

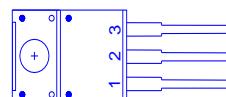
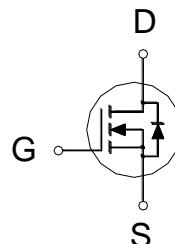
NIKO-SEM
**N-Channel Enhancement Mode
Field Effect Transistor**
P0920ATF

TO-220F

Halogen-Free & Lead-Free

**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
200V	0.42Ω	9A



1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ²	$T_C = 25^\circ\text{C}$	I_D	9	A
	$T_C = 100^\circ\text{C}$		5	
Pulsed Drain Current ¹		I_{DM}	22	
Avalanche Current		I_{AS}	9	
Avalanche Energy	$L = 2.1 \text{ mH}$	E_{AS}	85	mJ
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	28	W
	$T_C = 100^\circ\text{C}$		11	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		4.4	°C / W

¹Pulse width limited by maximum junction temperature.²Limited only by maximum temperature allowed.**ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	200			V
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2	2.6	4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 200V, V_{GS} = 0V$			1	μA
		$V_{DS} = 160V, V_{GS} = 0V, T_J = 125^\circ\text{C}$			10	
Drain-Source On-State Resistance ¹	$R_{DS(\text{ON})}$	$V_{GS} = 10V, I_D = 4.5A$		0.3	0.42	Ω
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 4.5A$		19		S

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DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		841			pF
Output Capacitance	C_{oss}			123			
Reverse Transfer Capacitance	C_{rss}			29			
Total Gate Charge ²	Q_g			29			nC
Gate-Source Charge ²	Q_{gs}	$V_{DS} = 200V, V_{GS} = 10V, I_D = 9A$		4			
Gate-Drain Charge ²	Q_{gd}			13			
Turn-On Delay Time ²	$t_{d(on)}$			11			nS
Rise Time ²	t_r			38			
Turn-Off Delay Time ²	$t_{d(off)}$	$V_{DS} = 100V, I_D \approx 9A, V_{GS} = 10V, R_{GEN} = 6\Omega$		36			nS
Fall Time ²	t_f			45			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)							
Continuous Current	I_S				9	A	
Forward Voltage ¹	V_{SD}	$I_F = 9A, V_{GS} = 0V$			1.6	V	
Reverse Recovery Time	t_{rr}	$I_F = 9A, dI_F/dt = 100A/\mu S$		151		nS	
Reverse Recovery Charge	Q_{rr}			779		nC	

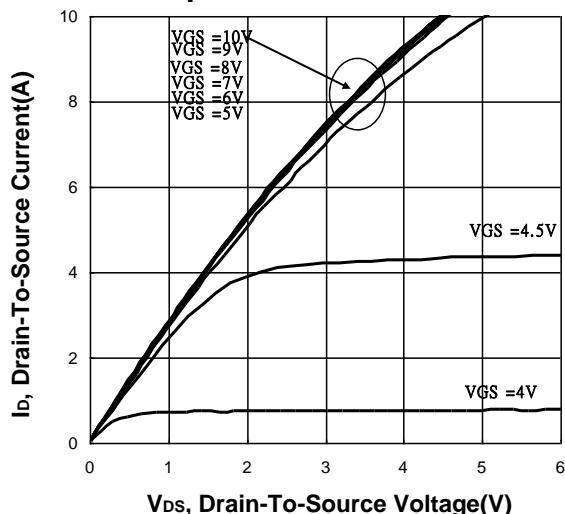
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.

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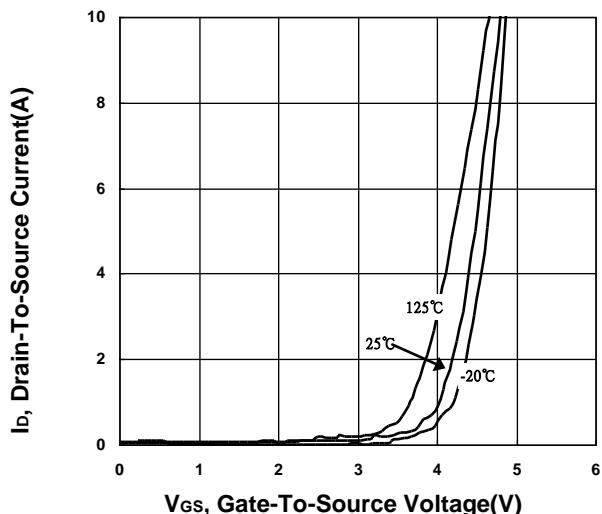
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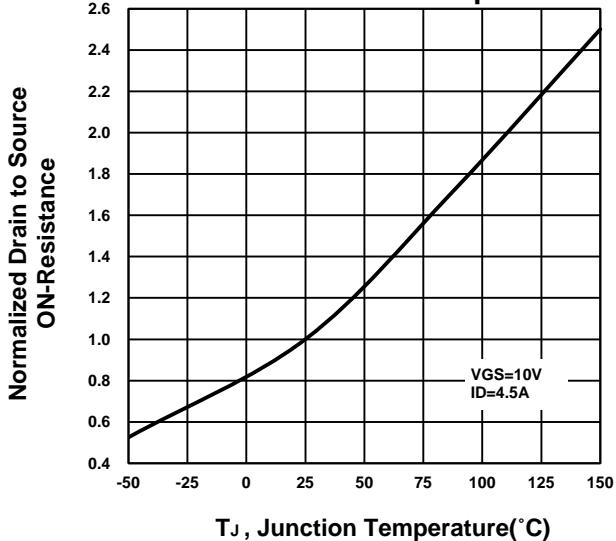
Output Characteristics



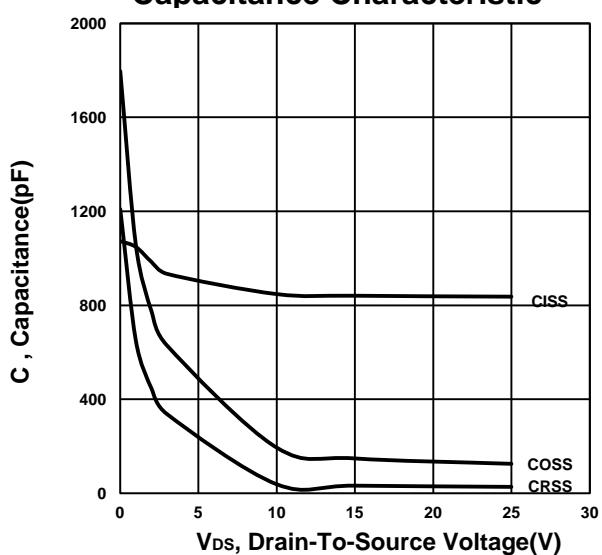
Transfer Characteristics



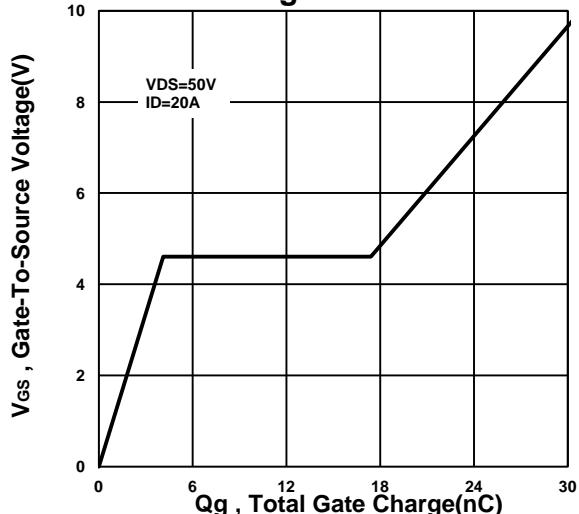
On-Resistance VS Temperature



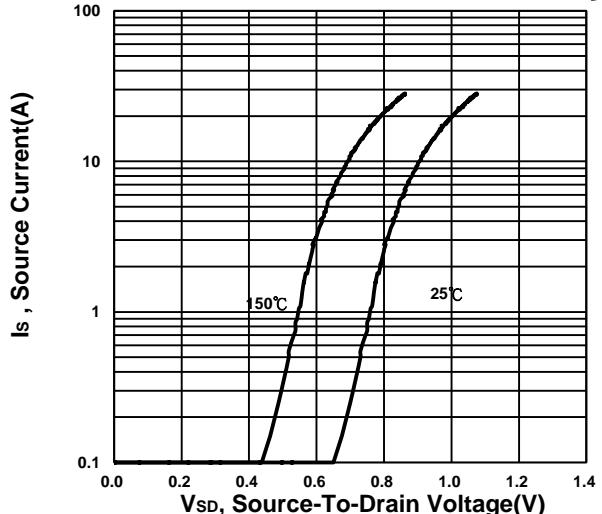
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage

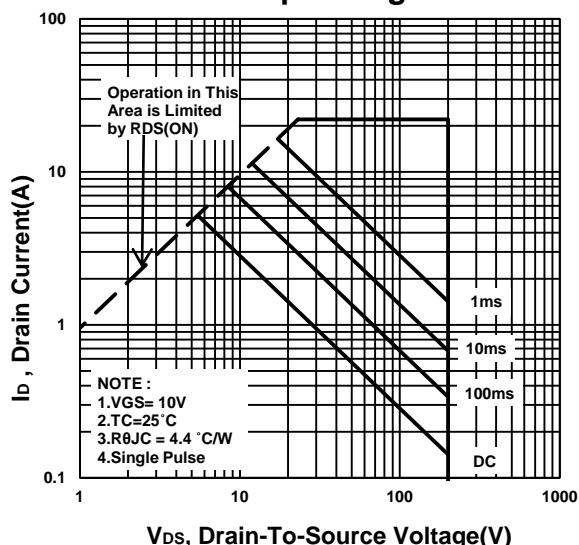


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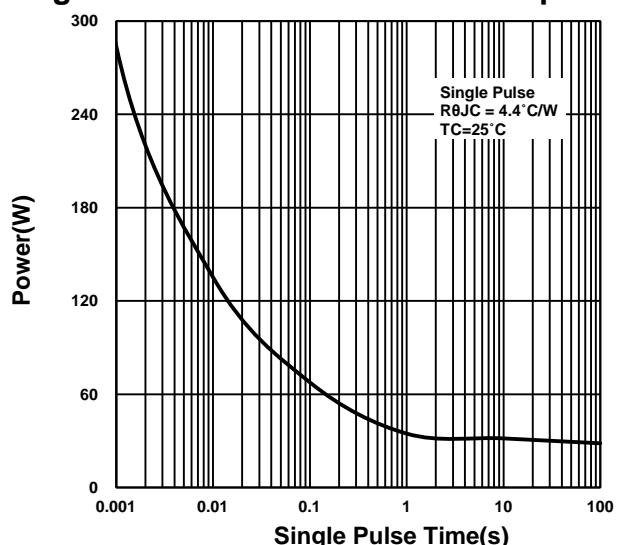
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Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

