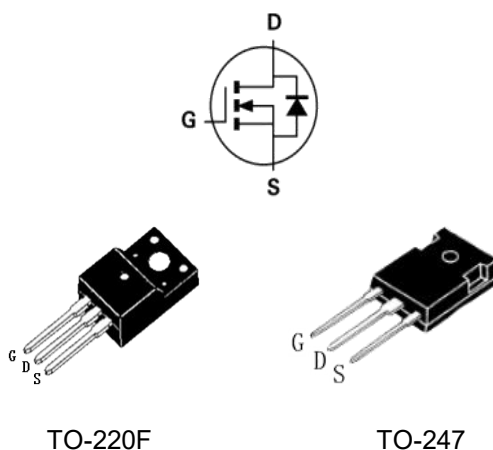


MAIN CHARACTERISTICS

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

Product specification classification

Part Number	Package	Mode Name	Pack
CS20N65A2	TO-220F (1.3mm)	CS20N65A	Tube
CS20N65A6	TO-247	CS20N65A	Tube

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

Characteristics	Symbol	Value		Unit
		220F	247	
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		$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150		$^{\circ}\text{C}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.78	0.5	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	40	$^{\circ}\text{C/W}$

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

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

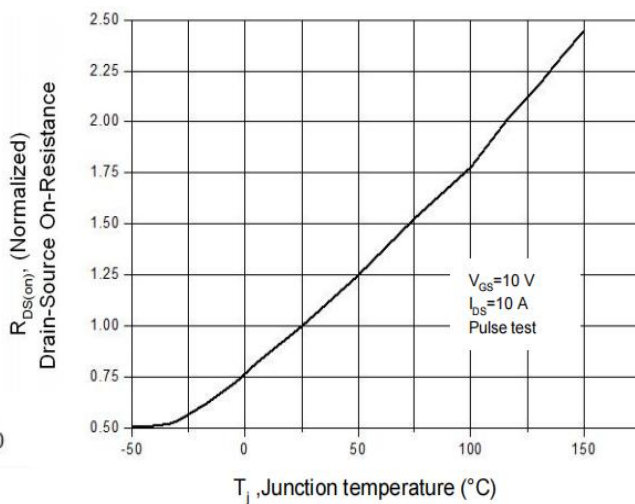
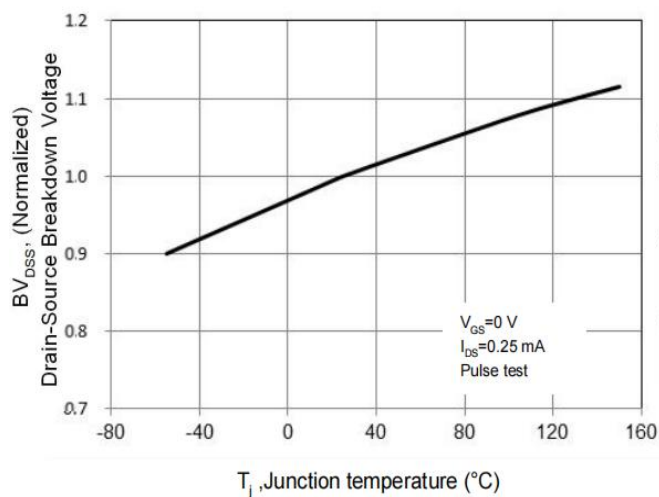
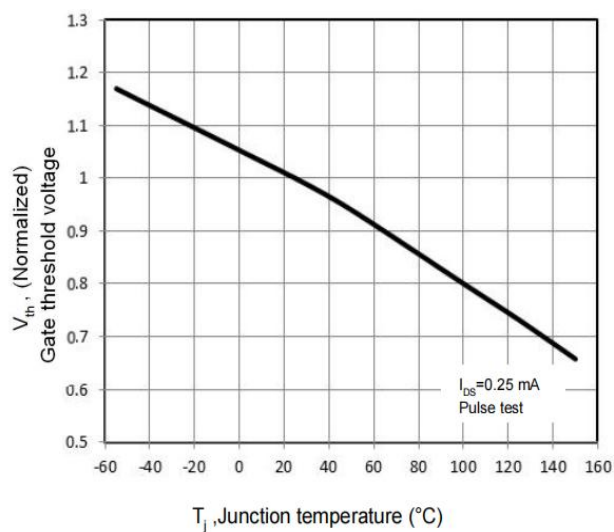
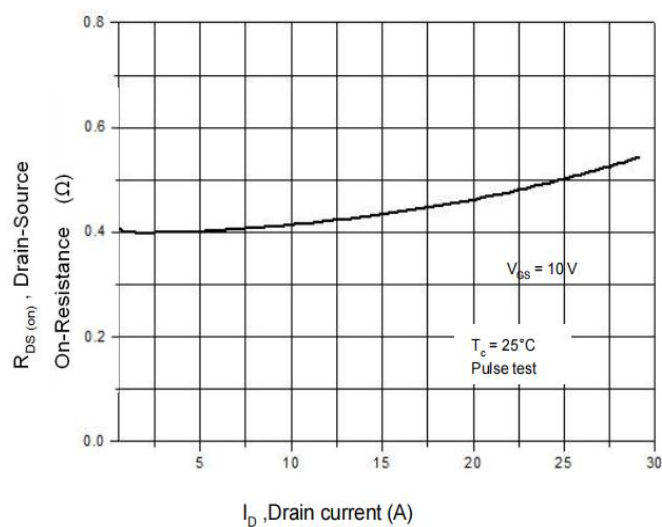
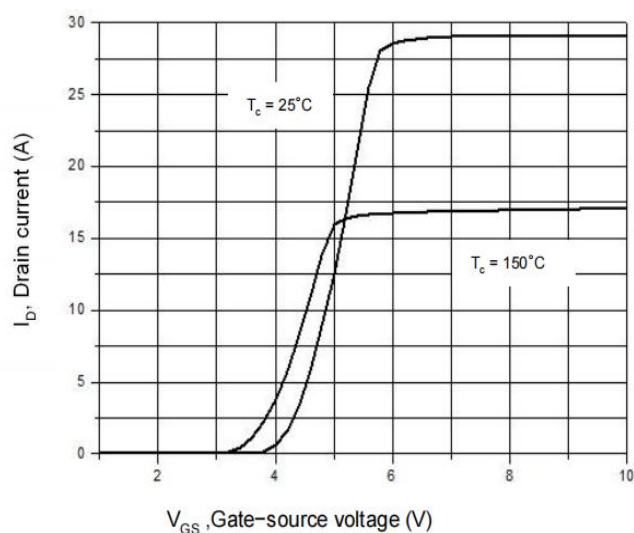
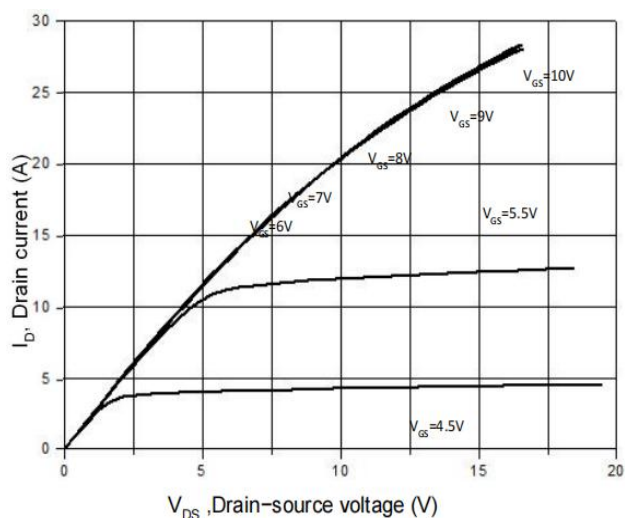
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650\text{ V}, V_{GS} = 0\text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	$V_{GS(th)}$	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)	$I_D = 20\text{ A}, V_{DD} = 325\text{ V},$ $R_G = 10\text{ }\Omega$	$t_d(ON)$	-	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 $T_a=25^{\circ}\text{C}$ unless otherwise specified

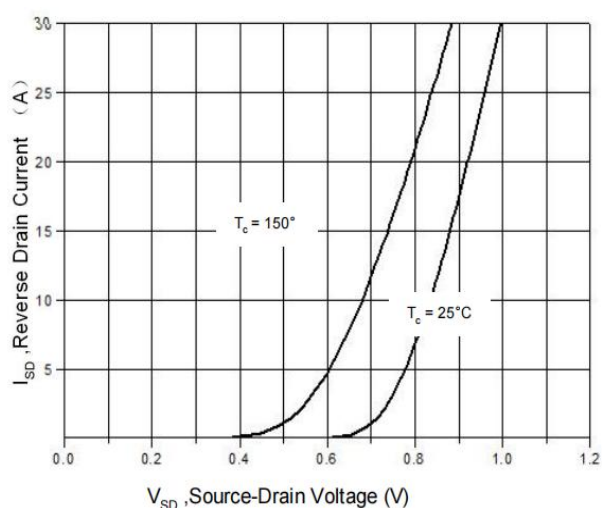
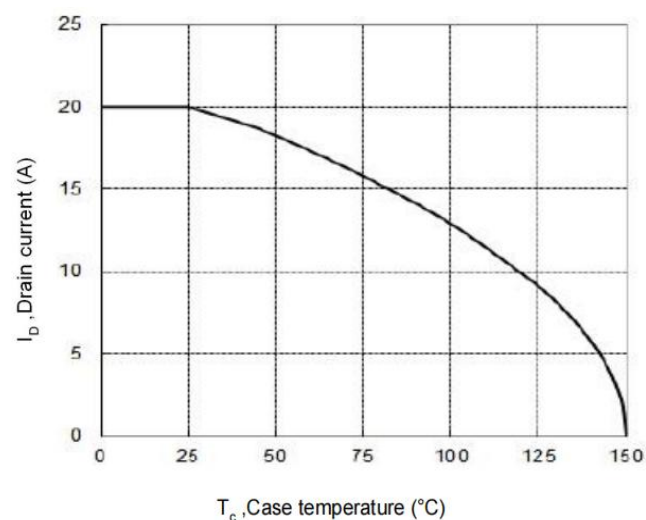
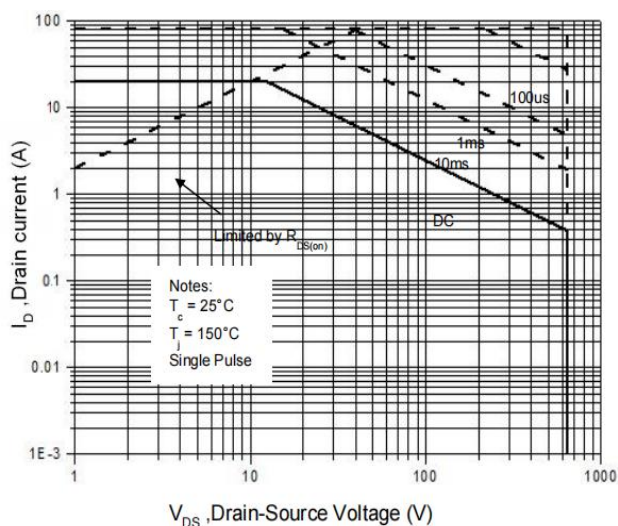
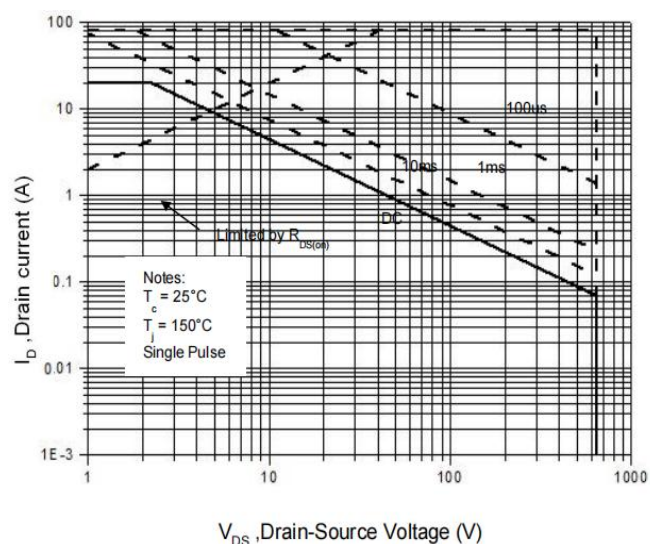
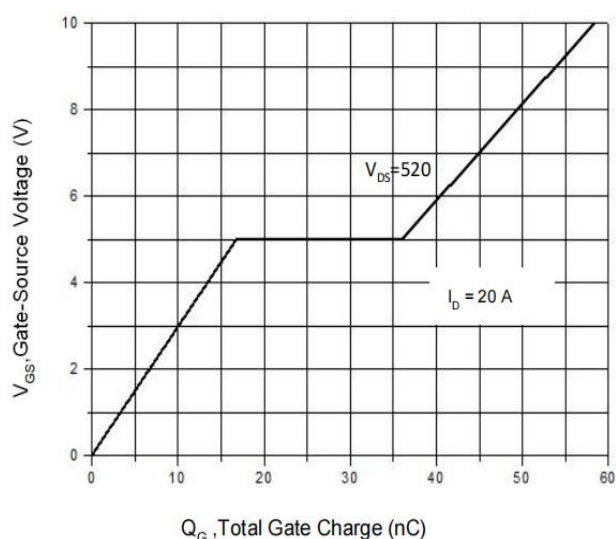
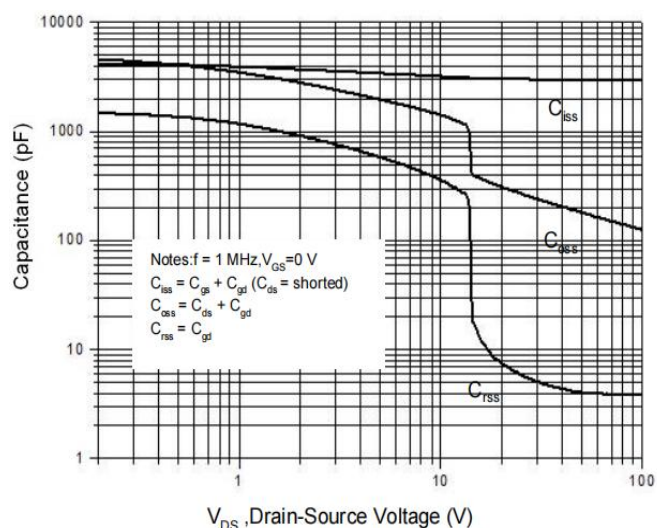
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		I_S	-	-	20	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	80	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20\text{ A}$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 20\text{ A}, V_{GS} = 0\text{ V},$	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 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

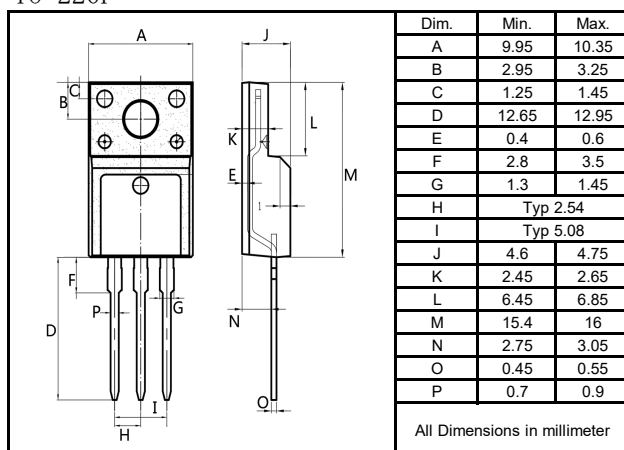


Package Outline Dimensions millimeters



Package Outline Dimensions millimeters

T0-220F



T0-247

