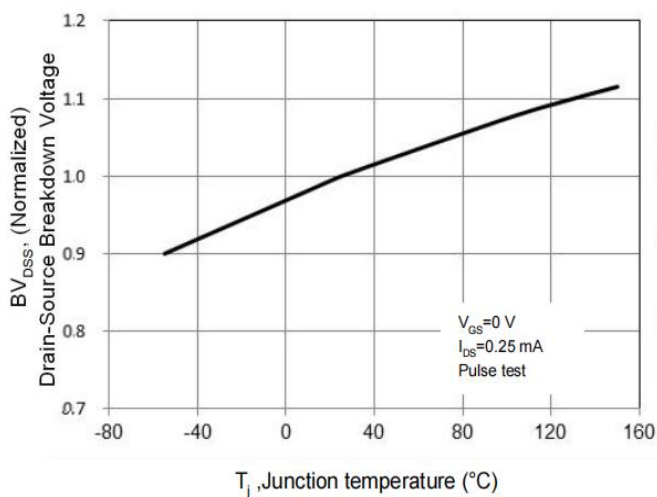
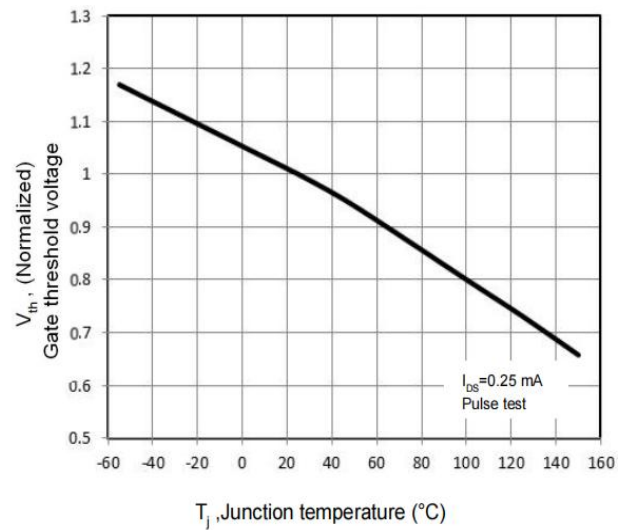
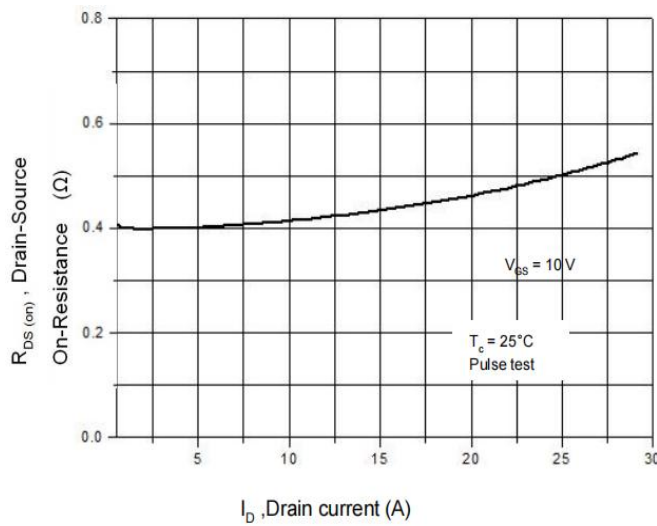
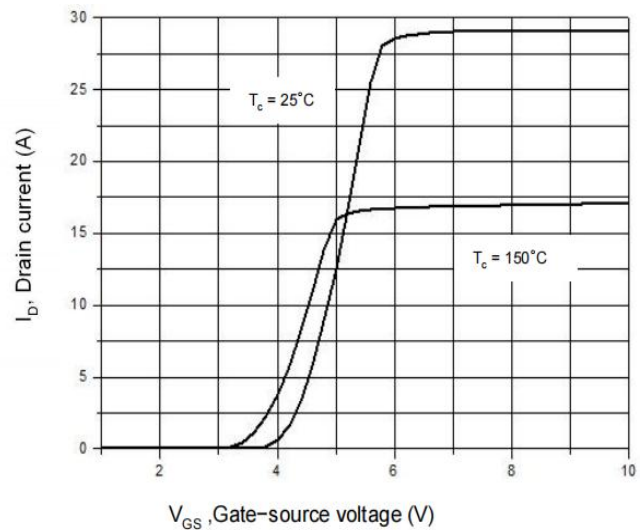
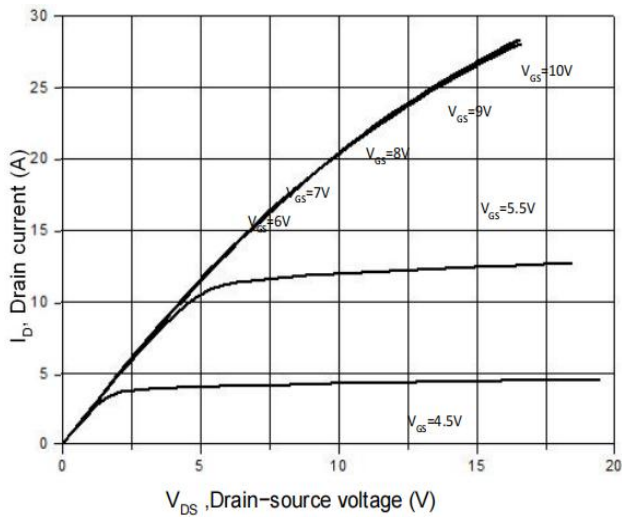
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	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	$V_{GS} = 10 \text{ V}, I_D = 10 \text{ A}$	$R_{DS(on)}$	-	0.38	0.46	Ω
Forward Transconductance	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ A}$	g_{fs}	-	18	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	2896	-	pF
Output Capacitance		C_{oss}	-	270	-	pF
Reverse Transfer Capacitance		C_{rss}	-	15.6	-	pF
Turn-on Delay Time(Note2)	$I_D = 20 \text{ A}, V_{DD} = 325 \text{ V}, R_G = 10 \Omega$	$t_d(ON)$	-	21.5	-	ns
Rise Time(Note2)		t_r	-	43	-	ns
Turn-Off Delay Time(Note2)		$t_d(OFF)$	-	97.5	-	ns
Fall Time(Note2)		t_f	-	17.2	-	ns
Total Gate Charge(Note2)	$I_D = 20 \text{ A}, V_{DD} = 520 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	57.4	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	16.5	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	19	-	nC

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

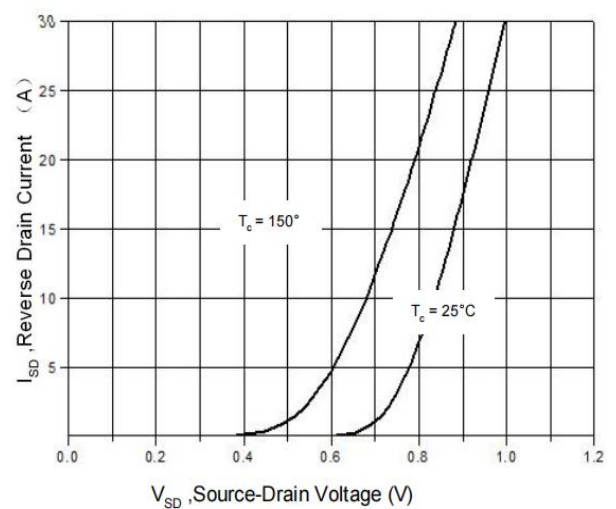
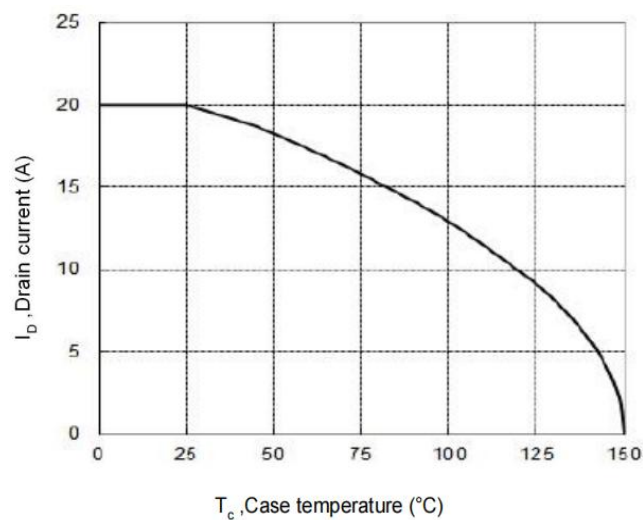
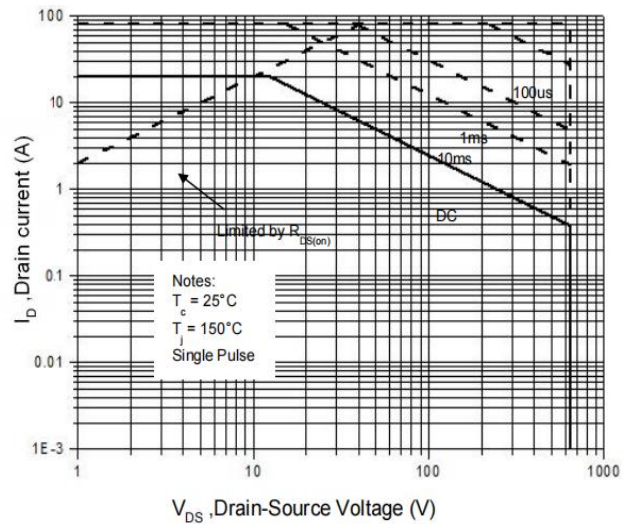
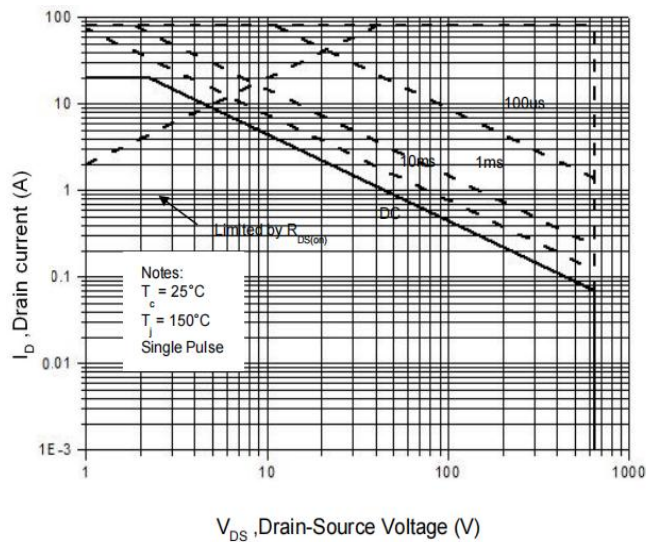
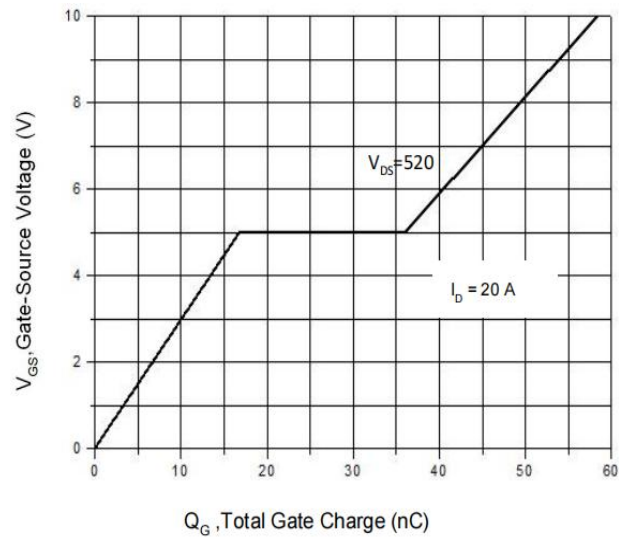
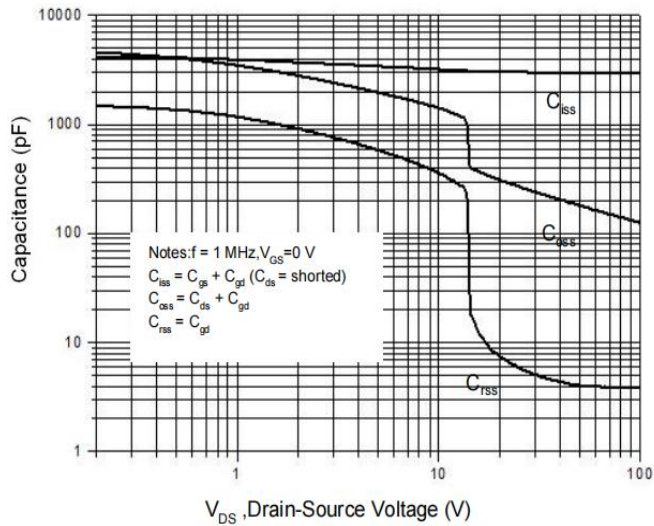
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	20	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	80	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20 \text{ A}$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 20 \text{ A}, V_{GS} = 0 \text{ V},$	t_{rr}	-	492.3	-	ns
Reverse Recovery Charge(Note2)	$dI_F / dt = 100 \text{ A}/\mu\text{s}$	Q_{rr}	-	7.6	-	μC

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

RATINGS AND CHARACTERISTIC CURVES

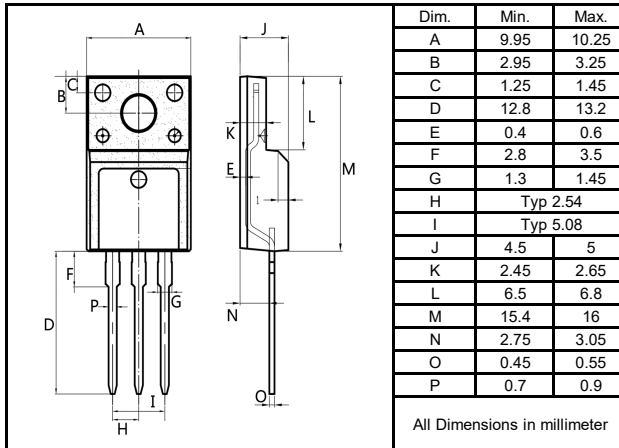


Package Outline Dimensions millimeters

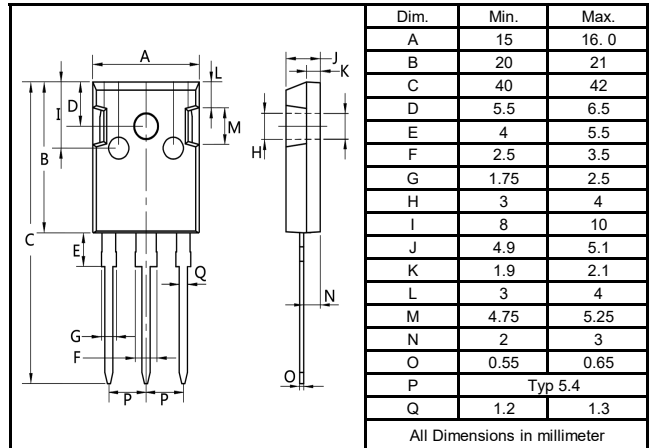


Package Outline Dimensions millimeters

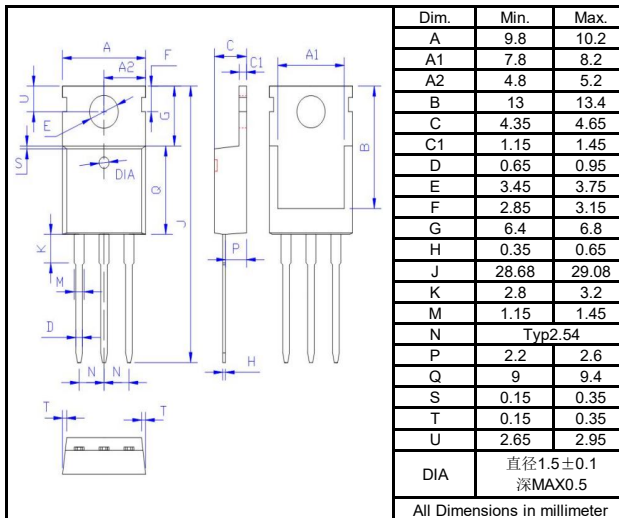
T0-220F



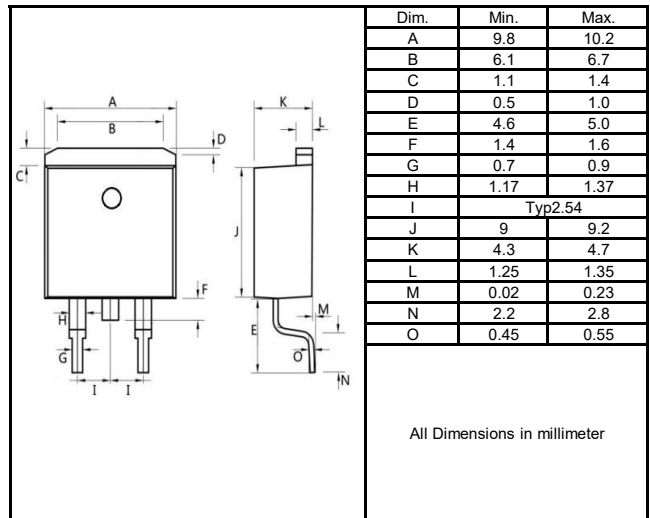
T0-247



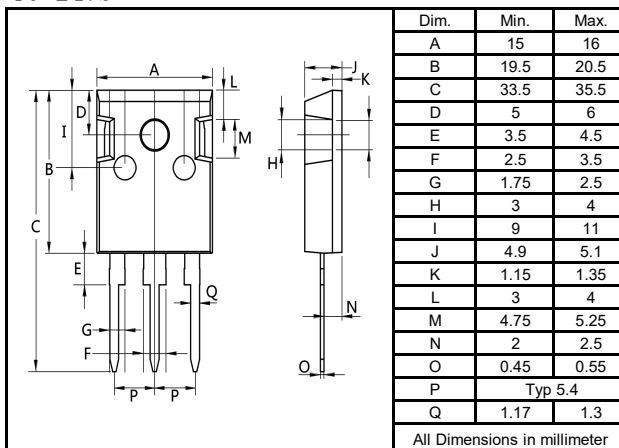
T0-220C



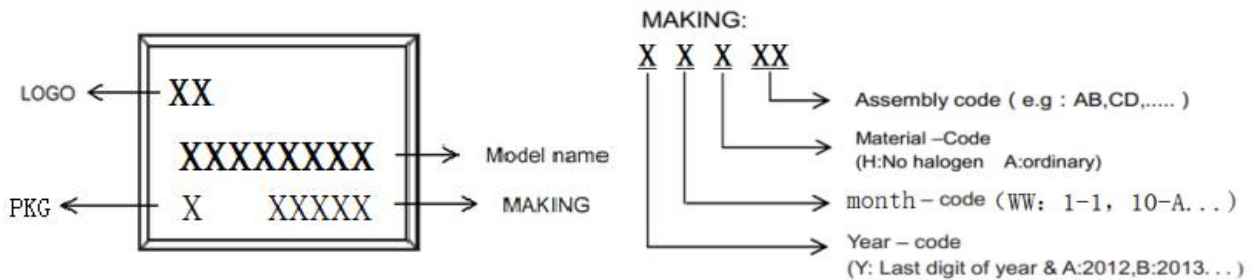
T0-263C



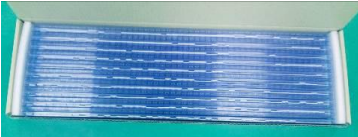
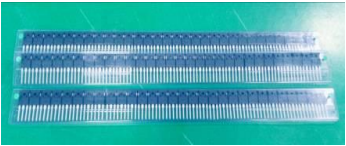
T0-247S



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F TO-220C TO-263C			
	50pcs/管	1000pcs/盒	5000pcs/箱
TO-247 TO-247S			
	30pcs/管	600pcs/盒	3000pcs/箱
TO-263C-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.