

MAIN CHARACTERISTICS

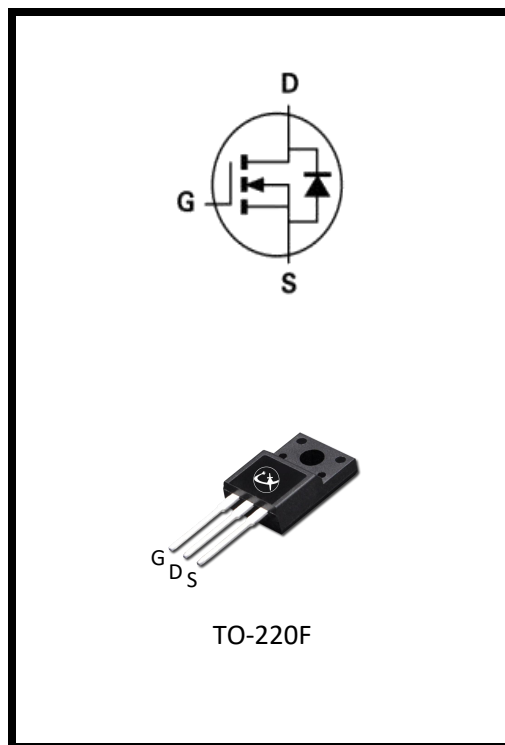
I_D	12A
V_{DSS}	800V
$R_{DS(on)-typ}$ (@VGS=10V)	0.60Ω

FEATURES

- Proprietary New Planar Technology
- Low Gate Charge Minimize Switching Loss

APPLICATIONS

- ATX Power
- LCD Panel Power



Product specification classification

Part Number	Package	Mode Name	Pack
CS12N80A8	TO-220F	CS12N80A8	Tube

Maximum Ratings at Tc=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	± 30	V
Continue Drain Current Tc=25°C	I_D	12	A
Continue Drain Current Tc=100°C		Figure 3	A
Pulsed Drain Current (Note1)	I_{DM}	Figure 6	A
Power Dissipation	P_D	48	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	884	mJ
Peak Diode Recovery dv/dt[3]	dv/dt	5	V/ns
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.6	°C/W
Thermal Resistance, Junction to	$R_{\theta JA}$	62.5	°C/W

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

Electrical Characteristics at Tc=25°C unless otherwise specified

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	BV_{DSS}	800	-	-	V
Drain-Source Leakage Current	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}$	I_{DSS}	-	-	1	μA
	$V_{DS} = 640 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 125^\circ\text{C}$	I_{DSS}	-	-	100	
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	$V_{GS} = 10 \text{ V}, I_D = 6 \text{ A}$	$R_{DS(on)}$	-	0.6	0.8	Ω
Forward Transconductance	$V_{DS} = 20 \text{ V}, I_D = 10 \text{ A}$	gfs	-	20	-	S
Input Capacitance	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	1950	-	pF
Output Capacitance		C_{oss}	-	208	-	pF
Reverse Transfer Capacitance		C_{rss}	-	60	-	pF
Turn-on Delay Time(Note2)	$I_D = 12 \text{ A}, V_{DD} = 400 \text{ V}, V_{GS} = 10 \text{ V}, R_G = 4.7 \Omega$	$t_{d(ON)}$	-	20	-	ns
Rise Time(Note2)		t_r	-	12	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	70	-	ns
Fall Time(Note2)		t_f	-	25	-	ns
Total Gate Charge(Note2)	$I_D = 12 \text{ A}, V_{DD} = 640 \text{ V}, V_{GS} = 10 \text{ V}$	Q_G	-	70	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	11	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	33	-	nC

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

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current	Tj=25°C	I _S	-	-	12	A
Maximun Body-Diode Pulsed Current(Note2)		I _{SM}	-	-	48	A
Drain-Source Diode Forward Voltage	I _{SD} = 12 A	V _{SD}	-	-	1.5	V
Reverse Recovery Time(Note2)	I _{SD} = 12 A, V _{GS} = 0 V, dI _F / dt = 100 A/μs	trr	-	600	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	3.4	-	μC

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

RATINGS AND CHARACTERISTIC CURVES

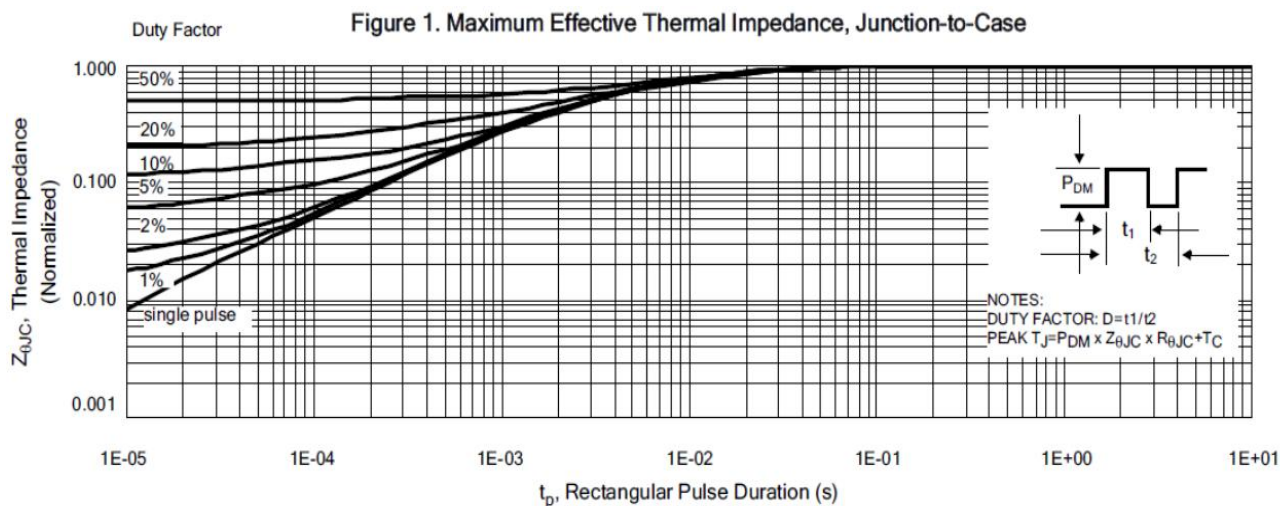


Figure 2. Maximum Power Dissipation vs Case Temperature

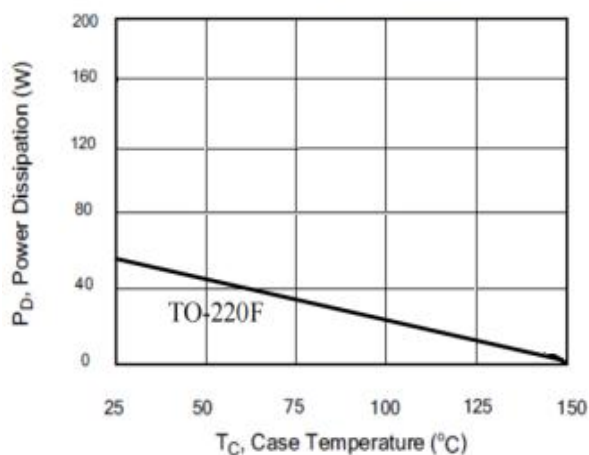


Figure3. Maximum Continuous Drain Current vs Case Temperature

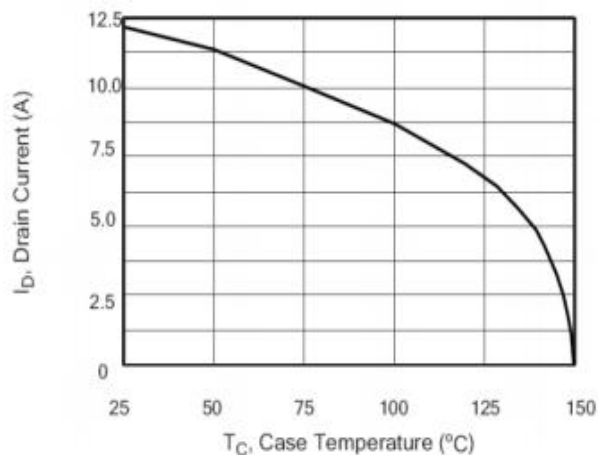


Figure 4. Typical Output Characteristics

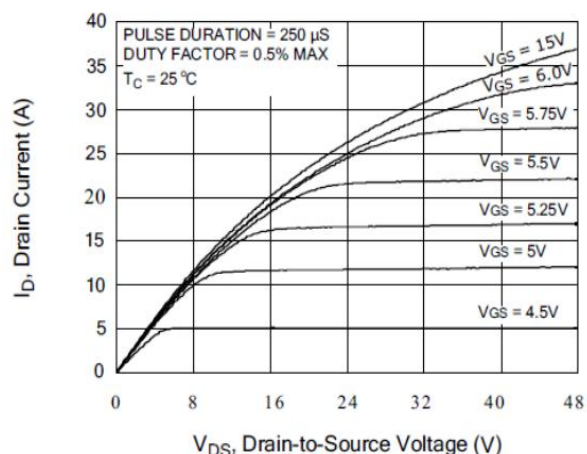
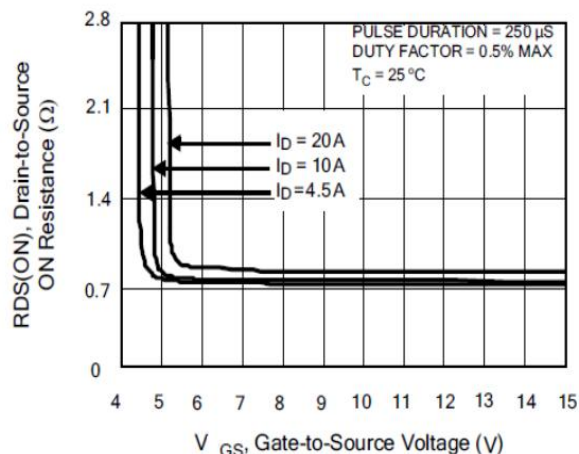


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



RATINGS AND CHARACTERISTIC CURVES

Figure 6. Maximum Peak Current Capability

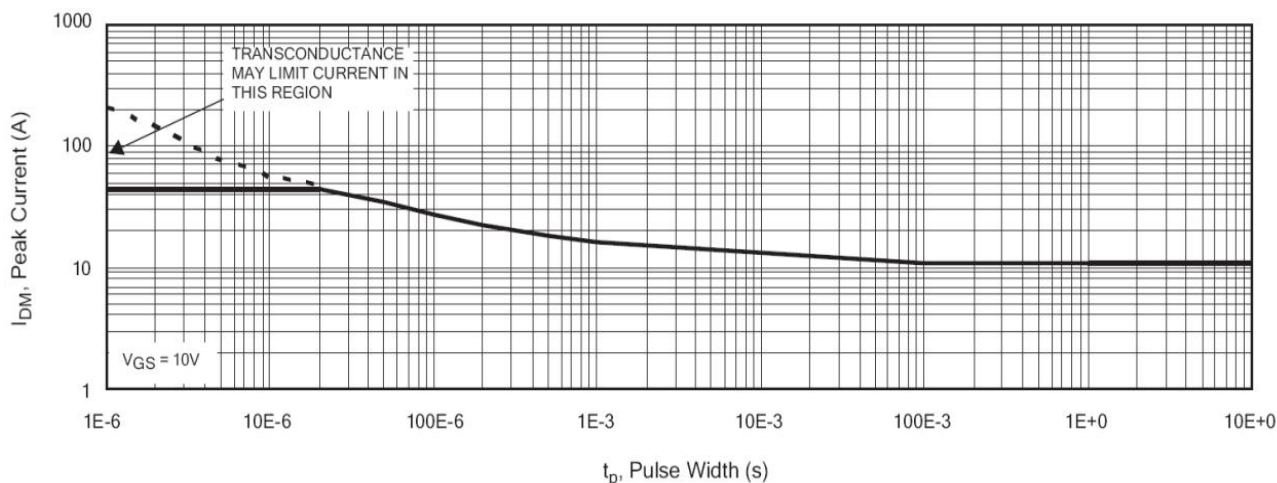


Figure 7. Typical Transfer Characteristics

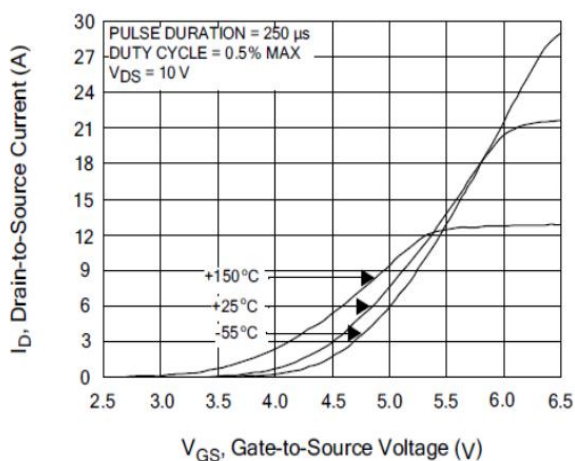


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

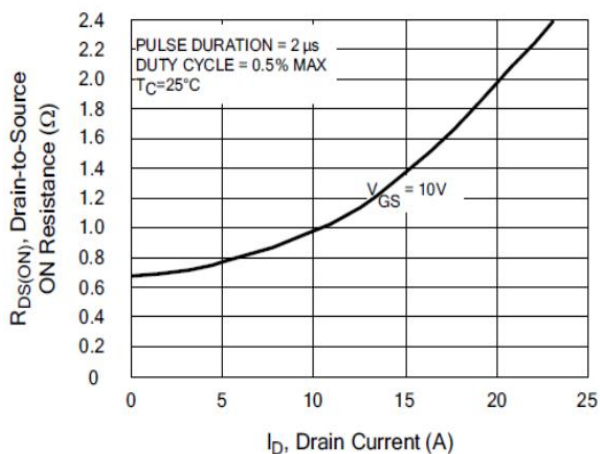


Figure 8. Unclamped Inductive Switching Capability

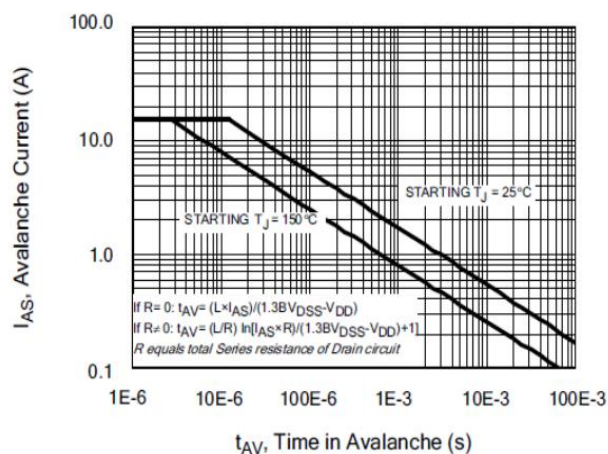
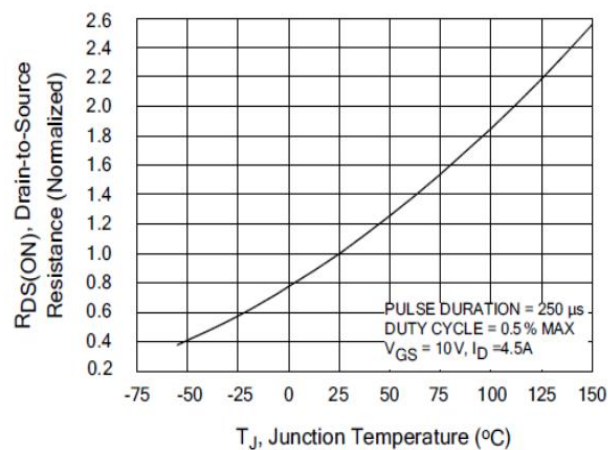


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature



RATINGS AND CHARACTERISTIC CURVES

Figure 11. Typical Breakdown Voltage vs Junction Temperature

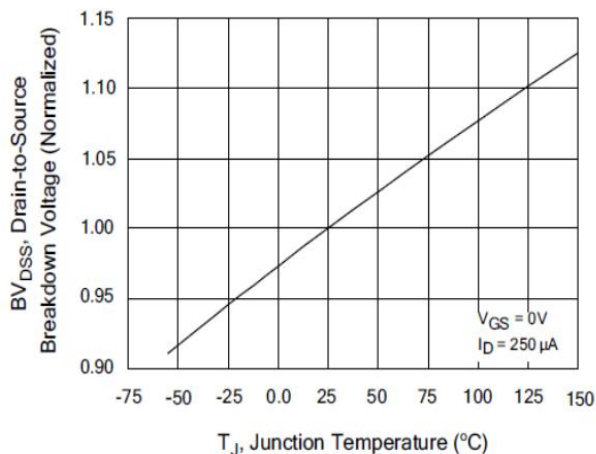


Figure 12. Typical Threshold Voltage vs Junction Temperature

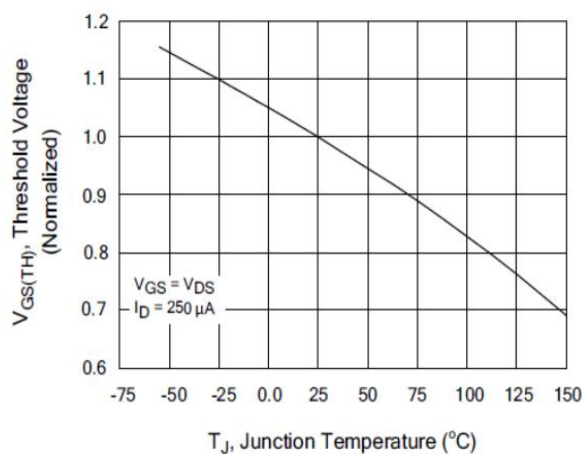


Figure 13. Maximum Forward Bias Safe Operating Area

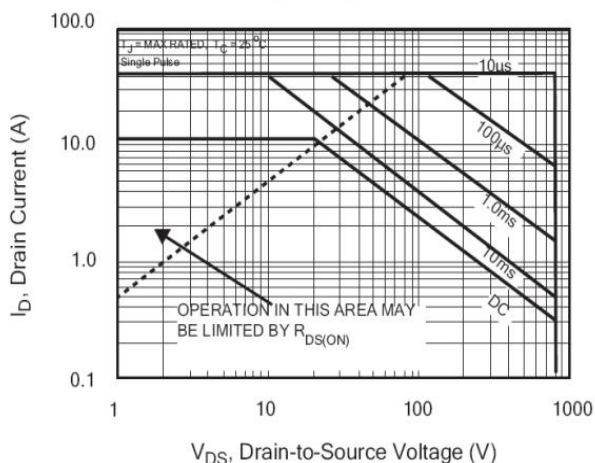


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

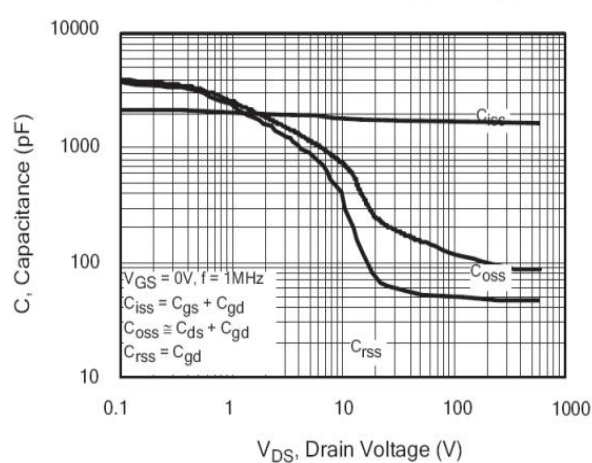


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

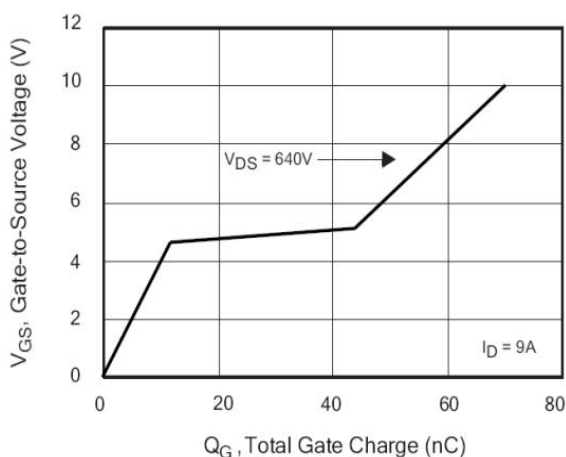
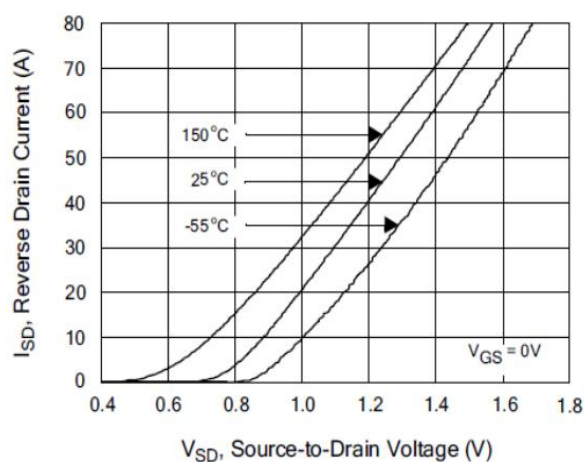
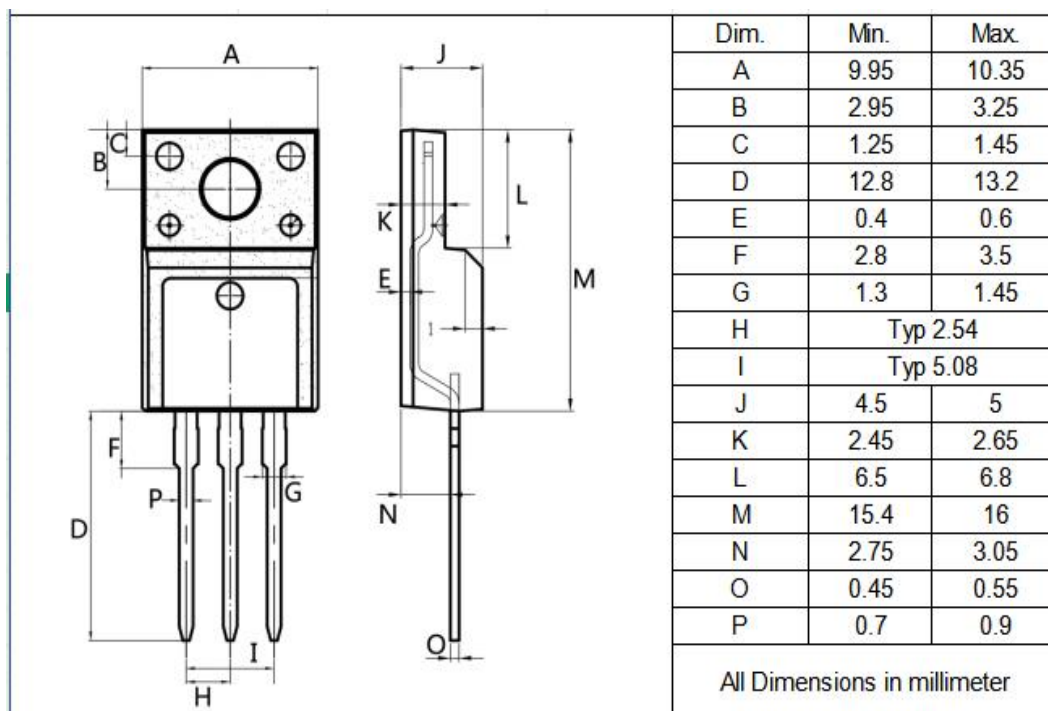


Figure 16. Typical Body Diode Transfer Characteristics

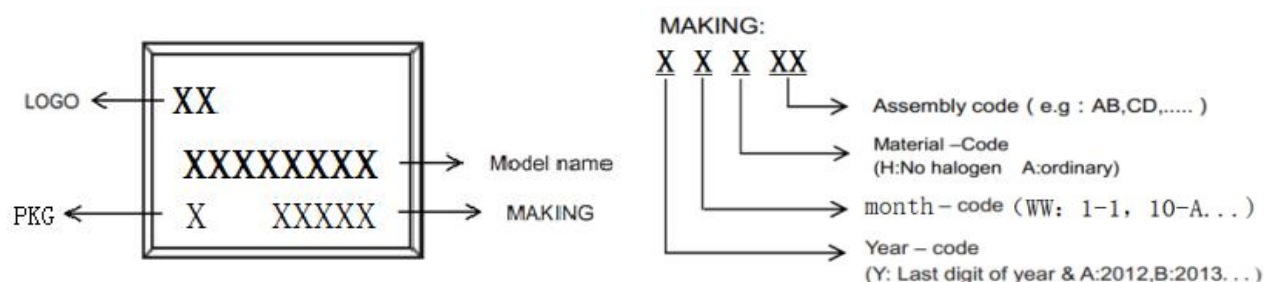


Package Outline Dimensions millimeters

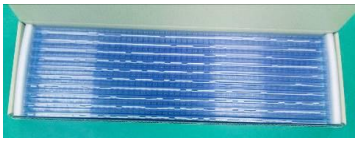
TO-220F



Marking on the body



packing instruction

PKG	Minimal Package	Box	Carton
TO-220F			
	50pcs/pdpe	1000pcs/box	5000pcs/Carton



CS12N80A8

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	2025-10-29