NIKO-SEM

Dual P-Channel Enhancement Mode Field Effect Transistor

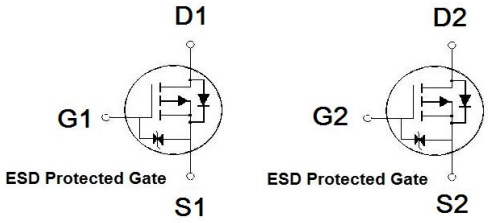
PB5C5JW

PDFN 2x2S

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	85mΩ	-3.1A

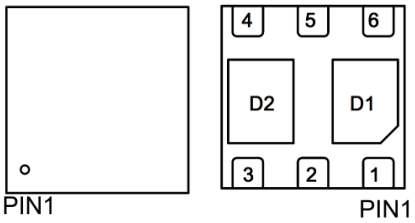


Features

- 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.



100% RG Test , 100% UIL Test

1 : S1. 4 : S2.
2 : G1. 5 : G2.
3 : D2. 6 : D1.

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}	±12	V
Continuous Drain Current	T_A = 25 °C	I_D	-3.1	A
	T_A = 70 °C		-2.5	
Pulsed Drain Current[1]		I_{DM}	-12	
Power Dissipation	T_A = 25 °C	P_D	1.3	W
	T_A = 70 °C		0.85	
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]	$R_{\theta JA}$		94	°C／W

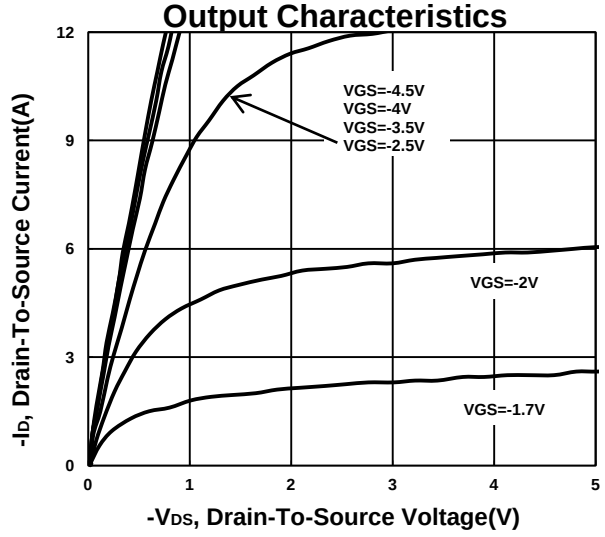
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Coppe.

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

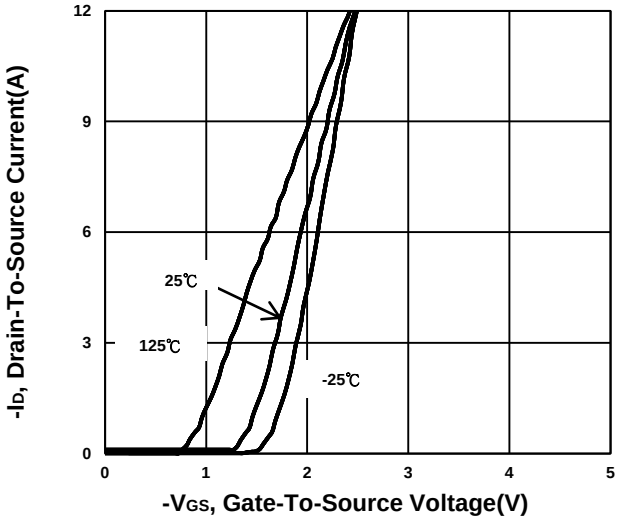
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.5	-0.9	-1.2	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V			±30	uA
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	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -2.5A		61	85	mΩ
		V_{GS} = -2.5V, I_D = -2A		86	135	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -2.5A		13		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		432		pF
Output Capacitance	C_{oss}			77		
Reverse Transfer Capacitance	C_{rss}			59		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		7.2		Ω
Total Gate Charge[2]	$Q_{g(V_{GS}=-4.5V)}$	V_{DS} = -10V , I_D = -2.5A		5.5		nC
	$Q_{g(V_{GS}=-2.5V)}$			3.4		
Gate-Source Charge[2]	Q_{gs}			0.8		
Gate-Drain Charge[2]	Q_{gd}			1.9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -10V I_D ≅ -2.5A, V_{GEN} = -4.5V, R_G = 6Ω		8.7		nS
Rise Time[2]	t_r			39		
Turn-Off Delay Time[2]	$t_{d(off)}$			26		
Fall Time[2]	t_f			39		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-1.1	A
Forward Voltage[1]	V_{SD}	I_F = -2.5A, V_{GS} = 0V			-1.2	V
Reverse Recovery Time	t_{rr}	I_F = -2.5A , dI_F/dt = 100A / μS		10		nS
Reverse Recovery Charge	Q_{rr}			4.2		nC

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

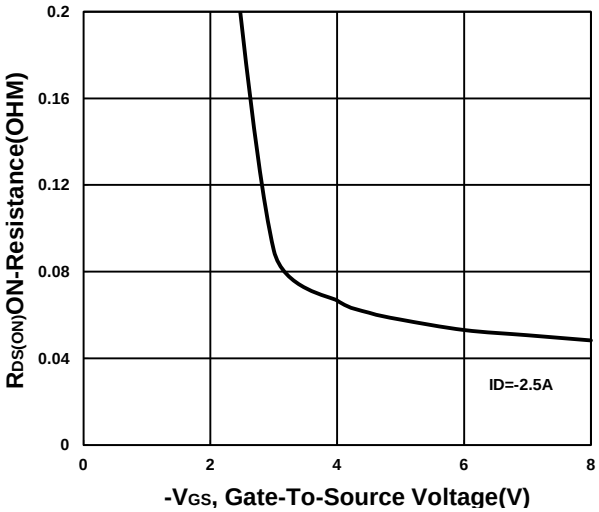
Output Characteristics



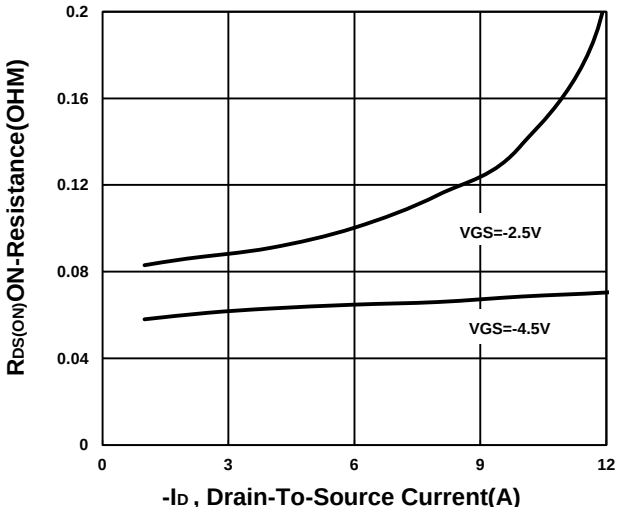
Transfer Characteristics



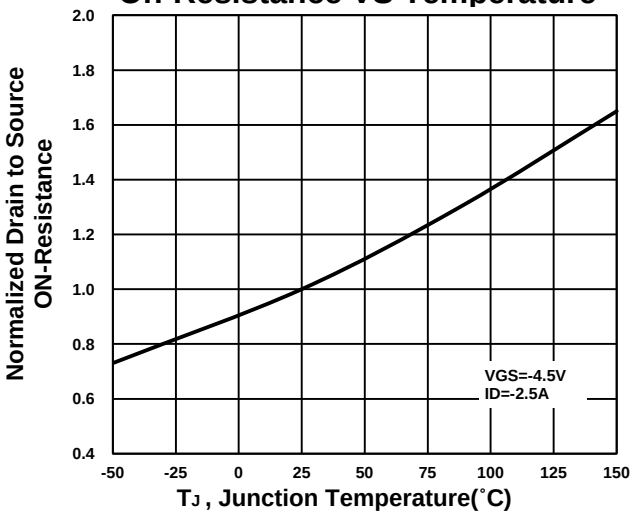
On-Resistance VS Gate-To-Source Voltage



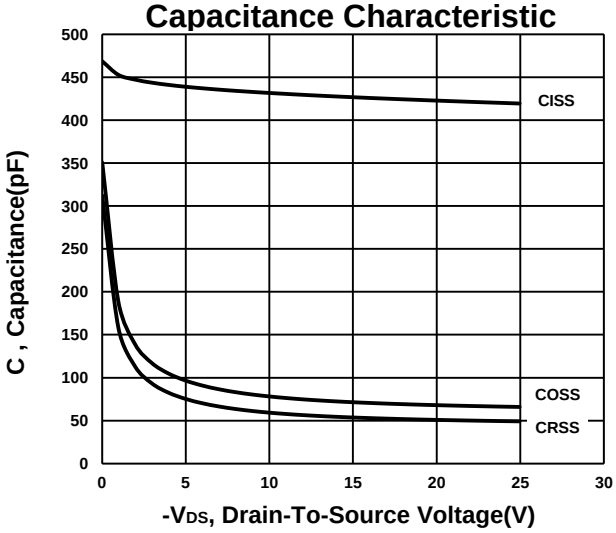
On-Resistance VS Drain Current



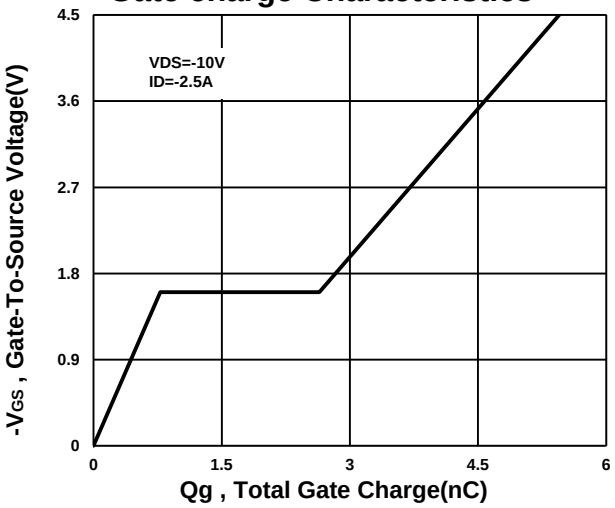
On-Resistance VS Temperature



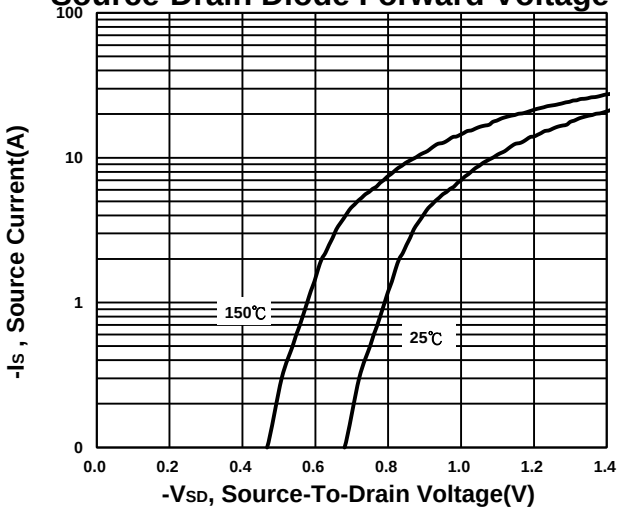
Capacitance Characteristic



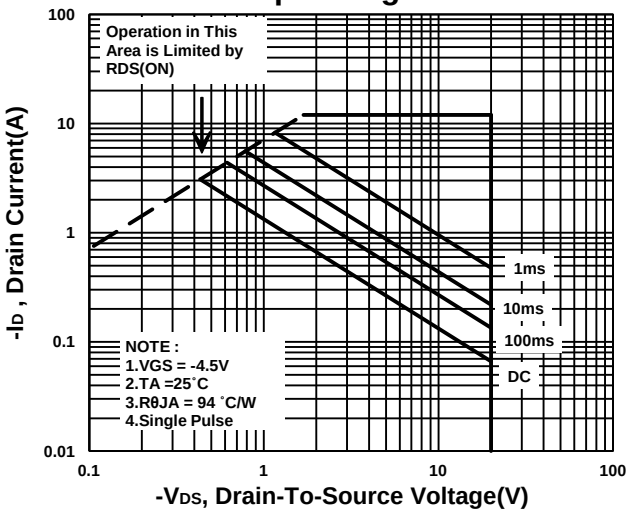
Gate charge Characteristics



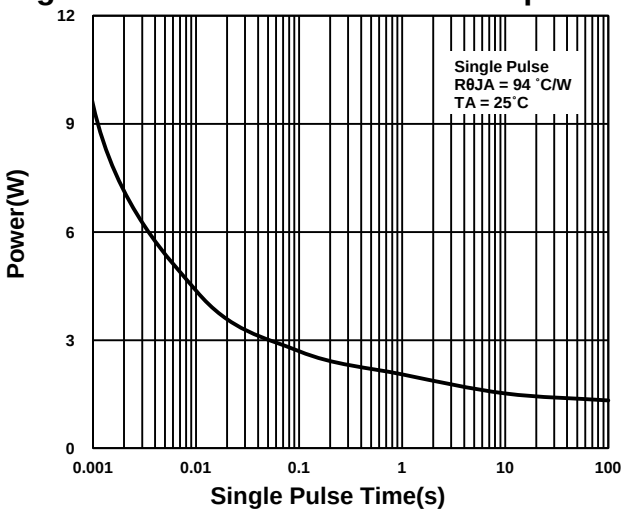
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve