

MAIN CHARACTERISTICS

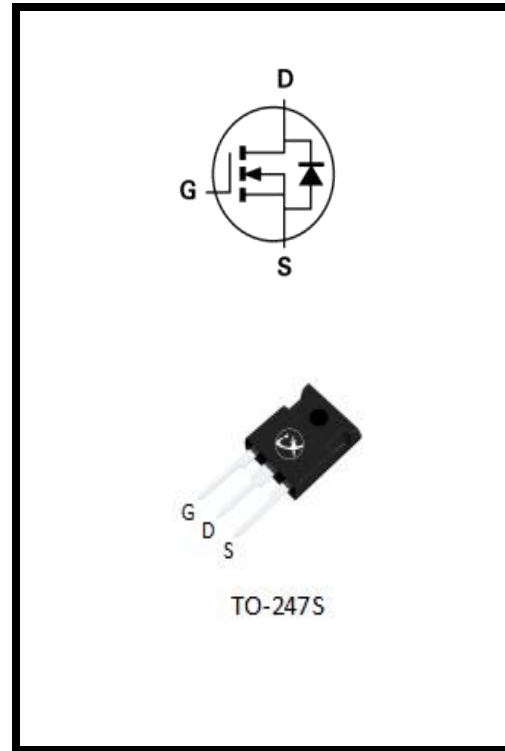
I_D	13A
V_{DSS}	900V
$R_{os(on)-Typ@ V_{gs}=10V}$	0.61 Ω

FEATURES

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

APPLICATIONS

- Power switch circuit of adaptor and charger.



Product specification classification

Part Number	Package	Mode Name	Pack
CS18N50A7	TO-247S	CS18N50A7	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current Tc=25°C	I_D	13	A
Continue Drain Current Tc=100°C		8.1	A
Pulsed Drain Current (Note1)	I_{DM}	52	A
Power Dissipation	P_D	227	W
Derating Factor above 25°C		2	W/°C
Single Pulse Avalanche Energy	E_{AS}	720	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.55	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	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}	900	975	-	V
Drain-Source Leakage Current	$V_{DS} = 900 \text{ V}, V_{GS} = 0 \text{ V}, T_a = 25^\circ\text{C}$	I_{DSS}	-	-	25	μA
	$V_{DS} = 720 \text{ V}, V_{GS} = 0 \text{ V}, T_a = 125^\circ\text{C}$		-	-	250	μA
Gate Leakage Current	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	3	3.8	5	V
Drain-Source On-State Resistance	$V_{GS} = 10 \text{ V}, I_D = 6.5 \text{ A}$	$R_{DS(on)}$	-	0.61	0.7	Ω
Forward Transconductance	$V_{DS} = 15 \text{ V}, I_D = 6.5 \text{ A}$	g_{fs}	-	16	-	S
Gate resistance	$f = 1.0\text{MHz}$	R_g	-	1.3	-	Ω
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	5023	-	pF
Output Capacitance		C_{oss}	-	294	-	pF
Reverse Transfer Capacitance		C_{rss}	-	3.3	-	pF
Turn-on Delay Time(Note2)	$I_D = 13 \text{ A}, V_{DD} = 450 \text{ V}, R_G = 25 \Omega$	$t_{d(ON)}$	-	52	-	ns
Rise Time(Note2)		t_r	-	59	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	90	-	ns
Fall Time(Note2)		t_f	-	48	-	ns
Total Gate Charge(Note2)	$I_D = 13 \text{ A}, V_{DD} = 720 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	87	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	27	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	31	-	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	-	-	13	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	52	A
Drain-Source Diode Forward Voltage	$I_{SD} = 13 \text{ A}, V_{GS} = 0 \text{ V},$	V_{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 13 \text{ A}, V_{GS} = 0 \text{ V},$ $dI_F / dt = 100 \text{ A}/\mu\text{s}$	t_{rr}	-	423	-	ns
Reverse Recovery Charge(Note2)		Q_{rr}	-	5.5	-	μC
Reverse Recovery Current(Note2)		Q_{rr}	-	28.6	-	A

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

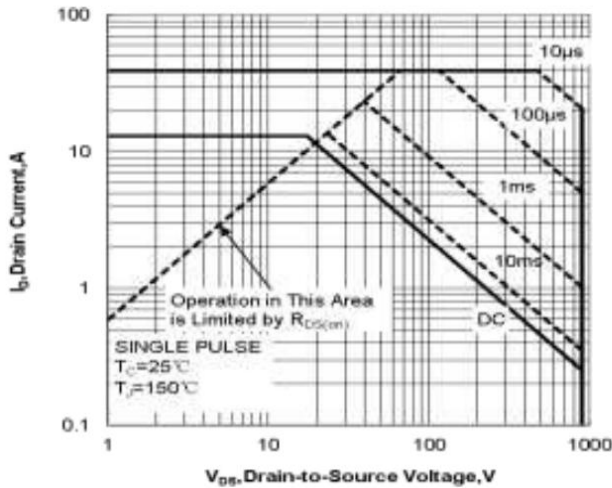


Figure 1 Maximum Forward Bias Safe Operating Area

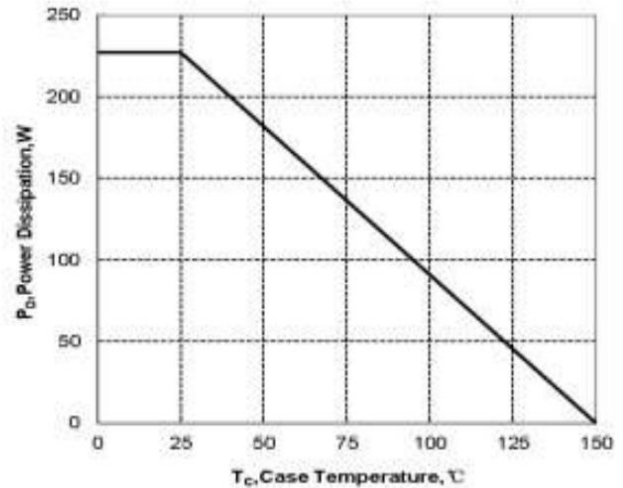


Figure 2 Maximum Power dissipation vs Case Temperature

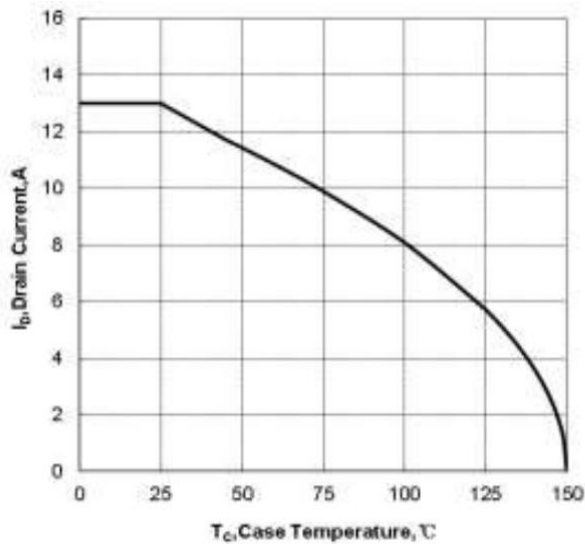


Figure 3 Maximum Continuous Drain Current vs Case Temperature

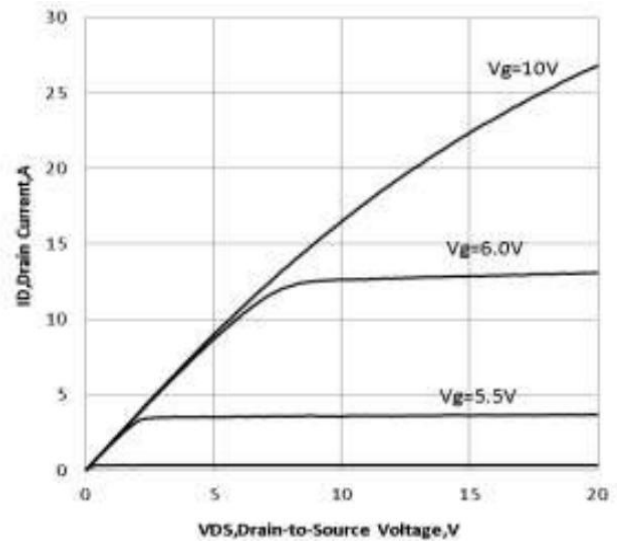


Figure 4 Typical Output Characteristics

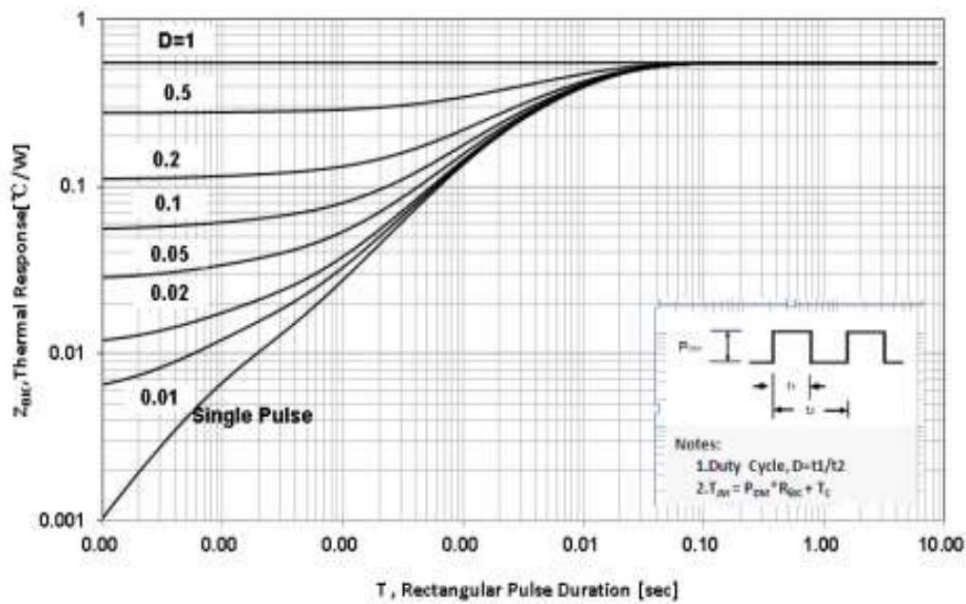


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

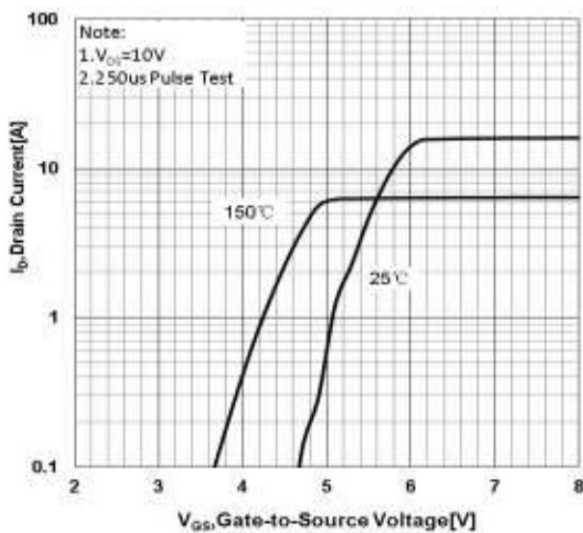


Figure 6 Typical Transfer Characteristics

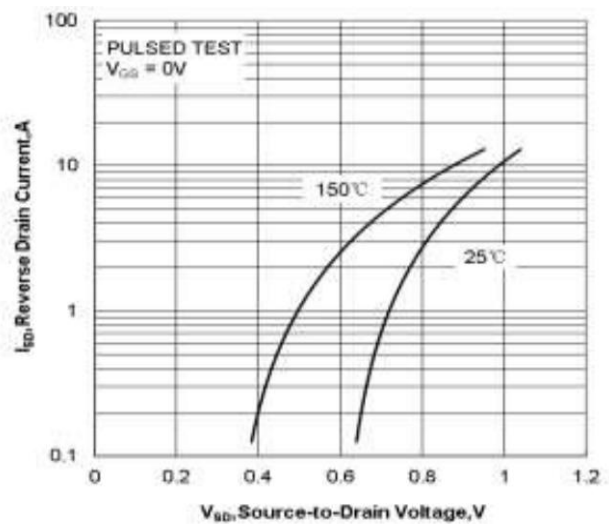


Figure 7 Typical Body Diode Transfer Characteristics

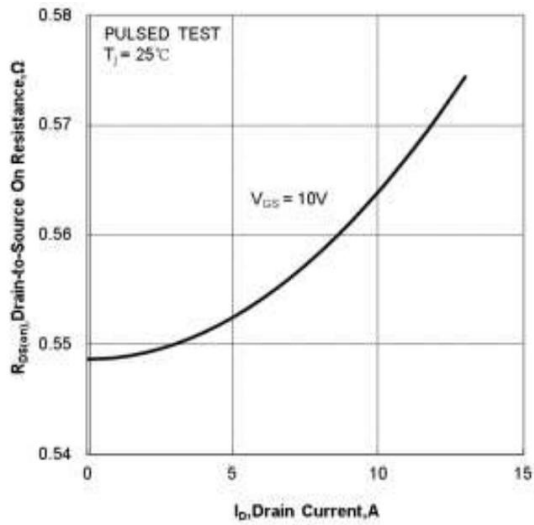


Figure 8 Typical Drain to Source ON Resistance vs Drain Current

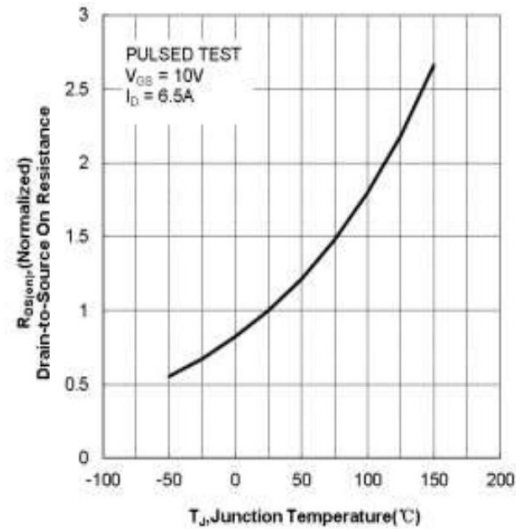


Figure 9 Typical Drain to Source on Resistance vs Junction Temperature

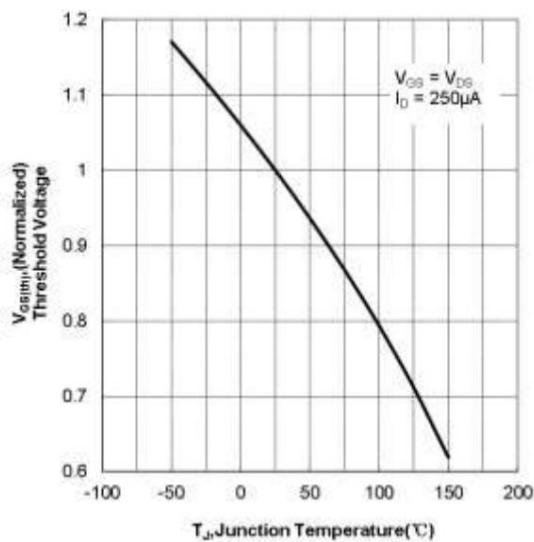


Figure 10 Typical Threshold Voltage vs Junction Temperature

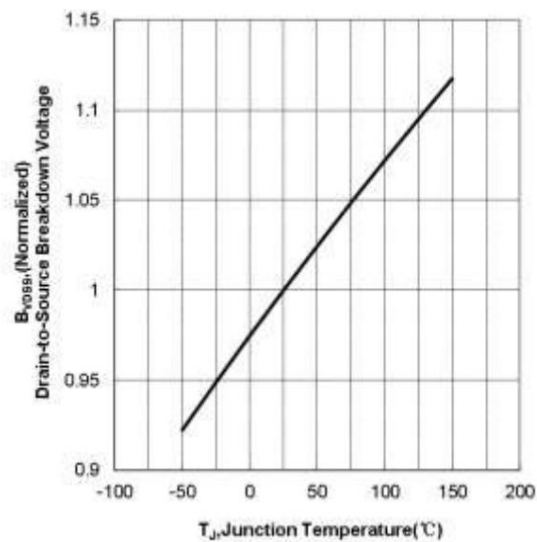


Figure 11 Typical Breakdown Voltage vs Junction Temperature

RATINGS AND CHARACTERISTIC CURVES

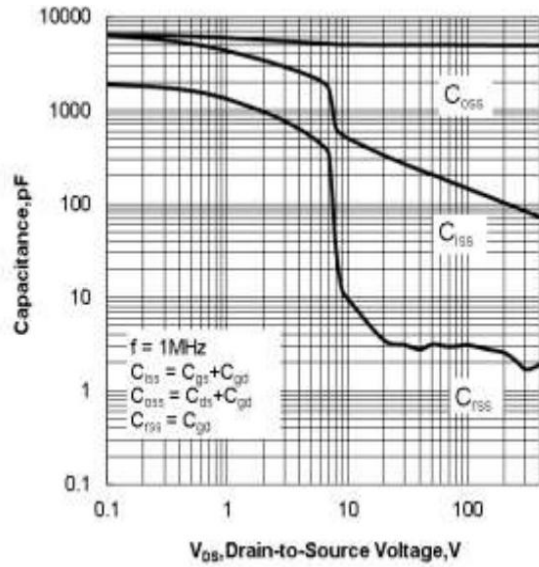


Figure 12 Typical Capacitance vs Drain to Source Voltage

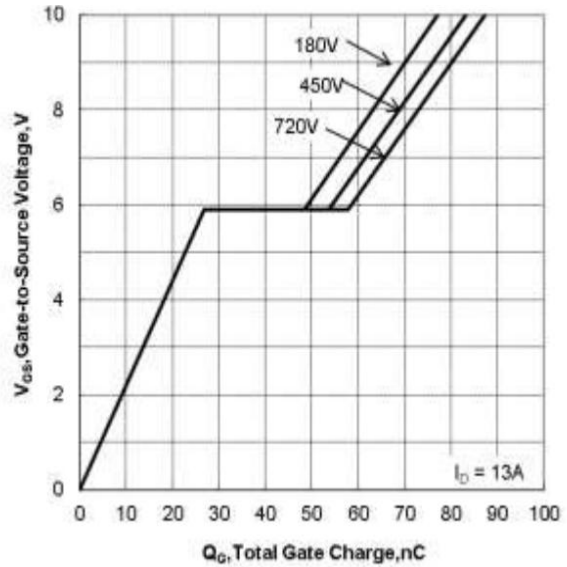
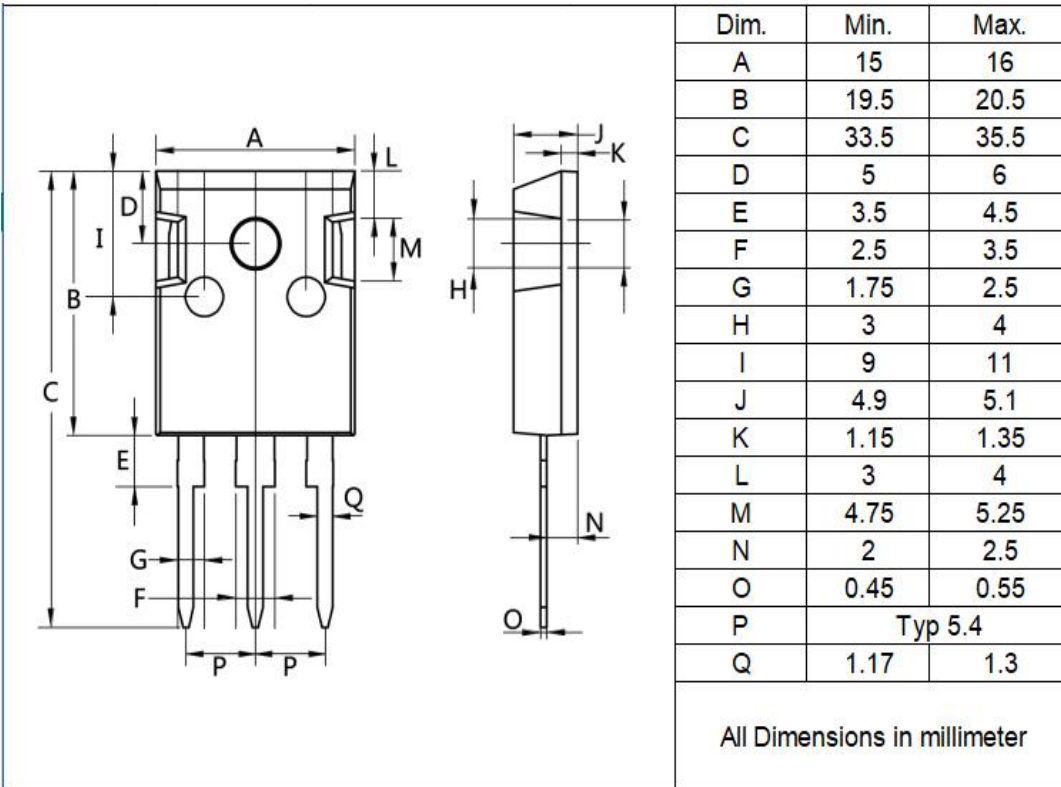


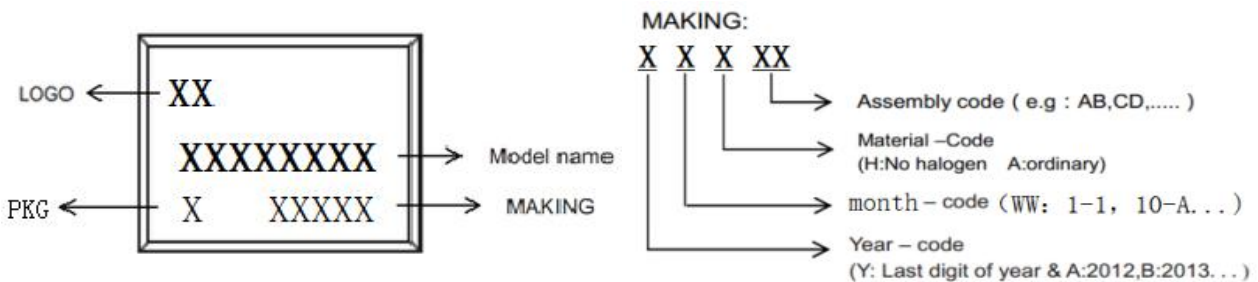
Figure 13 Typical Gate Charge vs Gate to Source Voltage

Package Outline Dimensions millimeters

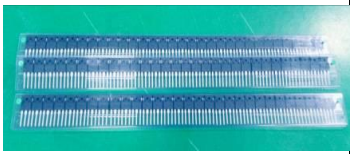
TO-247S



Marking on the body



packing instruction

PKG	Minimal Package	Mini Box	Box
TO-247S			
	30pcs/pdpe	600pcs/box	3000pcs/box



CS13N90A7

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	2025-11-8