NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor

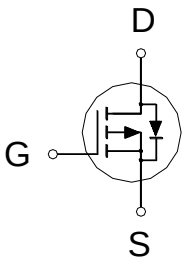
PKCE9BB

PDFN 5x6P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-40V	3.95mΩ	-92A



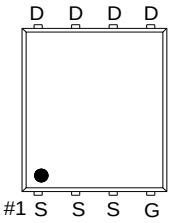
RoHS Compliant

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.

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 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current[4]	T_C = 25 °C	I_D	-92	A
	T_C = 100 °C		-58	
	T_A = 25 °C		-24	
	T_A = 70 °C		-19	
Pulsed Drain Current[1]		I_{DM}	-200	
Avalanche Current		I_{AS}	-57	
Avalanche Energy	L = 0.1mH	E_{AS}	162	mJ
Power Dissipation[3]	T_C = 25 °C	P_D	62	W
	T_C = 100 °C		25	
	T_A = 25 °C		4.1	
	T_A = 70 °C		2.6	
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]	t ≦10s	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		57	
Junction-to-Case	Steady-State	$R_{\theta JC}$		2	

[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. The value in any given application depends on the user's specific board design.
[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.
[4]The maximum current rating is package limited.

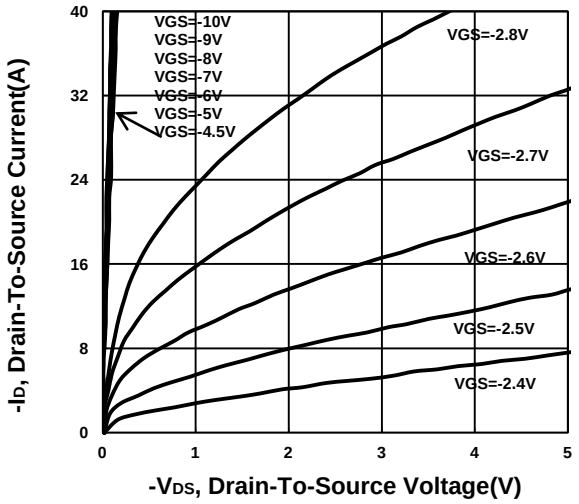
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

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	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.3	-1.6	-2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±25V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -40V, V_{GS} = 0V			-1	uA
		V_{DS} = -40V, V_{GS} = 0V, T_J = 55 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D = -20A		3.15	3.95	mΩ
		V_{GS} = -4.5V, I_D = -15A		4.35	7	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -20A		72		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -20V, f = 1MHz		6431		pF
Output Capacitance	C_{oss}			798		
Reverse Transfer Capacitance	C_{rss}			646		
Gate Resistance	Rg	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		4.3		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -20V, V_{GS} = -10V , I_D = -20A		142		nC
Gate-Source Charge[2]	Q_{gs}			17		
Gate-Drain Charge[2]	Q_{gd}			33		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -20V, I_D ≅ -20A, V_{GS} = -10V, R_{GS} = 6Ω		15		nS
Rise Time[2]	t_r			94		
Turn-Off Delay Time[2]	$t_{d(off)}$			232		
Fall Time[2]	t_f			133		

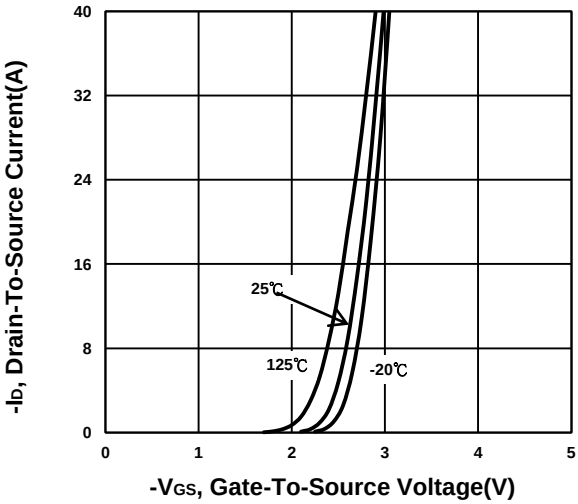
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				-47	A
Forward Voltage[1]	V_{SD}	I_F = -20A, V_{GS} = 0V			-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -20A , dI_F/dt = 100 A / μS		26		nS
Reverse Recovery Charge	Q_{rr}			19		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]The maximum current rating is package limited.

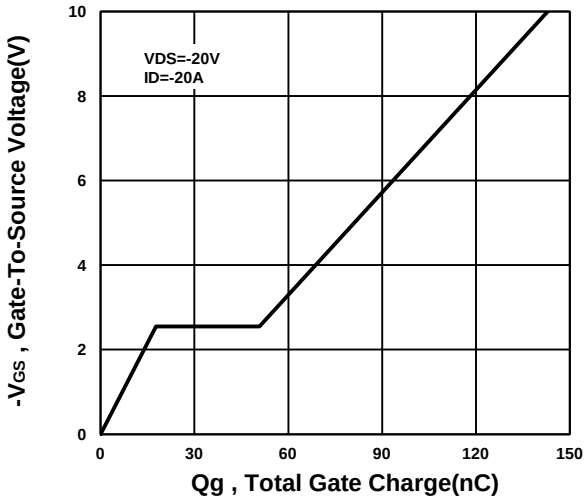
Output Characteristics



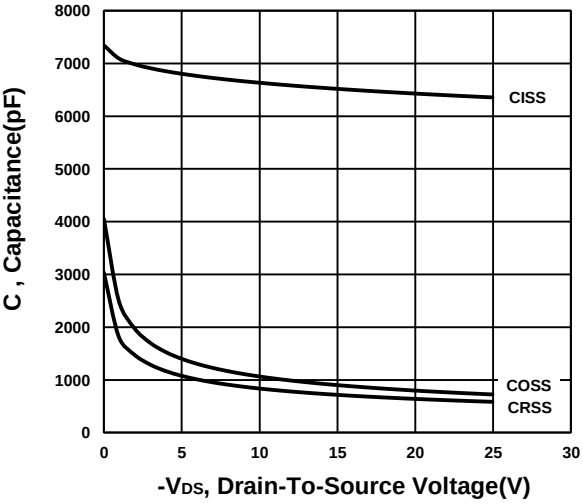
Transfer Characteristics



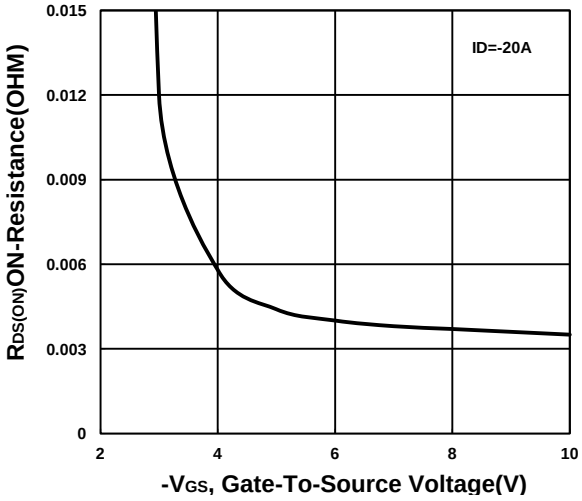
Gate charge Characteristics



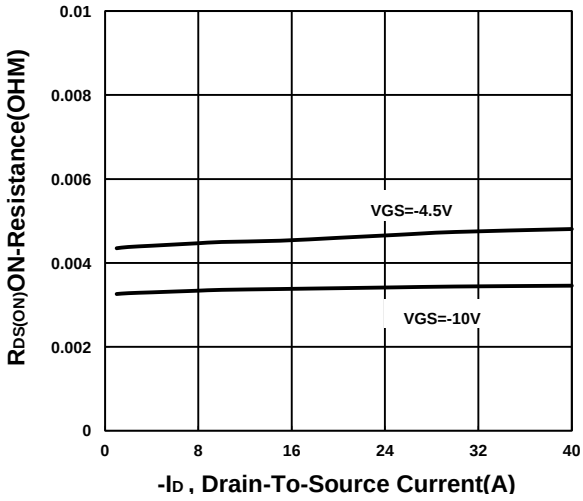
Capacitance Characteristic



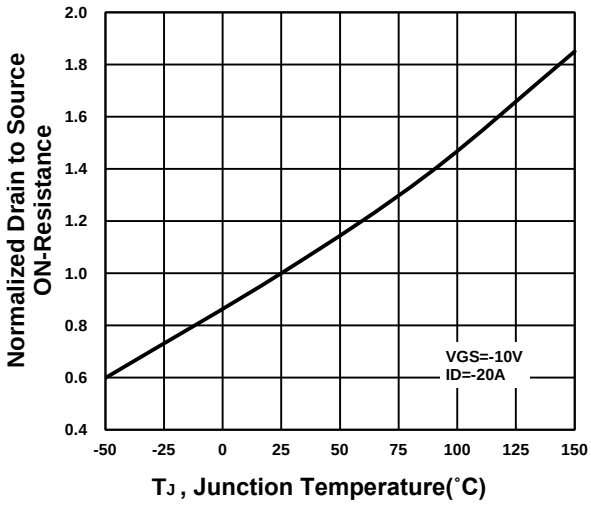
On-Resistance VS Gate-To-Source Voltage



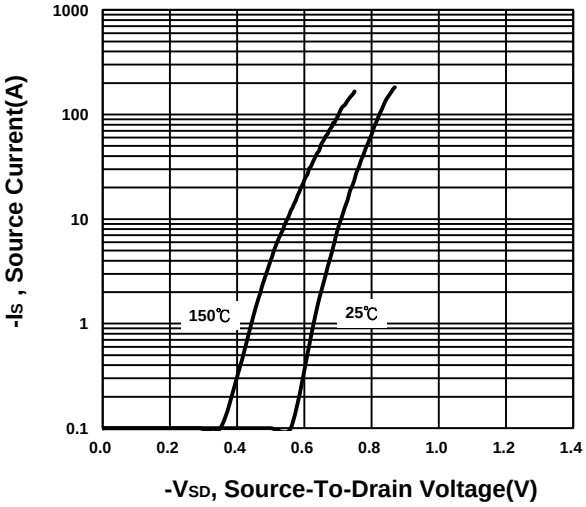
On-Resistance VS Drain Current



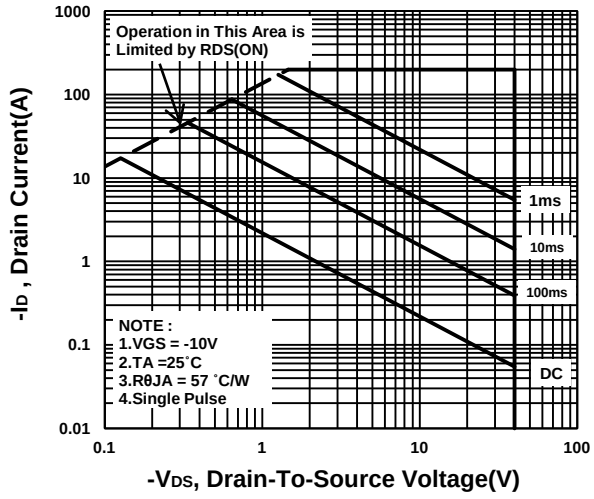
On-Resistance VS Temperature



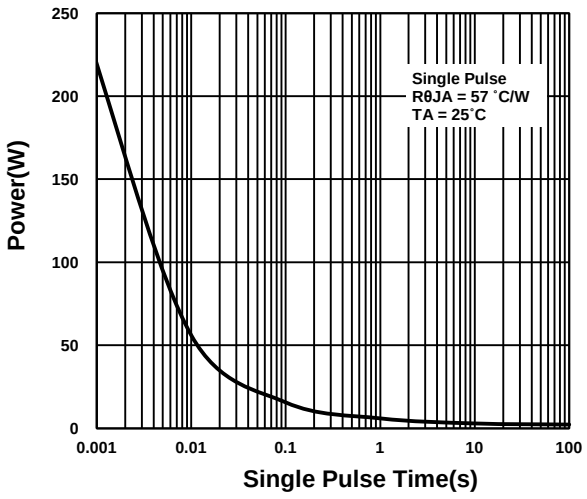
Source-Drain Diode Forward Voltage



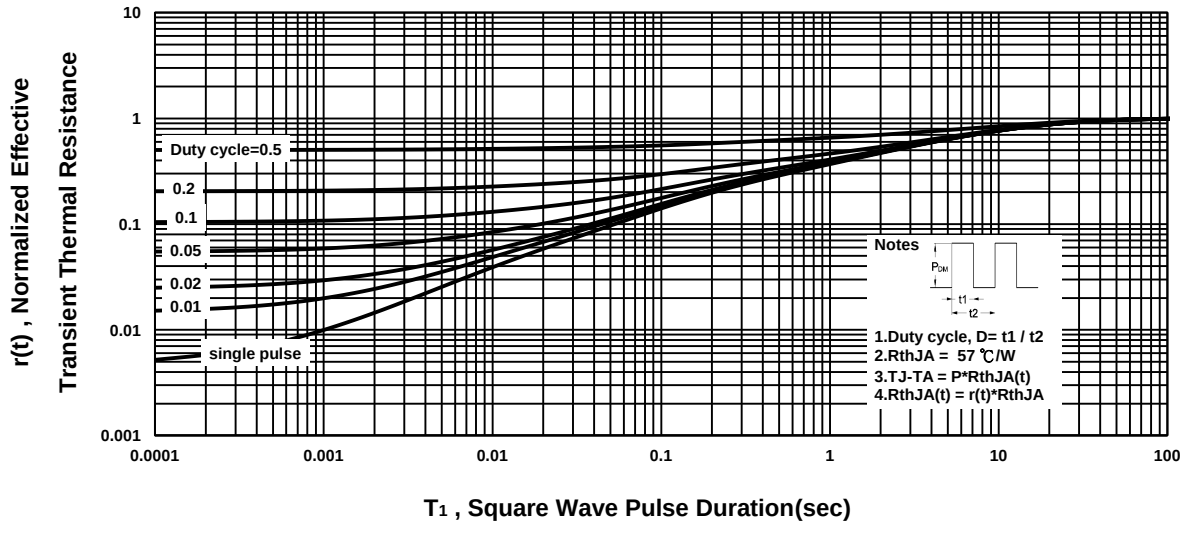
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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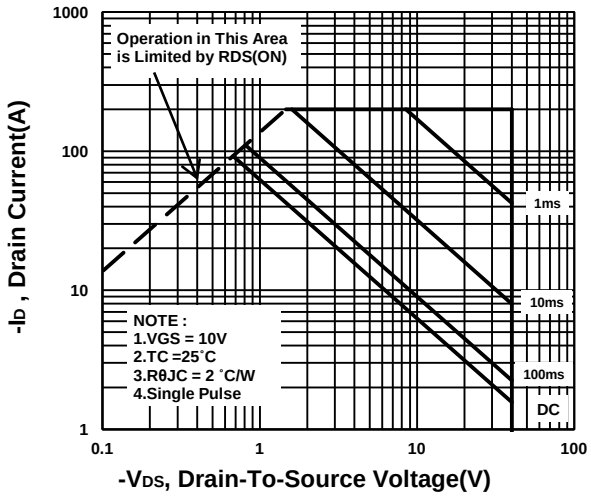
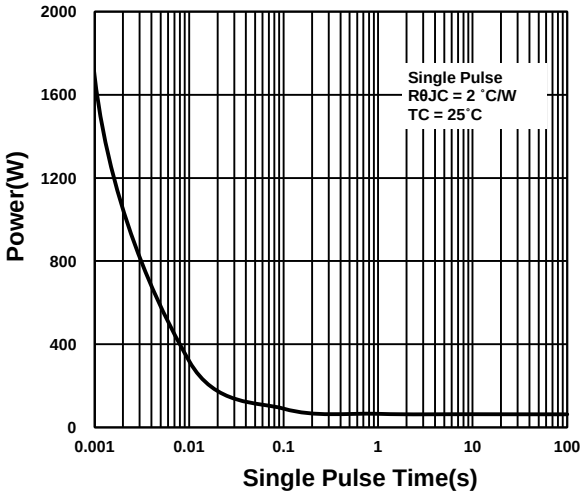


Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve