NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor

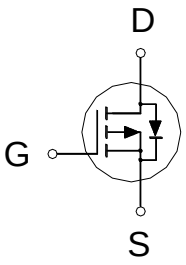
PE529BA

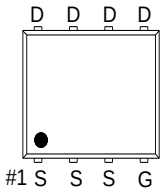
PDFN 3x3P

Halogen-free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	9.5mΩ	-34A





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}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current[3]	T_C = 25 °C	I_D	-34	A
	T_C = 100 °C		-21	
	T_A = 25 °C		-12	
	T_A = 70 °C		-9.8	
Pulsed Drain Current[1]		I_{DM}	-100	
Avalanche Current		I_{AS}	-39	
Avalanche Energy	L = 0.1mH	E_{AS}	76	mJ
Power Dissipation	T_C = 25 °C	P_D	17.8	W
	T_C = 100 °C		7	
	T_A = 25 °C		2.3	
	T_A = 70 °C		1.5	
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]	$R_{\theta JA}$		54	°C / W
Junction-to-Case	$R_{\theta JC}$		7	

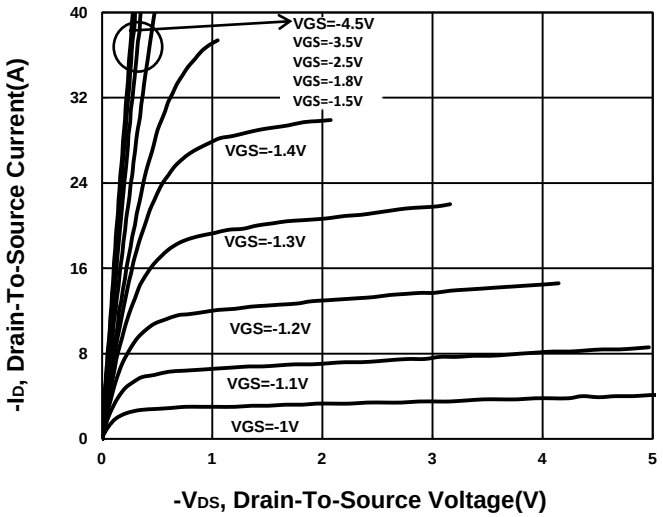
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
[3]Package limitation current is 22A

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

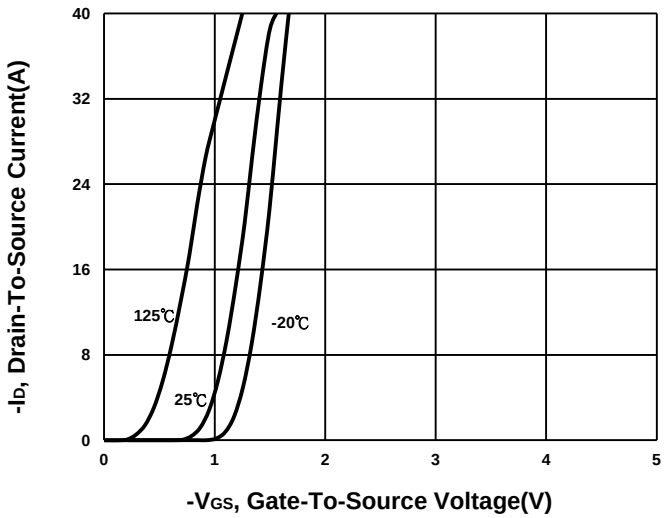
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.3	-0.6	-1	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V			±100	nA
Zero 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	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -12A		7.3	9.5	mΩ
		V_{GS} = -2.5V, I_D = -12A		8.8	12.5	mΩ
		V_{GS} = -1.8V, I_D = -11A		11	18	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = -10V, I_D = -12A		60		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		4480		pF
Output Capacitance	C_{oss}			429		pF
Reverse Transfer Capacitance	C_{rss}			326		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		4		Ω
Total Gate Charge[2]	$Q_{g(VGS=-4.5V)}$	V_{DS} = -10V , I_D = -12A		46		nC
	$Q_{g(VGS=-2.5V)}$			26		nC
Gate-Source Charge[2]	Q_{gs}			6.6		nC
Gate-Drain Charge[2]	Q_{gd}			10		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -10V I_D ≅ -12A, V_{GS} = -4.5V, R_{GEN} = 6Ω		32		nS
Rise Time[2]	t_r			31		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			196		nS
Fall Time[2]	t_f			125		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-14	A
Forward Voltage[1]	V_{SD}	I_F = -12A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-12A, dI/dt=100A/μs		12.8		nS
Reverse Recovery Charge	Q_{rr}			4.5		nC

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

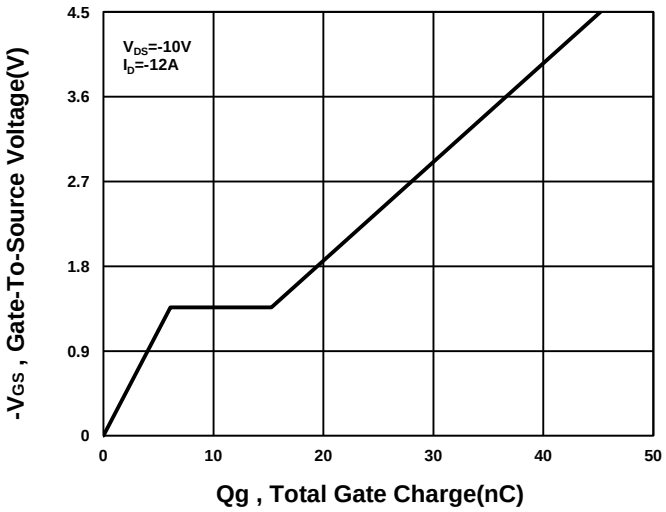
Output Characteristics



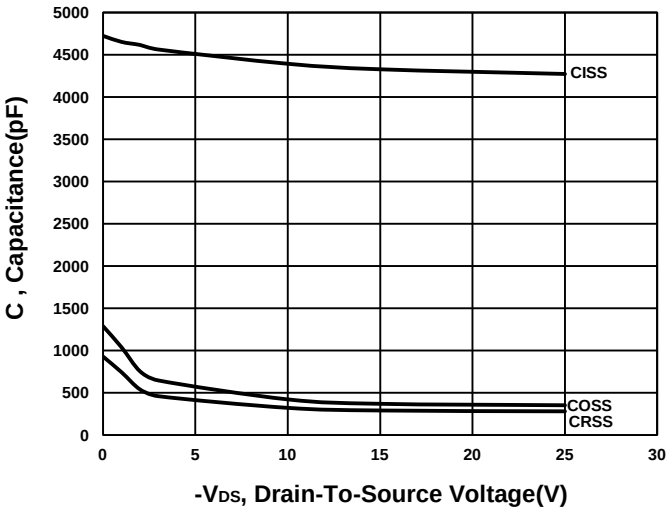
Transfer Characteristics



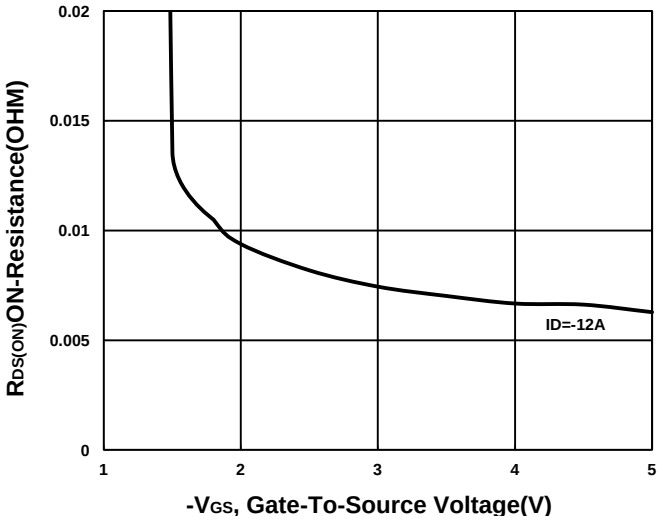
Gate charge Characteristics



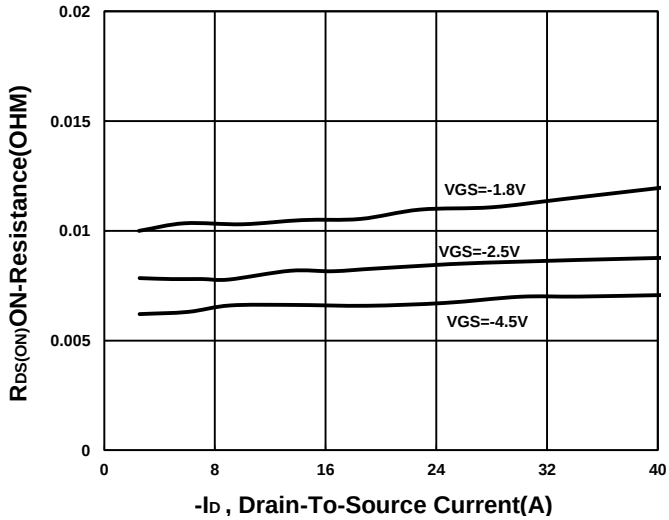
Capacitance Characteristic



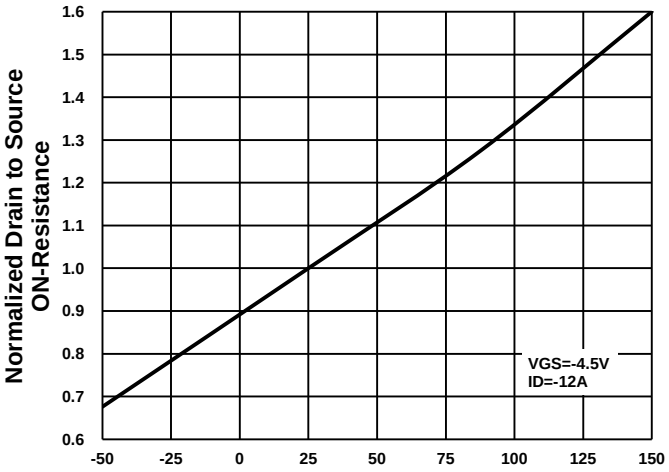
On-Resistance VS Gate-To-Source



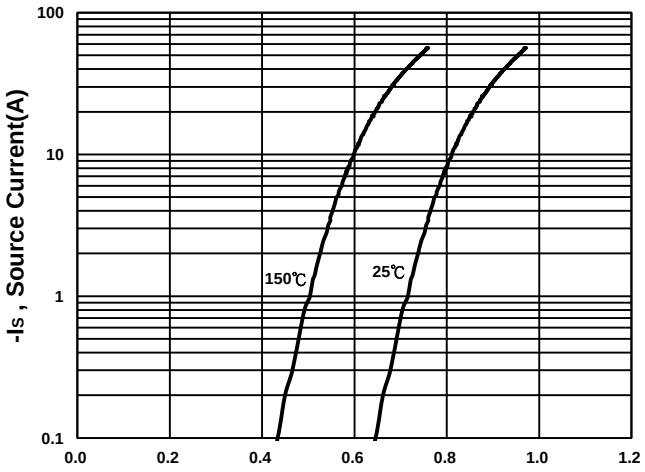
On-Resistance VS Drain Current



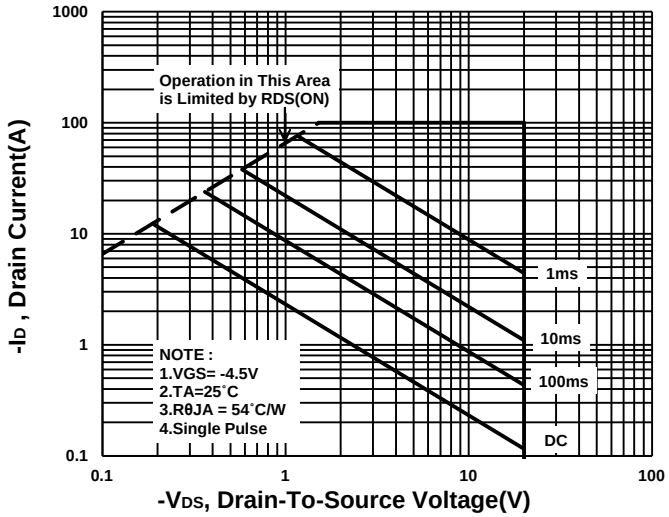
On-Resistance VS Temperature



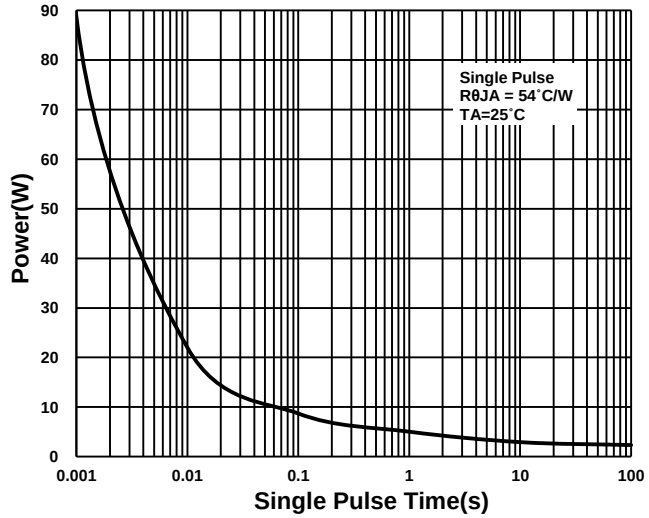
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve