NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

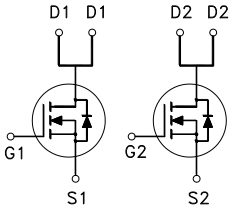
PA110HEA

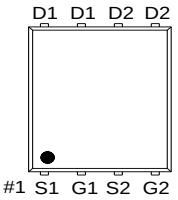
PDFN 3x3P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	110mΩ	8.4A





RoHS Compliant

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	8.4	A
	T_C = 100 °C		5.3	
	T_A = 25 °C		2.4	
	T_A = 70 °C		1.9	
Pulsed Drain Current[1]		I_{DM}	15	
Avalanche Current		I_{AS}	6.1	
Avalanche Energy	L = 1mH	E_{AS}	19	mJ
Power Dissipation	T_C = 25 °C	P_D	18	W
	T_C = 100 °C		7.3	
	T_A = 25 °C		1.5	
	T_A = 70 °C		0.9	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$		85	°C / W
Junction-to-Case	$R_{\theta JC}$		6.8	

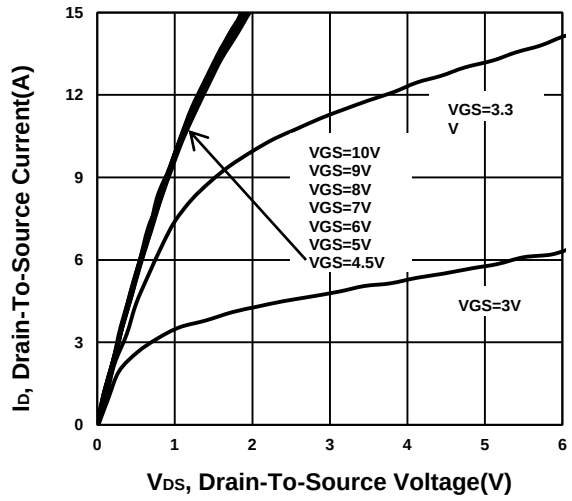
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C

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

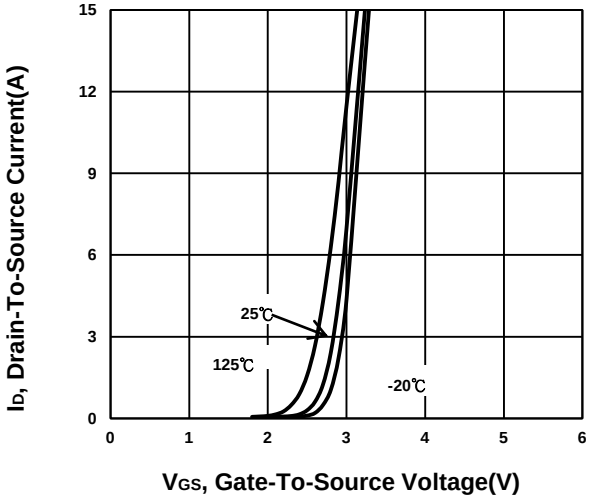
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.8	3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V			1	μA
		V_{DS} = 100V, V_{GS} = 0V, T_J = 55 °C			10	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A		89	120	mΩ
		V_{GS} = 10V, I_D = 6A		83	110	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 6A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	493	617	740	pF
Output Capacitance	C_{oss}		43	54	65	pF
Reverse Transfer Capacitance	C_{rss}		18	31	43	pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	0.8	1.6	2.4	Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 50V , I_D = 6A	10	13	15.6	nC
	$Q_{g(VGS=4.5V)}$		6	7.7	9.2	nC
Gate-Source Charge[2]	Q_{gs}		1.5	1.9	2.3	nC
Gate-Drain Charge[2]	Q_{gd}		2.5	4.2	6	nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50V I_D ≅ 6A, V_{GEN} = 10V, R_G =6Ω		9.5		nS
Rise Time[2]	t_r			15		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			22		nS
Fall Time[2]	t_f			30		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				8.4	A
Forward Voltage[1]	V_{SD}	I_F = 6A, V_{GS} = 0V			1.4	V
Reverse Recovery Time	t_{rr}	I_F = 6A , dI_F/dt = 100A / μS	11	23	35	nS
Reverse Recovery Charge	Q_{rr}		11	23	35	nC

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

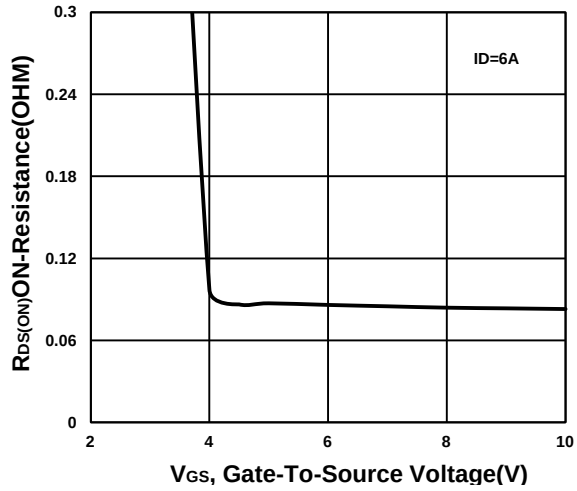
Output Characteristics



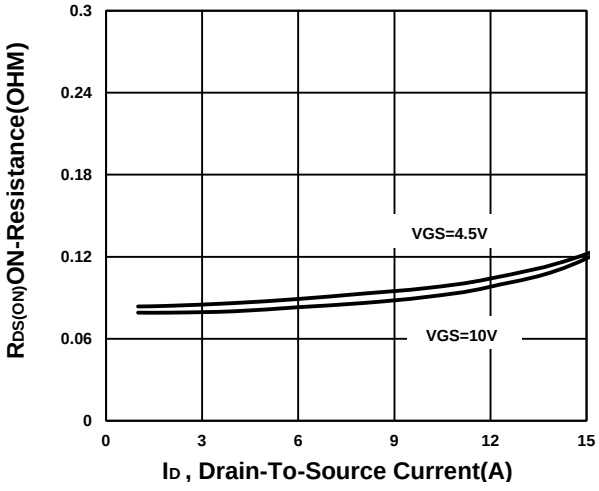
Transfer Characteristics



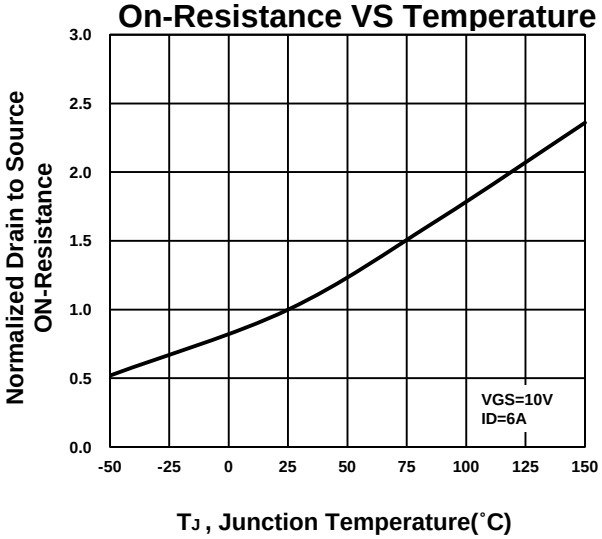
On-Resistance VS Gate-To-Source Voltage



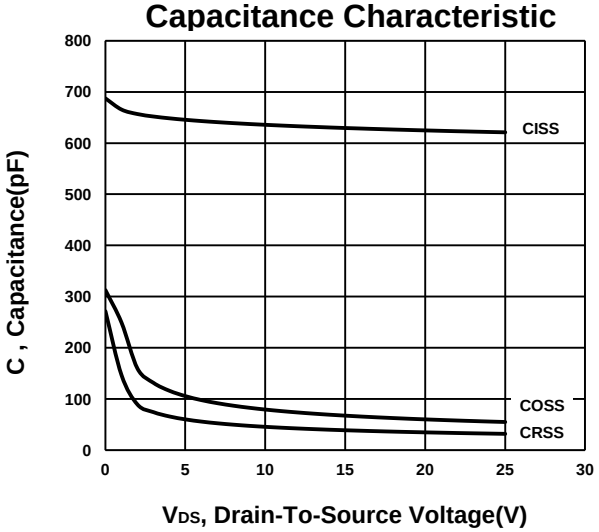
On-Resistance VS Drain Current



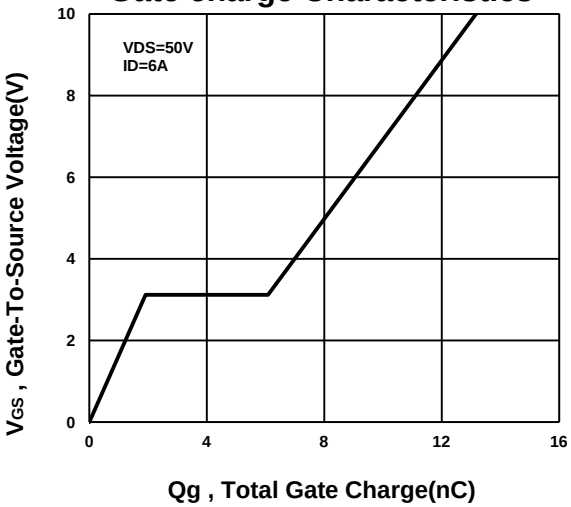
On-Resistance VS Temperature



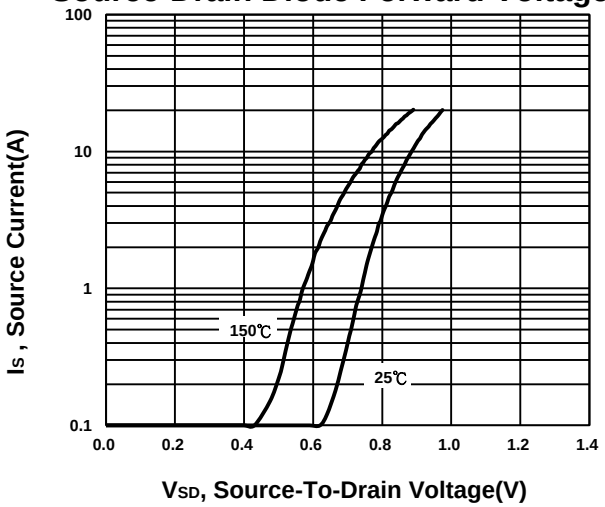
Capacitance Characteristic



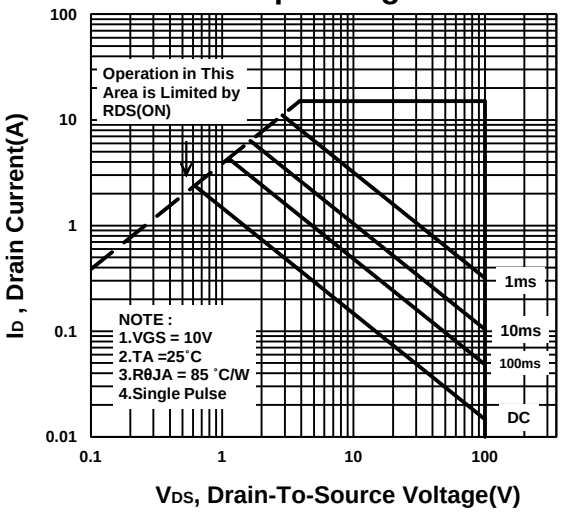
Gate charge Characteristics



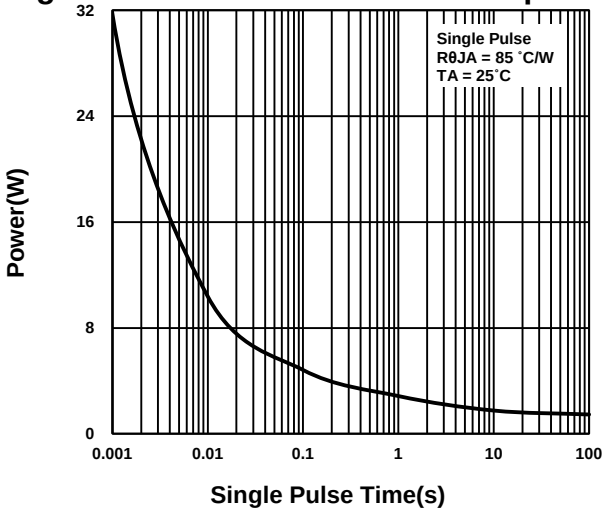
Source-Drain Diode Forward Voltage



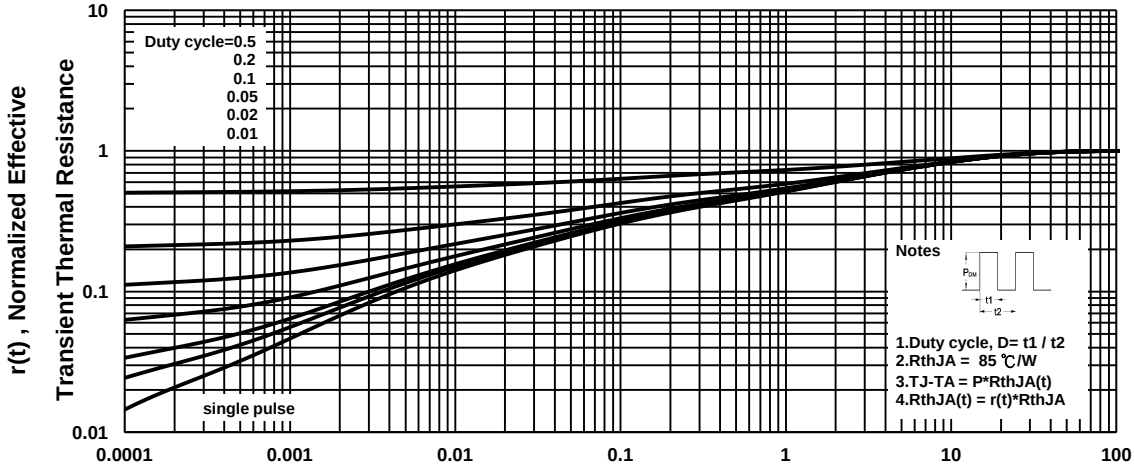
Safe Operating Area



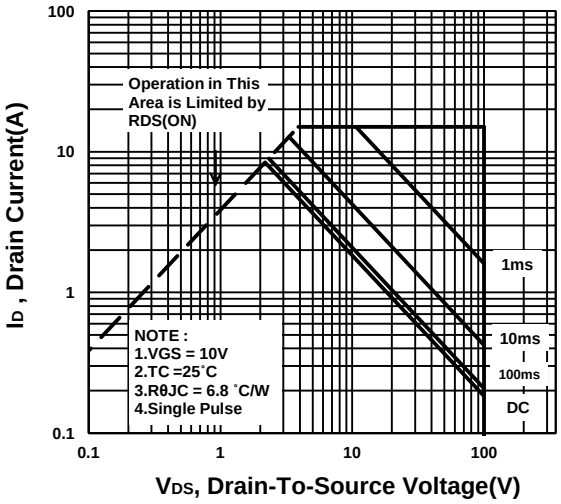
Single Pulse Maximum Power Dissipation



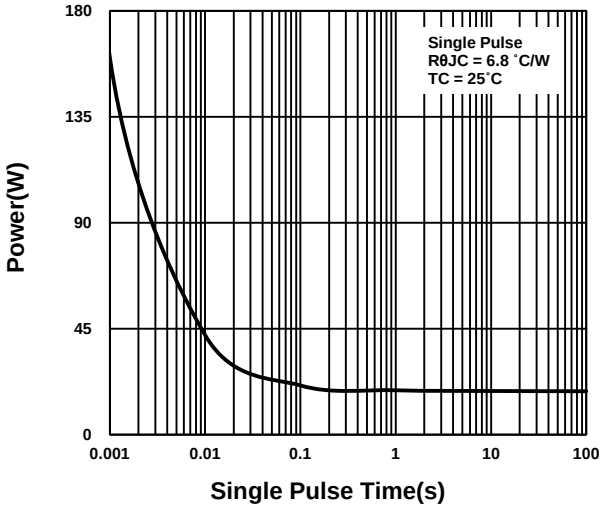
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

