



CS10N65A

N-Channel Enhancement Mode Power MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DSS}	650V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$)	0.79 Ω

FEATURES

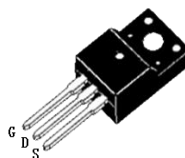
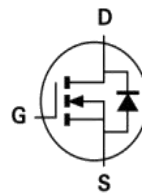
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

APPLICATIONS

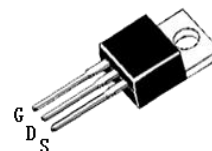
- Power switch circuit of adaptor and charger.

MECHANICAL DATA

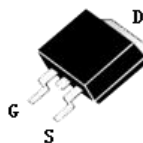
- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



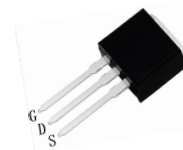
TO-220F



TO-220AB



TO-263



TO-262

Product specification classification

Part Number	Package	Mode Name	Pack
CS10N65A2	TO-220F (0.5mm)	CS10N65A	Tube
CS10N65A8	TO-220F (1.3mm)	CS10N65A	Tube
CS10N65A1	TO-220AB	CS10N65A	Tube
CS10N65A3	TO-263	CS10N65A	Tube
CS10N65A3-R	TO-263	CS10N65A	Tube
CS10N65A0	TO-262	CS10N65A	Tube



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Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value		Unit
		220F	220AB/263/262	
Drain-Source Voltage	V_{DS}	650		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	31	150	W
Single Pulse Avalanche Energy (Note2)	E_{AS}	845		mJ
Operating Temperature Range	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Thermal Resistance, Junction to	$R_{\theta JC}$	4	0.83	°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	$V_{GS} = 0$ V, $I_D = 250$ μ A	BV_{DSS}	650	690	-	V
Drain-Source Leakage Current	$V_{DS} = 650$ V, $V_{GS} = 0$ V	I_{DSS}	-	-	1	μ A
	$V_{DS} 520$ V, $T_c = 125^\circ$ C		-	-	10	μ A
Gate Leakage Current	$V_{GS} = \pm 30$ V, $V_{DS} = 0$ V	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 250$ μ A	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10$ V, $I_D = 5$ A	$R_{DS(on)}$	-	0.79	0.95	Ω
Forward Transconductance	$V_{DS} = 40$ V, $I_D = 5$ A	g_{fs}	-	11	-	S
Input Capacitance	$V_{GS} = 0$ V, $V_{DS} = 25$ V, $f = 1$ MHz	C_{iss}	-	1720	-	pF
Output Capacitance		C_{oss}	-	140	-	pF
Reverse Transfer Capacitance		C_{rss}	-	11	-	pF
Turn-on Delay Time	$I_D = 10$ A, $V_{DD} = 325$ V, $R_G = 25$ Ω (Note3,4)	$t_{d(ON)}$	-	23	-	ns
Rise Time		t_r	-	15	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	90	-	ns
Fall Time		t_f	-	30	-	ns
Total Gate Charge	$I_D = 10$ A, $V_{DD} = 520$ V, $V_{GS} = 10$ V (Note3,4)	Q_G	-	32	-	nC
Gate to Source Charge		Q_{GS}	-	5	-	nC
Gate to Drain Charge		Q_{GD}	-	16	-	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		I_{SM}	-	-	40	A
Drain-Source Diode Forward Voltage	$I_{SD} = 10$ A	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$I_{SD} = 10$ A, $V_{GS} = 0$ V,	t_{rr}	-	310	-	ns
Reverse Recovery Charge	$dl_F / dt = 100$ A/ μ s (Note3)	Q_{rr}	-	4.1	-	μ C

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



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RATINGS AND CHARACTERISTIC CURVES

Figure1: Output Characteristics

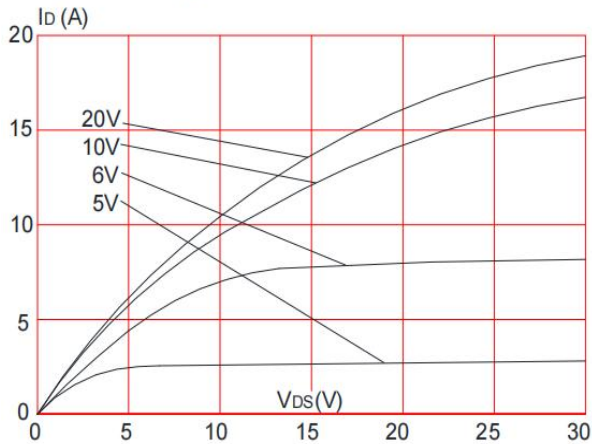


Figure 2: Typical Transfer Characteristics

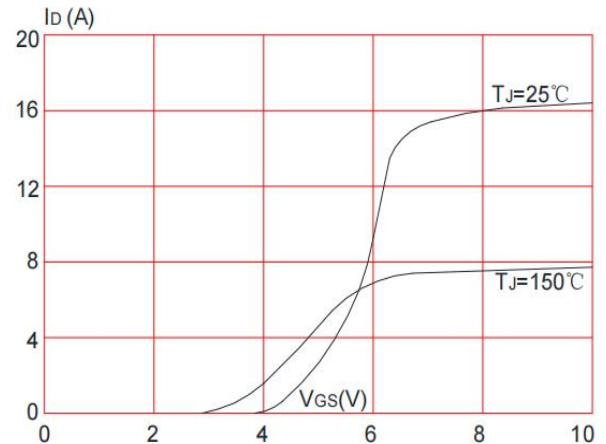


Figure 3: On-resistance vs. Drain Current

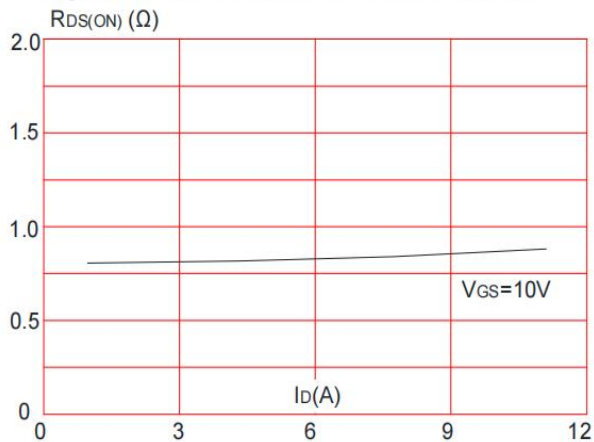


Figure 4: Body Diode Characteristics

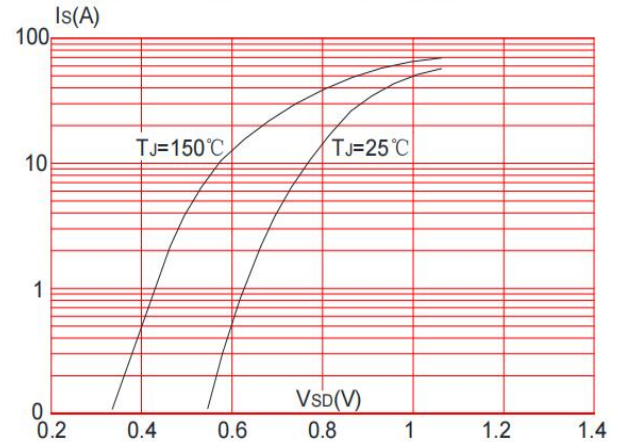


Figure 5: Gate Charge Characteristics

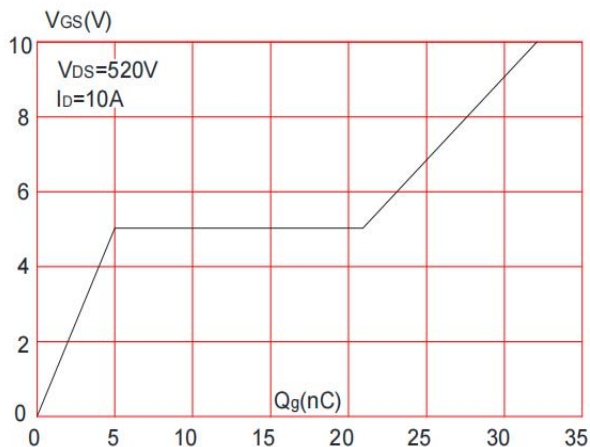
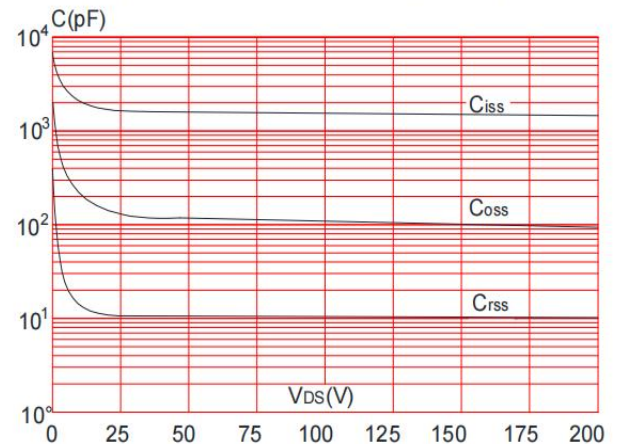


Figure 6: Capacitance Characteristics





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RATINGS AND CHARACTERISTIC CURVES

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

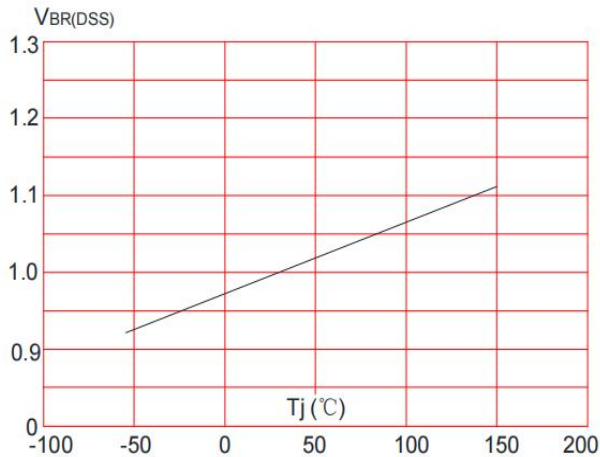


Figure 8: Normalized on Resistance vs. Junction Temperature

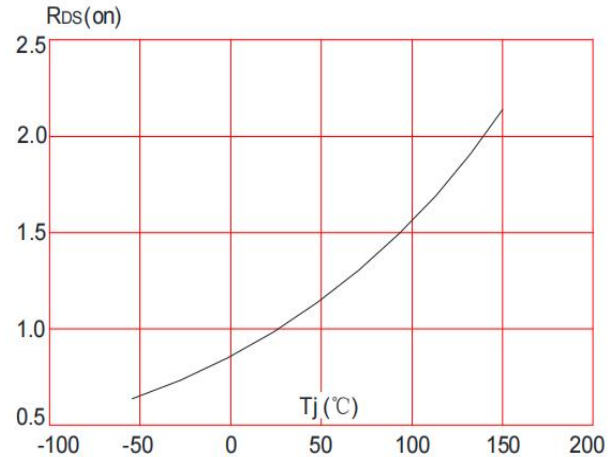


Figure 9: Maximum Safe Operating Area

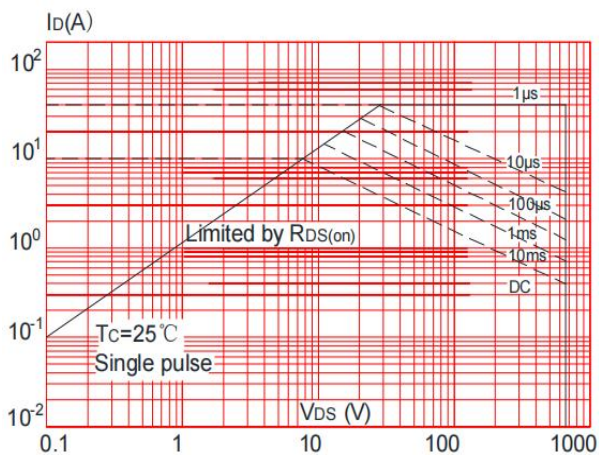


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

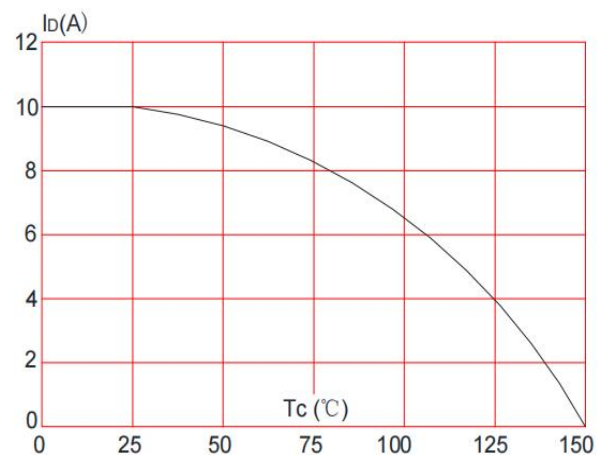
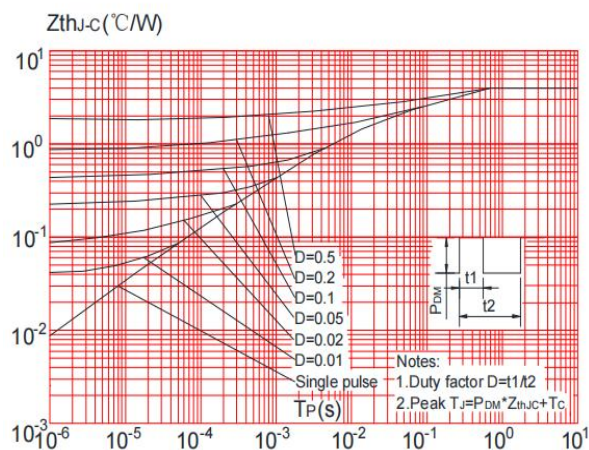


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



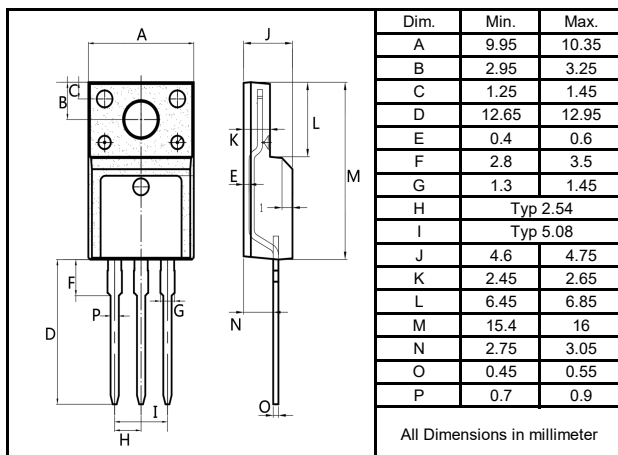


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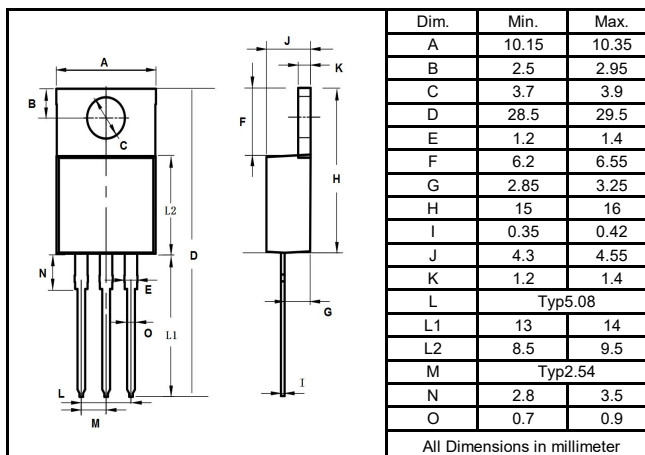
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Package Outline Dimensions millimeters

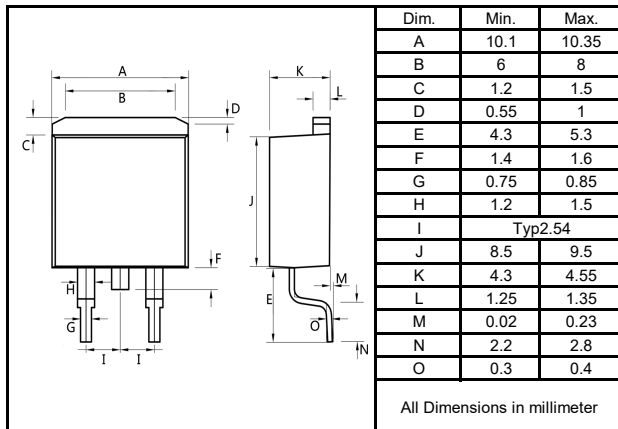
T0-220F



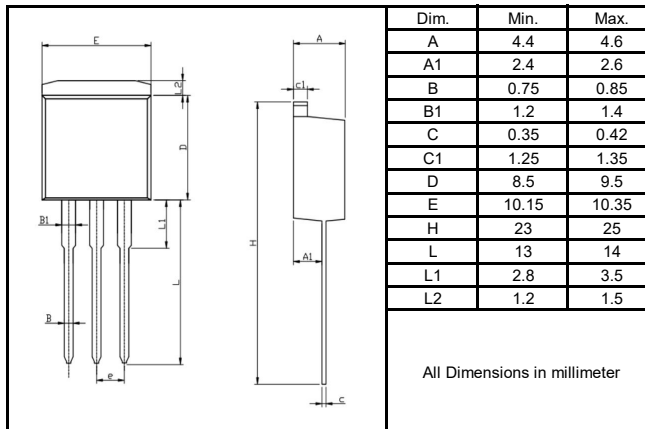
T0-220AB



T0-263



T0-262

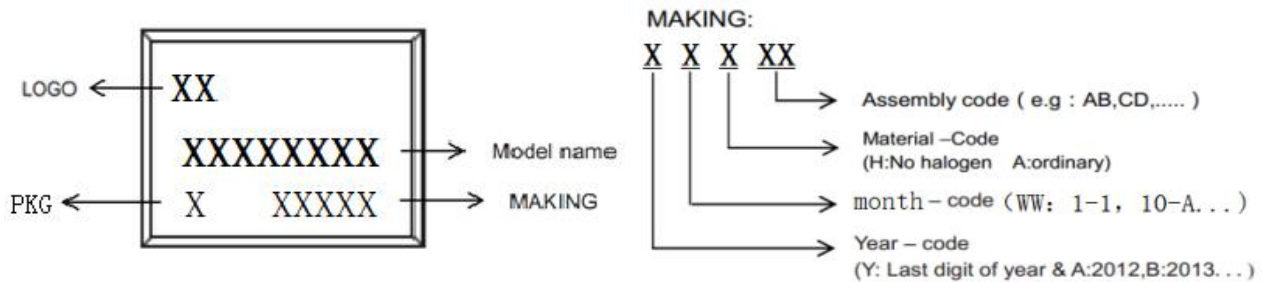




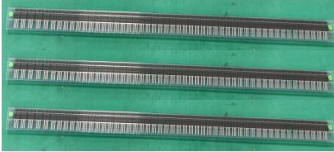
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Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F TO-220AB TO-263 TO-262	 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.