NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

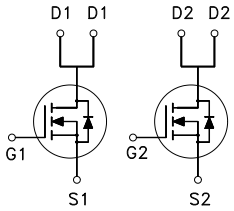
PE6W8DX

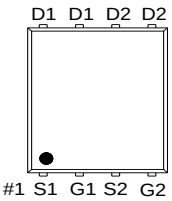
PDFN 3x3P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	20mΩ	20A





G : GATE
D : DRAIN
S : SOURCE

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.
- Protable Devices for Battery PACK Applications.

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}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	20	A
	T_C = 100 °C		13	
	T_A = 25 °C		7.2	
	T_A = 70 °C		5.8	
Pulsed Drain Current[1]		I_{DM}	41	
Avalanche Current		I_{AS}	8.1	
Avalanche Energy	L = 0.1mH	E_{AS}	3.3	mJ
Power Dissipation	T_C = 25 °C	P_D	19.8	W
	T_C = 100 °C		7.9	
	T_A = 25 °C		2.5	
	T_A = 70 °C		1.6	
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	$R_{\theta JA}$		50	°C / W
	Steady-State			77	
Junction-to-Case	Steady-State	$R_{\theta JC}$		6.3	

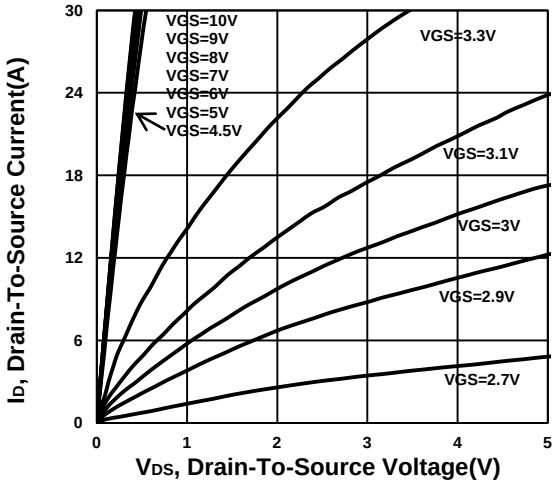
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C

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

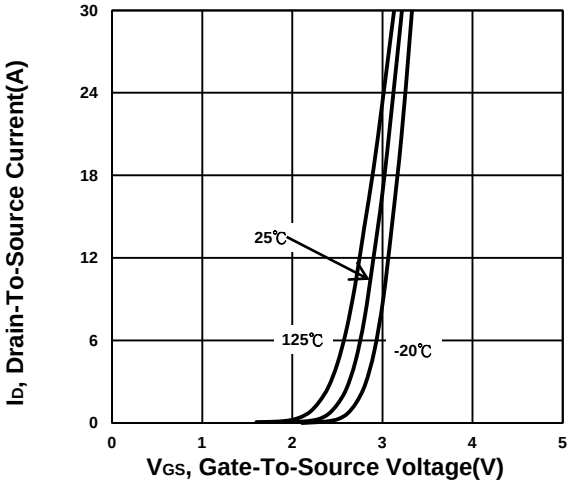
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	40			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.7	2.3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40V, V_{GS} = 0V			1	μA
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C			10	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6.4A		16.6	28	mΩ
		V_{GS} = 10V, I_D = 6.4A		13.5	20	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 6.4A		31		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz		603		pF
Output Capacitance	C_{oss}			91		pF
Reverse Transfer Capacitance	C_{rss}			74		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		3.6		Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 20V , I_D = 6.4A		17		nC
	$Q_{g(VGS=4.5V)}$			8.4		nC
Gate-Source Charge[2]	Q_{gs}			2.4		nC
Gate-Drain Charge[2]	Q_{gd}			4.4		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 20V I_D ≅ 6.4A, V_{GEN} = 10V, R_G =6Ω		7.2		nS
Rise Time[2]	t_r			26		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			27		nS
Fall Time[2]	t_f			40		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				15	A
Forward Voltage[1]	V_{SD}	I_F = 6.4A, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	I_F = 6.4A , dI_F/dt = 100A / μS		9		nS
Reverse Recovery Charge	Q_{rr}			3.6		nC

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

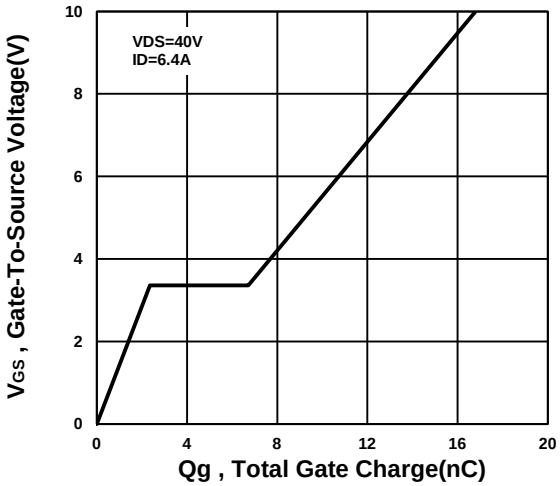
Output Characteristics



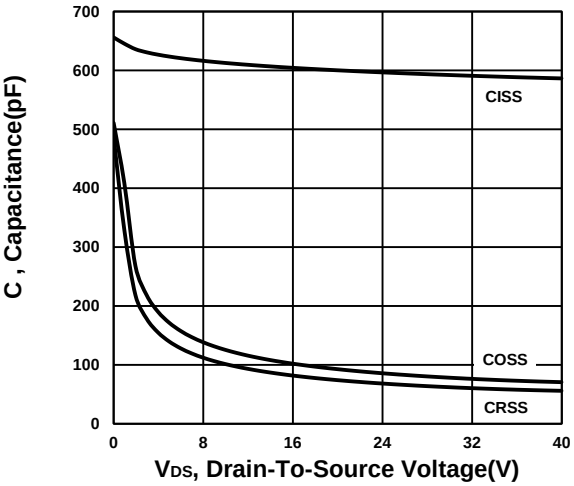
Transfer Characteristics



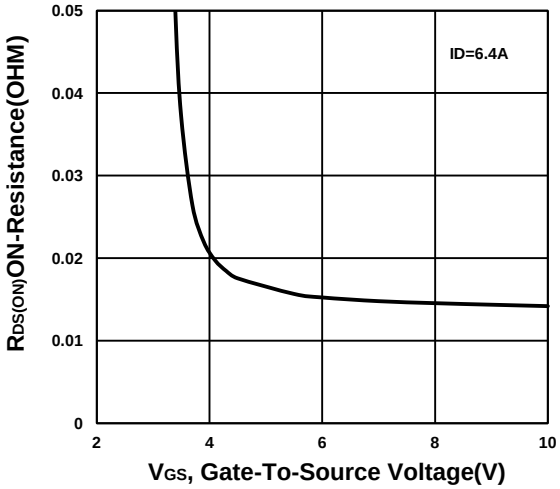
Gate charge Characteristics



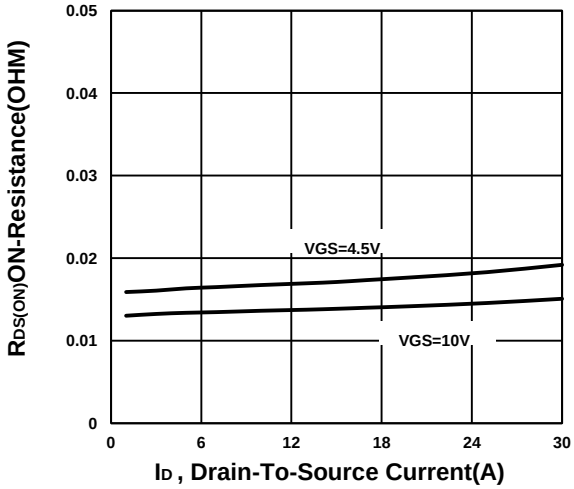
Capacitance Characteristic



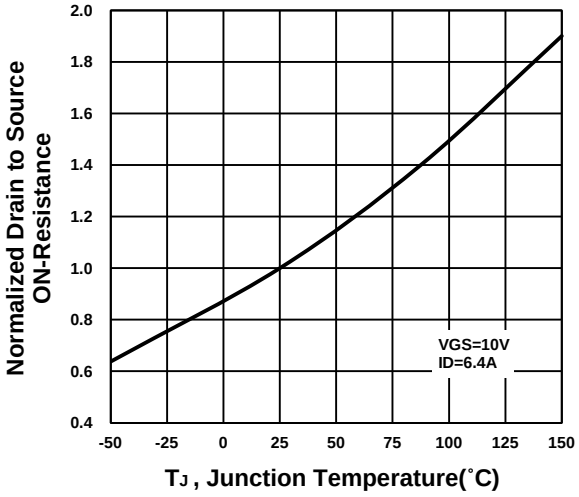
On-Resistance VS Gate-To-Source Voltage



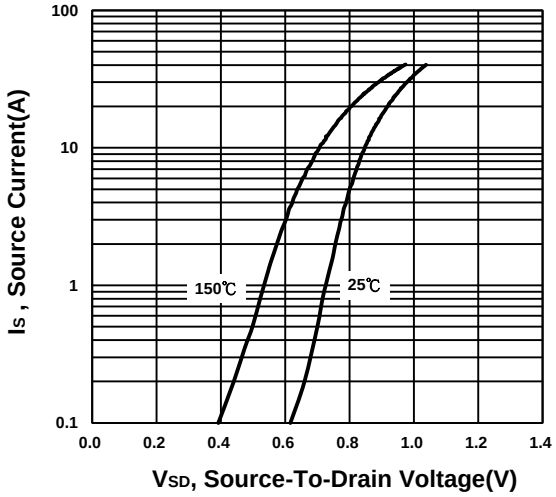
On-Resistance VS Drain Current



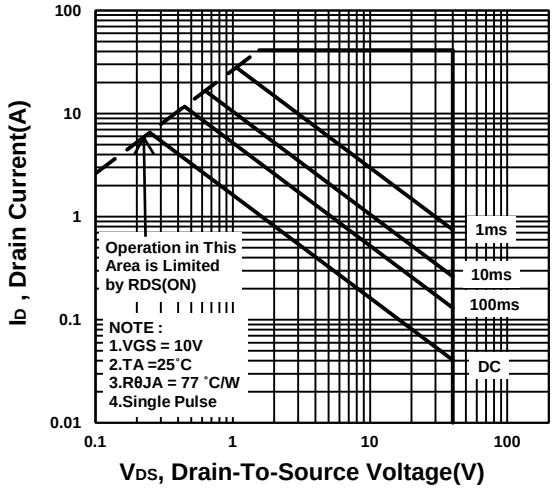
On-Resistance VS Temperature



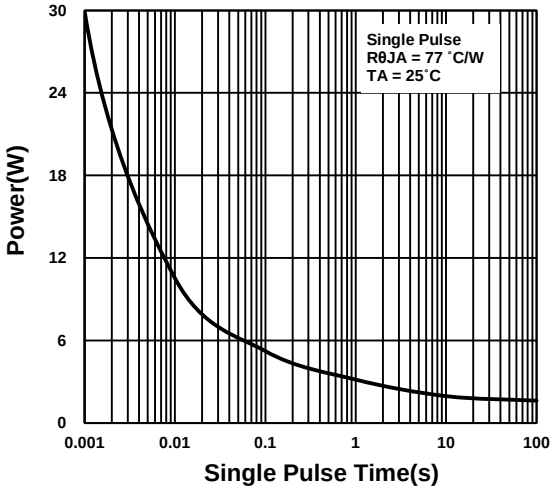
Source-Drain Diode Forward Voltage



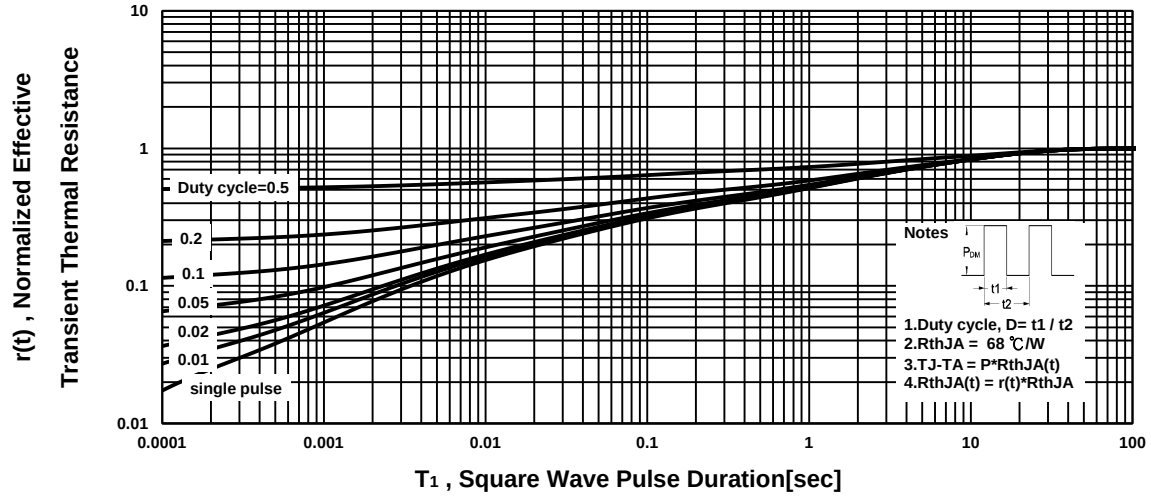
Safe Operating Area



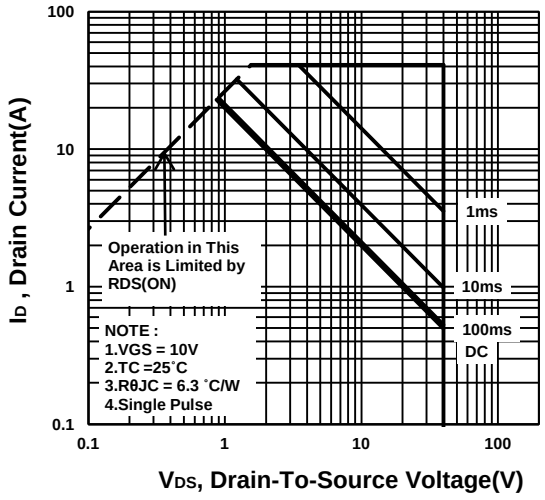
Single Pulse Maximum Power Dissipation



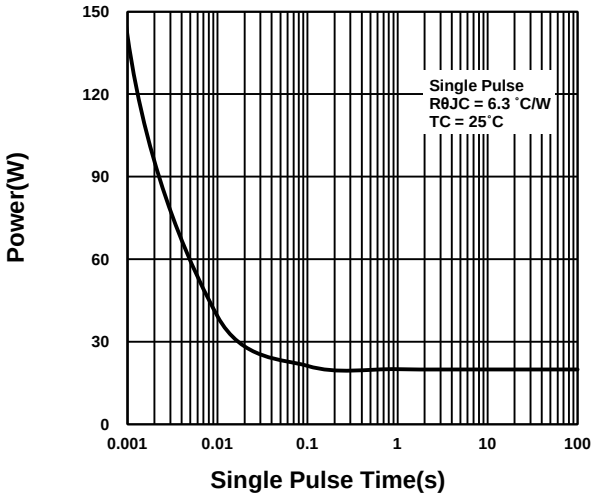
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve