NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

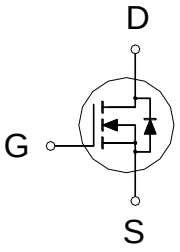
PP9C15AF

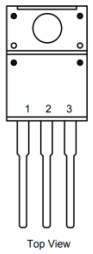
TO-220F

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
150V	9.3mΩ	50A





Top View


Side View

1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	50	A
	T_C = 100 °C		36	
Pulsed Drain Current[1]		I_{DM}	260	
Avalanche Current		I_{AS}	20	
Avalanche Energy	L = 1mH	E_{AS}	200	mJ
Power Dissipation	T_C = 25 °C	P_D	60	W
	T_C = 100 °C		30	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 175	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		62.5	
Junction-to-Case	Steady-State	$R_{\theta JC}$		2.5	

[1]Pulse width limited by maximum junction temperature.

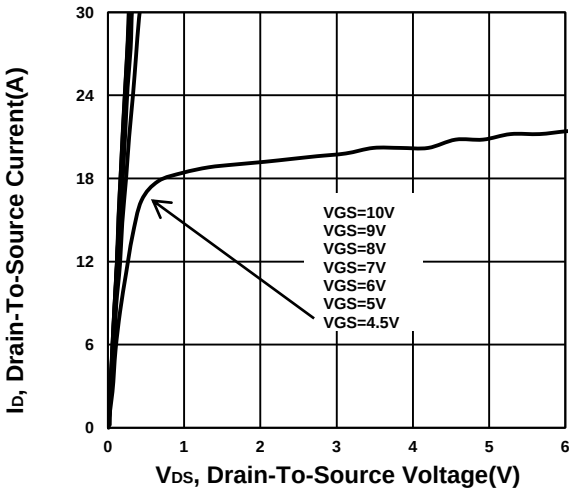
ELECTRICAL CHARACTERISTICS (T_J = 25 ° C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	150			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA

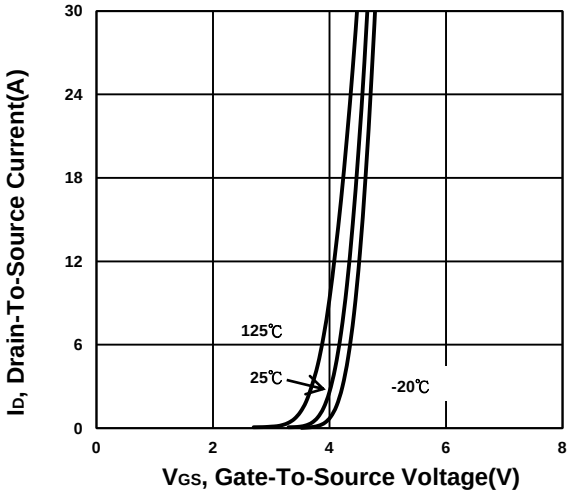
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 150V, V_{GS} = 0V			1	μA
		V_{DS} = 150V, V_{GS} = 0V, T_J = 125 ° C			100	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 20A		7.9	9.3	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		53		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 75V, f = 1MHz		3597		pF
Output Capacitance	C_{oss}			310		
Reverse Transfer Capacitance	C_{rss}			7		
Gate Resistance	Rg	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.2		Ω
Total Gate Charge[2]	Q_g	V_{GS} = 10V, V_{DS} = 75V,I_D = 20A		53		nC
Gate-Source Charge[2]	Q_{gs}			16		
Gate-Drain Charge[2]	Q_{gd}			13		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 75V, $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω		21		nS
Rise Time[2]	t_r			51		
Turn-Off Delay Time[2]	$t_{d(off)}$			46		
Fall Time[2]	t_f			59		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				50	A
Forward Voltage[1]	V_{SD}	I_F = 20A , V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 20A , dI_F/dt= 100A/μs		100		nS
Reverse Recovery Charge	Q_{rr}			227		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

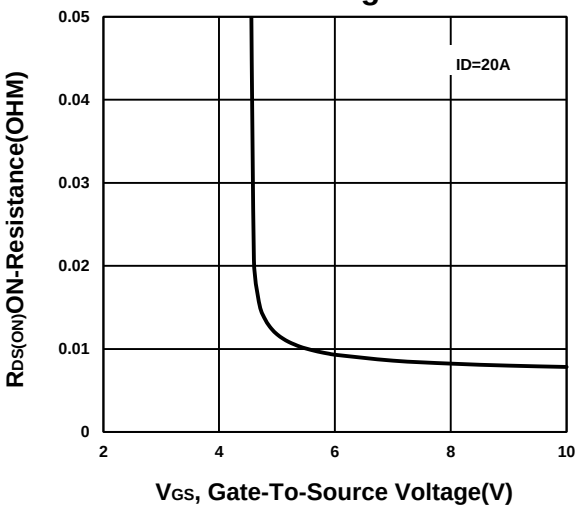
Output Characteristics



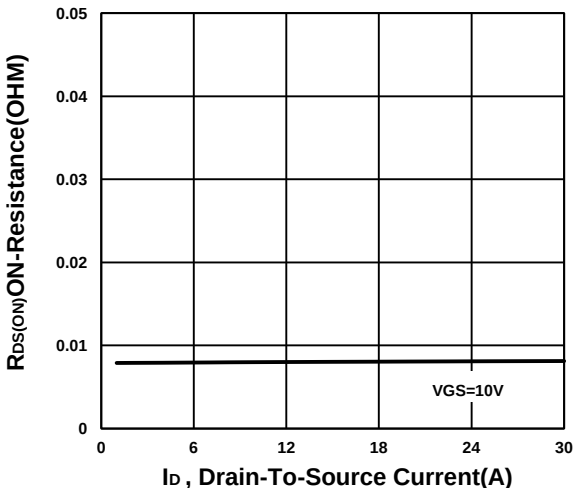
Transfer Characteristics



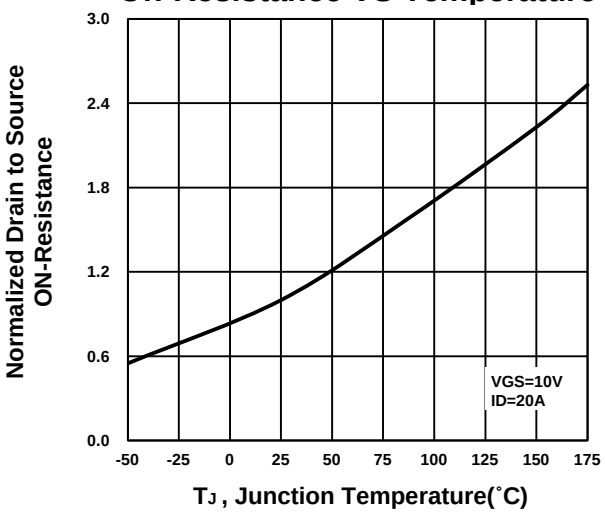
On-Resistance VS Gate-To-Source Voltage



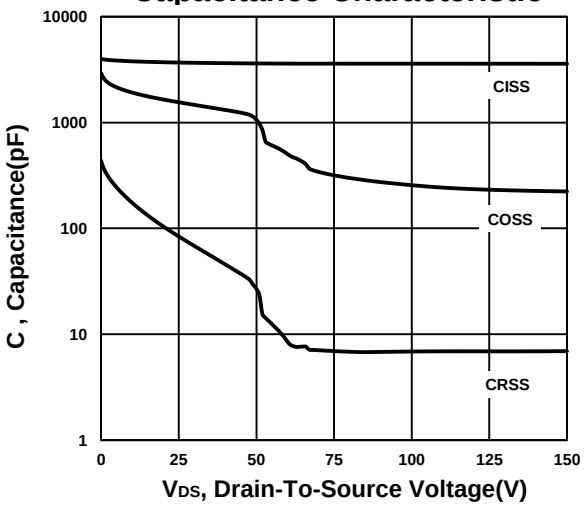
On-Resistance VS Drain Current



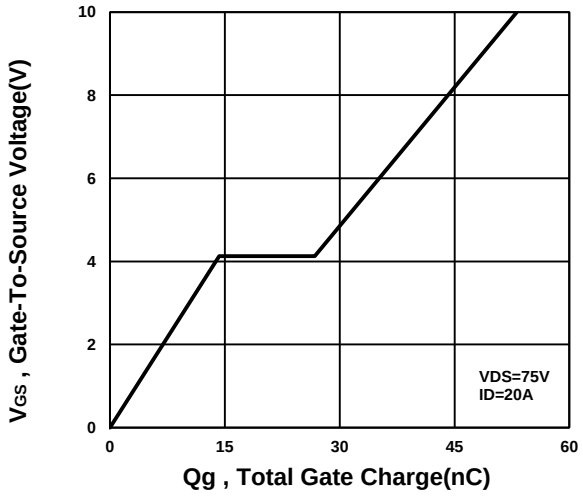
On-Resistance VS Temperature



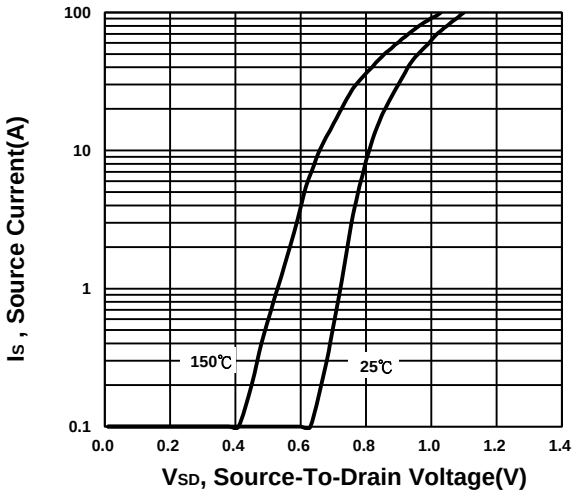
Capacitance Characteristic



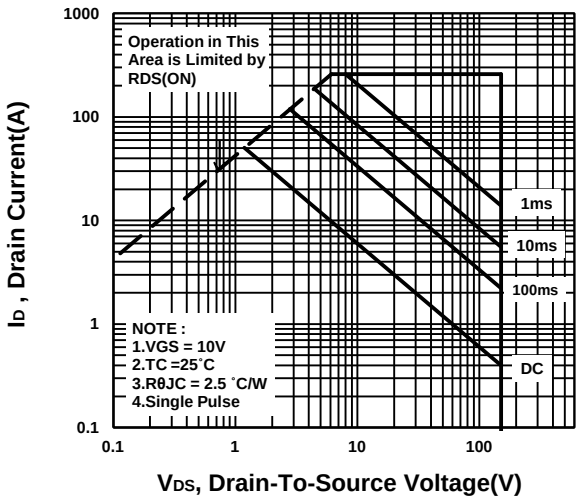
Gate charge Characteristics



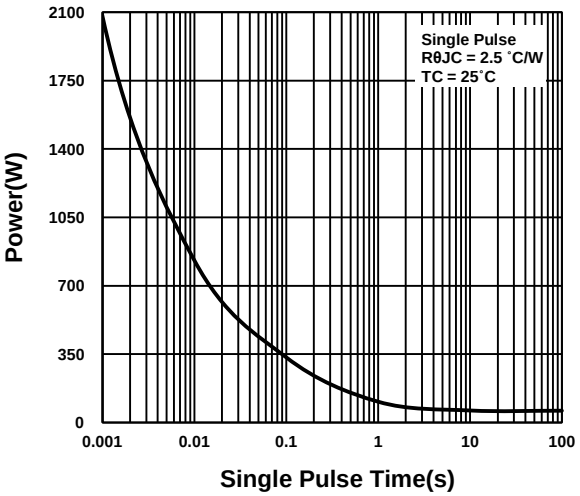
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve