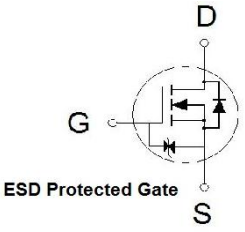
NIKO-SEM

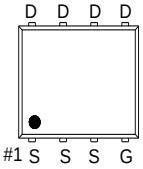
N-Channel Enhancement Mode Field Effect Transistor

PE5G6EA
PDFN 3x3P
Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D[3]
24V	2.4mΩ	72A





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}	24	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current[3]	T_C = 25 °C	I_D	72	A
	T_C = 100 °C		45	
	T_A = 25 °C		21	
	T_A = 70 °C		17	
Pulsed Drain Current[1]		I_{DM}	120	
Avalanche Current		I_{AS}	46	
Avalanche Energy	L = 0.1mH	E_{AS}	105	mJ
Power Dissipation	T_C = 25 °C	P_D	22	W
	T_C = 100 °C		9	
	T_A = 25 °C		1.9	
	T_A = 70 °C		1.2	
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]	$R_{\theta JA}$		63	°C / W
Junction-to-Case	$R_{\theta JC}$		5.5	

[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 26A

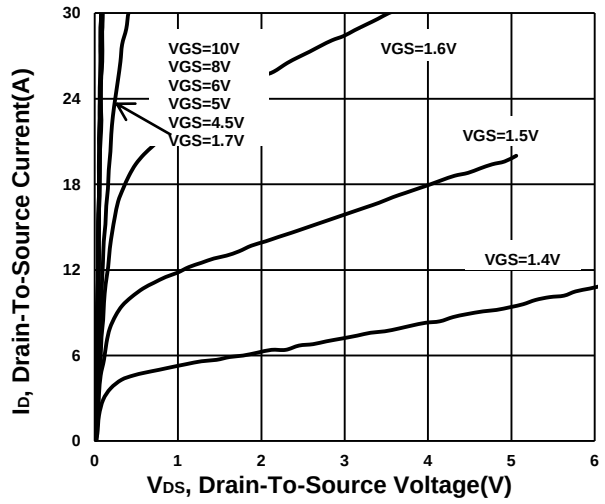
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	24			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.7	0.8	1.3	

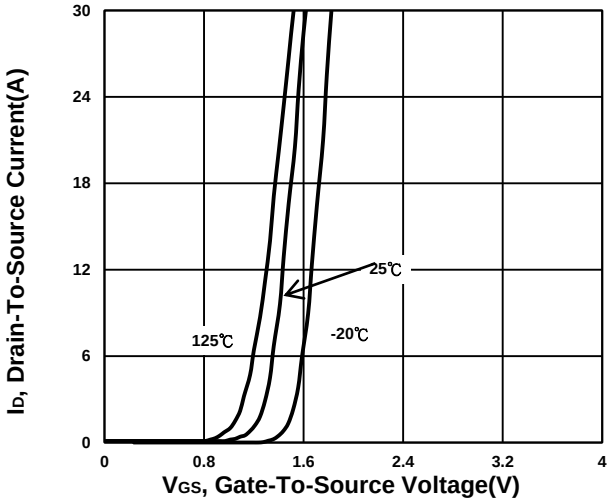
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V			±10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 19V, V_{GS} = 0V			1	μA
		V_{DS} = 10V, V_{GS} = 0V, T_J = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 2.5V, I_D = 10A		2.8	3.9	mΩ
		V_{GS} = 4.5V, I_D = 10A		2.1	2.8	
		V_{GS} = 10V, I_D = 15A		1.8	2.4	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 15A		30		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz		3693		pF
Output Capacitance	C_{oss}			643		
Reverse Transfer Capacitance	C_{rss}			526		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.2		Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 10V , I_D = 15A		88.5		nC
	$Q_{g(VGS=4.5V)}$			44		
Gate-Source Charge[2]	Q_{gs}			4.6		
Gate-Drain Charge[2]	Q_{gd}			15		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 10V I_D ≅ 15A, V_{GEN} = 10V, R_G =6Ω		40		nS
Rise Time[2]	t_r			58		
Turn-Off Delay Time[2]	$t_{d(off)}$			92		
Fall Time[2]	t_f			36		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				18	A
Forward Voltage[1]	V_{SD}	I_F = 15A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F =15A , dI_F/dt = 100A / μS		30		nS
Reverse Recovery Charge	Q_{rr}			20		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is 26A

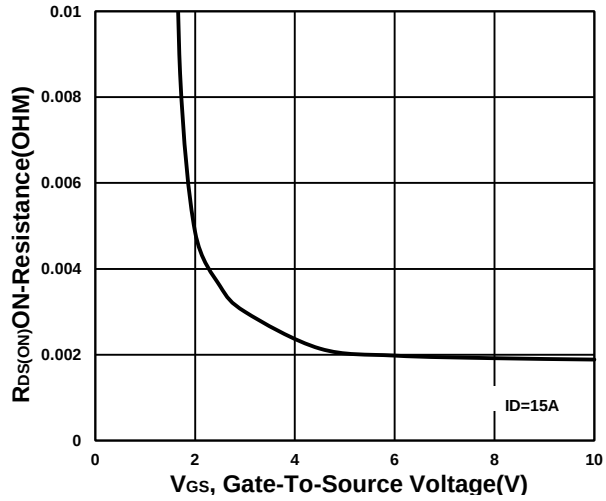
Output Characteristics



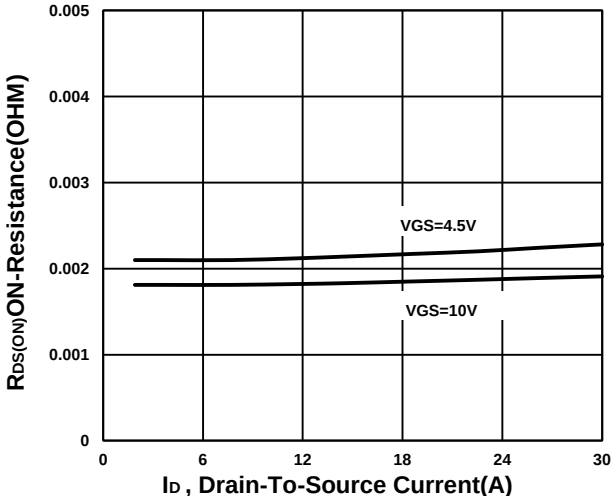
Transfer Characteristics



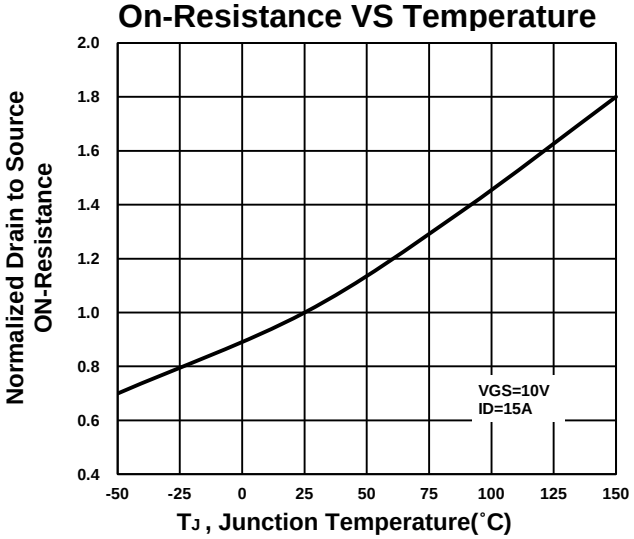
On-Resistance VS Gate-To-Source



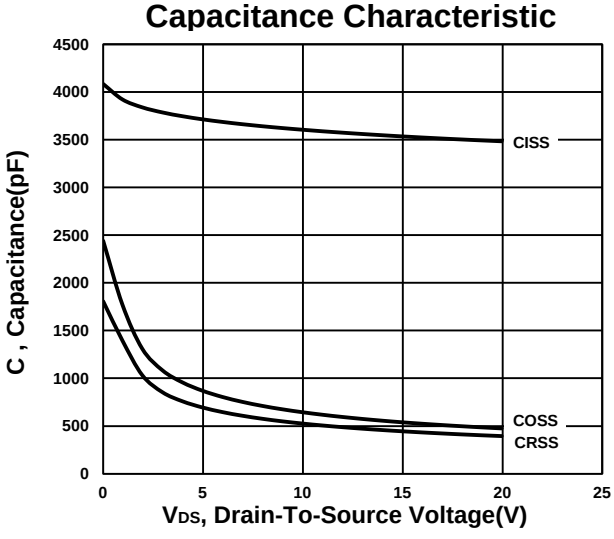
On-Resistance VS Drain Current



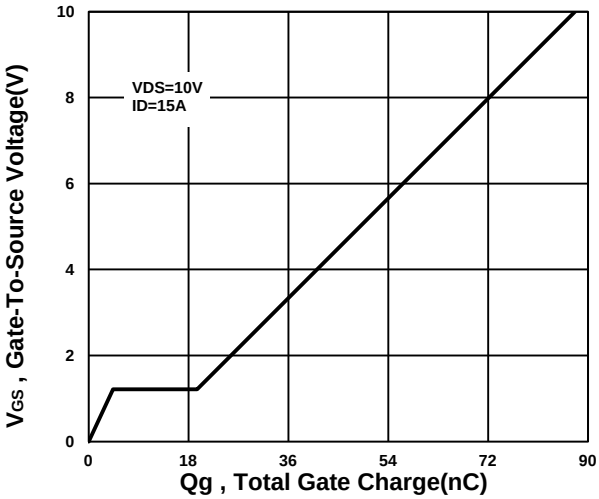
On-Resistance VS Temperature



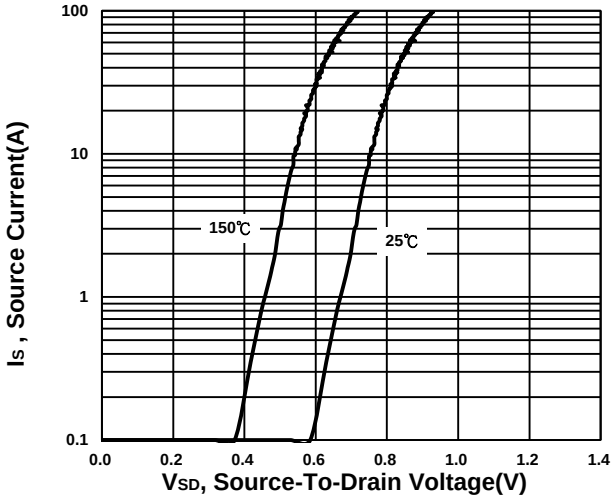
Capacitance Characteristic



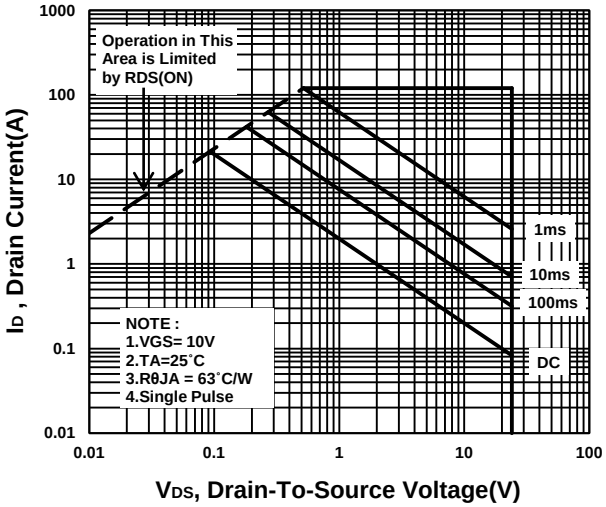
Gate charge Characteristics



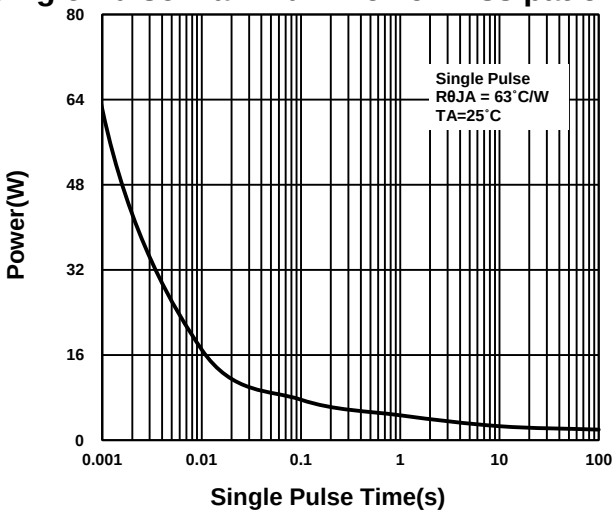
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve