

NIKO-SEM**P-Channel Logic Level Enhancement Mode PE5G5EA****Field Effect Transistor**

PDFN 3x3P

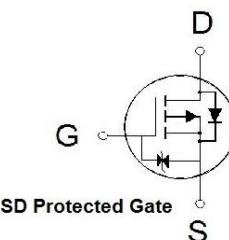
Halogen-free & Lead-Free

PRODUCT SUMMARY

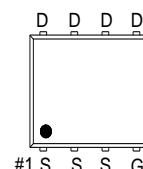
$V_{(BR)DSS}$	$R_{DS(on)}$	I_D
-30V	16mΩ	-30A

**Features**

- Pb-Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.
- Products Integrated ESD diode with ESD Protected.

**Applications**

- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.



G. GATE
D. DRAIN
S. SOURCE

100% UIS Tested
100% Rg Tested

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	A
	$T_C = 100^\circ\text{C}$		
	$T_A = 25^\circ\text{C}$		
	$T_A = 70^\circ\text{C}$		
Pulsed Drain Current ¹	I_{DM}	-72	
Avalanche Current	I_{AS}	-27	
Avalanche Energy	E_{AS}	36	mJ
Power Dissipation ³	$T_C = 25^\circ\text{C}$	P_D	W
	$T_C = 100^\circ\text{C}$		
	$T_A = 25^\circ\text{C}$		
	$T_A = 70^\circ\text{C}$		
Junction & Storage Temperature Range	T_j, T_{stg}	-55 to 150	°C

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THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ²	$t \leq 10s$	$R_{\theta JA}$		52	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		86	
Junction-to-Case	Steady-State	$R_{\theta JC}$		5	

¹Pulse width limited by maximum junction temperature.²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$.³The Power dissipation is based on $R_{\theta JA} t \leq 10s$ value.**ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ C$, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.3	-1.8	-2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 16V$			± 30	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 55^\circ C$			-10	
Drain-Source On-State Resistance ¹	$R_{DS(\text{ON})}$	$V_{GS} = -10V, I_D = -12A$		12	16	$m\Omega$
		$V_{GS} = -4.5V, I_D = -12A$		19	30	
Forward Transconductance ¹	g_f	$V_{DS} = -5V, I_D = -12A$		31		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		1139		pF
Output Capacitance	C_{oss}			188		
Reverse Transfer Capacitance	C_{rss}			151		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		8.7		Ω
Total Gate Charge ²	$Q_{g(VGS=-10V)}$	$V_{DS} = -15V, I_D = -12A$		24		nC
	$Q_{g(VGS=-4.5V)}$			13		
Gate-Source Charge ²	Q_{gs}			2.6		
Gate-Drain Charge ²	Q_{gd}			6.4		

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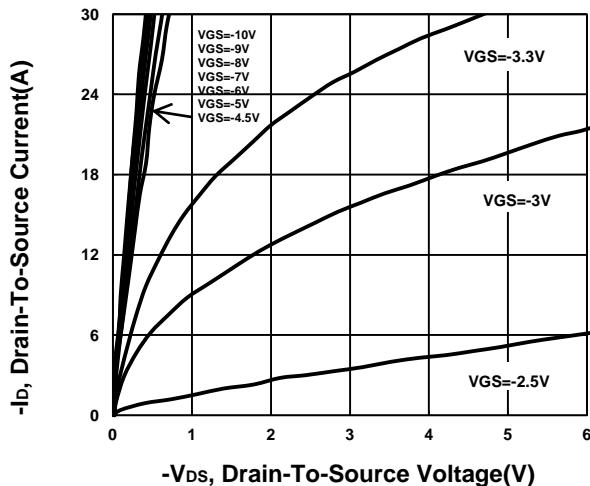
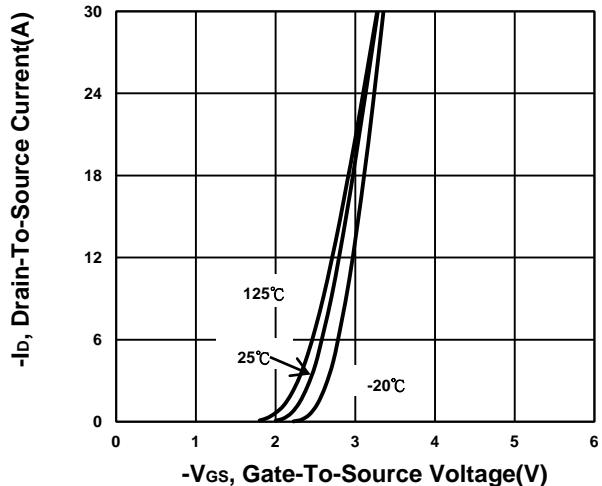
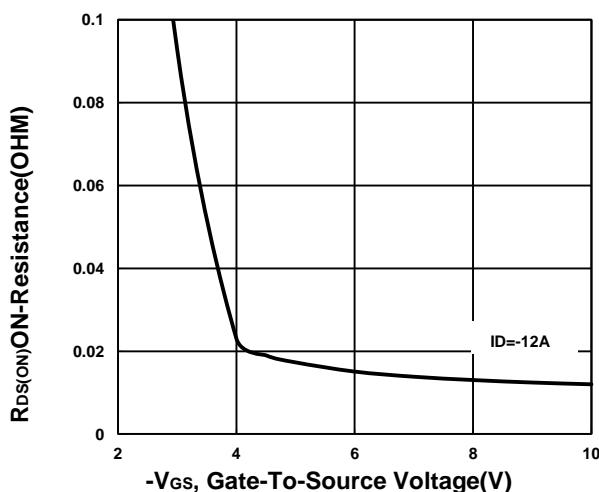
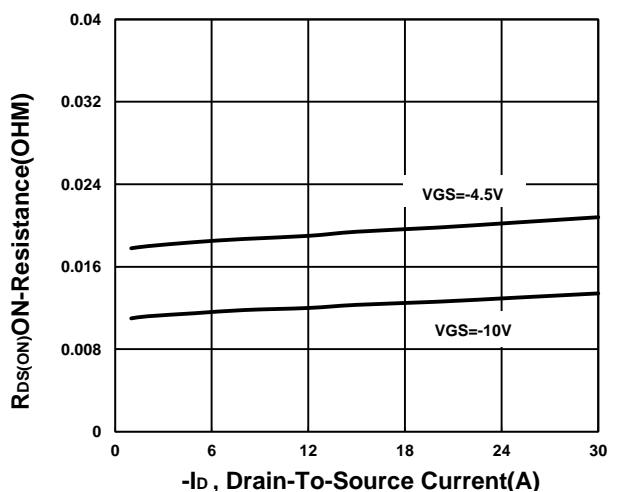
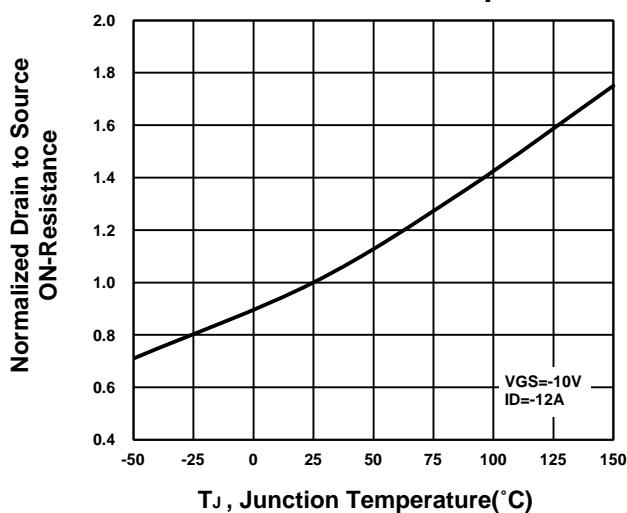
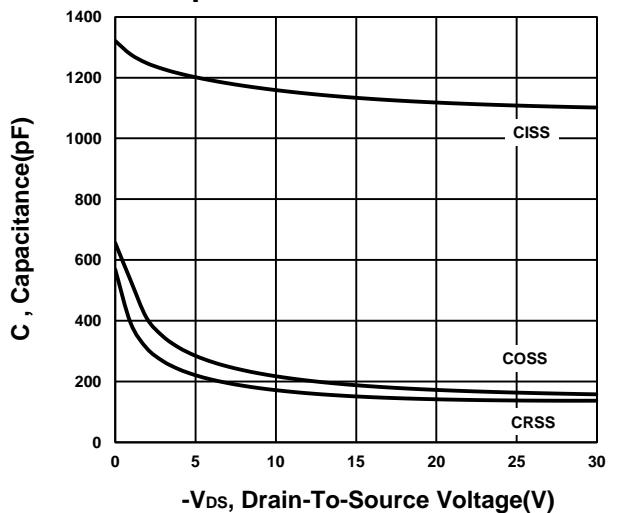
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = -15V$ $I_D \geq -12A, V_{GS} = -10V, R_{GEN} = 6\Omega$	9.3			nS
Rise Time ²	t_r		59			
Turn-Off Delay Time ²	$t_{d(off)}$		64			
Fall Time ²	t_f		90			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)						
Continuous Current	I_S	$I_F = -12A, V_{GS} = 0V$ $I_F = -12A, dI/dt = 100A/\mu s$		-19	A	
Forward Voltage ¹	V_{SD}			-1.3	V	
Reverse Recovery Time	t_{rr}		8.3		nS	
Reverse Recovery Charge	Q_{rr}		2.2		nC	

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.

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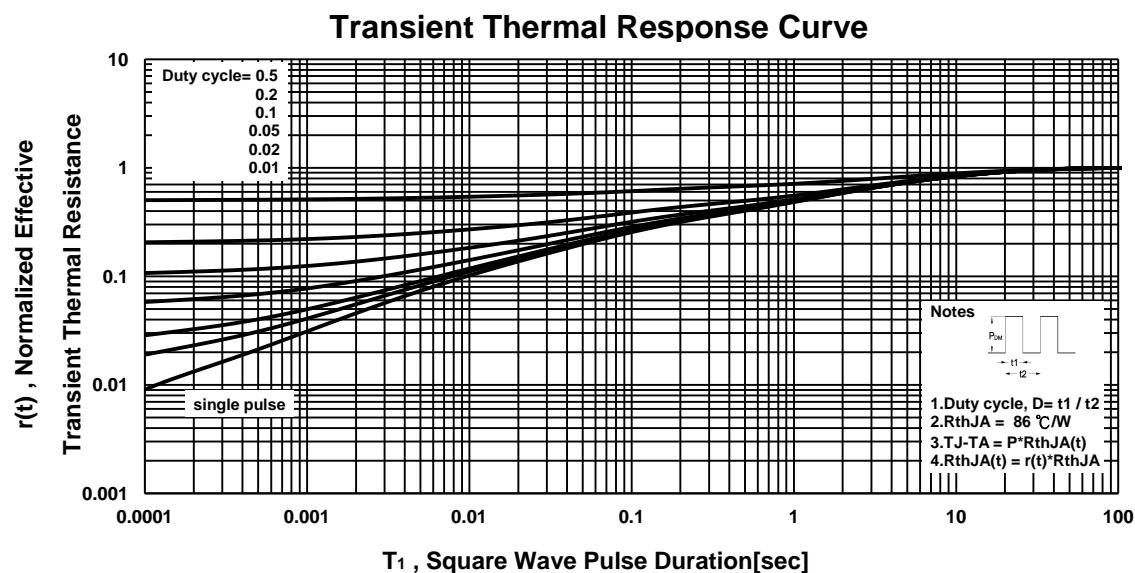
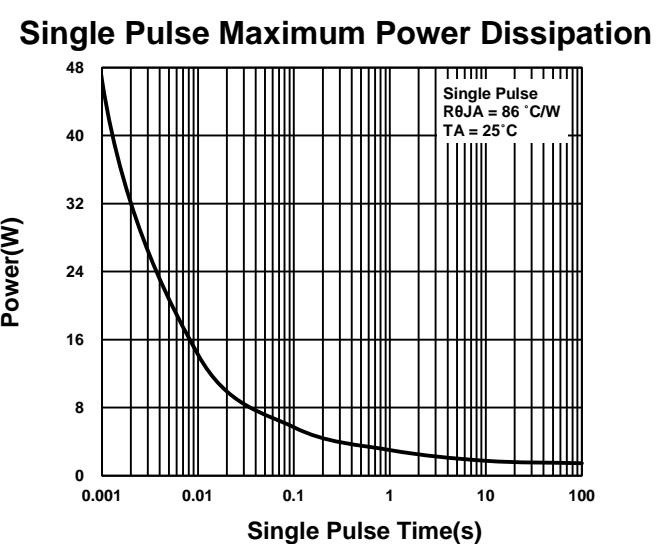
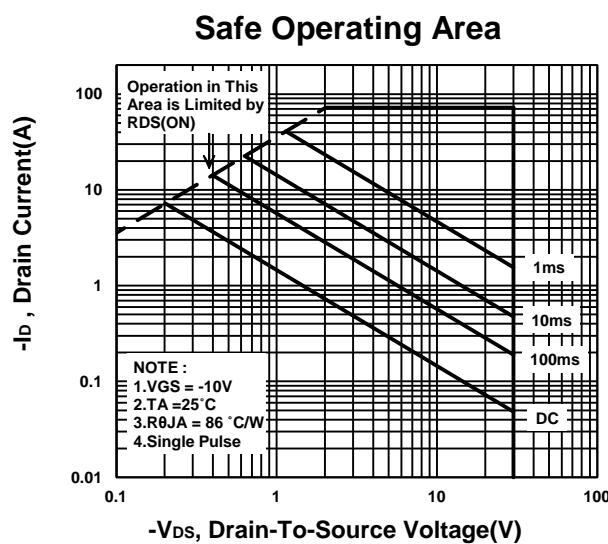
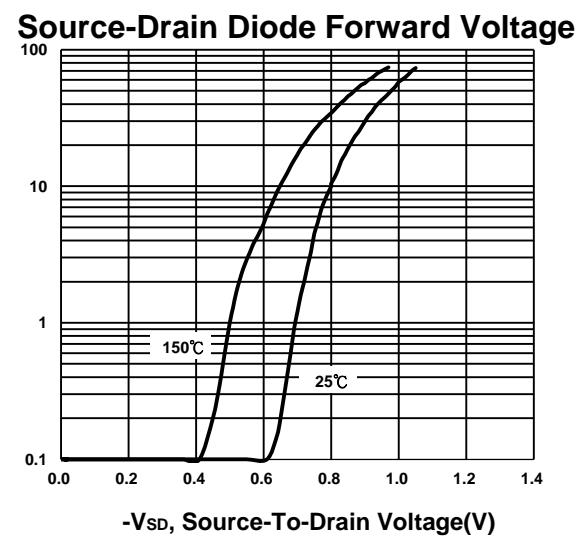
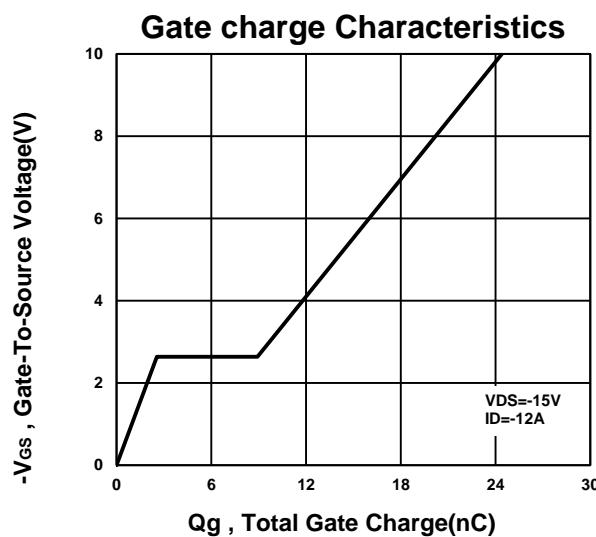
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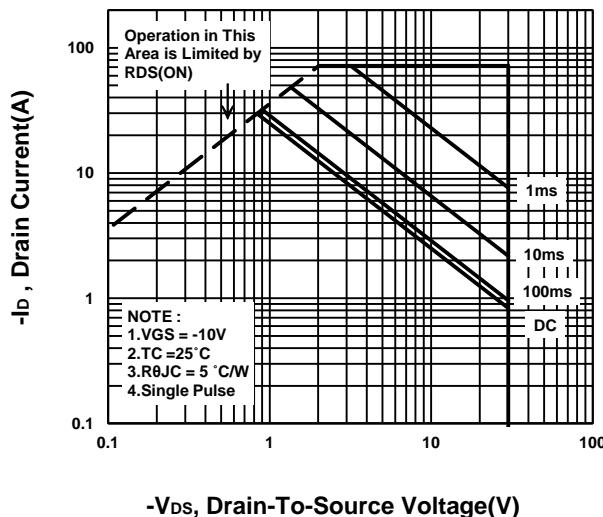
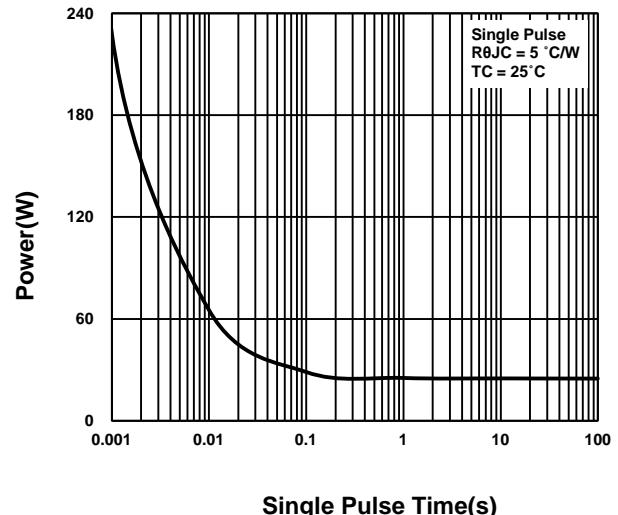
Output Characteristics**Transfer Characteristics****On-Resistance VS Gate-To-Source Voltage****On-Resistance VS Drain Current****On-Resistance VS Temperature****Capacitance Characteristic**

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NIKO-SEM**P-Channel Logic Level Enhancement Mode PE5G5EA****Field Effect Transistor****PDFN 3x3P****Halogen-free & Lead-Free****Safe Operating Area****Single Pulse Maximum Power Dissipation** $-V_{DS}$, Drain-To-Source Voltage(V)

Single Pulse Time(s)

Transient Thermal Response Curve