NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

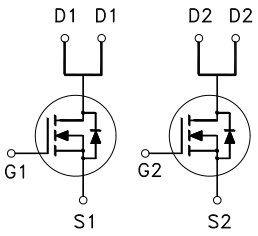
P3710HK

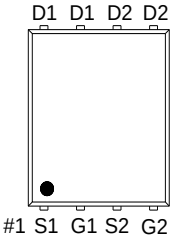
PDFN 5x6P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	37mΩ	23A





G. GATE
D. DRAIN
S. SOURCE

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	23	A
	T_C = 100 °C		15	
Pulsed Drain Current[1]		I_{DM}	50	
Continuous Drain Current	T_A = 25 °C	I_D	6	
	T_A = 70 °C		4.8	
Avalanche Current		I_{AS}	15	
Avalanche Energy	L = 1mH	E_{AS}	112	mJ
Power Dissipation	T_C = 25 °C	P_D	43	W
	T_C = 100 °C		17	
Power Dissipation[3]	T_A = 25 °C	P_D	3	W
	T_A = 70 °C		1.9	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	Value	UNITS
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$	42	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$	66	
Junction-to-Case	Steady-State	$R_{\theta JC}$	2.9	

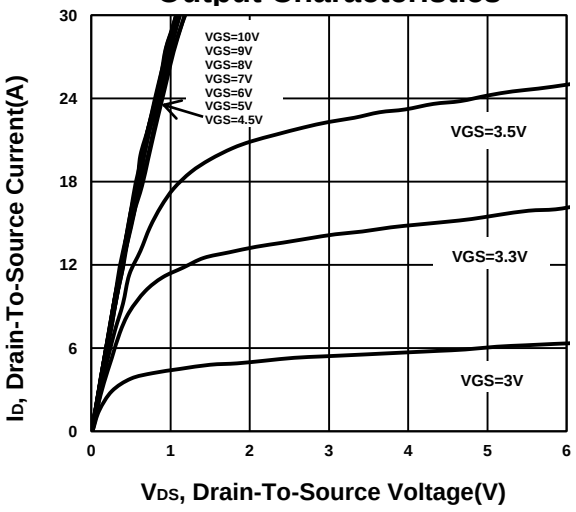
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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

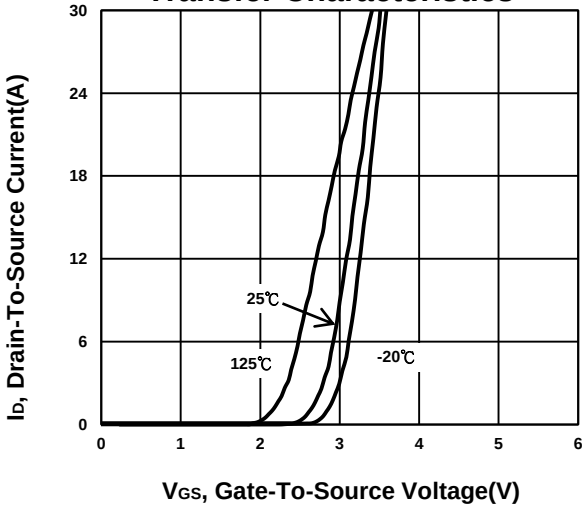
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.8	2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A		33	48	mΩ
		V_{GS} = 10V, I_D = 6A		29	37	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 6A		28		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	862	1078	1293	pF
Output Capacitance	C_{oss}		116	146	175	
Reverse Transfer Capacitance	C_{rss}		33	55	177	
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	0.6	1.2	1.8	Ω
Total Gate Charge[2]	Q_g V_{GS} = 10V	V_{DS} = 50V , V_{GS} = 10V, I_D = 6A	17	22	26.4	nC
	Q_g V_{GS} = 4.5V		10	13	15.6	
Gate-Source Charge[2]	Q_{gs}		2.4	3	3.6	
Gate-Drain Charge[2]	Q_{gd}		4	6.7	9.4	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V , I_D ≅ 6A, V_{GS} = 10V, R_{GEN} =6Ω		12		nS
Rise Time[2]	t_r			26		
Turn-Off Delay Time[2]	$t_{d(off)}$			31		
Fall Time[2]	t_f			53		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				23	A
Forward Voltage[1]	V_{SD}	I_F = 6A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 6A, dI_F/dt = 100A / μS	19	38	57	nS
Reverse Recovery Charge	Q_{rr}		29	58	87	nC

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

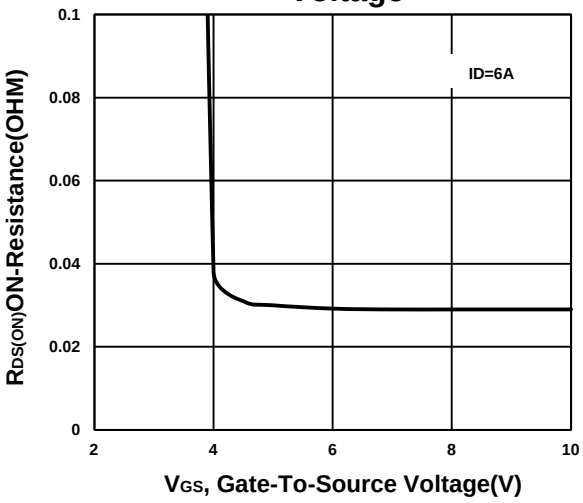
Output Characteristics



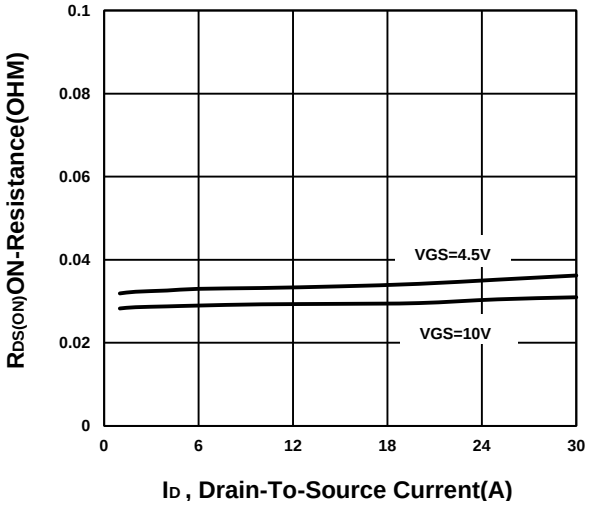
Transfer Characteristics



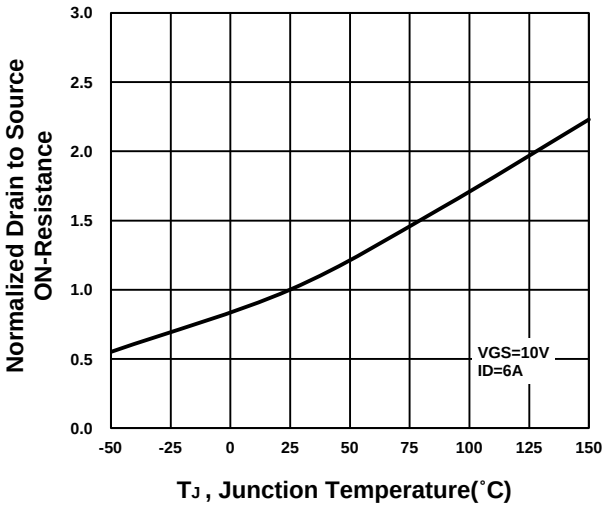
On-Resistance VS Gate-To-Source Voltage



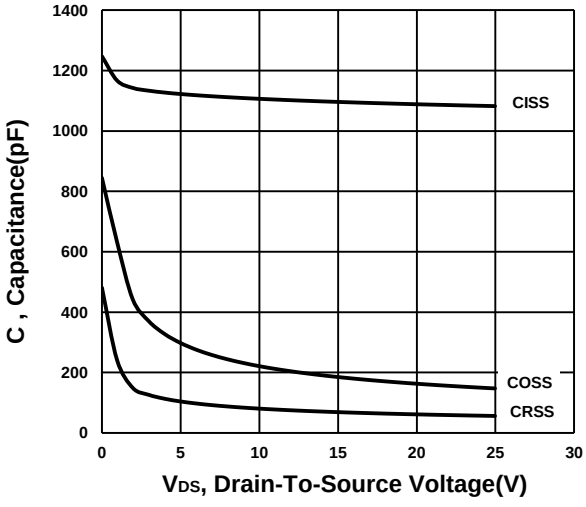
On-Resistance VS Drain Current



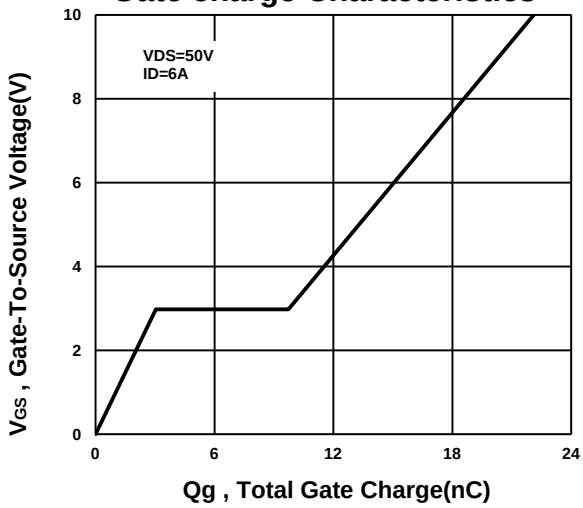
On-Resistance VS Temperature



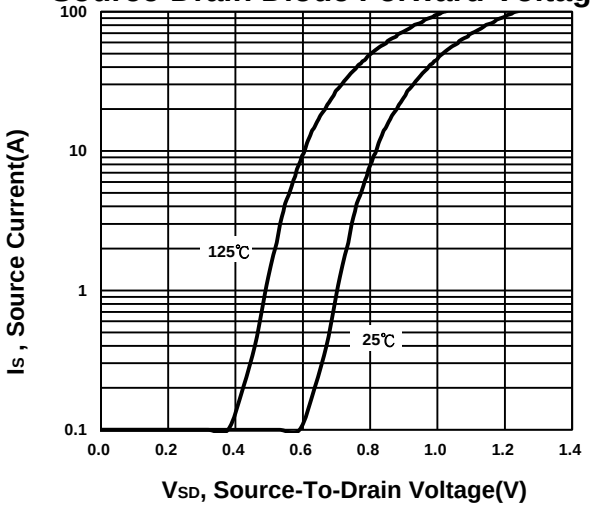
Capacitance Characteristic



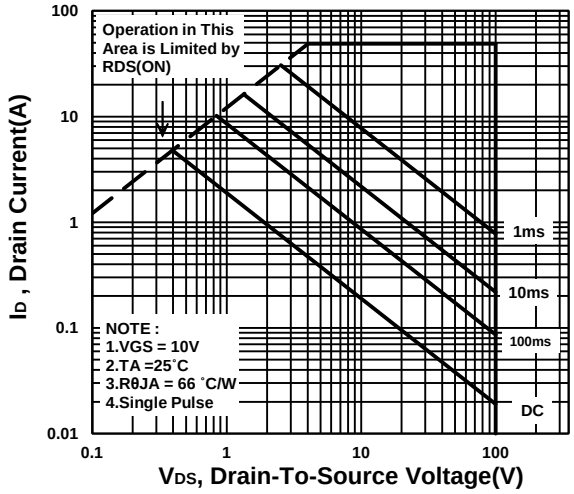
Gate charge Characteristics



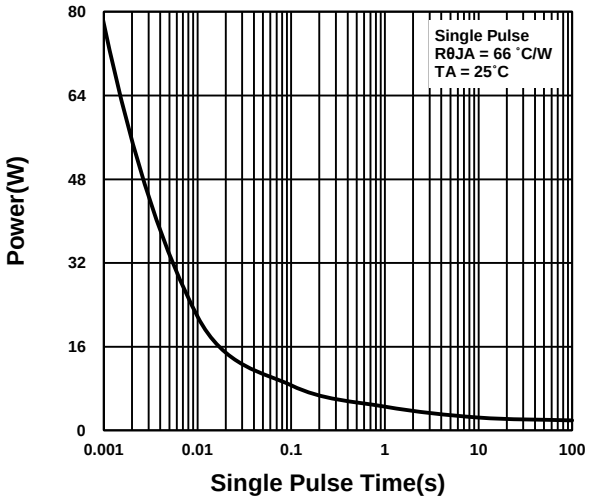
Source-Drain Diode Forward Voltage



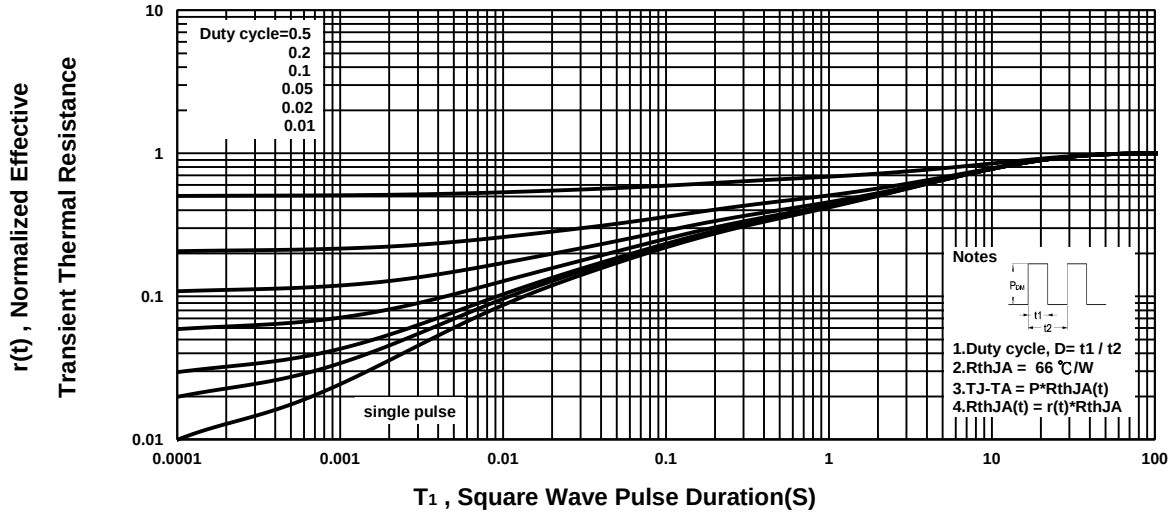
Safe Operating Area



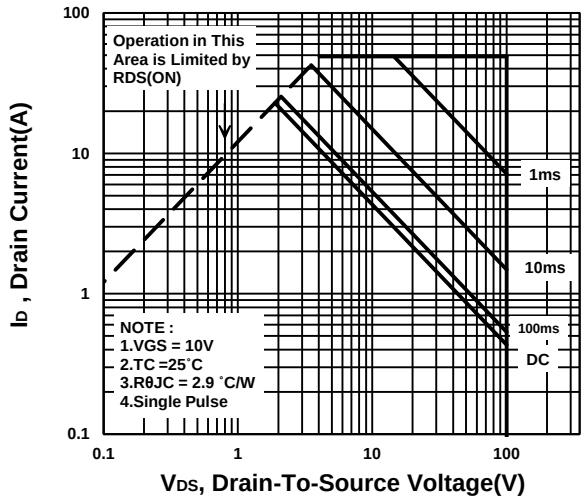
Single Pulse Maximum Power Dissipation



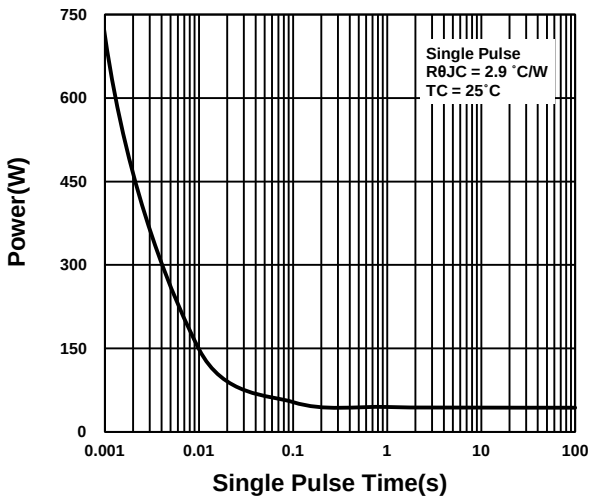
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve