NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

P1210BDA

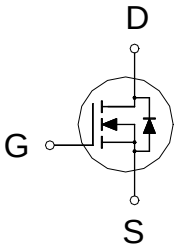
TO-252

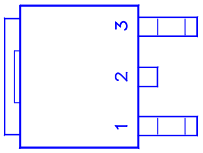
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	12mΩ	49A





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}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	49	A
	T_C = 100 °C		31	
Pulsed Drain Current[1]		I_{DM}	150	
Avalanche Current		I_{AS}	15	
Avalanche Energy[2]	L = 1mH	E_{AS}	112	mJ
Power Dissipation	T_C = 25 °C	P_D	62.5	W
	T_C = 100 °C		25	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.

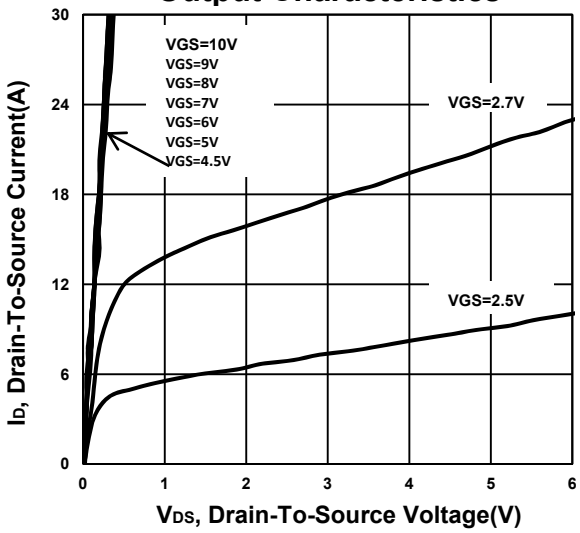
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250µA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	1.4	1.8	2.4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	µA
		V_{DS}=80V, V_{GS}=0V, T_J=125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 10A		11	15	mΩ
	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 12A		9.3	12	mΩ

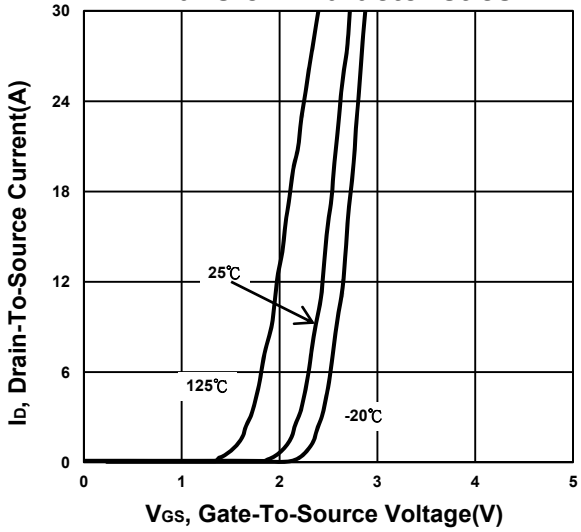
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 12A		62		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz		2025		pF
Output Capacitance	C_{oss}			186		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 50V, I_D = 12A		31.6		nC
	$Q_{g(VGS=4.5V)}$			16		
Gate-Source Charge[2]	Q_{gs}			5.2		
Gate-Drain Charge[2]	Q_{gd}			5.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50V $I_D \cong$ 12A, V_{GS} = 10V, R_{GS} = 6Ω		12		nS
Rise Time[2]	t_r			10		
Turn-Off Delay Time[2]	$t_{d(off)}$			33		
Fall Time[2]	t_f			11		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				49	A
Forward Voltage[1]	V_{SD}	I_F = 12A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 12A, dI_F/dt = 100A / μS		55		nS
Reverse Recovery Charge	Q_{rr}			62		nC

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

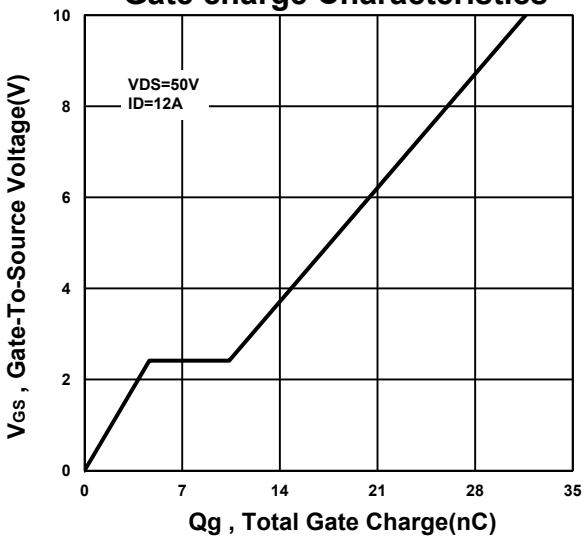
Output Characteristics



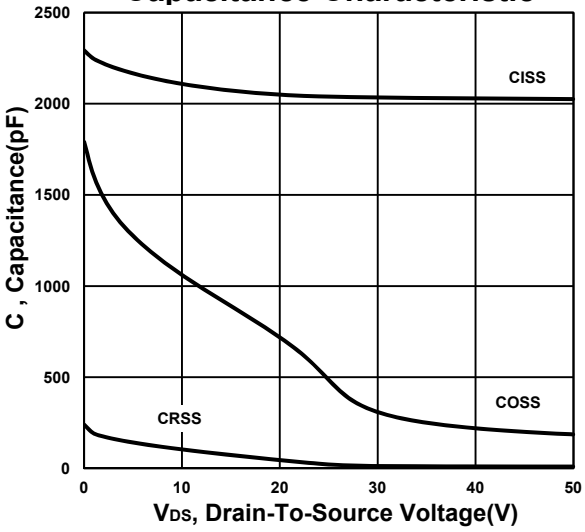
Transfer Characteristics



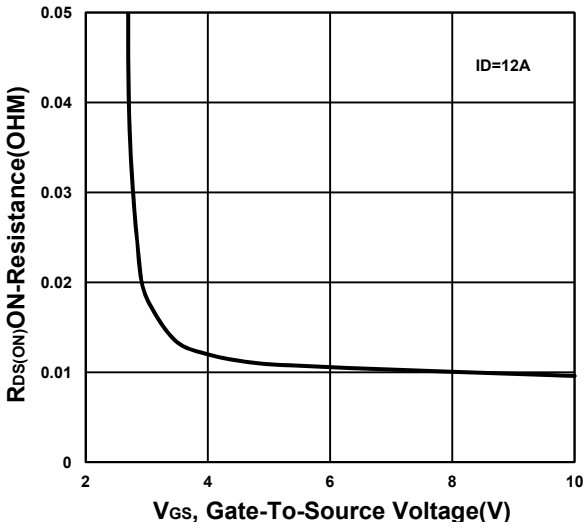
Gate charge Characteristics



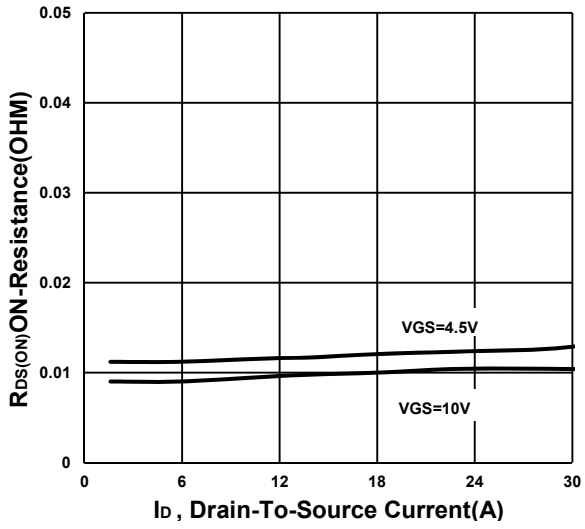
Capacitance Characteristic



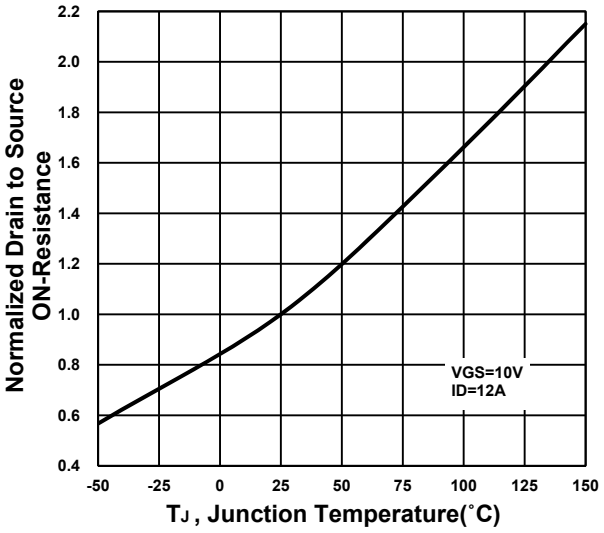
On-Resistance VS Gate-To-Source



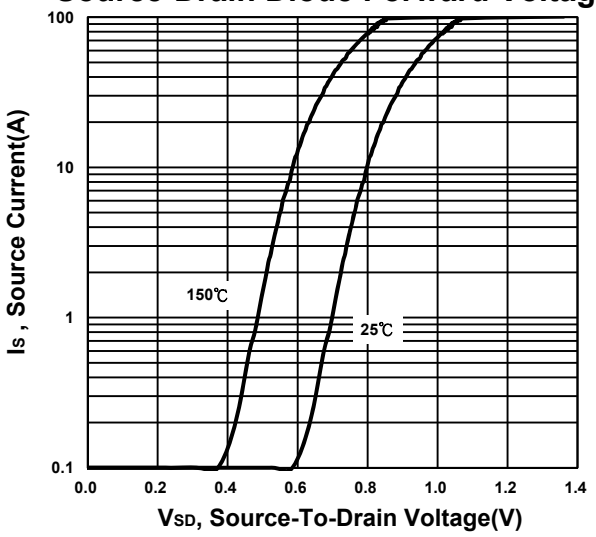
On-Resistance VS Drain Current



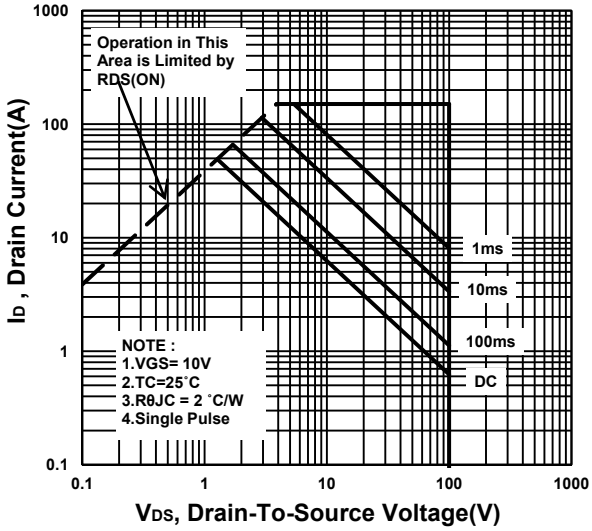
On-Resistance VS Temperature



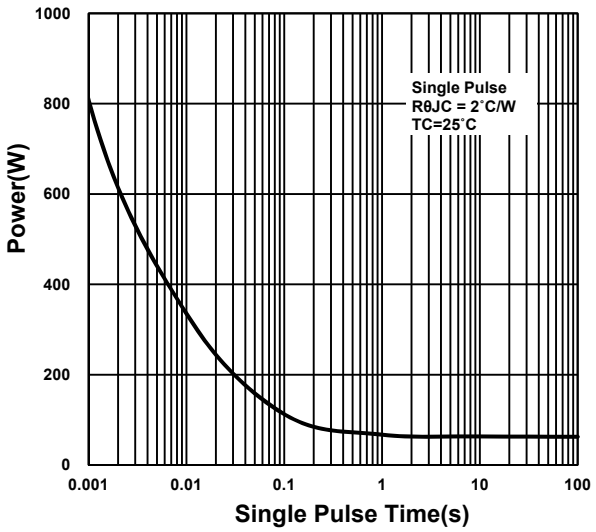
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

