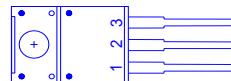
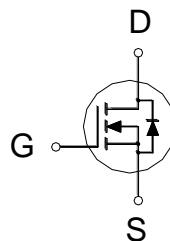


NIKO-SEM
**N-Channel High Voltage Mode
Field Effect Transistor**
P0970VTF
TO-220F
Halogen-Free & Lead-Free
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
700V	560mΩ	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}	700	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ²	I_D	9	A
		5.7	
Pulsed Drain Current ¹	I_{DM}	30	
Avalanche Current ³	I_{AS}	2.7	A
Avalanche Energy ³	E_{AS}	145	mJ
Power Dissipation	P_D	35	W
		14	
Operating Junction & Storage Temperature Range	T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.6	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W

¹Pulse width limited by maximum junction temperature.²Ensure that the channel temperature does not exceed 150°C.³ $V_{DD} = 50\text{V}$, $L = 40\text{mH}$, starting $T_J = 25^\circ\text{C}$.**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	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	700			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}	$V_{DS} = 0\text{V}, V_{GS} = \pm 30\text{V}$			± 100	nA
Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 700\text{V}, V_{GS} = 0\text{V}, T_C = 25^\circ\text{C}$			1	μA
		$V_{DS} = 560\text{V}, V_{GS} = 0\text{V}, T_C = 100^\circ\text{C}$			10	

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Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 4.5A	462	560	mΩ
Forward Transconductance ¹	g _f	V _{DS} = 10V, I _D = 4.5A	10		S
DYNAMIC					
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 100V, f = 250KHz	747		pF
Output Capacitance	C _{oss}		45		
Reverse Transfer Capacitance	C _{rss}		6.3		
Effective Output Capacitance ⁴	C _{o(er)}	V _{GS} = 0V, V _{DS} = 0 to 560V	32		
Total Gate Charge ²	Q _g	V _{DD} = 560V, I _D = 4.5A, V _{GS} = 10V	20		nC
Gate-Source Charge ²	Q _{gs}		3		
Gate-Drain Charge ²	Q _{gd}		7.1		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 350V, I _D = 4.5A, R _G = 25Ω, V _{GS} = 10V	17		nS
Rise Time ²	t _r		20		
Turn-Off Delay Time ²	t _{d(off)}		84		
Fall Time ²	t _f		27		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)					
Continuous Current ³	I _S			9	A
Forward Voltage ¹	V _{SD}	I _F = 9A, V _{GS} = 0V		1	V
Reverse Recovery Time	t _{rr}	I _F = 4.5A, dI _F /dt = 100A / μS	196		nS
Reverse Recovery Charge	Q _{rr}		1.5		uC

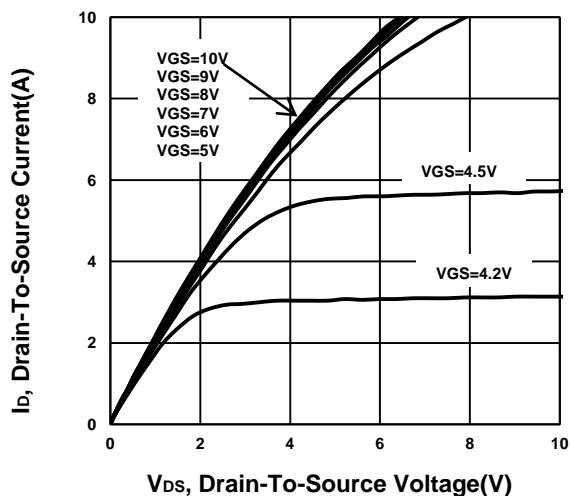
¹Pulse test : Pulse Width ≤ 380 μsec, Duty Cycle ≤ 2%.²Independent of operating temperature.³Pulse width limited by maximum junction temperature.⁴C_{o(er)} is a fixed capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0 to 80% V_{(BR)DSS}.

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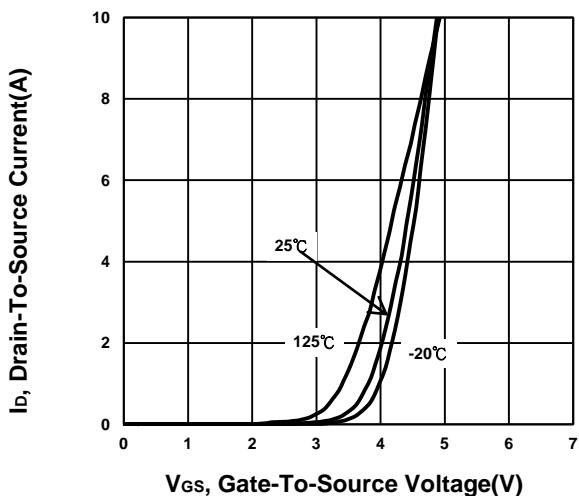
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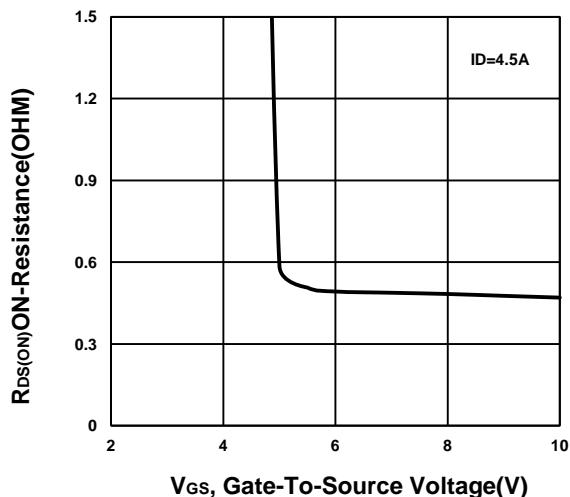
Output Characteristics



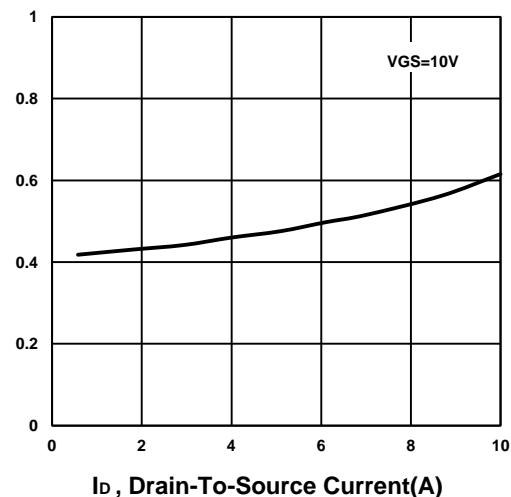
Transfer Characteristics



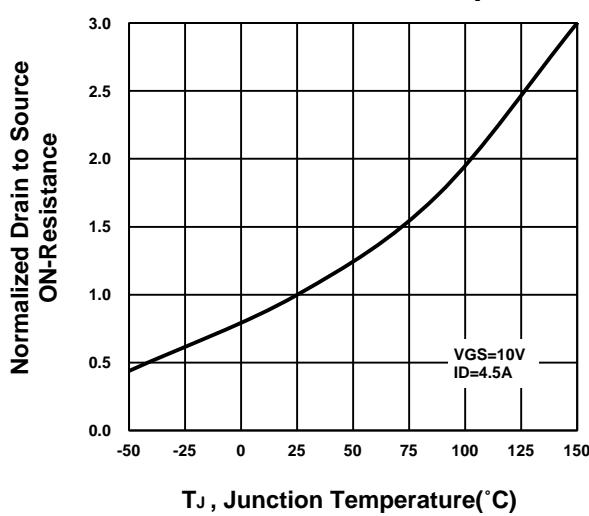
On-Resistance VS Gate-To-Source Voltage



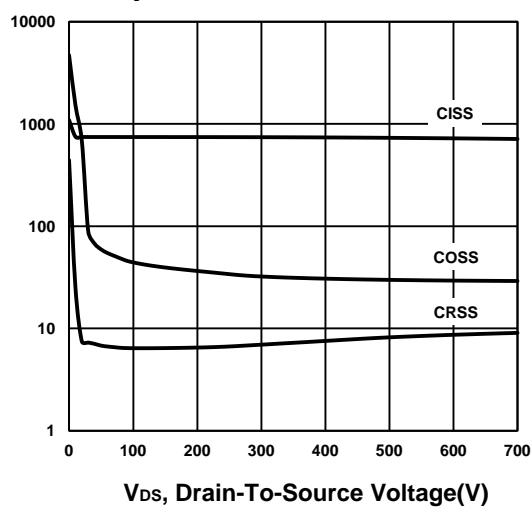
On-Resistance VS Drain Current



On-Resistance VS Temperature



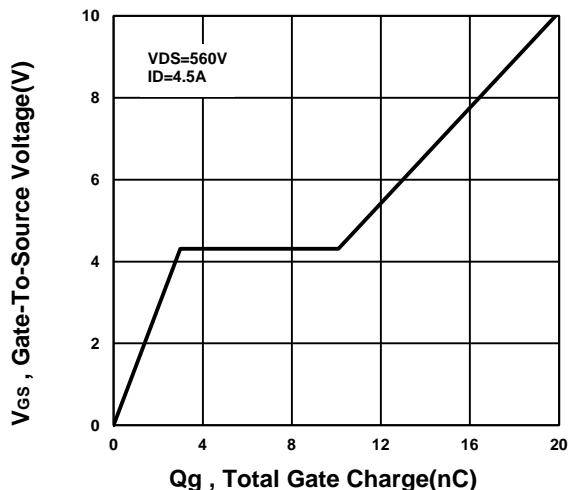
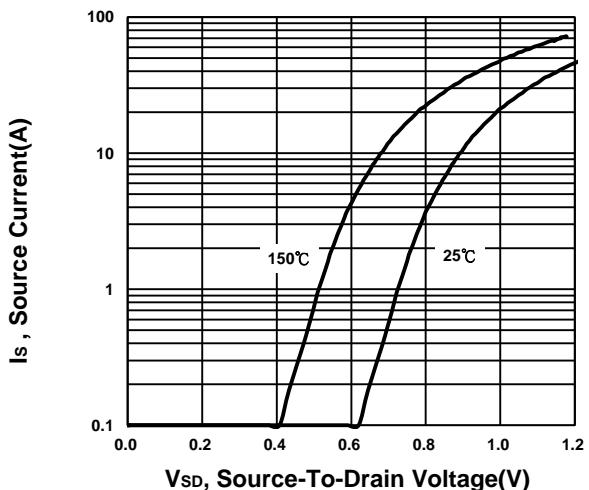
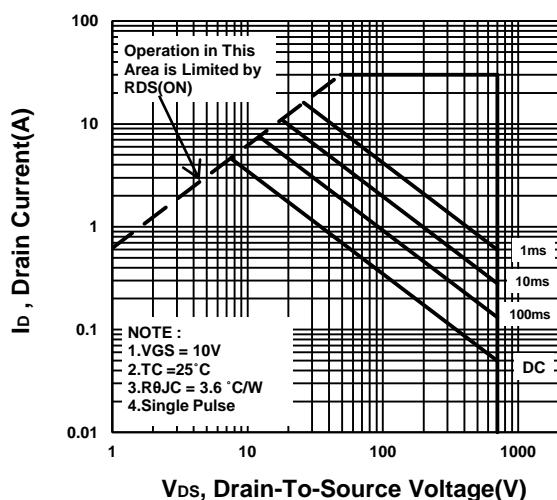
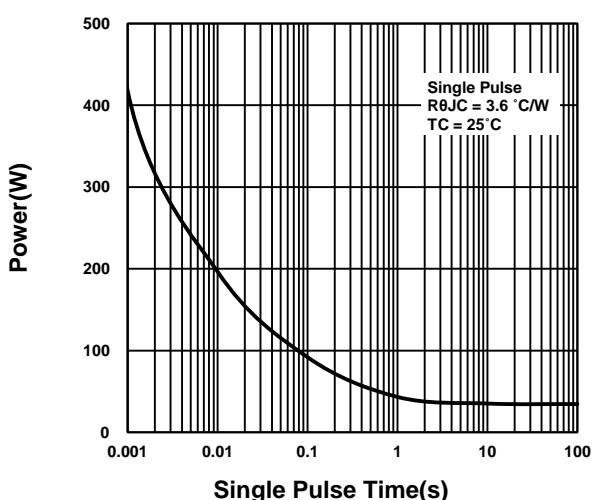
Capacitance Characteristic



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Gate charge Characteristics**Source-Drain Diode Forward Voltage****Safe Operating Area****Single Pulse Maximum Power Dissipation****Transient Thermal Response Curve**