NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

P0908ATF

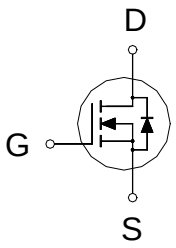
TO-220F

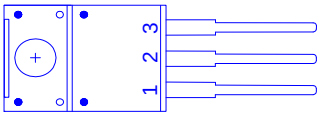
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
80V	9mΩ	43A





1.GATE
2.DRAIN
3.SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[2]	T_C = 25 °C	I_D	43	A
	T_C = 100 °C		27	
Pulsed Drain Current[1,2]		I_{DM}	160	
Avalanche Current		I_{AS}	49	
Avalanche Energy	L = 0.1mH	E_{AS}	120	mJ
Power Dissipation	T_C = 25 °C	P_D	37	W
	T_C = 100 °C		15	
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	$R_{\theta JC}$		3.3	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W

[1]Pulse width limited by maximum junction temperature.
[2]Limited only by maximum temperature allowed.

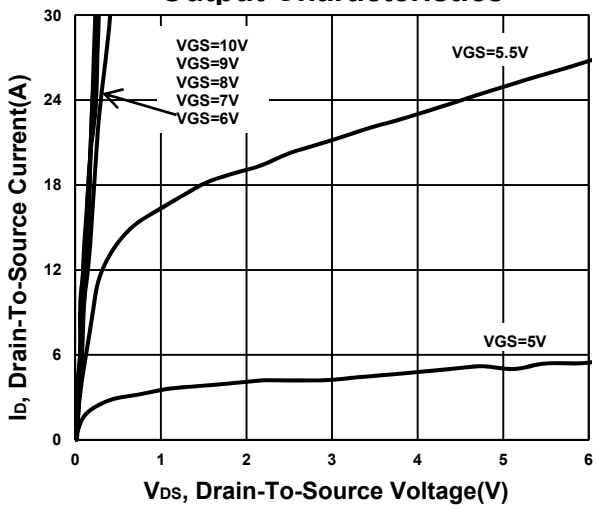
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	80			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3.4	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 64V, V_{GS} = 0V			1	μA
		V_{DS} = 60V, V_{GS} = 0V, T_J = 125 °C			10	

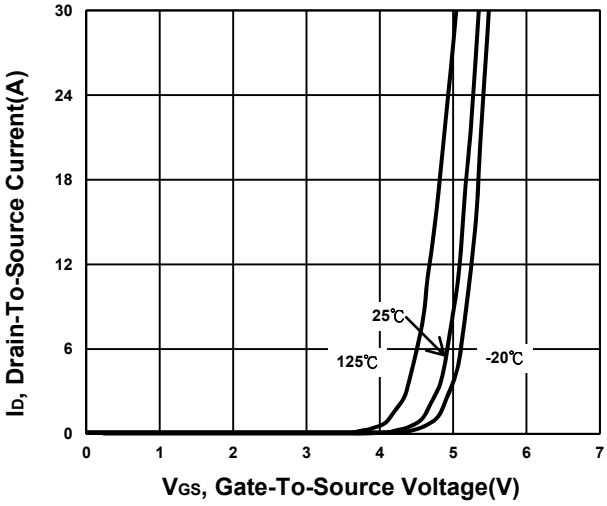
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 20A		7	9	mΩ
		V_{GS} = 7V, I_D = 15A		8.1	12	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 20A		57		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		2853		pF
Output Capacitance	C_{oss}			355		
Reverse Transfer Capacitance	C_{rss}			199		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V ,f = 1MHz		0.9		Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 40V, V_{GS} = 10V, I_D = 20A		55		nC
	$Q_{g(VGS=7V)}$			41.5		
Gate-Source Charge[2]	Q_{gs}			15.3		
Gate-Drain Charge[2]	Q_{gd}			19.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 40V, $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} = 6Ω		37		nS
Rise Time[2]	t_r			45		
Turn-Off Delay Time[2]	$t_{d(off)}$			61		
Fall Time[2]	t_f			42		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				26	A
Forward Voltage[1]	V_{SD}	I_F = 20A,V_{GS} = 0V			1.4	V
Reverse Recovery Time	t_{rr}	I_F = 20A, dI_F/dt = 100A / μS		34		nS
Reverse Recovery Charge	Q_{rr}			37		nC

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

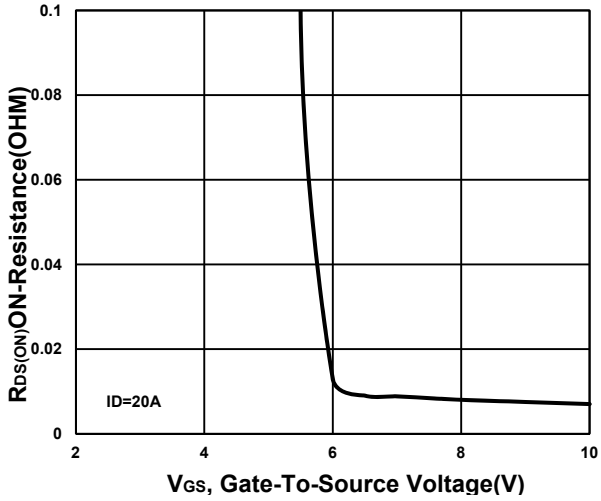
Output Characteristics



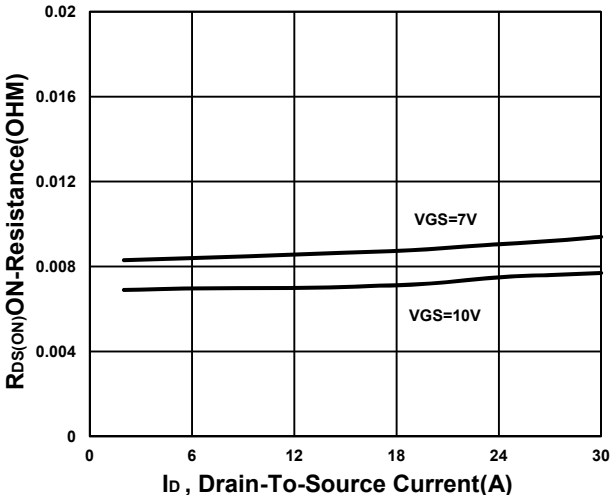
Transfer Characteristics



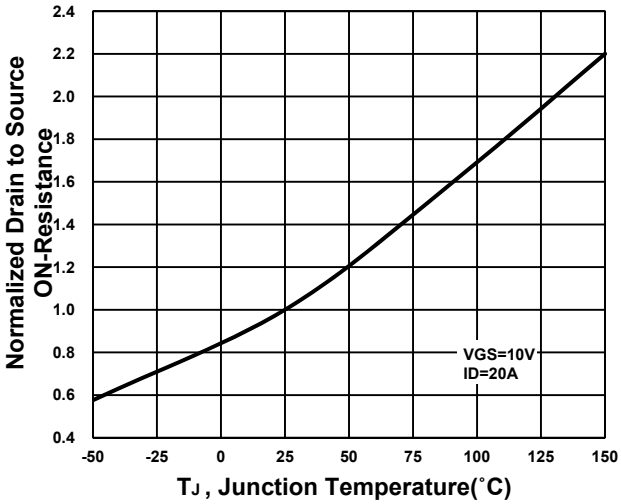
On-Resistance VS Gate-To-Source



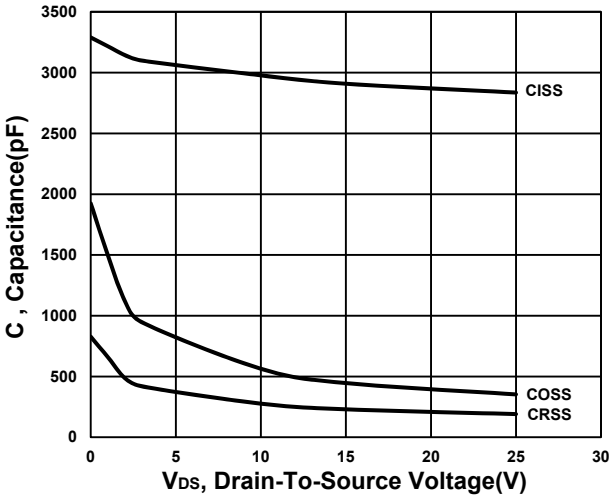
On-Resistance VS Drain Current



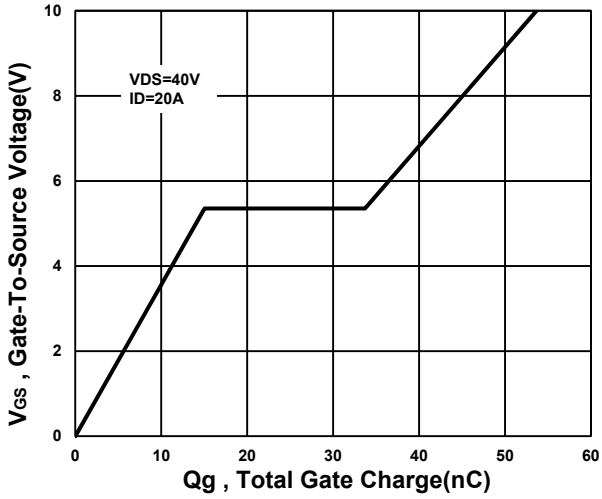
On-Resistance VS Temperature



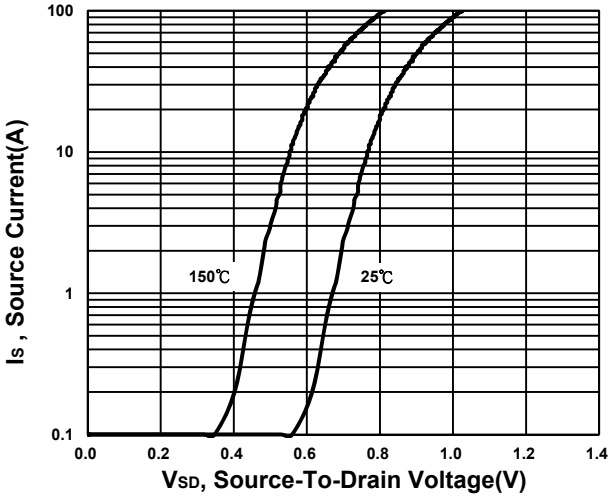
Capacitance Characteristic



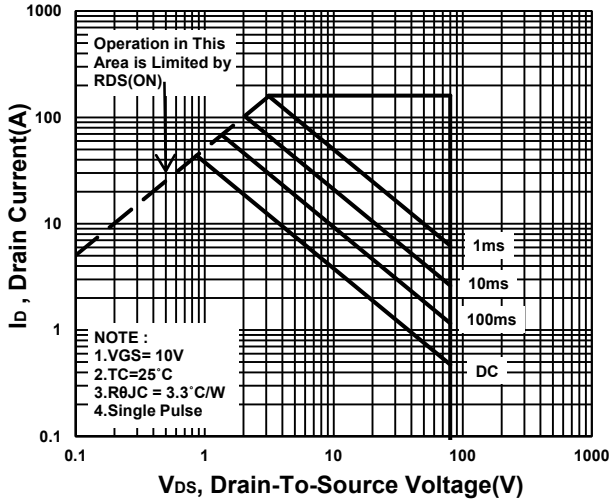
Gate charge Characteristics



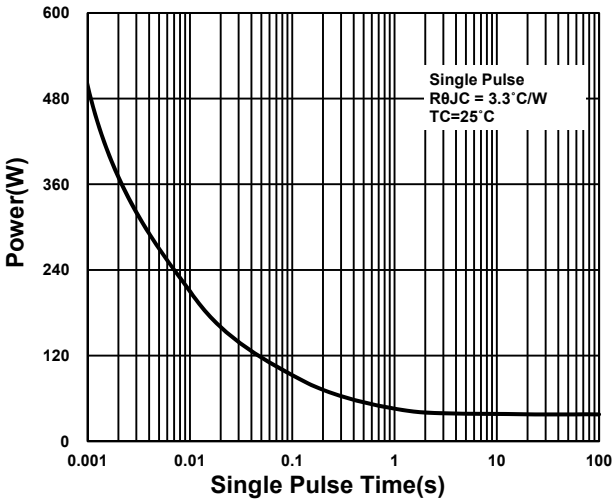
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve