NIKO-SEM

P-Channel Enhancement Mode Field Effect Transistor

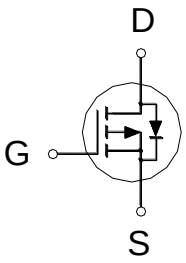
PB5B5BX

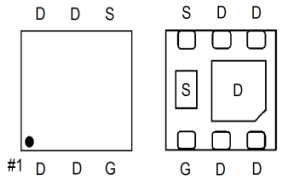
PDFN 2x2S

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	22mΩ	-7.9A





RoHS Compliant

G : GATE
D : DRAIN
S : SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A = 25 °C	I_D	-7.9	A
	T_A = 70 °C		-6.3	
Pulsed Drain Current[1]		I_{DM}	-32	
Power Dissipation	T_A = 25 °C	P_D	2.2	W
	T_A = 70 °C		1.4	
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]	$R_{\theta JA}$		57	°C／W

[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. Coppe.

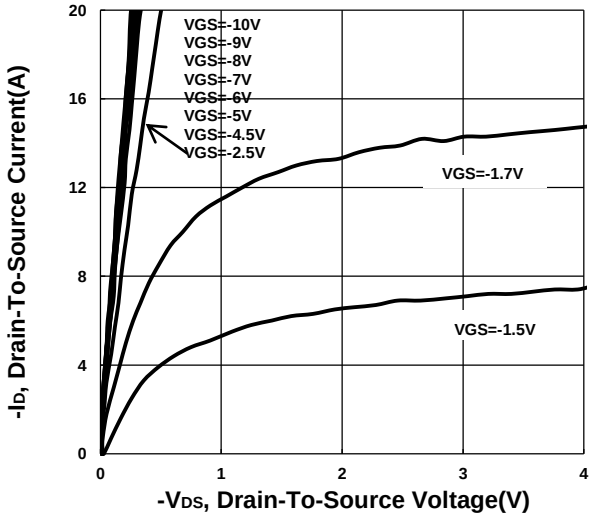
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

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	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.65	-0.9	-1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16V, V_{GS} = 0V			-1	μA
		V_{DS} = -10V, V_{GS} = 0V, T_J = 55 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -2.5V, I_D = -2A		24	35	mΩ
		V_{GS} = -4.5V, I_D = -2.5A		17.5	25	
		V_{GS} = -10V, I_D = -2.5A		14.8	22	
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -2.5A		17		S

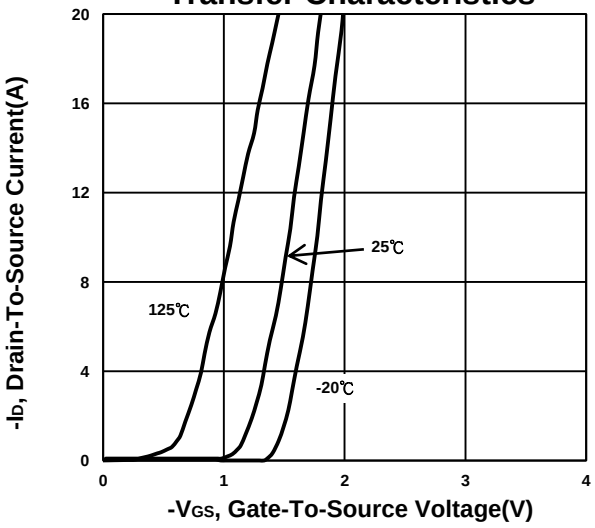
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		1325		pF
Output Capacitance	C_{oss}			188		
Reverse Transfer Capacitance	C_{rss}			168		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		10		Ω
Total Gate Charge[2]	Q_g	V_{GS} = -10V , V_{DS} = -10V , I_D = -2.5A		35		nC
Gate-Source Charge[2]	Q_{gs}			1.4		
Gate-Drain Charge[2]	Q_{gd}			5.2		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -10V $I_D \cong$ -2.5A, V_{GEN} = -10V, R_G = 6Ω		21		nS
Rise Time[2]	t_r			16		
Turn-Off Delay Time[2]	$t_{d(off)}$			62		
Fall Time[2]	t_f			36		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-1.8	A
Forward Voltage[1]	V_{SD}	I_F = -2.5A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = -2.5A , dI_F/dt = 100A / μS		41		nS
Reverse Recovery Charge	Q_{rr}			26		nC

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

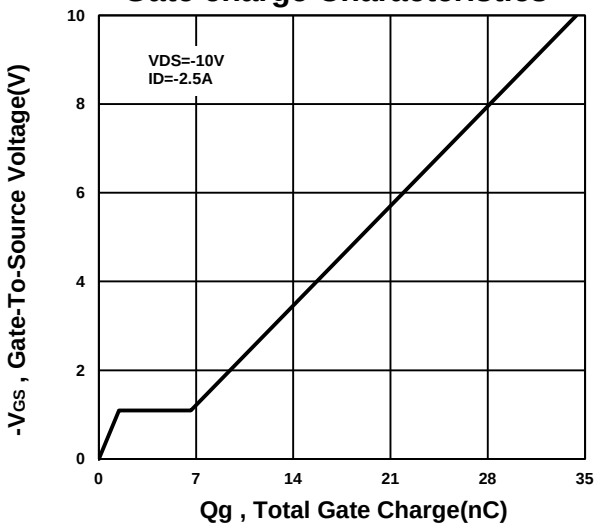
Output Characteristics



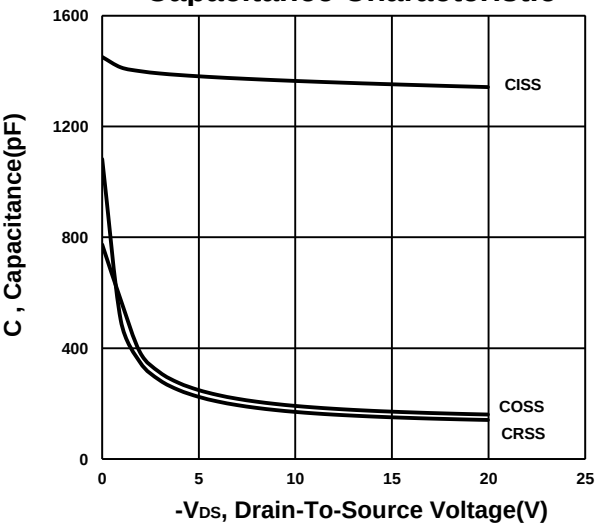
Transfer Characteristics



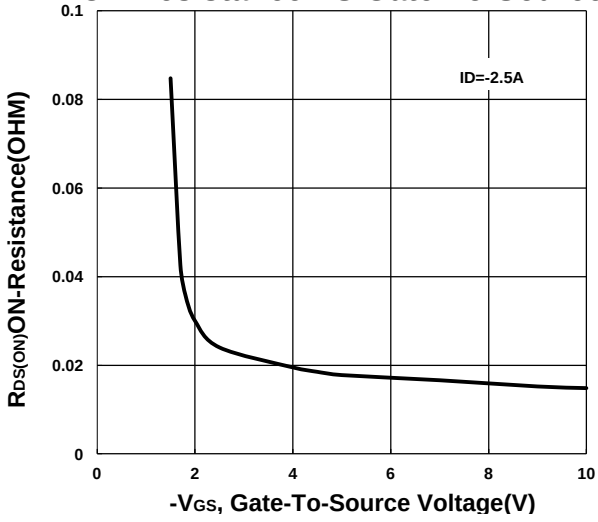
Gate charge Characteristics



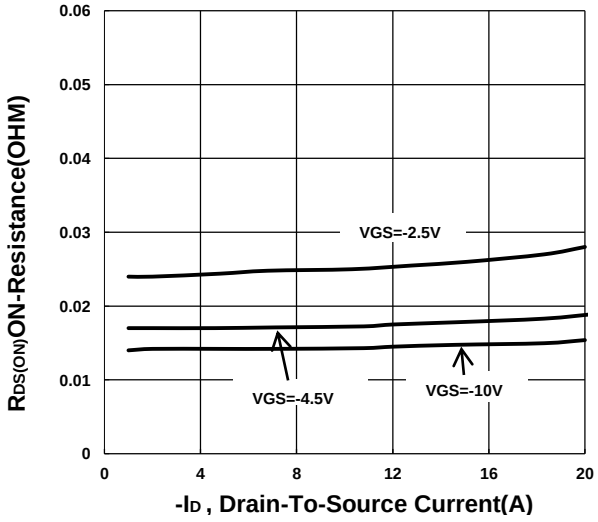
Capacitance Characteristic



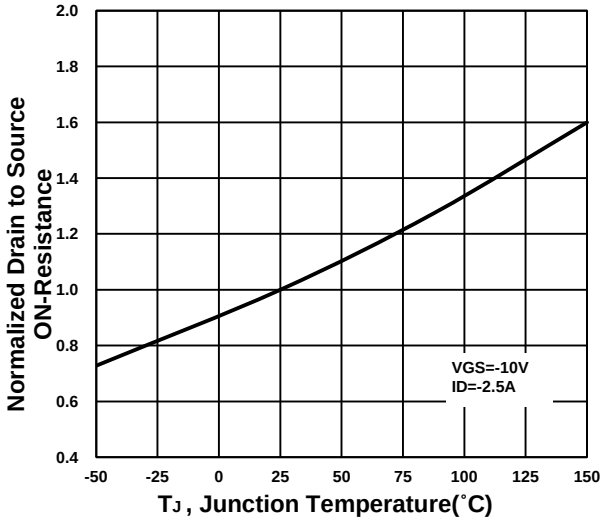
On-Resistance VS Gate-To-Source



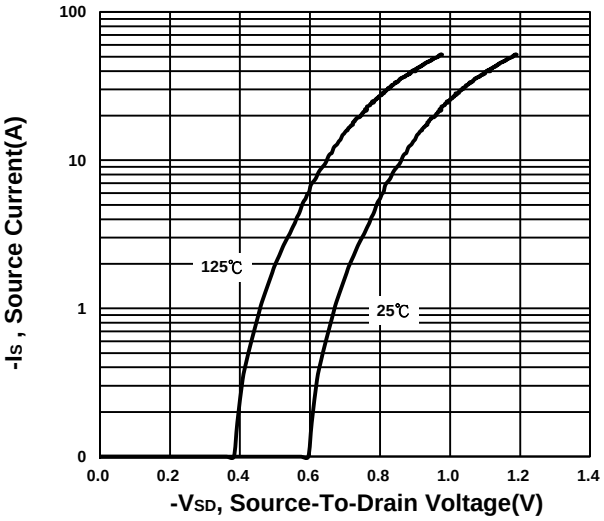
On-Resistance VS Drain Current



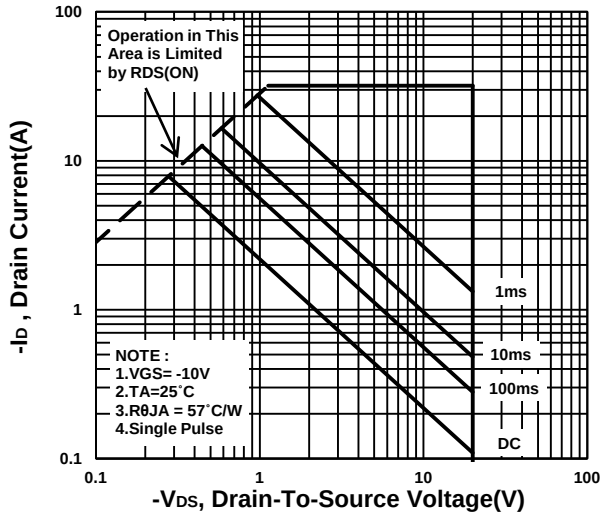
On-Resistance VS Temperature



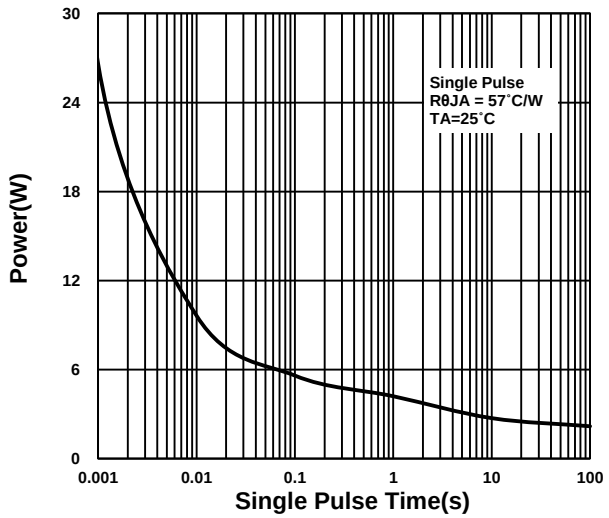
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve